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Making Salient Messages for Indigenous Tobacco Control

Thesis submitted by

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12th December 2014

For the degree of Doctor of Philosophy

In the College of Public Health, Medical and Veterinary Sciences

James Cook University

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Acknowledgements

I acknowledge Aboriginal and Torres Strait Islander peoples as the traditional owners and First Nations of Australia, and pay my respects to their Elders past, present and future.

For their generous involvement in Study 3, I acknowledge and thank the Aboriginal community and Elders, staff and clients from the Mid North Coast Local Health Network, and project officers from 'No Smokes North Coast'; and the focus group participants for their frank discussions about the complex topic of smoking in pregnancy. I appreciate the contribution and support of all the organisations involved in Study 4. The following organisations requested to be named: Asthma Foundation WA; Cancer Council WA; Central Australian Aboriginal Congress; Dandenong & District Aboriginal Corporation; Malabam Health Board Aboriginal Corporation; Nhulundu Health Service; WA Country Health Service - Population Health, Goldfields; Winnunga Nimmityjah Aboriginal Health Service; Wuchopperen Health Service Limited. I also acknowledge support from Dr Tom Calma AO for this study, the Australian Indigenous Info-Net, and the Aboriginal Health Workers and health promotion staff who gave me feedback on the questionnaire.

For Study 5, I acknowledge the valuable support of the partnering Aboriginal Community Controlled Health Service, and the Aboriginal Health Worker who advised about the study. I thank the Aboriginal students and staff at Coffs Harbour Educational Campus who engaged in the community consultation process and gave feedback on the questionnaire. I am appreciative of Aboriginal research assistants, EJ Williams and Sharne Johnson who helped recruit and interview participants and contributed to the qualitative analysis.

The Mid North Coast (NSW) Division of General Practice is acknowledged for their support as managers of the No Smokes North Coast project, under which I conducted Studies 2 and 3.

I acknowledge and thank my supervisors and advisers who contributed to my education and this research journey, and the Doctoral Cohort program and mentors at James Cook University. I am grateful to the support from administrative staff at James Cook University. I thank Associate Professor Rick van der Zwan, University of New South Wales (UNSW), who originally approved the protocols for Studies 1-3.

Lastly, I thank my husband, John Drummond, for his support and for bringing me endless cups of tea and listening even when he probably did not know what I was talking about.

Without all of you this thesis would not be possible.

Ethics statement

This research presented and reported in this thesis was conducted in accordance with the National Health and Medical Research Council (NHMRC) National Statement on Ethical Conduct in Human Research, 2007. The proposed research study received human research ethics approval from the following:

- James Cook University Human Research Ethics Committee (HREC) Approval Numbers #H4475 (Study 3); #H4466 (Study 4); #H4467 (Study 5)
- Aboriginal Health and Medical Research Council HREC Approval Numbers #756/10 (Study 3); #928/13 (Study 5)
- North Coast Area Health Service HREC Approval Number #494N (Study 3)
- Southern Cross University Approval Number #ECN-13-242 (Study 5)

Statement of Contribution of Others

Nature of Assistance	Contribution	Names, Titles and Affiliations of Co-Contributors
Intellectual support	Editorial assistance	Co-authors contributed editorial assistance for the publications in the process of their critical reviews. I employed Katharine J Fowler to proofread the thesis.
	Supervision	<p>A/Professor Alan R Clough was my principal supervisor at James Cook University.</p> <p>A/Professor Kerriane Watt was my second supervisor at James Cook University.</p> <p>Dr Andy McEwen was an external advisor from University College London.</p> <p>Professor Yvonne Cadet-James and Professor Peter Leggat were associate advisors at James Cook University.</p> <p>Professor Adrian Miller was previously an Aboriginal academic mentor at James Cook University.</p> <p>Associate Professor Rick van der Zwan was a previous supervisor at UNSW where this PhD commenced in 2010.</p>
	Other Collaborations	North Coast Medicare Local (formerly the Mid North Coast (NSW) Division of General Practice), Galambila Aboriginal Health Service, Mid North Coast Local Health Network.
	Research Assistance	Joanne Munn worked as a research assistant under the No Smokes North Coast project at UNSW, and contributed to Studies 2 and 3, as indicated in the table below. EJ Williams was employed by James Cook University as an Aboriginal

		<p>research assistant for Study 5, and Sharne Johnson was a research volunteer on the same study. Both contributed to the analysis of qualitative data in that study.</p>
	Other assistance	<p>The doctoral cohort program at James Cook University gave financial assistance to attend residential programs in Townsville and Cairns. Leah Stevenson had an initial role in helping design and conduct the community consultation process in Study 4.</p>
	Statistical support	<p>Supervisors Alan Clough and Kerriane Watt provided statistical support by helping me plan my analysis and checking my findings as required.</p>
Financial support	Project costs	<p>The Australian Department of Health and Ageing Indigenous Tobacco Control Initiative funded Studies 2 and 3 as part of the 'No Smokes North Coast' program. I was employed under that funding as Medical Director of the program from 2011-2012. The Royal Australian College of General Practitioners and Australian Primary Health Care Research Institute Indigenous Health Award 2013 funded Study 5. James Cook University, Faculty of Medicine, Health & Molecular Sciences, Graduate Research Scheme grant 2013 and 2014 contributed to Study 5.</p>
	Stipend	<p>National Health and Medical Research Council (Australia) and National Heart Foundation (Australia) provided a full-time post-graduate co-funded scholarship for Indigenous health research 2012-2014. Grants APP1039759 and PP 11S 6181</p>
	Other Funding	<p>Travel awards from the following</p>

Use of infrastructure external to James Cook University:

organisations enabled me to present thesis findings at various conferences: Primary Health Care and Research Information Service, Cancer Council, Society for Research on Nicotine and Tobacco, Royal Australian College of General Practitioners, and James Cook University.

As senior research fellow at UNSW until 2011, I had access to infrastructure at the Rural Clinical School, Coffs Harbour campus for Studies 1-3.

As conjoint senior lecturer at Southern Cross University Coffs Harbour campus I had access to library facilities and also on-line survey software called Qualtrics , to which the university subscribed, used for Studies 4 and 5.

I did a placement at the Institute of Epidemiology & Health, University College London for five weeks while writing my thesis, at the invitation of Andy McEwen, and had access to office space, computer and supportive infrastructure.

Publications on which this thesis is based and contributions of authors

Chapter #, Study #, publication, and nature and extent of intellectual input from each author including candidate
--

Chapter 2. Study 1. Gould GS*, McEwen A, Watters T, Clough AR, van der Zwan R.

Should anti-tobacco media messages be culturally targeted for Indigenous populations? A systematic review and narrative synthesis. Tobacco Control. 2013;22(4):e7. doi:10.1136/tobaccocontrol-2012-050436

Gould was responsible for the concept and design of the study, conducted the search, extracted data from papers rated them for quality, synthesised and interpreted the findings, and wrote the paper. Van der Zwan approved the study protocol and oversaw the study in its early stages. Watters provided an independent screening of papers for inclusion and independently assessed the study quality under the direction of Gould, and provided minor editorial assistance. McEwen advised on the design of the study, and critically reviewed drafts. Clough critically reviewed the paper and advised on drafts.

Chapter 3. Study 2. Gould GS*, Munn J, Watters T, McEwen A, Clough AR.

Knowledge and views about maternal tobacco smoking and barriers for cessation in Aboriginal and Torres Strait Islanders: A systematic review and meta-ethnography. Nicotine and Tobacco Research. 2013;15(5):863-74. doi: 10.1093/ntr/nts211

Gould was responsible for the concept and design of the study, supervised the search, extracted data from papers, rated them for quality, synthesised and interpreted the findings, designed the Line of Argument, and wrote the paper. Munn contributed to and assisted with the search strategy, data extraction and quality ratings of the papers, and figures and tables. Watters assessed the study quality of papers. McEwen advised on

the design of the study, and critically reviewed drafts. Clough critically reviewed the paper and advised on drafts. Van der Zwan approved the study protocol and oversaw the study in its early stages.

Chapter 4. Study 3. Gould GS*, Munn J, Avuri S, Hoff S, Cadet-James Y, McEwen A, Clough AR. *"Nobody smokes in the house if there's a new baby in it": Aboriginal perspectives on tobacco smoking in pregnancy and in the household in regional NSW Australia.* *Women and Birth.* 2013; 26(4):246-53.

Gould conceived and designed the study, developed the interview guide, contributed to the Aboriginal community consultation process, performed the qualitative analysis, wrote the paper, and revised it with editorial input from other authors. Munn contributed to the ethics applications, study design, interview guide, the Aboriginal community consultation process, and conducted the focus groups, transcribed audio-recordings, independently extracted codes, contributed to the thematic analysis, and critically reviewed the manuscript. Avuri and Hoff contributed to the Aboriginal community consultation process, assisted with arranging and conducting the focus groups and contributed to the analysis of the data. McEwen advised on the design of the study, and critically reviewed drafts. Clough critically reviewed the paper and advised on drafts.

Chapter 5. Study 4. Gould GS*, Watt K, Stevenson L, McEwen A, Cadet-James Y, Clough AR. *Developing anti-tobacco messages for Australian Aboriginal and Torres Strait Islanders: evidence from a cross-sectional national survey.* *BMC Public Health.* 2014. 14(250). doi: 10.1186/1471-2458-14-250

Gould conceived and designed the study, developed the questionnaire and its computer assisted on-line format, contributed to the Indigenous community consultation process, conducted the interviews, performed the statistical analysis and qualitative analyses, wrote the first draft of the paper, revised it with editorial input from

other authors, and developed the tables and figures. Watt contributed to the statistical analysis, checked the accuracy of the statistical findings, and critically reviewed the manuscript. Stevenson contributed to the Indigenous community consultation process, the questionnaire design and the qualitative analysis, and reviewed the manuscript. McEwen contributed to the study design and questionnaire development, and critically reviewed the manuscript. Cadet-James contributed to the interpretation of Indigenous cultural and policy issues relevant to the study. Clough contributed to the study design and questionnaire development, recruitment strategy, analysis of data, and interpretation of findings, and critically reviewed the manuscript.

Chapter 6. Study 5. Gould GS*, Watt K, McEwen A, Cadet-James Y, Clough AR. *Validation of risk assessment scales and predictors of intentions to quit smoking in Australian Aboriginal and Torres Strait Islander peoples: a cross-sectional survey protocol.* BMJ Open. 2014; 4(6). doi: 10.1136/bmjopen-2014-004887

Gould was responsible for the concept and design of the project, developing and adapting the survey instruments and digital format for the on-line survey, testing the suitability of the survey for Indigenous participants, conducting surveys, training and supervising Indigenous research assistants to conduct surveys, collating and analysing and interpreting results, writing reports and manuscripts.

Watt contributed to the research design, statistical analysis, interpretation of findings, and critical review of manuscripts. McEwen advised on any aspect relating to tobacco smoking, smoking risk behaviours and the survey, and critical review of manuscripts.

Cadet-James, as Aboriginal academic advisor, advised on the Indigenous community consultation processes, recruitment and the cultural interpretation of results. Clough oversaw the study and advises on all aspects, and provided critical review of manuscripts.

Chapter 7. Study 5. Gould GS*, Watt K, Cadet-James Y, Clough AR. *Using the risk*

behaviour diagnosis scale to understand Australian Aboriginal smoking - a cross-sectional validation survey in regional New South Wales. Preventive Medicine Reports. 2015;2:4-9. doi: 10.1016/j.pmedr.2014.10.004

Gould was responsible for the concept and design of the project, developing and adapting the survey instruments and their digital format (using the Qualtrics on-line software), testing the suitability of the survey for Indigenous participants, conducting surveys, training and supervising Indigenous research assistants, collating and analysing and interpreting results, writing the manuscript, and submitting the study. She takes overall responsibility for the content as guarantor. Watt contributed to the research design, statistical analysis, interpretation of findings, and critical review of manuscripts. Cadet-James, as Aboriginal academic advisor, advised on the Indigenous community consultation processes, recruitment strategy and the cultural interpretation of results, and provided critical review of the manuscript. Clough oversaw the study and advised on all aspects, and provided critical review of manuscripts. All authors approved the final version.

Chapter 8. Study 5. Gould GS*, Watt K, McEwen A, Cadet-James Y, Clough AR. *Gould G, Watt K, McEwen A, Cadet-James Y, Clough A. Predictors of intentions to quit smoking in Aboriginal tobacco smokers of reproductive age in regional New South Wales (NSW), Australia: quantitative and qualitative findings of a cross-sectional survey. BMJ Open. 2015;5(e007020). doi: 10.1136/bmjopen-2014-007020*

Gould was responsible for the concept and design of the project, developing and adapting the survey instruments and their digital format (comprising an on-line survey instrument using the Qualtrics website), testing the suitability of the survey for Aboriginal participants, conducting surveys, training and supervising Aboriginal research assistants, collating, analysing and interpreting results, writing reports and manuscripts. Watt contributed to the research design and statistical analysis, checked

all statistical findings/interpretations, and critically reviewed manuscripts. McEwen advised on aspects related to tobacco smoking, smoking risk behaviours and the survey, qualitative analysis and critical review of manuscripts. Cadet-James, as Aboriginal academic advisor, advised on the Aboriginal community consultation processes, recruitment, and the cultural interpretation of results. Clough oversaw the study and advised on all aspects, including assisting with the logistical regression, advising about the presentation of results, and critical reviewing all manuscript drafts. Aboriginal research assistant E.J. Williams and Aboriginal research volunteer Shame Johnston recruited and interviewed participants, and contributed to the qualitative data analysis and its interpretation.

Statement of authorship

I agree that the above statements about my respective contributions to authorship are true.

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Abstract

Objectives

The aim of this thesis is to explore how anti-tobacco messages can be made more salient for Indigenous smokers. The research has a focus on Australian Indigenous smokers, in particular pregnant smokers and those of reproductive age. These specific groups were chosen as a focus due to their continued high levels and slow decline of smoking prevalence. Consequently there is a public health imperative for new knowledge in these areas to inform practice and policy. The overarching research questions are: are anti-tobacco messages having an impact on Indigenous Australians; can we do better; if so how?

Methods

The thesis uses multiple methodologies dependent on the specific research questions. Five studies are presented that inform two main streams of inquiry: mass media anti-tobacco message development and maternal smoking, with a multi-phase design coming together in an integrated discussion of findings. The methods range from systematic reviews of the literature, interviews and focus groups, community based participatory research, cross-sectional surveys (regional and national), and the validation of psychometric instruments. The qualitative analysis draws from grounded theory, phenomenology and the constant comparative method. Factor and multivariate analyses are employed for the quantitative studies. The Risk Behaviour Diagnosis (RBD) Scale based on the Extended Parallel Process Model (EPPM) informs this work. The RBD Scale comprises measures of perceived efficacy (response and self-efficacy) and perceived threat (susceptibility and severity of threat). Regional studies were conducted in an Indigenous community in New South Wales

(NSW), and organisations in most States and Territories in Australia were interviewed in a national study.

Results

Study 1: A systematic review of 21 peer-reviewed publications on mass media interventions for smoking cessation among Indigenous peoples in Australia, Canada, New Zealand and the United States revealed that Indigenous peoples in the included populations preferred culturally targeted messages. Some generic anti-tobacco messages were considered by Maori women to be inappropriate for Indigenous peoples. Collectively, the studies included in the review demonstrated that perceived effectiveness and recall of generic messages among Indigenous populations were high but did not translate into increased cessation in Indigenous Australians, American Indians and Alaska Natives. In contrast, studies conducted in New Zealand showed that culturally targeted messages for Maori were as effective in the short-term as generic messages for the general population. Targeted internet-based messages had a positive impact on American Indian smokers. However, fear-based generic messages provoked more calls to the New Zealand Quitline by Maori smokers, compared with a holistic targeted campaign.

Study 2: A systematic review of seven Australian studies on knowledge and views about maternal tobacco smoking and barriers for cessation in Aboriginal and Torres Strait Islanders revealed eleven third-order constructs (themes) about maternal Indigenous smoking and cessation, at individual, family and community levels. The review identified pregnancy as an opportunity to encourage positive change where a strong “protector role” is expressed. However, studies included in the review demonstrate that tobacco use in the Indigenous population may be perpetuated by social norms and stressors within the Aboriginal community, insufficient knowledge of smoking harms, and lack of salience of anti-tobacco messages. Overall, the review

indicated a lack of awareness among Indigenous people regarding the use of pharmacotherapy.

Study 3: Pregnant women, partners and family members in regional NSW participated in focus groups to investigate social and family influences and responses to health messages. The results of this study showed that families were proactively managing smoke-free homes to reduce harm to babies and children, but there were some misconceptions about the age of vulnerability of children to passive smoking. Nicotine cravings were often interpreted as 'stress'. Focus group participants identified that anti-tobacco messages and cessation advice were more salient when they related to women's experiences. As a result of this study, community recommendations were made to improve approaches to maternal smoking.

Study 4: In a national survey that targeted health organisations involved in the development of anti-tobacco messages for Indigenous Australians, a two-dimensional non-linear principal component analysis extracted components interpreted as 'cultural understanding' (bottom-up, community-based approaches, deep structures) and 'rigour' (theoretical frameworks, and planned/completed evaluations). Aboriginal Medical Services demonstrated strength in using processes of 'cultural understanding' in their anti-tobacco messages. Organisations orientated to the general population were more likely to evaluate their programs.

Study 5: Through a community-based regional study of Aboriginal smokers of reproductive age, the RBD Scale and associated measures were found to be reliable and valid in this population. The majority of participants had high-perceived threat regarding smoking cessation. Participants with high-perceived threat and high-perceived efficacy demonstrated danger control responses. These participants had a high intention to quit and were more likely to keep smoke-free homes. However, those with low-perceived threat and low-perceived efficacy demonstrated fear control responses about the harms of smoking, which included denial and avoidance.

Logistical regression indicated that independent predictors of intention to quit smoking within the next three months were high-perceived efficacy and having consulted a health professional in the past.

Discussion

Anti-tobacco messages appear to be making an impact internationally for Indigenous peoples in terms of raising awareness, but there is conflicting evidence about whether they translate into quitting behaviour. Culturally targeted messages were preferred by the Indigenous populations in these studies and showed potential for future interventions. In pregnancy, messages appear to lack salience for Indigenous Australians and do not relate to women's lived experiences. Regional Aboriginal smokers in NSW had high-perceived threat levels regarding smoking, but high-perceived efficacy was an independent predictor of intention to quit smoking. Protective attitudes to children and babies were demonstrated by the reported management of smoke-free homes.

Anti-tobacco messages could be made more salient, particularly for pregnant smokers. Attention to the twin aspects of 'cultural understanding' and rigour could have importance for the development of culturally targeted anti-tobacco messages, via health promotion campaigns and in clinical encounters. Increased awareness is required regarding Aboriginal community perceptions about the age of susceptibility of children to environmental tobacco smoke, the health risks after cessation, and the use of pharmacotherapy for quitting. Community perceptions could be addressed through culturally appropriate educational approaches.

There has been no published peer-reviewed research directly comparing targeted versus generic messages in Indigenous peoples. More exploratory research is needed into attitudes about pharmacotherapy and to determine how evidence-based therapy can be promoted. Tobacco control and cessation messages could potentially

improve the quality of quit attempts. Health professional training is warranted to support these endeavours.

Conclusion

Indigenous Australian smokers of reproductive age, and Indigenous Australian pregnant smokers are urgently in need of more consistent approaches to motivating and supporting cessation attempts. The thesis has explored new approaches to developing targeted tobacco control messages with higher salience that have the potential to be translated into practice and policy. Further research is required to confirm the use of the RBD Scale in a larger sample, and its practical use to guide the tailoring and targeting of messages. The research significantly aligns with key policies in Australia for Closing the Gap on Indigenous health, such as the NHMRC Road Map and the Aboriginal and Torres Strait Islander Health Plan. These policies outline the need to evaluate risk factors implicated in chronic conditions that impact on Indigenous health status, build resilience against tobacco in Indigenous communities, foster wellbeing for pregnant women and children, and investigate optimum means of delivering preventive health messages utilising community-based approaches.

Table of Contents

<i>Statement of Access</i>	<i>iii</i>
<i>Statement on Sources</i>	<i>iv</i>
<i>Electronic Copy</i>	<i>v</i>
<i>Copyright Declaration</i>	<i>vi</i>
<i>Acknowledgements</i>	<i>vii</i>
<i>Ethics statement</i>	<i>ix</i>
<i>Statement of Contribution of Others</i>	<i>x</i>
<i>Publications on which this thesis is based and contributions of authors</i>	<i>xiii</i>
<i>Statement of authorship</i>	<i>xviii</i>
<i>Abstract</i>	<i>xx</i>
Objectives	<i>xx</i>
Methods.....	<i>xx</i>
Results.....	<i>xxi</i>
Discussion	<i>xxiii</i>
Conclusion	<i>xxiv</i>
<i>Table of Contents</i>	<i>xxv</i>
<i>List of Tables</i>	<i>xxxii</i>
<i>List of Figures</i>	<i>xxxii</i>
<i>Abbreviations</i>	<i>xxxiii</i>
<i>Glossary</i>	<i>xxxvi</i>
<i>Preface</i>	<i>1</i>
Terminology	<i>1</i>
Motivation and personal background.....	<i>1</i>
<i>Chapter 1. Introduction</i>	<i>4</i>
1.1 Overview.....	<i>4</i>

1.2	The role of tobacco in Aboriginal and Torres Strait Islander health	4
1.2.1	<i>Burden of Disease</i>	4
1.3	The challenge of smoking for Indigenous Australians	6
1.3.1	<i>Prevalence</i>	6
1.3.2	<i>Social disadvantage</i>	8
1.3.3	<i>Historical tobacco use</i>	8
1.3.4	<i>Social influences on smoking</i>	9
1.4	A comparison with tobacco smoking in other Indigenous populations	10
1.5	The potential of tobacco control and smoking cessation to improve Indigenous health	12
1.5.1	<i>Tobacco control strategies and barriers</i>	12
1.6	Evidence for effective interventions and importance of establishing an evidence base	13
1.6.1	<i>Research challenges</i>	14
1.7	History of tobacco control messages for Indigenous Australians	15
1.8	Current anti-tobacco messages and the need for more salient anti-tobacco messages	16
1.9	Research questions	17
1.9.1	<i>Research Questions:</i>	18
	Focus of the research	18
1.9.2	<i>Specific research questions:</i>	19
1.10	Significance and alignment with key strategies for Indigenous health	20
1.11	Underpinning theories and methodologies	21
1.12	Health Behaviour Theories	22
1.13	Addiction and comprehensive motivational theories	26
1.14	Overview of methods used in the thesis	28
1.14.1	<i>Addressing the research questions</i>	28
1.15	Developing the research	32
1.15.1	<i>Community Engagement</i>	32

1.15.2	<i>Population and Setting</i>	33
1.16	Considerations for ethical Indigenous research	34
1.16.1	<i>Community consultation and pre-requisites for Indigenous research</i> ..	34
1.17	Thesis structure and organisation	37
1.18	Summary of chapters and corresponding publications	40
1.19	Additional relevant publications not forming part of the thesis	42
1.19.1	<i>Articles</i>	43
1.19.2	<i>Letters</i>	44
Chapter 2. Should anti-tobacco media messages be culturally targeted for Indigenous populations? A systematic review and narrative synthesis 45		
2.1	Overview.....	45
2.2	Publication in Tobacco Control.....	47
2.3	Supplementary files	48
2.4	Summary	63
2.5	Final Word.....	64
Chapter 3. Knowledge and views about maternal tobacco smoking and barriers for cessation in Aboriginal and Torres Strait Islanders: a systematic review and meta-ethnography..... 65		
3.1	Overview.....	65
3.2	Publication in Nicotine and Tobacco Research	67
3.3	Supplementary file	68
3.4	Summary	68
3.5	Final word.....	70
Chapter 4. “Nobody smokes in the house if there’s a new baby in it”: Aboriginal perspectives on smoking in pregnancy and in the household in regional NSW Australia 71		
4.1	Overview.....	71
4.2	Publication in Women and Birth	73
4.3	Summary	74
4.4	Final word.....	75

Chapter 5. <i>Developing anti-tobacco messages for Australian Aboriginal and Torres Strait Islander peoples: evidence from a national cross-sectional survey</i>	76
5.1 Overview.....	76
5.2 Publication in BMC Public Health	78
5.3 Addendum – Qualitative findings.....	79
5.4 Summary	81
5.5 Final word.....	82
Chapter 6. <i>Validation of risk assessment scales and predictors of intentions to quit smoking in Australian Aboriginal and Torres Strait Islander peoples: a cross-sectional survey protocol</i>	83
6.1 Overview.....	83
6.1 Publication in BMJ Open.....	84
6.2 Supplementary file	85
6.3 Summary	86
6.4 Final word.....	87
Chapter 7. <i>Using the risk behaviour diagnosis scale to understand Australian Aboriginal smoking - a cross-sectional validation survey in regional New South Wales</i>	88
7.1 Overview.....	88
7.2 Publication in Preventive Medicine Reports.....	89
7.3 Summary	90
7.4 Final word.....	90
Chapter 8. <i>Predictors of intentions to quit smoking in Aboriginal tobacco smokers of reproductive age in regional New South Wales (NSW), Australia: quantitative and qualitative findings of a cross-sectional survey</i>	92
8.1 Overview.....	92
8.2 Publication in BMJ Open.....	93
8.3 Summary	94
8.4 Final word.....	95
Chapter 9. <i>Discussion</i>	96

9.1	Is the message ‘getting through’ about the harms of tobacco smoking to Indigenous Australians?.....	98
9.1.1	<i>Awareness - evaluations and attitudes about smoking and tobacco control messages</i>	<i>99</i>
9.1.2	<i>Motivation - intentions or plans to reduce or quit smoking, seek help for quitting and create smoke-free homes.....</i>	<i>104</i>
9.1.3	<i>Behavioural changes - reducing smoking, quitting and smoke-free homes</i>	<i>106</i>
9.2	Can we improve tobacco control and cessation messages for Indigenous Australians?	109
9.2.1	<i>Improvements for individuals.....</i>	<i>109</i>
9.2.2	<i>Improvements in organisational approaches</i>	<i>113</i>
9.3	How can we improve tobacco control and cessation messages for Indigenous Australians?	115
9.3.1	<i>Building efficacy for quitting.....</i>	<i>116</i>
9.3.2	<i>Case study of the Mid North Coast Aboriginal Community.....</i>	<i>120</i>
9.3.3	<i>Supporting quit attempts and cessation</i>	<i>121</i>
9.3.4	<i>Collaborative approaches.....</i>	<i>122</i>
9.3.5	<i>Improving evaluation of campaigns for Indigenous Australians</i>	<i>123</i>
9.4	Lessons learnt about Indigenous research during this thesis	126
9.4.1	<i>Community engagement and ethics applications</i>	<i>127</i>
9.4.2	<i>Net Benefits for Aboriginal communities</i>	<i>128</i>
9.4.3	<i>Reciprocity</i>	<i>128</i>
9.4.4	<i>Enhancing Aboriginal knowledge and skills</i>	<i>129</i>
9.4.5	<i>Publishing the research</i>	<i>129</i>
Chapter 10.	Conclusion	130
10.1	Strengths.....	130
10.2	Limitations	131
10.3	Relevance of the thesis	132
10.3.1	<i>Implications of the thesis for theory.....</i>	<i>133</i>
10.3.2	<i>Summary of recommendations for practice</i>	<i>134</i>

10.3.3	<i>Summary of recommendations for policy</i>	135
10.4	Further research and directions	136
	References	138
	Appendices	156
	Appendix A - Outputs and awards	157
	Appendix B - Surveys	172
	Appendix - C Permissions	176

List of Tables

<i>Table 2.1 Data extracted from included studies.....</i>	<i>49</i>
<i>Table 9.1: Suggested responses to misperceptions identified in the studies</i>	<i>110</i>
<i>Table 9.2 : Addressing cultural challenges for developing tobacco control messages</i>	<i>114</i>
<i>Table 9.3: Recommendations for tobacco control campaign evaluation</i>	<i>125</i>

List of Figures

<i>Figure 1.1 NSW smoking prevalence among Aboriginal and non-Aboriginal pregnant women 1996-2012.....</i>	<i>7</i>
<i>Figure 1.2 Map of the local Aboriginal Nations on the North Coast New South Wales</i>	<i>34</i>
<i>Figure 1.3 Multiphase design of studies.....</i>	<i>39</i>
<i>Figure 1.4 Conceptual diagram of thesis elements and chapters for making salient messages for Indigenous tobacco control.....</i>	<i>40</i>
<i>Figure 2.1 Study 1, Chapter 2 in relation to the conceptual model of the thesis for making salient messages for Indigenous tobacco control.....</i>	<i>46</i>
<i>Figure 3.1 Study 2, Chapter 3 in relation to the conceptual model of the thesis for making salient messages for Indigenous tobacco control.....</i>	<i>66</i>
<i>Figure 4.1 Study 3, Chapter 4 in relation to the conceptual model of the thesis for making salient messages for Indigenous tobacco control.....</i>	<i>72</i>
<i>Figure 5.1 Study 4, Chapter 5 in relation to the conceptual model of the thesis for making salient messages for Indigenous tobacco control.....</i>	<i>77</i>
<i>Figure 6.1 Study 5, Chapter 6 in relation to the conceptual model of the thesis for making salient messages for Indigenous tobacco control.....</i>	<i>84</i>
<i>Figure 7.1 Study 5, Chapter 7 in relation to the conceptual model of the thesis for making salient messages for Indigenous tobacco control.....</i>	<i>89</i>
<i>Figure 8.1 Study 5, Chapter 8 in relation to the conceptual model of the thesis for making salient messages for Indigenous tobacco control.....</i>	<i>93</i>
<i>Figure 9.1 Discussion and Conclusion sections in related to thesis elements.....</i>	<i>97</i>
<i>Figure 9.2 Attitudes, quitting experiences and smoke-free homes of Mid North Coast Aboriginal smokers aged 18-45 years</i>	<i>120</i>
<i>Figure 9.3 Synergy of strengths of organisations to improve effectiveness</i>	<i>123</i>

Abbreviations

Acronym	Phrase
ACCHS	Aboriginal Community Controlled Health Service
AH&MRC	Aboriginal Health and Medical Research Council
AHW	Aboriginal Health Worker
AI	American Indians
AMIHS	Aboriginal Maternal and Infant Health Service
AMS	Aboriginal Medical Service
AN	Alaska Natives
ASGC-RA	Australian Standard Geographical Classifications - Remoteness Area Classification
BCW	Behaviour Change Wheel
CATPCA	Categorical principal component analysis
CBPR	Community based participatory research
CEOS	Context, Executive and Operational Systems
CI	Confidence Interval
COAG	Council of Australian Governments
COM-B	'Capability, Opportunity, Motivation – Behaviour' System
COREQ	Consolidated criteria for reporting qualitative research
Cronbach's α	Cronbach's alpha coefficient
DALY	Disability-Adjusted Life Year
Df	Degrees of freedom
EJW	E.J. Williams
ES	Executive System
ETS	Environmental tobacco smoke
EPPM	Extended Parallel Process Model
FTND	Fagerström Test for Nicotine Dependence
FG	Focus Group
FCTC	Framework Convention of Tobacco Control
GSG/GG	Gillian S Gould
GO	Government organisation
GP	General Practitioner
HSI	Heaviness of Smoking Index

HREC	Human Research Ethics Committee
IAW	'It's all about whanau' campaign
IHW	Indigenous Health Worker
ITCI	Indigenous Tobacco Control Initiative
JM	Joanne Munn
LOA	Line of argument
M	Mean
MNCDGP	Mid North Coast Division of General Practice
MTSS	Motivation To Stop Smoking Scale
NACCHO	National Aboriginal Community Controlled Health Organisation
NTC	National Tobacco Campaign
NATSISS	National Aboriginal and Torres Strait Islander Social Survey
NGO	Non-Government Organisation
NHE	Negative Health Effects
NHMRC	National Health and Medical Research Council
NRT	Nicotine replacement therapy
OECD	Organisation for Economic Cooperation and Development
OR	Odds Ratio
OS	Operating System
P value	Probability value
PHW	Pack health warnings
PHMF	Persuasive Health Message Framework
PBS	Pharmaceutical Benefits Scheme
PI	Pacific Islanders
PRISMA	Preferred Reporting Items for Systematic Reviews
PRIME	P – plans, R – responses, I – impulses and inhibitions, M – motives, E – evaluations
RACGP	Royal Australian College of General Practitioners
RAL	Risk Acceptance Ladder
RCT	Randomised controlled trial
RBD	Risk Behaviour Diagnosis Scale
RR	Relative Risk
SA	Sandra Avuri

SD	Standard deviation
SES	Socio-economic status
SH	Susan Hoff
SIGN	Scottish Intercollegiate Guidelines Network
SJ	Sharne Johnston
SPSS	Statistical Package for the Social Sciences
SRAT	Smoking Risk Assessment Target
SRNT-E	Society for Research of Nicotine and Tobacco Europe
SOC	Stages of change
SUTS	Strength of Urges to Smoke
SIDS	Sudden Infant Death Syndrome
SUDI	Sudden Unexpected Death in Infancy
TDF	Theoretical Domains Framework
TW	Tracey Watters
χ^2	Chi squared
Σ	Sum of

Glossary

Term	Definition
Aboriginal Elder	A senior person revered by the Aboriginal community
Bricoleur/Bricolage	Pragmatic research approach that may encompass several methodologies and paradigms
Closing The Gap Strategy	National strategy to improve Indigenous Health
Danger control responses	Changes in beliefs, attitudes, intentions and behaviour in accordance with the message recommendation (protection motivation)
Decolonising research	Research that seeks to redress previous harms from colonisation, and protects and respects indigenous knowledge
Deep structure	Incorporates cultural, social and historical, mental and psychological forces that influence target health behaviour
Fear appeal	Threatening images/content aimed to produce behaviour change
Fear control responses	Coping responses that diminish fear (defensive motivation)
Heuristic type messages	Peripherally processed message with indirect content or message
Macassan traders	Indonesians who historically traded with Indigenous Australians
Maternal smoker	A woman who smokes during pregnancy and/or peri-natally
Meta-ethnography	Qualitative methodology for meta-synthesis
'Othering'	Regarding people as 'not one of us' or inferior
Perceived efficacy	Thoughts about ease, feasibility and the effectiveness of averting a threat
Perceived threat	Awareness of a specific harm in the environment
Pituri	Bush or native tobacco - native plants containing nicotine
Positive benefit messages	Mass media campaign highlighting positive outcomes
Protective response	Beliefs/attitudes about protecting others from tobacco smoke
Response efficacy	Belief about effectiveness of recommended

	response to avert a threat
Russell Standard	International standard for assessing continuous smoking abstinence
Self-efficacy	Belief in one's ability to perform a recommended response
Severity of threat	Belief about the magnitude of the threat
Stolen generation	Indigenous Australians who were forcibly removed from their families as children
Surface structure	Matching materials and messages to 'superficial' characteristics of target population
Susceptibility to threat	Belief about one's risk of experiencing the threat
Threat messages	Messages that predominantly use fear to persuade people to change behaviour
Tobacco control	Practice and policy level strategies to reduce the impact from smoking on health

Preface

Terminology

Advice was sought from an Indigenous Academic expert regarding the preferred terms for Indigenous status. Consequently, the term 'Indigenous Australians' is used with utmost respect throughout the thesis to refer to Aboriginal and Torres Strait Islander peoples, while acknowledging two separate cultural groups. This term is not intended to cause offence to any person. In acknowledgement of the First Peoples of New South Wales (NSW), I use the term Aboriginal when referring to this NSW population. In each chapter a comment is made about the terminology used in that publication.

Motivation and personal background

In Indigenous research it is considered important to place oneself in context, and it should be known that I am a non-Indigenous person. I was born in England, and migrated first to New Zealand after I finished my first year as a medical intern, and later to Australia. My upbringing led me to understand some of the challenges faced by marginalised groups, as I am from an ethnic minority group that has experienced genocide and considerable racism. My background is in medicine specialising in general practice, with an interest over the past 12 years in Indigenous health, refugee health and smoking cessation. I also hold qualifications in drama and arts therapy, which I seek to integrate where possible into my work. I have a long-standing interest in social justice issues encompassing health inequality. My prior cross-cultural medical experiences include voluntary work in a rural mission hospital in East Africa and in a large rural eye camp in North India. I have worked in a remote area in North Island and on the East Cape of New Zealand with Maori peoples.

I came to this research through my interest in tobacco smoking and cessation in general. In 2002 I took over the leadership of a program for smoking cessation on the Mid North Coast of New South Wales (NSW) at the Mid North Coast Division of General Practice (MNCDGP). This program initially included the provision of group cessation programs for the general public. In 2005, a local Aboriginal Community Controlled Health Service (ACCHS) sought my help to develop a culturally targeted program for local Aboriginal smokers in Coffs Harbour. This invitation into the Aboriginal community was the start of my involvement in the field of Indigenous smoking, which has now become the focus of my research and enabled me to develop considerable experience in this area of program development.

Between 2002 and 2011, the work I was doing in Indigenous tobacco control was linked with my academic appointment in a local Rural Clinical School (teaching medicine, research and administration), and my on-going role at the MNCDGP. I was successful in gaining funding to support this work, and in 2010 obtained major funding of \$700,000 to develop and direct a regional Indigenous Tobacco Control Initiative (ITCI) from the Australian Government Department of Health and Ageing. I was given the chance to commence this PhD and align some of the ITCI project elements with my thesis. At the same time I was starting to get some recognition from my peers for my early translational Indigenous research through a number of small but prestigious awards to fund my fledgling research career.

My experience, with the programs I had developed, run and evaluated for local Aboriginal smokers, was that it was difficult to interest and retain smokers in our programs and studies. Although some smokers were quitting, the overall numbers were low. This impression was reflected in the small amount of evaluated intervention studies that were being published at the time. The absence of good quality research in the field of Indigenous tobacco control and smoking cessation,

coupled with the importance of research to determine what interventions work in this vulnerable population, led me to focus on a research career.

Chapter 1. Introduction

1.1 Overview

The Introduction to this thesis outlines the influence of tobacco smoking on Indigenous Australians, including the impacts on their health and the challenges for reducing prevalence. A brief comparison is given to Indigenous populations in Westernised nations. It is intended to set the stage for positioning my research and give context for the research questions presented later in this section.

1.2 The role of tobacco in Aboriginal and Torres Strait Islander health

1.2.1 Burden of Disease

Tobacco use is a risk factor for six of the eight leading causes of death in the world.¹ These physical ill effects are well documented, such as heart disease, cancers, and respiratory diseases, but causal links have been found to diseases affecting nearly every organ in the body.^{2,3} Smoking has been proposed as a factor in mental health problems, anxiety and depression.^{4,5} Those who suffer from a range of psychiatric disorders have a higher prevalence of smoking, may be more highly dependent, and are less successful at quitting.^{4,6} Conversely, people who stop smoking exhibit reduced levels of anxiety, depression and perceived stress compared to those who continued to smoke.^{5,7} Smoking contributes to a range of social and financial stressors.^{8,9} The financial burdens from smoking are high, yet those under financial strain are also more likely to smoke and find it harder to quit.^{8,9} Tobacco smoking is considered a marker and a pervasive cause of disadvantage, and globally has

complex links with the social determinants of health, represented by educational level, poverty and other community disadvantages.¹

Tobacco smoking has a considerable negative impact on the health of Indigenous Australians because their smoking prevalence is significantly higher than the national average. Concerns about smoking and Indigenous Australians were raised in the published literature in the 1980s-1990s.¹⁰⁻¹⁵ Smoking is a major preventable risk factor. It accounts for 17% of the health gap between Indigenous Australians and the general Australian population, and is responsible for 12% of the Indigenous burden of disease.¹⁶ Vos et al defined the Indigenous health gap as the “difference between current rates of Disability-Adjusted Life Years (DALYs) by age, sex and cause for Indigenous Australians and DALY rates if the same level of mortality and disability as in the total Australian population had applied”.¹⁶ Eighty per cent of the mortality gap for Indigenous Australians is due to chronic disease.¹⁷ The harmful effects of smoking are worse for Indigenous Australians than for the general population.¹⁷ Collectively, heart disease and other tobacco-related conditions such as lung cancer and chronic respiratory disease, account for half the Indigenous health gap.¹⁶ Smoking exacerbates the risks of diabetes and chronic kidney disease, and both diseases play a major role in poor Indigenous health.¹⁷ Indigenous Australians are also overrepresented in subpopulations that have higher risks of smoking such as people with mental health conditions and prisoners.¹⁸

Tobacco smoking in pregnancy has a serious impact on mother and child. These factors combine to expose babies and children to the toxic effects of environmental and inter-uterine metabolites from tobacco smoke, causing pre-natal and birthing risks, low birth weight and on-going developmental problems.¹⁹⁻²² While pre-natal and peri-natal risks are higher in general for Indigenous smokers,²³⁻²⁵ Aboriginality itself has not been found to have an interactive role with tobacco in the causation of low birth weight for Indigenous infants exposed to smoking in utero.^{26, 27} Parental

smoking has an influence on uptake in adolescence.²⁸ Additionally, through pre-natal exposure, children born to mothers who smoke are more likely to become smokers themselves,²⁹ and sustain chronic detriments, e.g. increased asthma risks, and so a vicious cycle is established, with inter-generational impacts from tobacco smoking.³⁰

1.3 The challenge of smoking for Indigenous Australians

1.3.1 Prevalence

Australia is a world leader in tobacco control, with a daily tobacco smoking prevalence of 12.8% in the general population, according to a 2013 national survey.³¹ The national Indigenous prevalence rate is over three times this rate at 42%.³² Recent Australian figures show a significant and progressive decline in daily Indigenous smoking from 49% in 2002 to 45% in 2008, and then to 42% in 2014, but not for some population subgroups, such as smokers living in remote communities, and smokers in certain age groups e.g. 25-34 years and 45-54 years.³² Even where smoking reduction is occurring, rates of decline are slower than the general population and smoking rates still remain high. In NSW between 2002 and 2013, rates dropped by 6.6% in the general population (22.2% to 15.6%) and 3.4% (40.2% to 36.8%) for the Aboriginal population.³³

In the years from 2001-2008 there had been little downward shift in national smoking prevalence in Australian Indigenous pregnant women, which had been static around 50-52%.³⁴ The most recent available figures show the prevalence has declined to 49.3%.³⁵ In NSW smoking rates during pregnancy have reduced in Aboriginal and non-Aboriginal women, observed over 17 years from 1996-2012 (Figure 1.1).³⁶ However the relative risk for smoking in the NSW Aboriginal population has increased over this time. In NSW in 2012, smoking prevalence among Aboriginal pregnant women was five times higher than non-Aboriginal women, whereas in 1996

it was only three times higher.³⁶ It should be noted that there are more marked fluctuations among rates for Aboriginal women, which may reflect data quality and smaller sample sizes.

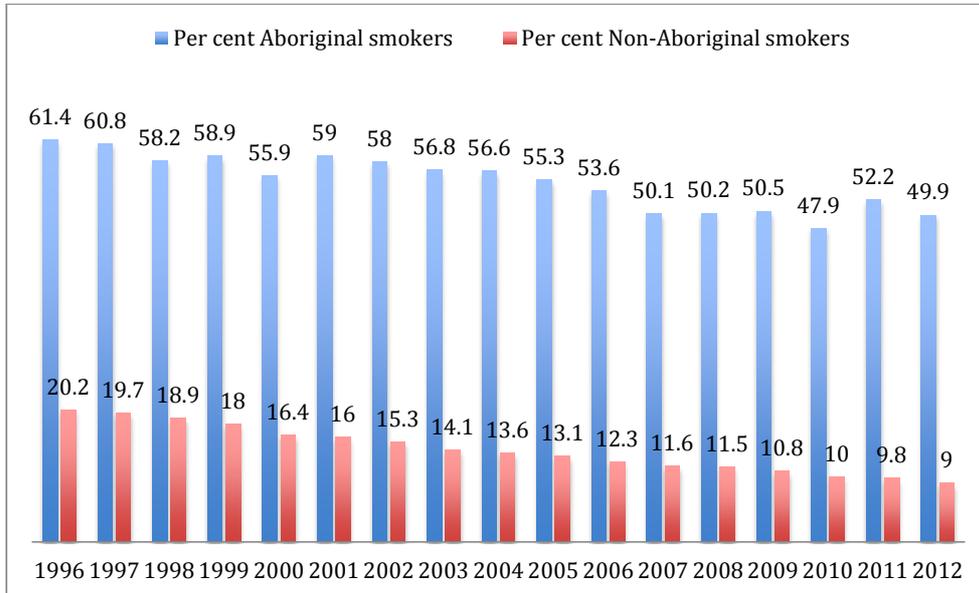


Figure 1.1 NSW smoking prevalence among Aboriginal and non-Aboriginal pregnant women 1996-2012

Data extracted from the 2012 Report of the Chief Health Officer NSW.³⁶

There is much ground to be made up before equity is reached in terms of prevalence. NSW Health aims to reduce the smoking rate of Indigenous pregnant women by 2% per annum to reach equity of 4% prevalence by 2033.³⁶ This will require a reduction in smoking prevalence in pregnant Indigenous women at three times the rate observed from 1996-2012. Because of the latency in adverse effects for children, improvements in the health effects from smoking are likely to lag behind for Indigenous Australians.

1.3.2 Social disadvantage

“An individual’s smoking trajectory is related to the accumulation of social disadvantage over the entire life course”. (Kunst, cited in WHO Report on Equity, social determinants and public health programs, 2010¹)

Smoking by Indigenous Australians has a significant social gradient.³⁷ Among Indigenous Australians, there is an inverse association between socio-economic status (SES) and self-reported smoking: those having less education and lower income are more likely to smoke.³⁷⁻³⁹ Pregnant Indigenous smokers living in areas of disadvantage also show a trend towards higher rates of smoking.³⁷ These findings are consistent with international research on social gradient and smoking.^{40, 41}

1.3.3 Historical tobacco use

Several important historical antecedents to tobacco smoking for Indigenous Australians are associated with disadvantage and complicate the situation. Historical factors were outlined in detail in Ivers’ literature review and by Brady.^{42, 43} Traditionally, wild nicotine-containing plants, such as *pituri*, were chewed and held in the mouth (then placed behind the ear when not in use) to alleviate hunger, as a stimulant, and for trade and ceremony.^{43, 44} *Pituri* and similar plants are still used today in parts of Australia.⁴⁴ Tobacco for smoking and associated paraphernalia was first acquired from Macassan traders, over 300 years ago, through respectful trading practices mainly in Northern Australia,⁴⁵ recalled nostalgically by some elders.⁴⁶ Indigenous Australians incorporated tobacco into their ceremonial and trading networks.⁴⁵

Patterns of tobacco use changed with European contact. Colonisation/invasion saw the more insidious and painful exposure to tobacco smoking reportedly used, along

with other substances, to subdue tribes and landowners, and further supplied as rations and as payment on missions and to agricultural workers.^{43, 47, 48} Thus the value placed on tobacco by Indigenous peoples has been described as being deliberately exploited by Europeans.⁴³ Further destructive impacts, contributing to tobacco smoking, may be the effects of land dispossession and loss of identity, culture and rights.⁴⁹ Those who have experienced the consequences of being part of the stolen generation and racism are documented as being more likely to smoke^{39, 50}. Smoking continues to be fostered by the clustering of disadvantage over the life course, and the impoverished life circumstances many Indigenous Australians live with today. These factors may need to be taken into account when considering the determinants of smoking among Indigenous Australians.

1.3.4 Social influences on smoking

The sharing of cigarettes has a role in the contemporary life of many Indigenous Australians. Sharing practices that have been described include social sharing among family, households and kinship networks, sharing when supplies run low, and demand sharing.^{43, 51} Cigarette smoking is used for social bonding and cohesion, and cigarettes are sometimes exchanged for other commodities in present-day Indigenous society.^{13, 43, 46, 48} Smoking in contemporary society lacks the social controls described for traditional use that may have safeguarded overuse leading to ill health and addiction.⁴³ Nonetheless debate exists as to whether tobacco smoking by Indigenous Australians can be considered 'traditional', meaning part of ceremony pre-dating colonisation.⁴³

The exposure of young Indigenous Australians to the widespread use of tobacco may result in earlier uptake, with experimentation commonly reported before 10 years old.⁵² Earlier studies on youth smoking reflect the social norms and high

prevalence, for example one study in the 'top end' (northern parts of the Northern Territory) found that 98% of children lived with at least one smoker in the late 1990's.⁵³ In Western Australia in the 1980-90's only 3% of Aboriginal people acknowledged smoking as a major cause of death.¹⁴ However Indigenous attitudes and awareness about tobacco smoking may be changing, youth smoking rates are dropping,³² and smoke-free households are increasing.⁵⁴

Important considerations when tackling tobacco smoking in Australian Indigenous communities are in summary:

- Higher prevalence of smoking is described in Indigenous communities.
- Historical use of tobacco, colonisation and racism influence contemporary smoking practices.
- Tobacco smoking is interwoven with other socioeconomic disadvantages.
- Cigarette smoking may have become part of contemporary culture.
- Indigenous Australian smoking is going through a period of change.

1.4 A comparison with tobacco smoking in other Indigenous populations

Indigenous peoples in Western nation states share some of the experiences of colonisation by Europeans, such as increased exposure to tobacco smoking. However, there are differences in tobacco use pre European contact across different populations. Traditional and ceremonial use is important to American Indians and First Nations peoples of Canada, where tobacco is considered by some tribes to be a sacred plant.⁵⁵⁻⁵⁷ Native youth may be introduced to tobacco at an early age through ceremonial use.⁵⁸ Conversely, New Zealand Maori people had no history of tobacco use pre-contact.⁵⁹ The great diversity of tribal groups limits comparisons even within countries, so international comparisons have to be treated cautiously.

However, similarities in prevalence, trends and tobacco consumption are seen in Indigenous populations in developed countries. Proportionately more people in Indigenous populations tend to smoke than in the general population, but smoke fewer cigarettes per day, and may be intermittent smokers.^{60 61-63} As a corollary of high prevalence, normative social use is reported.^{59, 64-66} Smoking may be static or increasing in some sub-populations e.g. Maori and American Indian women,^{60, 67} leading to higher rates in those of reproductive age.⁶⁸ These trends similarly have an influence on smoking in pregnancy and babies being exposed to the metabolites of tobacco smoke in utero.⁶⁹⁻⁷²

As with Australian Indigenous peoples, health disparities and low SES are associated with smoking in Indigenous peoples internationally,^{73, 74} with lack of access to effective cessation services, and the discrimination in equitable treatment that Indigenous peoples may experience in general.⁷⁵ Tobacco causes similar negative impacts on health and increases the health gap for Indigenous peoples globally, especially chronic diseases such as cancer, heart disease, respiratory diseases and diabetes.⁷⁶⁻⁸⁰ However, the overall differences in life expectancy between an Indigenous person and a member of the general population in the USA, Canada and New Zealand are reportedly less than the differences for Indigenous Australians.⁸¹ Comparative figures reported in 2003 were 19-21 years (Australia), 8 years (New Zealand), 5-7 years (Canada) and 4-5 years (USA).⁸²

The evidence for effective tobacco control interventions for Indigenous peoples has been summarised in several systematic reviews.^{74, 83-85} I refer to this evidence below in section 1.6. More comparative studies may be useful, as, despite the diversity of First Nations peoples internationally, there are some historical commonalities and similar health disparities. In addition, research on marginalised populations has the potential to give a greater understanding about what drives tobacco use and

undermines cessation in the human population generally, and inform tobacco control in the widest sense.⁸⁶

1.5 The potential of tobacco control and smoking cessation to improve Indigenous health

Addressing the major causes of the Indigenous health gap, particularly smoking, has the potential to translate into large health gains for Indigenous Australians.¹⁶ Quitting smoking is important as early as possible, because after 40 years of age life expectancy reduces by three months for every year of smoking.⁸⁷ This estimate is based on the British doctors' study, which prospectively measured the health of doctors and the impact of smoking on morbidity and mortality. Being derived from a highly privileged population, it is acknowledged that these estimates are likely to be conservative in relation to the effects for marginalised populations. For Indigenous peoples this sinister effect of smoking is likely to start earlier in the lifespan, as smoking initiation can be earlier for Indigenous Australians, and many other chronic conditions, e.g. heart disease, have a premature onset, resulting in a reduced lifespan.¹⁷

Based on international evidence, smoking cessation has the potential to reverse or improve many of the morbidities affecting Indigenous peoples, providing that access to tobacco prevention and cessation services are available and equitable.^{48, 88-91} Furthermore, maternal Indigenous smokers who quit in the first trimester reduce their pregnancy-related tobacco risks to that of a non-smoker.²⁶

1.5.1 Tobacco control strategies and barriers

Government goals are to reduce Aboriginal and Torres Strait Islander smoking prevalence by half by 2018. For this to be achieved, a prevalence decline of six times

the rate observed from 1994-2008 is required.⁹² Important strategies include interventions to address the social gradient in smoking such as pricing increases, and the full range of tobacco control strategies as outlined in the Framework Convention of Tobacco Control (FCTC).⁹³ However, pricing increases can be problematic for Indigenous peoples. Experience shows that increases in price cause hardship for Indigenous smokers and their families, as people may continue to smoke regardless of the cost, and prioritise smoking over food.^{93, 94} On the other hand, there is also support in Indigenous communities for price increases to reduce smoking,⁹⁵ but effects from these strategies have not yet been evaluated.⁹⁶ The FCTC recommendations include strategies to reduce both supply of and demand for tobacco, and interventions for smoking cessation.^{63 64} Considerations for potentially successful programs include attention to the disadvantaged and stressful life experiences of Indigenous Australians and provision of behaviour change techniques and pharmacotherapy.^{90 96-98}

Systemic barriers to smoking cessation have been identified for Indigenous Australians.⁹⁹ System-centred approaches are required at the organisation level.¹⁰⁰ Inequitable access to health services, including lack of cessation services and provision of aids to cessation, such as medications and counselling, impedes the goal to close the gap on Indigenous health in Australia. Access issues may partly account for the lack of change in prevalence in remote Indigenous smokers and during pregnancy.^{99, 101} Involving people in their health care would also be ideal to foster their sense of self-determination and self-responsibility.^{99, 101}

1.6 Evidence for effective interventions and importance of establishing an evidence base

Indigenous tobacco research is in the early stages compared to tobacco research in the general population. Although national prevalence studies have been undertaken,

they are not conducted as frequently as similar studies in the general population, leaving researchers and communities in the position of being unsure of the emergent trends. Population and cross-sectional studies have been limited, and utilise small samples. For example we know little about the natural history of being an Indigenous smoker, but are starting to get a picture about smoking and quitting behaviours,^{39, 102-105} and views of providers.^{94, 106} Published studies have not yet tracked behaviour over different time points or waves, although an ambitious larger population-based study has recently been completed, and analysis of two waves of the NSW Aboriginal Smoking and Health Survey is currently underway.^{107, 108}

Recent research on smoking among Indigenous people that has occurred in Australia is summarised below. Several in-depth qualitative studies and mixed methods studies on attitudes to smoking, quitting and smoke-free environments,¹⁰⁹⁻¹¹² have been recently completed, as have studies on smoking initiation,^{113, 114} several observational intervention studies including those of a participatory community nature,¹¹⁵⁻¹¹⁸ and recently two randomised controlled trials (RCTs).^{119, 120} Several Cochrane and other systematic reviews about Indigenous tobacco smoking have been recently published,^{74, 84, 85, 98, 121-123} and an update of one of the Cochrane reviews is in progress.¹²⁴ Evidence for effective smoking cessation interventions for Indigenous peoples is emerging, for example pharmacotherapy combined with cognitive and behavioural therapies, and cognitive therapy through clinical encounters and text messages are showing positive benefits.⁷⁴

1.6.1 Research challenges

There is an absence of well-designed evaluation research on smoking cessation programs for Indigenous Australians, and admittedly being involved with research with and for the Indigenous community can be challenging.^{74, 121 125} Knowing more

about Indigenous smoking is a public health imperative. Recent reviews have highlighted the absence of sound methodological approaches.⁷⁴ Programs focused on smoking cessation in Indigenous youth have shown no effect or potentially negative outcomes.⁸⁵ Most Indigenous studies have suffered from considerable research challenges such as small sample sizes, local or regional studies with lack of transferability to Indigenous peoples in other locations, lack of incorporation of Indigenous knowledge systems, contamination of intervention and control arms of RCTs, poor access to resources and inadequate attention to barriers to Indigenous participation.^{126, 127}

Funding of targeted programs is a priority. Substantial funds were allocated by the Council of Australian Governments (COAG) Closing the Gap programs in the past, however in the current political climate there have been substantial funding cuts for health promotion and mass media programs in general, and specifically for Indigenous tobacco programs.¹²⁸ The Tackling Indigenous Smoking program has, according to the National Aboriginal Community Controlled Health Organisation (NACCHO), recently been subjected to cuts of \$130M over five years, amounting to more than one-third of the program's annual funding.¹²⁹ These cutbacks jeopardise the progress made for Indigenous Australians. Limited funding means less latitude for a hit and miss approach, thus it is vital to have evidence based solutions and to ensure the approaches and messages are effective.

1.7 History of tobacco control messages for Indigenous Australians

Over a decade ago Indigenous communities were calling for culturally appropriate messages, which received scant attention prior to the 'Break The Chain' campaign in 2010.¹³⁰ A report commissioned by the Australian Medical Association referred to

Indigenous Australians who smoke as 'The Forgotten Smokers' in 2001, and proposed a range of approaches for tobacco control messages and cessation.¹³¹

The availability of Indigenous tobacco control messages has changed during the course of my research for this thesis. When I started the PhD, there was no national targeted campaign, and no national programs such as the current Tackling Indigenous Smoking program or the Indigenous Tobacco Control Initiative (ITCI). Pre-2010 anti-tobacco messages for Indigenous smokers relied mostly on the generic National Tobacco Campaigns (NTC), although there were earlier targeted campaigns in some states and territories, such as the 'Beyond the Big Smoke' program in Western Australian from 2008, and radio advertisements by Aboriginal comedian Mary G. Many of the early programs were either not evaluated or not published.

A qualitative report of Indigenous views of the NTC in 1999 showed Indigenous Australians had preferences for targeted campaigns and locally developed programs.¹³⁰ Rowena Ivers was one of the pioneer researchers to lead the evaluation of TV and radio campaigns in her 2005 paper.¹³² Ivers et al's findings, and other Australian and international research pre-2012, are detailed in Chapter 2.¹³² In 2010 a targeted NTC ('Break The Chain') was started and followed soon after by national and regional funding for targeted campaigns through the ITCI (2011) and Tackling Indigenous Smoking programs (2012).

1.8 Current anti-tobacco messages and the need for more salient anti-tobacco messages

Limited research and evaluation are available for tobacco control messages for Indigenous people. Whether existing anti-tobacco messages were meeting their desired objectives was unclear when I started my PhD in 2010. A rapid growth of

targeted anti-tobacco programs and accompanying mass media has forged ahead of the development of consistent approaches, and associated research and evaluation has been slow to follow. Much of the evidence about tobacco control messages for Indigenous Australians is in its early stages of planning and implementation and is not yet published in the peer-reviewed literature. Progressive improvements along a continuum are expected in any new field, and these need to be documented.

The aim of mass media campaigns is to change attitudes, behaviours and social norms.¹³³ Changes can be observed via direct impacts from mass media interventions, for example modifications in smoking and quitting attitudes and changes in intentions and behaviours.¹³⁴ However indirect indicators are also appropriate, such as recall of messages, community awareness, and process indicators such as campaign reach.¹³⁴ How the contemporary evidence and my studies contribute to an understanding of these attitudinal and behavioural changes will be addressed in the Discussion at the end of this thesis (Chapter 9). My research will suggest how, particularly for some subgroups, for example pregnant women and Indigenous smokers with young families, there is a persistent need for more salient anti-tobacco messages.

1.9 Research questions

The central question for this thesis is whether anti-tobacco messages are 'getting through' to Indigenous Australians about the harms of smoking and importance of quitting. 'Getting through' means are the messages resonating with the Indigenous community and having any measurable impact on Indigenous Australian attitudes, beliefs and behaviour. My experiences with Indigenous smoking cessation research, the slow movement in prevalence of Indigenous smoking rates, and the limited evidence for effective smoking cessation programs led me to take a step back to ask

this basic question, which may not have otherwise received attention. The Australia National Preventive Health Agency's priority driven agenda for tobacco control, several years after the commencement of this research degree, confirm that the primary question for Australian Indigenous smokers is "what message strategies are persuasive among Aboriginal and Torres Strait Islander populations".¹³⁵ My research is thus based on the premise that Indigenous smoking must be addressed, which then leads to the following questions.

1.9.1 Research Questions:

1. *Is the message 'getting through' to Indigenous Australians about the harms of tobacco smoking? Are there any demonstrable impacts from tobacco control messages on smoking and quitting attitudes, intentions and behaviours?*
2. *Can we do better? Is it possible to improve tobacco control messages i.e. make them more salient and effective for Indigenous Australians?*
3. *If so, how? What are the mechanisms and methods for improving tobacco control messages in Indigenous Australians?*

Focus of the research

My research focuses in particular on tobacco smoking in pregnancy among Indigenous Australian women, and also among women and men of reproductive age. This focus is important for the reasons stated earlier, i.e. in these reproductive years babies and children have maximum exposure to parental and environmental tobacco smoke. Parental smoking prevalence remains high with little sign of decline, and yet vital intergenerational gains could be made if parents and pregnant women were able to cease smoking, and children were raised in completely smoke-free environments. More specifically, to address these issues I sought to understand the following.

1.9.2 Specific research questions:

1. Do Indigenous smokers need culturally targeted messages, and what is the evidence for this?
2. What organisational practices are occurring in Australia for the development of Indigenous tobacco control messages, and how can these contribute towards developing an evidence base?
3. How is the experience of tobacco smoking in pregnancy different for an Indigenous woman compared to the experiences of other (non-pregnant) Indigenous smokers?
4. Do Indigenous pregnant women need different tobacco control messages compared to other Indigenous (non-pregnant) populations?
5. Can risk assessment scales be utilised for this population to aid our understanding of how anti-tobacco messages can be targeted and tailored to the individual?

The studies in this thesis build on and add to work in the fields of mass media and maternal Indigenous smoking. Although several studies have individually explored attitudes to and effectiveness of mass media interventions for Indigenous peoples and attitudes about Indigenous maternal smoking in Australia, there has been no synthesis of the literature to date in these areas. Little critical attention has been paid to the specific gaps in these particular areas. As such, this thesis presents additional insights into mass media anti-tobacco messages and smoking in pregnant Indigenous Australian women, and Indigenous Australians of reproductive age.

Much of the evidence for regional tobacco control initiatives is in the 'grey literature'. Conferences are frequently used as opportunities to share and report on programs, however more descriptive studies and interventional studies need to be published in the peer-reviewed literature. I address these reporting gaps by using a national

survey to take a snapshot of current anti-tobacco message development targeted to Indigenous Australians. Lastly I address these issues by demonstrating the advantage of risk assessment scales for Indigenous Australians in NSW.

This thesis focuses on tobacco smoking by Indigenous peoples of Australia. The empirical research in this thesis is confined to Indigenous Australians rather than Indigenous peoples in the broader sense, for pragmatic reasons. This thesis does not include other types of tobacco use by Indigenous Australians such as chewing tobacco, or the use of native tobacco (*pituri*), or tobacco as used with cannabis, except in the sense of minor references where appropriate. The reason for this focus is that tobacco use in the form of cigarette smoking is ubiquitous, and the most pressing concern for Indigenous Australians; more comparative data is available.

1.10 Significance and alignment with key strategies for Indigenous health

This research aligns with key approaches and recommendations for research in the following policies and strategies:

- Australian National Tobacco Strategy.¹³⁶
- Aboriginal and Torres Strait Islander Health Plan.¹³⁷
- Closing the Gap on Chronic Indigenous Disease.¹³⁸
- NHMRC Road Map II.¹³⁹

Tackling smoking is one of the priority areas in the National Partnership Agreement on Closing the Gap. This research covers several NHMRC Road Map themes, namely: it seeks to build resilience against tobacco use, it focuses on wellness for pregnant women and their offspring, it investigates the optimum means of delivering preventive health messages and it utilises Indigenous community-based health research.¹⁴⁰ Action areas for improving the health of Indigenous Australians through

research include: improving capacity exchange, which establishes research relationships which values Indigenous knowledge, giving priority to research on chronic disease in Indigenous Australian communities, supporting medicine graduates undertaking Indigenous research, contributing to Closing the Gap by evaluating risk factors implicated in chronic conditions and social factors that impact on health status (tobacco smoking), and priority-driven research, which has potential to lead to research evidence transfer.¹³⁹ This research is in a high priority area and has the ability to contribute new knowledge to the broad area of Indigenous health, and to closing the gap caused by tobacco smoking.

1.11 Underpinning theories and methodologies

In this research I take the role of the *bricoleur*, characterised as a ‘handywoman’ who uses what is available and pragmatic in the building of this body of work.¹⁴¹ When all is done, it is the strength of the building that matters. The concept of the *bricoleur* emerged from the work on structural anthropology by Levi-Strauss, and is based on the concept of the re-use of available materials to solve new problems.¹⁴² The concept was further refined by Kincheloe, as applied to qualitative research.¹⁴¹ Denzin and Lincoln explain that the methodological *bricoleur* aims to become adept at performing a large number of diverse tasks, ranging from interviewing to self-reflection and introspection. The theoretical *bricoleur* aims to become knowledgeable about interpretive paradigms and move between them.¹⁴³ Thus, for this body of work, many approaches have gone into the foundation.

The experiences of developing and implementing culturally targeted programs for Indigenous smokers inform the way I have planned this research. While favouring the use of a theoretical framework, I place my attention firmly on pragmatic applications. I asked myself this question as I proceeded: ‘Could I see myself, or a colleague,

using these tools in practice?’ Thus the theories and frameworks underpinning this thesis have been chosen from different disciplines for their potential utility and range from biomedical theory to health promotion and communication theories. I do not bracket out my stance as a clinician, but use the lens of my clinical experience, particularly in smoking cessation, to interpret how to apply the findings from these studies towards a translational direction. Translational research here is the pragmatic application of the evidence to improve the health and well being of Indigenous Australians through real-world approaches.

Consideration was given to choosing theories and explanatory models that do not further disadvantage Indigenous peoples.¹⁴⁴ Although it could be argued that the underlying theories are from a Western paradigm, they have been chosen either because they have been successful cross-culturally and pay respect to diversity, or I believed them to have a potential application if validated in this population. The choice of theory depended on the individual study, as I explain below. Similarly, the methodologies chosen include qualitative and quantitative methods. The qualitative methods are used to give an Indigenous voice and dimensionality to the quantitative methods. These are summarised after the section on theories. This thesis presents selected portions of the findings to advance the topic in the peer-reviewed publications, and additional qualitative material in an addendum to Chapter 5.

1.12 Health Behaviour Theories

Central to this thesis is the question of what influences health behaviour. Contemporary views regard health behaviour as the product of the social determinants of health at a population level.¹⁴⁵ Rectifying the underlying social determinants is a vital necessity, by upstream approaches to tackle the industry that has profited from people’s susceptibility and public health measures, and

downstream approaches to protect people from differential vulnerability and exposure.¹ However, immediate benefits can be gained at the individual level through an improved lifestyle and the promotion of healthy behaviours; for example risks for heart attacks can be halved within the first year of quitting smoking.⁸⁸

Health behaviour theories abound: 83 have been identified and explained recently by Michie et al.¹⁴⁶ Several theories are linked and build on each other's attributions. Many health behaviour and health communication theories inform responses to health messages. Out of this smorgasbord of options I chose to base the research in this thesis largely on the work of Kim Witte. I considered Witte's work to be one of the most scholarly and informed that approached message making on mass media and individual platforms. However other theories have been adopted for different parts of the thesis, where they serve as a pragmatic explanatory framework or to highlight potentially important aspects of the inquiry. I give a brief overview and the merits of the theories below, but the details are in the published chapters.

I commence with a summary of the work of Witte. Witte's work has informed the development of fear based mass media campaigns, and include a suite of several linked frameworks that provide practical guides to designing and developing mass media health promotion approaches, analysing individual and collective risk taking behaviours, and a clinical tool for providing tailored approaches to counselling. These include the Extended Parallel Process Model (EPPM),¹⁴⁷ the Risk Behaviour Diagnosis (RBD) Scale,¹⁴⁸ and the Persuasive Health Message Framework (PHMF).¹⁴⁹ Theories that led to the development of the EPPM, with their principle constructs in parentheses include:

- Fear-as-acquired drive model (learning to reduce the state of fear by habitual responses).¹⁵⁰
- Health belief model, (perceived barriers, benefits, susceptibility and severity, and cues to action).¹⁵¹

- Theory of planned behaviour (attitudes, intentions, subjective and social norms perceived power and behavioural control).¹⁵²
- Elaboration likelihood model (information processing via peripheral versus central routes).¹⁵³
- Protection motivation theory (danger control responses – probability and magnitude of threat, and effectiveness of response to avert the threat).¹⁵⁴
- Parallel process model (cognitive and emotional responses to danger control and fear control processes).¹⁵⁵

The EPPM (explained further in Chapters 6-8) was directly based on the parallel process model. However, the EPPM was extended to account for the components that form the danger and fear control responses: perceived threat (susceptibility and severity) and perceived efficacy (response efficacy and self-efficacy). The EPPM determines whether responses to a perceived threat would be adaptive or maladaptive, depending on the level of perceived efficacy.¹⁴⁸ The extended model is proposed by the authors to have a greater capacity to explain differing responses to health threats and has been validated and used in different populations for many different health behaviours.¹⁴⁷ Derived from the EPPM was a validated RBD Scale, forming a bridge between theory and practice. I considered the RBD Scale warranted attention to explain some of the potential responses in Indigenous Australians to anti-tobacco messages.¹⁴⁸ The RBD scale is detailed in chapter 6. When formulating the survey instrument for Study 4 and to a lesser extent, the interview guide for Study 3, I used the PHMF developed by Witte,¹⁴⁷ as it provided a comprehensive list of factors to take into consideration when discussing issues related to health promotion messages, and is closely aligned with her EPPM which informs this work.

The EPPM has much strength as a model. Strengths of the EPPM lie in its thorough development of theoretical concepts, how it reconciles contradictions in earlier models, its elegance and ease of understanding, and its pragmatic structure for

guiding the development of public health campaigns.¹⁵⁶ Although the EPPM has been the basis over 50 empirical studies,¹⁵⁶ and was found to be consistent with the meta-analysis of over 100 fear appeals,¹⁵⁷ some of its propositions have been critiqued.¹⁵⁶

Critiques of the EPPM centre around 12 propositions of the model suggested by Witte.^{156, 158} Popova analysed 29 empirical studies to determine whether the EPPM's propositions were supported.^{156, 158} Some of the 12 propositions were inconsistent, and about a third had not been thoroughly tested. For example the EPPM proposes that when threat is low there is no further processing of the message as measured by attitudes, intentions and behaviour. Yet it may be that messages were processed but found not to warrant action because of their perceived innocuous nature, or that perceived threat was low because the person was in a state of denial. Another premise was that, as threat increases, if efficacy is high message acceptance correspondingly increases. However for some populations (e.g. Texas farmers and tractor safety) the only construct that influenced behaviour was perceived efficacy.¹⁵⁹ Another study found only a marginal amount of threat was required to move the target audience towards the desired action.¹⁶⁰

Variations in target audience responses support the necessity to check responses to key variables before instituting campaigns. Audiences, topics and cognitions will be different, and the way the EPPM predicts behaviours may need to be interpreted more flexibly. Interactive analyses between threat and efficacy have been inconclusive at times.¹⁵⁷ The EPPM can nonetheless illuminate a great deal about responses to health threats, which is pertinent to Indigenous peoples, a target audience not hitherto explored by this or similar models.

Another model included in the thesis is Beattie's health promotion model (Study 4),¹⁶¹ which had appeal for its sociological and ideological foundation.^{161 161 161 160 160160} The model classifies health promotion strategies along two axes: a community/collective

versus individual focus for the intervention, and a bottom-up versus top-down approach to the intervention development. Beattie's model incorporates these fundamental dimensions, and their implied ideological commitment, as opposing dichotomies. Because of the importance of community-based and empowerment approaches in Indigenous research, this sociological model was chosen to provide a basis for the analysis of strategic approaches used by Australian organisations. A depiction of the model is shown in chapter 5 (Figure 2 in the published paper).

Theories about cultural targeting and tailoring have been led internationally by Resnicow and Kreuter.^{162, 163} Their approaches relate to designing messages that resonate with individuals taking into account individual-level characteristics, and also on the basis of audience segmentation through meaningful belonging to a group. The approaches by these theorists overlap with each other to a certain extent, (and have correspondences with the PHMF), for example the deep structure for message formation proposed by Resnicow corresponds to sociocultural strategies of Kreuter, and salient beliefs, referents, social values, and customs in the PHMF. Theories from Resnicow et al,¹⁶³ and Kreuter and Skinner,¹⁶² about health promotion messages gave depth and structure to how message development was operationalised, thus I used them to inform the national survey for Study 4, and the resultant analysis. It should be noted that some of the definitions and usage for terms vary with theorists. Terms such as cultural sensitivity, cultural competence, culturally appropriate, culturally consistent, cultural tailoring and cultural targeting are often used interchangeably.

1.13 Addiction and comprehensive motivational theories

Changing tobacco smoking behaviour is complex because of the addiction to nicotine,¹⁶⁴ and the difficulty of initiating and sustaining abstinence.¹⁶⁵ Behaviour

change theories are seldom applied in the field of addiction but are important to inform different aspects of the behaviour change process and contribute to the 'science of change'.¹⁶⁶ Complex theories of motivation applying to addiction have also been proposed, recognising that change is not always linear, but a quantum event.¹⁶⁷ PRIME Theory and CEOS Theory are two such candidates.^{164, 165} PRIME Theory proposes five sub-systems making up the human motivational system (P – plans, R – responses, I – impulses and inhibitions, M – motives, E – evaluations), which interact and are influenced by the internal and external environment.^{146, 164} CEOS (Context, Executive and Operational Systems) is a dual control theory based on the interaction between two systems, the Operating System (OS) and the Executive System (ES), focusing on hard-to-maintain behaviour.¹⁶⁵ As defined, these complex theories are often not easy to understand, and in practice would involve many lines of inquiry and variables to apply them to behaviour change in this population.

When I designed this PhD, PRIME Theory whilst a 'new' theory, was the most accessible of the complex theories, as several research studies based on PRIME were published. A measure that had emerged out of PRIME Theory, the Risk Acceptance Ladder (RAL), was in its very early stages of development. It has interesting correspondences with Witte's EPPM, although founded on a different theoretical base. On the other hand, the use of a simple formula in the RBD Scale to aid the tailoring of anti-tobacco messaging had appeal as, if it proved valid and successful, it may be more easily translated into health promotion policy and used for interventions in clinical settings. The EPPM and the corresponding RBD Scale are presented as the mainstay of this thesis and its recommendations, although I considered EPPM and PRIME to have potential to assess risk behaviours for smoking in the target population.

1.14 Overview of methods used in the thesis

Creswell outlines four paradigms or worldviews that inform research: post-positivist, constructivist, pragmatic and transformative.¹⁶⁸ Consistent with the *bricolage*,¹⁴¹ I selected multiple methodologies and methods to address the research questions, which may belong to one or more of these paradigms. Broadly, these combinations, including both qualitative and quantitative research, are influenced by the 'mixed methodology' approach. This mixed approach can be compared to the margins of the seashore. If the beach represents the post-positivist yet endless probabilities of the truth sought by quantitative research, the qualitative findings are then represented by the unexpected and nuanced knowledge thrown up from the depths of the ocean. These discoveries become visible as the waves surrender their contents to the beach, and in rock pools along the shoreline, with a transformative potential inherent in that process. Taking account of the margins between these ways of knowing embellishes this research methodology and this thesis.

1.14.1 Addressing the research questions

Question 1: Do Indigenous smokers need culturally targeted messages, and what is the evidence for this?

Methodology: The main methodology for addressing this question was a systematic review of the international peer-reviewed literature about mass media and new media messages, using a search of standard electronic databases (Study 1, Chapter 2). Systematic reviews are a higher-level method for developing an evidence-base. I used the Preferred Reporting Items for Systematic Reviews (PRISMA) checklist as an evidence-based guide to ensure the transparent and complete reporting of the review.¹⁶⁹ Popay's guide to narrative synthesis was additionally used as a pragmatic way of enabling an orderly structure to the review, especially as it encompassed

diverse subsections about different anti-tobacco media.¹⁷⁰ Quality appraisal was conducted with the Scottish Intercollegiate Guidelines Network (SIGN) guide for quantitative studies,¹⁷¹ and Daly et al's hierarchy for evidence for qualitative studies.¹⁷² A quantitative meta-analysis was not feasible due to the diversity of methodologies used in the studies and the diverse levels of study quality.

Secondary methods for answering this question were the qualitative studies in this thesis. The focus groups with pregnant women, partners and family members (Chapter 4) elicited information about attitudes to mass media messages and recommendations for community-based programs. The national cross-sectional study (Chapter 4) also contributed by examining current organisational practices in Australia, using mainly quantitative methods but with qualitative input from open-ended questions (see below).

Question 2: What practices are occurring in Australia and how can these contribute towards developing an evidence base?

Methodology: This question was addressed by a national cross-sectional study (Study 4, Chapter 5), using a computer-assisted telephone interview, including qualitative and quantitative questions. This methodology was chosen to enable a wide sampling of organisations in every state and territory, as face-to-face interviews would not be feasible. An interview was preferred so rapport could be developed with participants, and a degree of probing could be accomplished. As many of the participants were expected to be Indigenous Australians, person-to-person contact was considered more culturally sensitive. Open-ended questions were included to give greater depth to the data, and to enable a more nuanced understanding of research findings. The interviewer recorded responses electronically during the interview to enable efficient data collection and facilitate the analysis. The qualitative data was independently analysed by two researchers to support researcher triangulation. The consolidated criteria for reporting qualitative research (COREQ)

checklist was used to uphold transparency and rigour.¹⁷³ Quantitative data were analysed by an exploratory factor analysis: this was the first study of this type in the field of Indigenous tobacco control research, so it was unknown how the multiple factors would interact to produce evidence for anti-tobacco message development.

Question 3 and Question 4: How is the experience of tobacco smoking in pregnancy different for an Indigenous woman compared to the experiences of other (non-pregnant) Indigenous smokers? Do Indigenous pregnant women need different tobacco control messages compared to other Indigenous (non-pregnant) populations?

Methodology: I applied several approaches to answering these questions:

1. A systematic review of the Australian peer-reviewed literature and grey literature about maternal Indigenous smoking, using a search of standard electronic databases (Study 2, Chapter 3) and repositories of Indigenous research, was completed. As the included studies were mainly qualitative, the synthesis and analysis used the seven stages of meta-ethnography proposed by Noblit and Hare.¹⁷⁴ The aim was to interpret a range of qualitative studies and express the findings in relationship to each other, thus construct a 'line of argument' or model. In the absence of uniform guidelines for reporting methodological rigor of qualitative studies, two qualitative appraisals tools were used. Rigour of studies were thus assessed with guides from Daly et al and Hawker et al.^{172, 175} The Hawker tool facilitates the systematic review of research quality from different paradigms, and the Daly tool focuses on ranking qualitative studies.

2. A qualitative study using focus groups of pregnant Aboriginal women and their partners and family members was conducted. Focus groups were considered a suitable approach to generate community attitudes about behavioural and social norms.¹⁷⁶ This study was initially planned using a topic guide and recruitment

strategy that came from the previous literature review, and I used the PHMF as a check so important topics were not missed.¹⁴⁷ The study used a community based participatory research (CBPR) methodology.¹⁷⁷ A phenomenological women-centred approach was used to report the findings: presenting the views of the participants without an overlay of theoretical interpretation. Phenomenology seeks to understand peoples' lived experiences, their life and meaning within a specific context free from theoretical constructs.¹⁷⁸ By this approach I sought to avoid inappropriate theorising from a Western perspective. I discuss issues about appropriate approaches to Indigenous research in section 1.16 below. The COREQ checklist was used to ensure comprehensive and valid reporting.¹⁷³

3. Finally, the protective attitudes held by Aboriginal community members about smoking in pregnancy were investigated via some of the scales developed for the cross-sectional study described in Study 5 (Chapters 6-8).

Question 5: Can risk assessment scales be utilised for this population to aid our understanding of how anti-tobacco messages can be targeted and tailored to the individual?

Methodology: I used a cross-sectional survey that included the RBD Scale, based on the EPPM (outlined in section 1.12) and associated scales, to answer this question (Study 5). I adapted additional measures developed from PRIME theory, such as the Motivation to Stop Smoking Scale and the Risk Acceptance Ladder, for Indigenous smokers (described in Chapter 6). The cross-sectional design enabled the recruitment of a representative sample of the local NSW Aboriginal community of reproductive age. The interviews were conducted face-to-face to establish rapport, circumvent literacy issues, and enable probing of responses in open-ended sections. Thus quantitative and qualitative data were collected in the survey. The qualitative data were independently analysed by more than one researcher, then collaboratively interpreted with my Aboriginal colleagues, using a general inductive approach.¹⁷⁹

Once again the COREQ checklist guided reporting.¹⁷³ The quantitative data were analysed in several ways, which included a comparison with the EPPM and a multivariate analysis. The findings were interpreted where relevant by a 'mixed methods approach' to take advantage of the more nuanced discoveries and enrich the understanding from the quantitative findings.

1.15 Developing the research

1.15.1 Community Engagement

This research builds on my direct experiences with local Aboriginal communities on the Mid North Coast of NSW (detailed in the preface). My involvement with these Aboriginal communities in Grafton, Coffs Harbour, Yarrawarra and the Nambucca Valley gave me a distinct advantage when it came to commencing the community engagement for this research. Most of the executive and management of the local Aboriginal Health Services (the Local Health District and the ACCHSs) would have known me to some extent. I had been instrumental in obtaining local and national funding for targeted tobacco control programs, and been able to deliver on those objectives. So it is with humility that I say I might be regarded as a trusted person to the local Aboriginal communities. I also had by now some considerable experience with the process of community engagement.

The community engagement for this research commenced when I was medical director of a regional ITCI program. The consultative process for that program ('No Smokes North Coast') was very broad and was under the auspices of the No Smokes North Coast Steering Committee. The process included not only Aboriginal Health Services, but also social services, the Department of Education and Training and the Aboriginal Education Consultative Group. For this thesis, the main input of the No Smokes North Coast Steering Committee was into the maternal focus group

study (Study 3, Chapter 4). After the 'No Smokes North Coast' program wound up, my consultation process for the latter studies (Study 5, Chapters 6-8) was with the local ACCHS and Aboriginal student liaison services at a tertiary educational campus.

1.15.2 Population and Setting

Aboriginal people represent 2.9% of the population of NSW, but 3.8-12.8% of the population on the Mid North Coast NSW, depending on the Local Government Area.¹⁸⁰ Smoking rates have been historically high on the Mid North Coast of NSW. When I commenced this research the most recent available figure for the local area indicated an Aboriginal smoking prevalence of 59.5% on the North Coast of NSW. This prevalence was the highest in NSW: the rest of NSW had a comparative Aboriginal smoking rate of 43%.¹⁸¹ Smoking currently accounts for 3.7 times the hospitalisation rate for Aboriginal people on the Mid North Coast compared with the local general population.¹⁸⁰ In 2011, the local smoking prevalence in Aboriginal pregnant women in the area was 55%, thus higher than the equivalent NSW average of 52% and the local non-Aboriginal smoking rate of 16%. Premature births and the rate of infants with low birth weight are increasing on the Mid North Coast, and socio-economic indicators are well below average for the state.¹⁸⁰ Thus my research on the Mid North Coast NSW has the potential to make an important contribution to this socially deprived area.

Three main Aboriginal Nations or language groups were involved in this research on the Mid North Coast of NSW, Bundjalung, Gumbainggir and Dainggatti (see Figure 1.2 below). These communities, mainly from the Grafton area, Coffs Harbour and Nambucca (Macleay) Valley and Kempsey, contributed to the Study 5 (Chapters 6-8). Study 3 (Chapter 4) centred on the Coffs Harbour area. The populations recruited

for these local studies included any Aboriginal or Torres Strait Islanders residing in the area, thus some may have been from other parts of Australia or from another Indigenous nation.



Figure 1.2 Map of the local Aboriginal Nations on the North Coast New South Wales
Map supplied by Mid North Coast Local Health District Media Department.

1.16 Considerations for ethical Indigenous research

1.16.1 Community consultation and pre-requisites for Indigenous research

Meaningful community consultation is an essential pre-requisite for all Indigenous research. This means building up a trusted relationship with the community where

the research is to be conducted and ensuring that the community's wishes are given priority in the research process. Having a prior relationship with the community can be an advantage. Adequate time has to be allowed for the community consultation process, and sometimes there needs to be a compromise between what the researcher believes are the best design and objective, and what the community really wants and needs. It is normal to have representation of Elders on any community panel, and be guided by the local ACCHS (their CEO or manager) as to who should be approached to fulfil this role.

Community consultation forms the basis of Indigenous ethics applications. Adequate time needed to be allocated for the ethics submissions. In NSW pre-requisites for Indigenous Australian research include the demonstration of:

- Net benefits for Aboriginal people and communities
- Aboriginal community control of research
- Cultural sensitivity
- Reimbursement of costs
- Enhancement of Aboriginal skills and knowledge

In the final part of the thesis (Discussion – Chapter 9) I outline the lessons learnt from the Indigenous community consultations and process of engagement, and how the thesis contributes to some of the seminal values inherent in these approaches.

1.16.1.1 Decolonising approaches and privileging Indigenous voices

As a non-Indigenous researcher I am aware that research in many Indigenous communities has a poor reputation. Linda Tuhiwai Smith commences her book on Indigenous research with the statement: “‘Research’ is probably one of the dirtiest words in the indigenous world’s vocabulary’ and calls for a decolonising approach.”¹⁸²

Indigenous Australians have been subjected to unethical research in the past: many Indigenous people I know, and others I encountered through this research, reminded

me of this on a regular basis. “Decolonising research is a process for conducting research with Indigenous communities that places Indigenous voices and epistemologies in the centre of the research process” and involves “a more critical understanding of the underlying assumptions, motivations and values that inform research practices”.¹⁸³ Writers on Indigenous methodologies such as Kovach, Smith, Denzell and Lincoln, and Chilisa all warn about the hazards of ‘Othering’.^{182, 184-186} ‘Othering’ is explained by Chilisa (pp. 49 and 74) to be an ideological stance taken when a population is marginalised by a dominant colonising culture, and a binary opposite is constructed of self/Other.¹⁸⁶ Thus Indigenous peoples may be considered ‘not one of us’. ‘Othering’ is implicit when Western knowledge assumes that its way of viewing the world is the norm and other knowledge systems are inferior.^{182, 184-186}

The issue of research thus has to be approached very sensitively and respectfully. The notion that I was gaining something (my PhD and kudos for my publications and successful funding, for example) perhaps at the expense of other people is vocalised by Indigenous researchers. As a migrant to this country it is possible that I may be viewed as a ‘white coloniser/settler’ and thus potentially perpetuate harms already inflicted. I needed to take a reflexive stance about my place in Indigenous research, often raised as a topic of discussion with fellow researchers in the field. This meant examining my own motivations, expectations and interpretations for this work, and being careful how I represented myself and how others were portraying me.

Demonstrating the benefits of the research to the Aboriginal community and reciprocity are factors that a non-Indigenous researcher needs to consider from the start. These factors not only need to be demonstrated during the ethics application, but along every step of the way in a practical form. Examples of reciprocity included making sure I paid my own way for any research expenses and offering back my expertise and advise as a smoking cessation expert, taking time to yarn (discuss in

an informal way) about smoking, and contributing to Aboriginal community and educational events where I could.

The decolonising approach aims to “instil a balance between Indigenous and Western frameworks and methods”.¹⁸³ In a practical sense this approach may involve the stance of putting forward the reality of the participating Indigenous communities ahead of my own, or a Western interpretation. Decolonising approaches are sometimes referred to as ‘privileging the voices of Indigenous peoples’. This approach took practical shape in the presentation of the findings of Study 3 (Chapter 4). The approach avoids a focus on deficit models, to prevent further marginalising Indigenous peoples and portraying Indigenous communities as problematic and ‘Other’. Lastly, the decolonising approach is a learning process and requires an openness and humility to being guided by my Indigenous mentors and the Indigenous communities that this research serves.

1.17 Thesis structure and organisation

This thesis contains seven publications in peer-reviewed journals, which form Chapters 2-8, with linking commentaries. Chapter 5 contains additional qualitative material that was not included in the journal publication. Chapters 2-8 have been presented as published in a PDF format, consequently inevitable duplications were not removed. Supplementary on-line material, where related to a publication, has been placed after each paper. The abstract for each publication has been placed as a summary at the end of each chapter to serve as a convenient reminder to the reader before moving on to the next chapter. The thesis commences with this Introduction, and finishes with a Discussion section (Chapter 9) and Conclusion (Chapter 10) that brings together the findings from all studies and their implications, with suggestions for future research. The methodology for each publication is

addressed within the corresponding chapter. My contribution to each publication has been outlined in the table “Publications on which this thesis is based and contributions of authors”.

Two publications are systematic reviews of the literature as an exploration and synthesis of the evidence for (1) mass-media anti-tobacco messages for Indigenous peoples, and (2) knowledge attitudes and beliefs about maternal Indigenous smoking. These reviews feed into the studies as depicted in the following diagram, to comprise a multiphase design as described by Creswell and Plano Clark, including both quantitative and qualitative elements (Figure 1.3).¹⁸⁷ The main findings from the quantitative and qualitative studies will be integrated in the Discussion section (Chapter 9) towards the end of the thesis. The multi-phase mixed methods approach enables the findings to be triangulated “to obtain a more nuanced understanding of the phenomenon... especially as that applies to the experiences of women and members of other marginalised groups”.¹⁸⁸

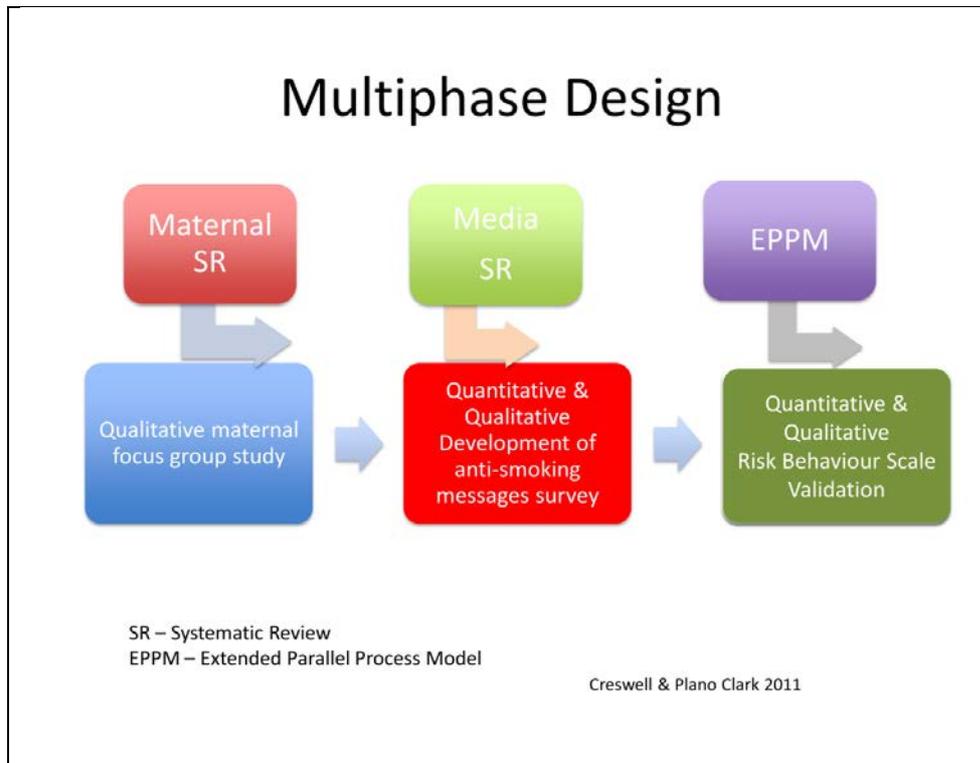


Figure 1.3 Multiphase design of studies

A single Reference section (containing the references from the Introduction, Discussion and Conclusion) follows the chapters. Appendices contain a summary of outputs and awards accomplished during the term of my doctoral studies, offprints of other relevant publications as PDFs, interview guides and surveys used in the studies, and documentation about copyright permissions.

This research has two main strands. I am using here a model that emerged from the study in Study 4 (Chapter 5), which comprises the two principal components of cultural understanding and rigour, which I propose will facilitate the development of salient anti-tobacco messages for Indigenous Australians. In the context of my studies these become the following (as in Figure 1.4).

1. Cultural understanding of smoking in Indigenous pregnancy

2. Evidence for cultural targeting of anti-tobacco messages for Indigenous Australians

Although these strands are separate they come together in the Discussion to answer the questions posed by the research.

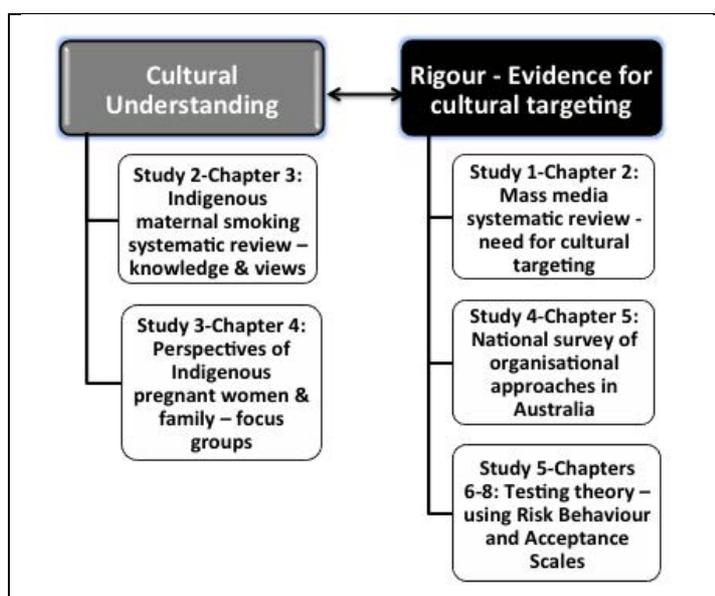


Figure 1.4 Conceptual diagram of thesis elements and chapters for making salient messages for Indigenous tobacco control

1.18 Summary of chapters and corresponding publications

Study 1, Chapter 2: Should anti-tobacco media messages be culturally targeted for Indigenous populations? A systematic review and narrative synthesis. Tobacco Control. 2013 July 1, 2013;22(4):e7.

In this paper, published by Tobacco Control, I examine the evidence for both culturally targeted and generic anti-tobacco messages distributed through mass media and new media on Indigenous peoples from Western nation states.

Study 2, Chapter 3: Knowledge and views about maternal tobacco smoking and barriers for cessation in Aboriginal and Torres Strait Islanders: a systematic review and meta-ethnography. *Nicotine & Tobacco Research*. 2013;15(5):863-74.

This chapter, published in *Nicotine Tobacco Research*, outlines the evidence on how maternal smoking is viewed by Indigenous Australians, and brings together findings across the available studies. The analysis constructs new themes and a line of argument out of the data from the included papers.

Study 3, Chapter 4: “Nobody smokes in the house if there’s a new baby in it”: Aboriginal perspectives on smoking in pregnancy and in the household in regional NSW Australia. *Women and Birth*. 2013;26(4):246-53.

This chapter reports on a qualitative focus group study published in *Women and Birth*. The study highlights the views and experiences of smoking and quitting of pregnant Aboriginal women and their families on the Mid North Coast of NSW. New information is presented about household smoking, and the participants’ suggestions for cessation strategies.

Study 4, Chapter 5: Developing anti-tobacco messages for Australian Aboriginal and Torres Strait Islander peoples: evidence from a national cross-sectional survey. *BMC Public Health*. 2014;14(1):250.

This chapter reports on a national cross-sectional survey published in *BMC Public Health*. The study examined the reported practices of organisations in Australia involved in the development of anti-tobacco messages for Indigenous Australians. The study provides a timely snapshot of the current trends for formative and evaluative research, and outlines implications for improved practice and policy.

Study 5, Chapter 6: Validation of risk assessment scales and predictors of intentions to quit smoking in Australian Aboriginal and Torres Strait Islander peoples: a cross-sectional survey protocol. BMJ Open. 2014;4(6).

This is the first of three chapters about a community based cross sectional survey with Aboriginal smokers aged 18-45 years on the Mid North Coast of NSW. This publication describes the protocol for the study and was published in BMJ Open.

Study 5, Chapter 7: Using the risk behaviour diagnosis scale to understand Australian Aboriginal smoking - a cross-sectional validation survey in regional New South Wales. Preventive Medicine Reports. 2015;2:4-9.

This chapter, published in Preventive Medicine Reports, describes the validation of the scales used in the community based cross sectional study and how the findings inform patterns of perceived efficacy and threat in the population according to the Extended Parallel Process Model.

Study 5, Chapter 8: Predictors of intentions to quit smoking in Aboriginal tobacco smokers of reproductive age in regional New South Wales (NSW), Australia: quantitative and qualitative findings of a cross-sectional survey. BMJ Open. 2015;5(e007020).

This final chapter, published in BMJ Open, presents the findings of a multivariate analysis from the community based cross sectional study. It highlights the central role of efficacy to predict intentions to quit smoking and the importance of consulting with a doctor or health professional for support.

1.19 Additional relevant publications not forming part of the thesis

The following publications (in PDF form in Appendix A) extend the scope of this research by (1) offering pragmatic recommendations for practice and policy that had

emerged from my explorations on this research topic, (2) report on other research that I have been involved with during my candidature, and (3) enter into a dialogue with other researchers and authors through letters to the Editor. Where relevant in the thesis I refer to some of these publications, or in some cases give a synopsis.

1.19.1 Articles

Gould GS. *Exploring the barriers and enablers to smoking cessation in pregnant Aboriginal and Torres Strait Islander women with the Behaviour Change Wheel*. *Australasian Epidemiologist*. 2014;2(2):31-5.

Gould GS, Bittoun R, Clarke MJ. *A pragmatic guide for smoking cessation counselling and the initiation of nicotine replacement therapy for pregnant Aboriginal and Torres Strait Islander smokers*. *Journal of Smoking Cessation*. March 31st 2014. FirstView. doi: 10.1017/jsc.2014.3

Gould GS. *Patient-Centred Tobacco Management*. *Drug & Alcohol Review*. 2014;33(1):93-8. 10.1111/dar.12082

Gould GS. *Making 'Blow Away The Smokes' DVD for Indigenous smokers – the journey and lessons learnt*. Peer Reviewed Conference Paper for 12th National Rural Health Conference, Adelaide 2013. Available from http://nrha.org.au/12nrhc/wp-content/uploads/2013/06/Gould-Gillian_ppr.pdf

Also please refer to:

Mendelsohn CP, Gould GS, Onken C. *Management of smoking in pregnant women*. *Australian Family Physician*. 2014;1-2;43:46-51. Available from following link, as permission not granted to include in thesis:
<http://www.racgp.org.au/afp/2014/januaryfebruary/smoking-in-pregnant-women/>

1.19.2 Letters

Mendelsohn CP, & Gould GS. *Unadjusted conversion ratio underestimates nicotine dose*. Rapid response letter to 'Nicotine patches in pregnant smokers: randomised, placebo controlled, multicentre trial of efficacy'. *British Medical Journal*. 7 May 2014.

Mendelsohn CP & Gould GS. *Changes in smoking intensity among Aboriginal and Torres Strait Islander people, 1994–2008*. Letter to the Editor. *Medical Journal of Australia*. 2013; 198 (9): 479. doi: 10.5694/mja12.11693

Gould GS, McEwen A. *An intensive smoking intervention for pregnant Aboriginal and Torres Strait Islander women: a randomised controlled trial*. Letter to the Editor. *Medical Journal of Australia*. 2013; 198 (1): 23. doi: 10.5694/mja12.11221

Gould GS, Clough, A, McEwen, A. *Are changes in functional beliefs about smoking a proxy for nicotine withdrawal symptom reduction?* *Tobacco Control*. [E-letter].
Published online 4 July 2012.

**Chapter 2. Should anti-tobacco media messages
be culturally targeted for Indigenous populations?
A systematic review and narrative synthesis**

'We need a different message for Indigenous people'

Dr Tom Calma AO
National Coordinator for
Tackling Indigenous Smoking

2.1 Overview

At the time of this review there was no published synthesis of mass media interventions for Indigenous populations globally. In the above quote Dr Tom Calma states that we need to make different messages for Indigenous people and this chapter explores the questions: (1) Do we need different anti-tobacco messages for Indigenous peoples? (2) Do anti-tobacco messages need to be culturally targeted? The chapter synthesises the evidence for the effectiveness of both culturally targeted and generic anti-tobacco messages for Indigenous peoples from Western nation states. Figure 2.1 places the chapter in relation to the other thesis elements.

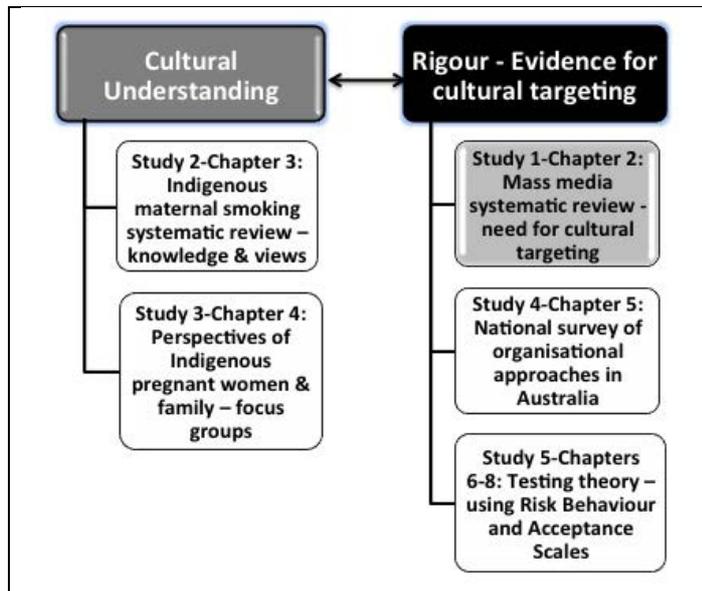


Figure 2.1 Study 1, Chapter 2 in relation to the conceptual model of the thesis for making salient messages for Indigenous tobacco control

This chapter is inserted as the published PDF of the following article:

Gould GS, McEwen A, Watters T, Clough AR, van der Zwan R. *Should anti-tobacco media messages be culturally targeted for Indigenous populations? A systematic review and narrative synthesis*. Tobacco Control. 2013 July 1, 2013;22(4):e7. doi:10.1136/tobaccocontrol-2012-050436

The study was commenced with a previous supervisor van der Zwan at UNSW, and then transferred over to James Cook University for completion.

This paper was chosen as *Editor's choice* by Tobacco Control and has made a significant contribution to the literature by for the first time comparing mass media interventions for tobacco across Indigenous populations. It is highly accessed and is in the top 10% of papers ever tracked by Altmetrics. It is an open access paper covered by a creative commons licence.

2.2 Publication in Tobacco Control

Should anti-tobacco media messages be culturally targeted for Indigenous populations? A systematic review and narrative synthesis

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Received 11 January 2012
Accepted 29 July 2012

ABSTRACT

Objective To summarise published empirical research on culturally targeted anti-tobacco media messages for Indigenous or First Nations people and examine the evidence for the effectiveness of targeted and non-targeted campaigns.

Methods Studies were sought describing mass media and new media interventions for tobacco control or smoking cessation in Indigenous or First Nations populations. Studies of any design were included reporting outcomes of media-based interventions including: cognitions, awareness, recall, intention to quit and quit rates. Then, 2 reviewers independently applied inclusion criteria, which were met by 21 (5.8%) of the studies found. One author extracted data with crosschecking by a second. Both independently assessed papers using Scottish Intercollegiate Guidelines Network (SIGN; quantitative studies) and Daly *et al* (qualitative studies).

Results A total of 21 studies were found (4 level 1 randomised controlled trials (RCTs), 11 level 2 studies and 6 qualitative studies) and combined with narrative synthesis. Eight evaluated anti-tobacco TV or radio campaigns; two assessed US websites; three New Zealand studies examined mobile phone interventions; five evaluated print media; three evaluated a CD-ROM, a video and an edutainment intervention.

Conclusions Although Indigenous people had good recall of generic anti-tobacco messages, culturally targeted messages were preferred. New Zealand Maori may be less responsive to holistic targeted campaigns, despite their additional benefits, compared to generic fear campaigns. Culturally targeted internet or mobile phone messages appear to be as effective in American Indians and Maori as generic messages in the general population. There is little research comparing the effect of culturally targeted versus generic messages with similar message content in Indigenous people.

INTRODUCTION

The preamble to the WHO's Framework Convention on Tobacco Control contains statements of deep concern about the high levels of smoking in Indigenous peoples across the globe.¹ Western countries have experienced a decrease in prevalence of smoking in the general population, but little improvement among the Indigenous or First Nations populations embedded within them. In the general Australian population, for example, smoking prevalence dropped from 34% in 1980,² to

16.6% in 2007.³ Data available for Indigenous Australian Aboriginal and Torres Strait Islander populations suggests a small decrease from 53% in 2004,⁴ to 50% nationally in 2008.⁵ Rates were comparable in 2008 for American Indians (49%),⁶ and New Zealand (NZ) Maori (45%),⁷ with levels also remaining static.^{8,9}

Traditional mass media anti-tobacco campaigns communicate through television, radio, newspapers, billboards, posters, leaflets or booklets, with the intention of discouraging uptake, encouraging smokers to quit and maintaining abstinence in non-smokers.¹⁰ More recently, new media have been incorporated into anti-tobacco campaigns and interventions and are the subject of recent research: these include digital formats with interactive technology such as internet, mobile phone, video and CD-ROMs.¹¹ Media campaigns are considered an important component of tobacco control.¹¹ Given the lack of change in smoking prevalence in Indigenous populations in Western nation states, compared with the general population in these countries, it seems that anti-tobacco media messages, as one of several influential drivers of cessation, may not yet be reaching their potential.¹¹ Other important factors influencing Indigenous smoking cessation such as sociocultural factors, consistent implementation of tobacco control policies in Indigenous and remote communities, and access to treatment, while relevant, are beyond the scope of this review.

Targeted marketing is used in the advertising industry including tobacco advertising.¹¹ Targeting is also employed for high-risk population groups with specific health needs or risk factors. The Ottawa charter recommends that health messages should be sensitive and respectful of the cultural needs of diverse populations.¹² There is no agreed definition of cultural targeting. Kreuter and Skinner propose that targeting involves: 'the development of a single intervention approach for a defined population subgroup that takes into account characteristics shared by the subgroup's members'.¹³

Most research on anti-tobacco media interventions has been in general populations of high-income countries.^{14,15} Whether anti-tobacco strategies need to be targeted for minority or disadvantaged subgroups based on divisions such as ethnicity, language or age is debated.¹¹ Bala *et al*, in a Cochrane review of mass media interventions for smoking cessation in adults, found no consistent relationship between campaign effectiveness and ethnicity.¹⁰ Other evidence suggests anti-tobacco messages

Review

should be culturally relevant, linguistically clear and reinforced by prominent community members.¹⁵

The focus of this review is Indigenous populations of Western nation states, who experience similar disadvantages and high smoking prevalence.¹⁶ Little is known about the optimum delivery of salient anti-tobacco health promotion messages to these Indigenous populations,^{17 18} whether culturally-targeted media messages are needed or, indeed, if tobacco treatment and prevention needs to be targeted at all.¹⁹

This review examines the available literature for evidence about the impact of anti-tobacco messages in Indigenous and First Nations populations in Australia, New Zealand, USA and Canada. This includes Australian Aboriginal and Torres Strait Islanders, Maori from New Zealand, American Indians, Alaska Natives, First Nations and Inuit from Canada. Studies in Pacific Islanders living in the US state of Hawaii are included. The review is deliberately broad to include motivational and interventional anti-tobacco messages delivered through traditional mass media and new media platforms.

Objectives

Our aims were (a) to systematically review and summarise the literature describing attitudes and key responses to culturally targeted anti-tobacco messages and (b) identify any differences in effect according to whether the messages were addressed to the target population or aimed at the general population. The evidence was assessed regarding impacts of media-based interventions in the target populations such as cognitions, awareness, recall, intentions to quit and quit rates.

METHODS

Data sources

The following databases were searched from their earliest date through to October 2011: Medline, CINAHL, Embase, Psych INFO and Australian databases via Informat (see online appendix 1). Searches used truncated keywords and/or subject headings related to (tobacco or nicotine or smoking) combined with (Indigenous populations or Oceanic Ancestry Group or Aborigine or Torres Strait Islander or Maori or Inuit or First Nations or American Indian or Alaska Natives or Pacific Islanders) and further combined with (communication media or mass media or social marketing or advertising or health promotion or health education or internet or mobile phone or arts or arts therapy). Art was included as a search term as it is often used in health promotion for Indigenous populations.^{20 21} Additionally, hand searches of reference lists of included papers and other literature on Indigenous smoking known to authors supplemented the electronic search.

The selection criteria were: full, peer-reviewed papers of original research on media-based anti-tobacco messages using any study design that included Indigenous populations embedded within Australia, New Zealand, USA and Canada, including Australian Aboriginal or Torres Strait Islanders, NZ Maori, American Indians, Alaska Natives, Pacific Islanders, First Nations or Inuit. Papers were not included if no measurement of outcome or impact was reported, such as knowledge, attitudes, beliefs, message recall, intention to quit or smoke, or quit rates.

Two reviewers (GSG and TW) independently applied the criteria then reached consensus. GSG (a medical practitioner) prescreened publications for relevance. Then GSG and TW (a clinical psychologist) independently screened titles, available abstracts and then full papers to determine eligibility. Discrepancies were resolved by consensus. Of the 489 studies found,

after removing 124 duplicates, 21 (5.8%) met the inclusion criteria. (See supplementary figure 1.)

Data extraction

One author (GSG) extracted data, with crosschecking by a second (TW). Information recorded included: aim of the study, geographical region, participant demographics, recruitment methods, methods of data collection and analysis, and summary of results.

Methodological quality for quantitative aspects of studies was assessed for hierarchy of evidence and risk of bias using checklists from Scottish Intercollegiate Guidelines Network (SIGN) 50.²² With no similar guidelines for assessing study quality in qualitative research,²³ we chose an evidence-for-practice theory by Daly *et al*²⁴ to categorise qualitative and mixed studies into: (1) generalisable studies; (2) conceptual studies; (3) descriptive studies and (4) single case studies.

Data synthesis

Data synthesis made use of Popay *et al*'s guidelines for narrative synthesis.²⁵ No statistical meta-analysis was performed due to the diversity of study designs and approaches included in this review. For preliminary synthesis, studies were divided into five groups: television or radio campaigns, print media, internet studies, mobile (cell) phone studies and other media. As study approaches were diverse, these were categorised into four basic approaches depending upon whether the variables tested were generic messages, targeted messages or comparisons of both.

RESULTS

Following Popay *et al*'s guidelines,²⁵ results are organised first to summarise the basic features of the studies. A preliminary synthesis of findings is then presented describing the key findings for each type of media studied: initially, traditional mass media and then new media. Outcome measures, study designs, quality of studies and approaches are then presented. This is followed by a narrative synthesis, which collates information from across the studies. We then examine the responses to culturally targeted anti-tobacco messages for Indigenous smokers and draw comparisons between targeted and generic messages.

In all, 21 papers reporting on 20 studies met the inclusion criteria. Supplementary table 1 contains full details of each study including aim, location, recruitment, participants, methods and analysis, intervention, key findings and relevant comments.

Table 1 summarises the included studies in terms of the type of media used, type of study and the studied population.

The nine quantitative studies were comprised of: four randomised controlled trials (RCTs),^{26–29} a database analysis,³⁰ two post-intervention surveys,^{31 32} and two before and after (BAS) studies.^{33 34} The remaining 12 studies were mixed-methods or qualitative studies,^{35–46} including 4 with a BAS design.^{35–38} No peer-reviewed studies were found describing Canadian First Nations or Inuit. All studies were in community settings covering a range of urban, rural and remote locations. Seven of the studies described the impact of media interventions among youth,^{27 29 32 36 37 41 42} and two addressed women,^{38 39} with one of these aimed at pregnant women.³⁸ Two studies included health staff or health professionals.^{40 43}

Mass media

Television or radio advertisements

Of the 21 papers, 8 evaluated the impact of anti-tobacco television or radio advertisements on attitudes, beliefs, smoking

Table 1 Summary of media type and populations of included studies

Media	Aboriginal and Torres Strait Islander Australians (5 studies)	New Zealand Maori (7 studies)	US Pacific Islander and Native Hawaiians (1 study)	American Indian or American Indian + Alaska Native (7* studies)
TV and/or radio advertisements	4 TV/Radio studies (1 mixed, 1 mixed BAS, 1 survey, 1 qualitative)	3 TV studies (1 database, 1 BAS, 1 qualitative)		1 TV/Radio study (survey)
Internet				2 internet studies (1 RCT, 1 qualitative)
Mobile phone		3 Mobile phone studies (2 RCT, 1 mixed BAS)		
Print media		1 print media study (BAS)		3 print media studies (4 papers: 1 RCT, 2 qualitative, 1 mixed)*
Other media:	1 CD-ROM intervention (mixed BAS)		1 edutainment study (mixed BAS)	1 Video intervention (mixed BAS)

*Two papers reported the same study.

BAS, before and after study; RCT, randomised controlled trial.

intentions or behaviour. Three New Zealand studies examined the effect of the collaboratively developed, 'it's about whanau' (IAW) television campaign, targeting Maori smokers.^{30 35 39} The first study used a cross-sectional New Zealand-wide survey and Quitline data from two waves: the Quitline monitoring data showed that the proportion of Maori callers to the Quitline increased from 20% to 25% post campaign.³³ The advertisements were rated highly believable (73%) and relevant (67%) and over 50% of Maori survey respondents said the advertisements influenced them to quit. A second study used a focus group of Maori women to elicit their views on a range of smoking cessation initiatives including the IAW campaign, which was seen as portraying enduring values, while fear campaigns by comparison, were considered to have only short-term effects and be culturally inappropriate.³⁹ In contrast, another study reported a greater number of calls by Maori smokers to the Quitline following the screening of an advertising campaign that featured a fear message compared to the screening of the Maori orientated IAW campaign (RR 1.26, 95% CI 1.08 to 1.46). However although the fear message had some Maori specific content, the advertisements had very different objectives, formats and intentions, and therefore the content was not comparable.³⁰

Four papers measured the response of Aboriginal or Torres Strait Islander Australians to television and radio campaigns.^{31 35 40 46} Three studies reported high levels of recall of generic television or radio anti-tobacco advertising,^{31 35 40} two of which further assessed self-reported changes in smoking behaviour.^{31 35} Despite good recall (85%) of the National Tobacco Campaign (NTC), exposure to anti-tobacco interventions (eg, advice, medication and advertisements) did not influence cessation rates among Aboriginal people in three Northern Territory communities ($p=0.42$).³⁵ There was similarly high prompted recall (89.9%) to the 'Bubblewrap' campaign by Aboriginal smokers in Western Australia, with most survey participants reporting positive changes in attitudes such as thinking about cutting down or quitting (81%); however only three participants (1.5%) reported quitting.³¹ Similarly, Indigenous community members and health staff had 'good recall' of TV campaigns when questioned about different tobacco interventions, although health staff believed TV advertisements should be more targeted to Indigenous smokers.⁴⁰ There was a non-significant difference in how Australian Indigenous and non-Indigenous viewers rated TV advertisements featuring strong graphic imagery and personal narratives on a range of outcome measures. These included message acceptance (combined ratings for 'understanding', 'believable' and 'relevant') and personalised effectiveness (combined ratings of 'made me

stop and think', 'concerned about smoking', 'more likely to try to quit' and 'provided good reasons to quit')⁴⁶ Similarly, American Indian students showed no differences compared to students from the general population in how they rated the most popular threat based TV advertisement with 'Artery' rated highest for 'afraid' and 'disgust'.³²

Print media

The print media studies showed varied effects. Improved pack health warnings (PHW) resulted in similar significant increases in recognition of the Quitline number ($p<0.001$), pre/post campaign, for Maori (25.1% increase) and the general New Zealand population (24.1%).³⁴ Two US papers assessed the feasibility of adapting the 'Second Wind' program for pan-tribal populations. Participants representing 17 different tribal groups suggested improving Native design elements, including a Native worldview, oral history, family content and traditional tobacco use.^{44 45} A three-part systematic strategy was used to assess the 'All Nations Breath of Life' educational brochures for scientific accuracy, readability and cultural appropriateness for American Indian and Alaska Native smokers. The authors propose this strategy as a way to enhance the cultural suitability of print materials, prior to conducting a clinical trial.⁴³ Anti-tobacco messages embedded into a mailed-out Native art calendar for American Indians and Alaska Natives did not increase the uptake of smoking cessation advice or nicotine patch prescription (as determined by an audit of the patient's record), compared with a control calendar without messages. No impact on quit rates was observed (6.3% vs 7%, $p=0.33$).²⁸

New media

Internet

Two studies, which included American Indians and Alaska Native participants, reported a positive impact from US internet websites.^{26 41} American Indians formed a small percentage of US participants (2% $n=7$) using a website featuring video clips, in a RCT with a wait-list control.²⁶ On logistical regression there were no significant interactions between ethnicity and condition therefore self-reported quit rates were reported as one group (treatment group 12.3% vs control 5% at 90 days, OR 2.66). In a two-phase action research pilot project American Indian and Alaska Native participants suggested modifications to the generic SmokingZine website to make it more 'Native'.⁴¹ Researchers then compared use of the generic website with the culturally adapted website for American Indian/Alaska Native youth. Usability scores were moderately in favour for the culturally adapted version compared to the non-modified site. Changes in smoking behaviour were not assessed.

Mobile phone

Three New Zealand studies reported mixed outcomes from mobile phone interventions that used text,²⁷ and video messages.^{29 42} Culturally-adapted text messages were as effective for Maori as generic messages were for non-Maori in the short term, in a four group RCT with controls receiving follow-up reminder texts only. There were no significant differences between Maori and non-Maori in self-reported quit rates (26.1% for Maori in the treatment group vs 11.2% Maori in control group at 6 weeks, RR: 2.34, 95% CI 1.44 to 3.79), and results were similar for non-Maori (RR: 2.16, 95% CI 1.72 to 2.71). This indicates that when Maori are given culturally targeted interventions their quit rates can equal those of the general population.²⁷ A collaboratively developed multimedia mobile phone intervention was successfully piloted producing a 53% self-reported quit rate at a multicultural college, which included Maori.⁴² However when a RCT tested its effectiveness, there was no significant difference in continuous abstinence (intention-to-treat) at 6 months between the smoking cessation video message intervention (26.4%) and a general health video message control (27.6%), ($p=0.8$).²⁹ No data about the ethnic group of the quitters was provided in the latter two studies, even though Maori were a target group.

Other media

Three media studies falling outside the above categories had varying effects: one incorporated a CD-ROM, another used an education-entertainment format and a third used a DVD. An Aboriginal Australian community based program employed a CD-ROM, which was well received and used by participating youth, however there were no changes in self-reported smoking behaviours.³⁷ An education-entertainment multimedia drama performance improved knowledge about addiction ($p=0.021$) and decreased future intentions to smoke ($p=0.041$) in Native Hawaiians and Pacific Islanders in Hawaii, USA.³⁶ In contrast, a study with the intervention group using a culturally-targeted video, counselling and brochures, and the control group receiving brief interventions and brochures only, had poor levels of acceptance and did not change smoking behaviour in pregnant Alaska Native women.³⁸

Outcome measures

Table 2 demonstrates the diversity of outcome measures. A total of 12 studies measured cultural suitability^{38–41 43–45} and/or relevance.^{26 29 31 33 43–46} Only three studies measured believability,^{26 31 46} which is one of the hallmarks of a salient message. Usability was confined mostly to those delivery systems, such as mobile phone and internet, which demanded interactivity on a technical basis.^{26 29 41 42 44 45} Awareness and recall of the messages or campaign was a common feature^{31–36 38 40}; a standard approach is to ask for unprompted then prompted recall,¹¹ however the type of recall in some studies was unspecified.^{35 40} One study had a sophisticated measure of perceived effectiveness and confirmed recall.³² The assessment of smoking attitudes and behaviour varied across the studies and included measuring attitudes to quitting,^{33 46} intentions to quit or smoke,^{26 32 33 36} quit attempts,^{29 31 38} levels of consumption,^{26 42} perceptions about being influenced to quit by the message (including talking to others about quitting),^{31 33 35} calls to a Quitline,^{30 33} receipt of cessation advice,²⁸ and quit rates.^{26 27 29 31 33 38 41 42}

Standardised reporting of smoking abstinence, which is considered best practice, was missing from most of the studies.^{47 48} Only three studies described how they assessed self-reported quit status: consumption over the last 7 days,^{26 29 38} while three

studies biochemically validated abstinence,^{27 29 38} with one using the Russell Standard for continuous abstinence.²⁹

Study designs and quality of evidence

Table 3 summarises the studies and their level of evidence (SIGN and Daly *et al*). Due to the small number of studies in this field, we did not exclude studies on the basis of their quality ranking, but rather gave greater weight to the higher-level studies. Four quantitative studies were rated as level 1+ or 1++ (SIGN),²² which indicates they are higher quality and have a lower risk of bias.^{21–24} One further cohort study was considered 2+, therefore of good quality for its type.⁴⁶ Of the 15 quantitative studies, 10 received a minus score for SIGN ranking, that is the studies were considered to have a high risk of bias.

Nine papers containing qualitative elements were rated using Daly *et al*'s hierarchy of evidence for practice.²⁴ Two mixed-methods studies reported insufficient qualitative details to be assessed. Only two papers were rated as category 2, that is as conceptual,^{38 44} and therefore potentially transferable to other populations,²⁴ while none were ranked in the top category. Seven other papers rated as category 3 were therefore deemed descriptive.^{35 39–43 45}

Study approaches

There was a wide variety of research approaches making comparisons between non-equivalent population groups and interventions difficult. Figure 1 illustrates the study approaches, which can be categorised into four conceptual groups as follows:

1. Effect of generic media on Indigenous people \pm comparison with general population.^{31 32 34 35 40 46}
2. Generic versus targeted for Indigenous people (in this case the interventions had non-equivalent content).³⁰
3. Generic for general population versus targeted for Indigenous population.^{26 27 29 42}
4. Effect of targeted campaigns for Indigenous or measures of cultural suitability.^{28 33 36–39 41 43–45}

Of the 21 papers, 16 had some degree of specificity to the target population or choice of culturally targeted elements. Eight studies described a formative phase in collaboration with the target audiences,^{27–28 33 36–38 41 42} in order to target the intervention.

NARRATIVE SYNTHESIS

Responses to culturally targeted anti-tobacco messages

The qualitative studies revealed a preference for culturally targeted messages. This held true across the populations studied. US participants from pan-tribal Nations recommended that resources should become more inclusive of other Nations' views by: use of appropriately diverse cultural design elements; depicting a broader range of tribal customs; and increasing education about ceremonial tobacco use.^{44 45} American Native youth preferred using a website with a more 'Native' look and advised how to adapt a generic site by incorporating Native design features.⁴¹ In Australia, health and welfare staff, working with Indigenous communities, favoured culturally appropriate messages and suggested that modifications were required for an Indigenous audience.⁴⁰ Stewart *et al* tested one Indigenous targeted TV advertisement that was rated significantly higher, by Indigenous compared to non-Indigenous smokers, for message acceptance and personalised effectiveness.⁴⁶ Indigenous viewers related more to the advertisement and were more likely to discuss it than non-Indigenous viewers. NZ Maori similarly call for more culturally relevant advertisements,³⁹ and point out that mainstream graphic advertisements showing body parts, are inappropriate or tapu.³⁹ The culturally targeted IAW

Table 3 Summary of evidence regarding impact of media-based anti-tobacco messages for Indigenous populations

Reference (lead author, year)	Study and specificity	Population	Type of study	SIGN rankings	Qualitative rankings (Daly <i>et al</i>)	Summary of evidence relevant to review
Wilson, 2005 ³⁰	TV media campaign, Maori specific	New Zealand Maori	Quantitative database	2-	N/A	More calls to Quitline after generic graphic advert compared to holistic Maori advert
Grigg, 2008 ³³	TV media campaign, Maori specific	New Zealand Maori	Quantitative BAS	2-	N/A	Increased recall of adverts and calls by Maori to Quitline
Fernandez, 2008 ³⁹	TV media campaign, Maori specific	New Zealand Maori	Qualitative focus groups	N/A	II	Positive feedback to IAW campaign, compared with generic graphic TV adverts
Ivers, 2005 ³⁵	TV campaign and community interventions. Mostly generic	Aboriginal and/or Torres Strait Islanders	Mixed methods BAS pre/post-intervention surveys	2-	Insufficient information to assess	High recall of adverts. Exposure to any of the various interventions did not influence cessation.
Boyle, 2010 ³¹	TV and radio media campaign, generic	Aboriginal and/or Torres Strait Islanders	Quantitative survey interviews	2-	N/A	High recall of adverts. In all, 25% attempted to quit, 1.5% successful.
Johnston, 2010 ⁴⁰	TV campaign and other interventions, generic	Aboriginal and/or Torres Strait Islanders	Qualitative study semistructured interviews	N/A	III	Best recall of graphic imagery in TV adverts. Health staff believe adverts need to be culturally targeted.
Stewart, 2011 ⁴⁶	TV advertisements, mostly generic	Aboriginal and/or Torres Strait Islanders	Mixed methodology, questionnaire and discussion	2+	III	Strong graphic adverts and first person narratives rated highly by Indigenous smokers
Vogeltanz-Holm, 2009 ³²	TV and radio media campaign, generic	American Indian (youth)	Quantitative study structured interviews	2-	N/A	Confirmed recall and perceived effectiveness highest to 'Artery' advert
Daley, 2006 ⁴⁰ and Choi, 2006 ⁴⁴	Program curriculum and printed resources, American Indian specific	American Indian/Alaska Native	Qualitative focus groups	N/A	II Daley, III Choi	Modifications provided for the 'Second Wind' smoking cessation program to improve pan-tribal cultural suitability
Daley, 2009 ⁴³	Health promotional pamphlets, American Indian specific	American Indian/Alaska Native	Mixed methodology: expert opinion, readability scores and focus group	4	III	Scientific and cultural content, and readability scores appropriate: minor changes advocated
Doorenbos, 2011 ²⁸	Native calendar, American Indian/Alaska Native specific	American Indian/Alaska Native	Single-blind randomised controlled trial	1+	N/A	Calendar with health messages did not increase smoking cessation related outcomes compared to calendar without messages
Wilson, 2010 ³⁰	Pack health warnings, generic	New Zealand Maori	Quantitative BAS pre/post telephone surveys	2-	N/A	Significant increase in Quitline number recognition from improved PHWs
Swartz, 2006 ²⁶	Internet website, targeted content	American Indian subset	Non-blinded randomised controlled trial	1+	N/A	No significant difference in cessation rates between ethnic groups
Tauaili, 2010 ⁴¹	Internet website, American Indian specific	American Indian/Alaska Native (youth)	Qualitative focus groups	N/A	III	Favourable response to targeted website
Bramley, 2005 ²⁵	Mobile phone text messages, targeted for Maori, generic for others	New Zealand Maori and non-Maori (youth)	Single-blind randomised controlled trial	1++	N/A	No significant difference in response between Maori and non-Maori
Whittaker, 2008 ⁴²	Mobile phone video messages, targeted choice	New Zealand Maori subset (youth)	Mixed methodology questionnaire	2-	III	Favourable attitudes to content. High self-reported quit rate; not stratified to population group
Whittaker, 2011 ²⁹	Mobile phone video messages, targeted choice	New Zealand Maori subset (youth)	Single-blind randomised controlled trial	1+	N/A	No significant difference in cessation rates between intervention and control; results not reported by ethnic group
Johnston, 1998 ³⁷	CD-ROM and other community interventions, Indigenous specific	Aboriginal and/or Torres Strait Islanders (youth)	Mixed methodology BAS questionnaires and informal feedback	2-	Insufficient information to assess	No change in smoking behaviour, increased knowledge, CD favourably viewed

Continued

Table 3 Continued

Reference (lead author, year)	Study and specificity	Population	Type of study	SIGN rankings	Qualitative rankings (Daly <i>et al</i>)	Summary of evidence relevant to review
Mitschke, 2010 ³⁶	Education-entertainment drama, Pacific Islander/Native specific	Pacific Islander and native Hawaiian subset (youth)	Mixed methodology, BAS pre/post-intervention	2-	III	Evidence of high-level engagement of viewers. Participants' knowledge increased and intentions to smoke decreased.
Patten, 2010 ³⁸	Video and educational materials, Alaska Native specific	Alaska Native pregnant women	Mixed methodology, BAS pre/post-intervention randomised control	2-	Insufficient information to assess	Intervention deemed not acceptable or feasible as low interest and recruitment. No significant difference between intervention and control groups.

Scottish Intercollegiate Guidelines Network (SIGN) levels of evidence rankings (descriptors taken from SIGN 50)²²: 1+++, high quality meta-analyses or systematic reviews of RCTs, or RCTs with very low risk of bias; 1+, well conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias; 1-, meta-analyses, systematic reviews, or RCTs with a high risk of bias; 2+, high quality systematic reviews of case-control/cohort studies or high quality case-control/cohort studies; very low risk of confounding/bias and a high probability of causal relationship; 2+, well conducted case-control/cohort studies; low risk of confounding/bias and moderate probability of causal relationship; 2-, case-control/cohort studies with a high risk of confounding/bias and significant risk relationship is not causal; 3, non-analytic studies, for example case reports, case series; 4, expert opinion.

Daly *et al* rankings for Qualitative Studies²⁴: level I, generalisable studies; high quality, well reported analytical studies based on comprehensive literature review and conceptual framework with diverse sample; level II, conceptual studies; comprehensive study based on conceptual framework, sample may not be diversified but selected on theoretical basis; level III, descriptive studies; atheoretical, no diversification, descriptive only, sample selected to illustrate practical rather than theoretical issues; level IV, single case study; single or small number interviews, may provide rich data or insights.

BAS, before and after study; IAW, 'it's about whanau' (campaign title); N/A, not applicable; PHW, pack health warnings.

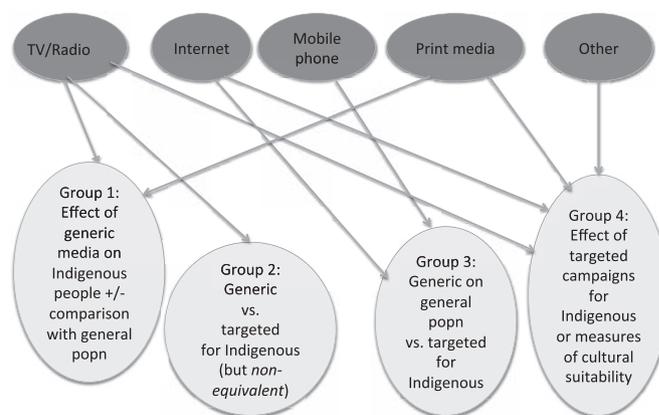


Figure 1 Schema of included studies illustrating conceptual groups 1–4.

campaign increased calls to Quitline and recall of tobacco advertisements in Maori.³³ Although graphic advertisements stimulated more calls by Maori to the NZ Quitline than the IAW campaign,²⁹ less robust qualitative data suggests tacit value in the culturally targeted campaign.³⁹ Emotional engagement and identification is considered a key feature of nicotine dependence,⁴⁹ and also to successful implementation of entertainment-education.⁵⁰ Mitschke *et al*'s study of a culturally targeted tobacco prevention drama for Asian and Pacific Islander and Native youth in Hawaii was the only study in this review that specifically measured the level of emotional engagement with the characters and identification with the messages.³⁶ Analyses demonstrated a significant difference in knowledge after the drama and significant improvements in intention to avoid smoking.

Effects of generic and targeted anti-tobacco messages on Indigenous people

There is weak evidence from five studies that generic messages (devised for the wider population), can be as effective in terms of recall for the Indigenous population as the general population, when tested in Aboriginal or Torres Strait Islanders and NZ Maori.^{31 32 34 35 40} There is evidence against the ability to recall a generic advertisement in the target population translating into increased quit rates as exemplified by Iver *et al*'s study,³⁵ and discussed by Johnston and Thomas,⁴⁰ and Vogeltanz-Holm *et al* in the US.³² Stewart *et al* found that Indigenous and non-Indigenous viewers shown a broad range of advertisements in an experimental study rated those containing strong graphic imagery or personal narratives as effective for a range of measures including being more likely to quit.⁴⁶ Where there was a significant difference, ratings by Indigenous viewers were always higher for graphic and narrative advertisements than those given by the non-Indigenous viewers. A study on new PHW found no significant differences in improved recognition of generic tobacco messages between the New Zealand general population and Maori.³⁴ It can be argued that wholly graphic non-targeted messages such as 'Artery'³² and PHWs²⁹ may be culturally neutral. Indigenous viewers commented that advertisements such as 'Bubblewrap' and 'Alive' targeted everyone as they depicted body parts only.⁴⁶ Conversely the showing of body parts can render messages tapu for Maori.³⁹

Several studies compared culturally targeted content for the Indigenous population with generic (non-targeted) content for the rest of the population. In these cases there is evidence from two level 1 studies using culturally targeted content

demonstrating the approaches were equally effective on quit rates in the short term (6–12 weeks) when comparing responses of the Indigenous samples to the general population samples.^{26 27} The New Zealand text messaging study, which deliberately over-recruited Maori to eliminate health inequality bias (21% Maori participants compared with 14.7% Maori in the New Zealand population), had equivalent Maori to non-Maori self-reported quit rates.²⁷ In contrast, the US study of an automated website with video content had only a small percentage of American Indian participants (2% n=7), however it found no significant interactions between ethnicity for any of the ethnic subgroups, including American Indians, and treatment or control condition on logistical regression.²⁶ When a generic threat campaign was measured head-to-head with a targeted holistic Maori campaign, in regard to calls to the Quitline, it appeared the generic threat campaign was more effective.³⁰

DISCUSSION

Should anti-tobacco media messages be culturally targeted for Indigenous people?

Despite qualitative evidence that Indigenous populations prefer culturally targeted messages, there is early evidence of effective recall or recognition of generic messages in the Indigenous cohorts. There is also preliminary evidence that culturally targeted messages can be as effective in Indigenous populations in the short term, as generic (non-targeted) messages are for the general population. Market research supports the view that resources that depict Indigenous faces will be more engaging to an Indigenous audience,¹⁸ except perhaps for youth who relate more to the dominant youth culture.⁵¹ Indigenous people may also be wary of negative stereotyping in the media.⁵² Mounting culturally targeted mass media campaigns for Indigenous smokers, through mass media, may demand a substantial financial investment, for a return that is still as yet uncertain.

This review revealed disparity in the sophistication of media studies in different countries for Indigenous tobacco control. New Zealand has the most comprehensive culturally targeted mass media campaign for its Indigenous people and has trialled mobile phones to deliver anti-tobacco messages to Maori with varying success.^{29 30 33} Although Australia's National Tobacco Campaign included some targeted TV and radio advertisements,⁵¹ Australia has only recently invested in a national culturally targeted mass media campaign.⁵³

Internet-based programs for Indigenous populations and drama appear to be promising interventions, but were only evident in the US. There were several US studies on print media, but no evidence so far that videos for pregnant Alaska Native women, or mailed out print media for American Indians are effective. Notable was a lack of peer-reviewed papers on interventions in Canadian First Nations and Inuit. Those Western countries that have Indigenous citizens can learn from each other's exemplars and trial different targeted approaches to attempt to drive down smoking prevalence.

In light of the importance of transportation and self-referencing for influencing intentions to quit smoking, the case for culturally targeted anti-tobacco media interventions is compelling although methodologically challenging.^{11 54} Effectiveness of interventions is not the sole consideration when implementing interventions in Indigenous populations, particularly in the early, formative stages. Promoting community ownership, self-determination and acceptability are important aims.⁵⁵ Emotional engagement and identification is also plausibly higher if the targeted community has been involved in formative

research, whichever the media used.^{56 57} These elements can be accomplished through community-based participatory research (CBPR),⁵⁸ however higher levels of evidence, afforded by randomised controlled trials, may be unobtainable in community based health promotion programs.⁵⁹

The importance of going beyond tests of cultural appropriateness, acceptability and feasibility to establish effectiveness is illustrated. Some culturally targeted media interventions: the art calendar for American Indians/Alaska Natives,²⁸ the video for pregnant Alaska Native women³⁸ and the New Zealand video mobile phone intervention,²⁹ were no more effective than the control intervention despite being collaboratively developed. The latter two studies were hampered with recruitment issues, with few Indigenous people being ready to quit. The degree to which interventions are culturally sensitive may potentially influence effectiveness. Superficial strategies (such as matching language and themes) may increase receptivity to the message, whereas deeper strategies (targeting sociocultural beliefs influencing health behaviour) convey salience.⁶⁰ An evidence-based method to ensure cultural suitability, readability and accuracy of tobacco control messages is fundamental. The protocol suggested by Daley *et al* could have a worthy application to resource development for print media.⁴³ Researchers in New Zealand are commended for their avoidance of cultural bias by a using a boosted sample of Maori participants,^{27 29 33} and conducting and reporting research within a Maori framework.^{27 33 39}

Mass media campaigns can be drivers for prompting quit attempts. While many smokers are able to quit unassisted,⁶¹ the success of individual quit attempts are significantly improved though use of behavioural support and medications.^{62 63} It is documented that mass media campaigns are more effective when supported by comprehensive programs, which may include improved access to treatment.¹¹ Little is yet known about the natural history of quitting for an Indigenous smoker. In the interim, steps need to be taken to ensure that Indigenous populations are not disadvantaged by inequities in access to media broadcasting,⁶⁴ IT technology⁶⁵ and effective treatments, should they wish or need to use them.⁶⁶

This review found an absence of a common taxonomy in Indigenous studies to describe media-based interventions. It also found precise outcome measures are not used routinely, for example for measuring perceived effectiveness, recall and quit rates. This reduces the ability to transfer findings and conduct meta-analyses.

Conclusions

There is a well established evidence base on the effectiveness of anti-tobacco mass media campaigns in the general population.^{10 11 14 67} Yet Indigenous people are one of several disadvantaged groups for whom there is a shortage of robust evidence for either generic or culturally targeted anti-tobacco messages.⁶⁸

Media based research in Indigenous people is diffuse and hindered by a diversity of study approaches and lack of agreed outcome measures. There is limited evidence supporting the need for culturally targeted messages. Preference for culturally targeted messages by Indigenous peoples is acknowledged. Where culturally targeted messages have been trialled campaigns have been shown to be effective in terms of change of knowledge, attitude and behaviour.

Developing messages that are of personal relevance to Indigenous smokers and testing this concept through a well constructed, culturally appropriate campaign, preferably would include longitudinal data to assess whether recall and intentions to quit translate into long-term abstinence. Comparisons

What this paper adds

- ▶ Indigenous populations have a high prevalence of tobacco smoking, which is not decreasing in line with that of the general population.
- ▶ Despite well established evidence for anti-tobacco mass media campaigns for the general population, there is limited evidence for the use of anti-tobacco messages for Indigenous people.
- ▶ This review brings together empirical evidence for culturally targeted and generic anti-tobacco messages for Indigenous populations in North America, New Zealand and Australia.
- ▶ Although Indigenous smokers recall generic anti-tobacco messages, this review also supports the need for culturally targeted messages. Targeted messages for Indigenous smokers are shown here to effectively change knowledge, attitudes and smoking behaviour, and persist as a preferred option.
- ▶ This paper highlights the need for a well constructed trial comparing generic versus targeted messages with similar content for Indigenous smokers.

between targeted and non-targeted campaigns furthermore need to test equivalent genres in order to lay down a proof of principle.

Contributors GSG is lead researcher for this review, conceived the study, designed and conducted the search, reviewed papers for inclusion, assessed study quality, formulated the tables and figures, interpreted data, formed and interpreted the synthesis and wrote the manuscript. AMcE advised on design of review, search strategy, structure of the paper, interpretation of data and critically reviewed all drafts. TW independently reviewed papers for inclusion and quality, crosschecked data tables and critically reviewed drafts. ARC advised on the structure of the paper, interpretation of data, and critically reviewed and edited drafts. RvdZ advised on the concept and design of the review, search strategy, structure of the paper and critically reviewed initial drafts. All authors read and approved the final manuscript.

Funding This work was supported by a National Health and Medical Research Council (Australia) and National Heart Foundation (Australia) cofunded postgraduate training scholarship for Indigenous Health Research, grant number APP1039759.

Competing interests None.

Provenance and peer review Not commissioned; externally peer reviewed.

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Review

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Should anti-tobacco media messages be culturally targeted for Indigenous populations? A systematic review and narrative synthesis

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Tob Control published online August 22, 2012
doi: 10.1136/tobaccocontrol-2012-050436

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2.3 *Supplementary files*

List of Informit Databases

Australian specific databases via Infomit:

- AMI: Australasian Medical Index
- APAFT: Australian Public Affairs Full Text
- APAIS ATSI: Australian Public Affairs Information Service – Aboriginal and Torres Strait Islander Subset
- APAIS: Australian Public Affairs Information Service
- APAIS-Health: Australian Public Affairs Information Service – Health
- ATSIHealth: Aboriginal and Torres Strait Islander Health Bibliography
- FAMILY-ATSI: Australian Family and Society Abstracts - Aboriginal and Torres Strait Islander Subset
- FAMILY: Australian Family and Society Abstracts
- Family & Society Plus
- Health & Society Database
- Indigenous Australia
- Indigenous Studies Bibliography: AIATSIS
- Informit e-Library: Health Collection

Table 2.1 Data extracted from included studies

Author Date [Ref]	Aim	Participants location & Recruitment	Participant Numbers and Demographics	Methods and Analysis	Summary of Key Findings relevant to review	Comments
TV and radio ads						
Wilson 2005 [30]	Compares two different ad campaigns ('Every Cigarette is doing you damage' (EC) and 'It's About Whanau' (IAW) in generating Quitline calls by NZ Maori.	NZ-wide: Monthly quit line call data 2002-3.	n=2319 TV placements.	Database analysis. <i>Data Collection</i> Number of calls to NZ Quit line within one hour of 1482 TVCs. <i>Analysis</i> Calls per 100 TARPs calculated.	EC campaign generated 1.3 times number of calls per 100 TARPs compared to IAW campaign (RR 1.26, 95% CI 1.08-1.46). 8.2% of all Maori smokers rang the Quitline over the 2 years.	Ads were different in intent: EC a mostly generic threat appeal, IAW is a culturally targeted holistic /positive benefits appeal.
Grigg 2008 [33]	To assess the effects amongst NZ Maori smokers and <i>whanau</i> (extended family) of 'It's About Whanau' Campaign (IAW) ad campaign.	NZ-wide: Maori current smokers and recent quitters and their <i>whanau</i> .	Pre (n=473) and post (n=655) Weighted to reflect age/sex distribution of Maori smokers from 1996. NZ Census & NZ health survey.	Quantitative. <i>Data Collection</i> Quitline data pre and post launch. Cross-sectional computer aided telephone survey: pre-and post-campaign with Maori interviewers. <i>Analysis</i> SAS Version 13.0 to identify significant changes across survey years.	Campaign increased calls to Quit line following launch. Unprompted recall of smoking related ads increased significantly. Total recall 78% for smokers and 73% <i>whanau</i> . Ads rated highly believable. >50% said ads influenced them to quit.	Description of genesis of IAW campaign included. Source culturally specific.
Fernandez	To examine Maori	Purposive	n= 5 Maori women	Qualitative.	IAW campaign preferred	Positive feedback to

Author Date [Ref]	Aim	Participants location & Recruitment	Participant Numbers and Demographics	Methods and Analysis	Summary of Key Findings relevant to review	Comments
2008 [39]	women's views on smoking cessation initiatives, including the IAW campaign.	sampling at a local Maori organization. Maori women, who were abstinent from smoking for six months or more.	aged 28 to 45 yrs.	<i>Data Collection.</i> 2-hr Maori-centred focus groups with discussion, interaction and prompts. Feelings and beliefs about smoking and smoking cessation, including attitudes to culturally specific media campaign. <i>Analysis.</i> Boyatzis thematic analysis of transcribed and coded data.	to graphic campaigns. IAW elicited an enthusiastic response to positive role modeling. Graphic anti-smoking ads evoke strong feelings of discomfort: perceived as having only short-term effects and raise cultural concerns re showing of graphic body parts, believed to be inappropriate or <i>tapu</i> , particularly for the elderly.	IAW campaign compared with generic graphic TV ads.
Ivers 2005 [35]	To assess the effect of anti-tobacco TV ads from National Tobacco Campaign (NTC) in comparison to other interventions for Aboriginal people.	Aboriginal people in three remote communities in Northern Territory, Australia: smokers, ex smokers and never-smokers.	n=643 pre-test; n=628 post-test; n=351 both Age 12 yrs. +; 91% Aboriginal; 9% non-aboriginal; 50% male: 15% < 18 years, 46% 18-34 years, 39% > 35 years.	Mixed Methods. <i>Data Collection.</i> Community surveys baseline and 1 year. Outcome measures: recall of TV ads; smoking behaviour and self-reported quit rates. <i>Analysis</i> Chi squared tests of impact of exposure to interventions and changes in smoking behaviour. Logical	85% recalled ads: smoking status did not influence recall. Self-reported quit rate 4%. Recalling ads had no influence on cessation rate (Fisher's exact test $p=0.42$). Exposure to any of the tobacco interventions (advice, medication, posters, ads, Quit line, education)	NTC included 2 ads that showed Aboriginal people. Content not described.

Author Date [Ref]	Aim	Participants location & Recruitment	Participant Numbers and Demographics	Methods and Analysis	Summary of Key Findings relevant to review	Comments
				regression: likelihood of smoking cessation. Thematic analysis qualitative data.	did not affect likelihood of cessation. Qualitative evidence of ads influencing quitting.	
Boyle 2010 [31]	To examine responses of Aboriginal and Torres Strait Islander smokers and recent quitters to TV and radio ads from 'Bubblewrap' as part of 'making smoking history' campaign.	Convenience sample 3 sites Perth, Kalgoorlie, and Broome, Western Australia.	n=198 Even age distribution in four groups, 18 to 29 years, 30 to 39 years, 40 to 49 years, and 50 years and over, 55% female, 45% male.	Quantitative. <i>Data Collection.</i> Cross-sectional personal intercept survey. Outcome Measures: recall; changes in smoking in response to ads; information sought after seeing ads; discussions generated by ads; relevance and believability. <i>Analysis</i> Chi squared tests analysed differences between study sites, sex and age groups and advertising mediums.	>83% recalled TV ads. 29.9% recall radio ad, 50% radio recall in non-Metro areas. Ads believable and relevant. 81.1% thought about cutting down/stopping. 59% talked to family about ads. 26.5% sought more information. 25.1% tried to quit in 2 months prior to study. 31.3% tried to cut down. 1.5% had successfully quit (self-reported).	'Bubblewrap' a generic advert. Included an Indigenous targeted radio ad narrated by 'Mary G' Unknown how smokers who stated they 'tried' succeeded in quitting.
Johnston 2010 [40]	To explore perceptions of promote Indigenous community members and	Northern Territory, Australia. Purposive and snowball, recruitment, assisted by	Community members n= 25; Health & welfare staff n= 19 Age range 23-67,	Qualitative. <i>Data Collection.</i> Semi structured interviews. Attitudes and beliefs on a range of issues: relevant to	Community results: Good recall of TV anti-smoking messages. Best recall for graphic imagery, and graphic messages on tobacco	Attitudes of health staff may be converse to other evidence. Authors point out recall does not necessarily

Author Date [Ref]	Aim	Participants location & Recruitment	Participant Numbers and Demographics	Methods and Analysis	Summary of Key Findings relevant to review	Comments
	health staff regarding acceptability and effectiveness of different tobacco control and health promotion interventions.	female elders.	12 male, 13 female: 2 never smoked, 15 current tobacco use, 6 ex-smokers, 2 recent quitters. Of 19 health staff, 5 Aboriginal including 2 AHWs; 14 non-Aboriginal.	this review are community-based interventions and social marketing campaigns. <i>Analysis.</i> Data coded descriptively and thematically analysed with Indigenous research assistants.	packets. Children used pack warnings as leverage to persuade family to quit. In contrast, health staff thought social marketing campaigns needed to be significantly modified to be acceptable.	translate into cessation.
Stewart 2011 [46]	To determine whether mainstream anti-tobacco media advertisements influence Indigenous smokers to quit, and assess the potential effectiveness of different types of messages.	Adelaide and S Australian rural centres. Convenience sample smokers. Recruitment non-Indigenous by consumer database and Indigenous by key community contacts.	n=299. 38 groups: 20 groups Indigenous; 18 groups non-Indigenous. n=143 Indigenous; n=156 non-Indigenous. Metropolitan sample: 80 Indigenous; 88 Non-Indigenous. M=145, F= 154. Aged 18-40.	Mixed Methods. <i>Data Collection.</i> Questionnaire post viewing 10 ads (one with Indigenous content). Outcome measures: message acceptance, personalized effectiveness, information, comfort, perceived effect, likely to discuss ad. Discussions recorded and transcribed. <i>Analysis.</i> Multivariate logistical regression analyses for six	'Bronchoscopy' rated highest by >80% Indigenous smokers for 5/6 outcome measures. Significant differences between Indigenous and non-Indigenous ratings: Indigenous rate reflective and positive ads higher. 'Bronchoscopy' and 'Bubblewrap' rated similarly overall: 'Bubblewrap' and 'Alive' ads perceived as neutral regarding gender and	Although ads rated similarly on some scales, it is unknown whether motivation translates into behavioural change. How the source of an ad (Indigenous vs. non-Indigenous) rather than type of content/format impacts on response is not elucidated.

Author Date [Ref]	Aim	Participants location & Recruitment	Participant Numbers and Demographics	Methods and Analysis	Summary of Key Findings relevant to review	Comments
				rating outcomes, Indigenous vs. non-Indigenous, and combined sample. Controlled for ad order. Thematic analysis of discussions.	ethnicity. Indigenous ad “Billy” made significantly more Indigenous than non-Indigenous smokers want to quit ($\chi^2 = 6.10$, $p = 0.014$) but gave mixed qualitative responses.	
Vogeltanz-Holm 2009 [32]	To examine rural youths response to 10 TV and radio tobacco counter marketing ads during a 13-week campaign.	Rural US northern plains state. Random digital phone telephone survey, one-month post-campaign of youth aged 12-17. Over sampling AI.	n=391 including 58 AI. 198 male, 209 female. Equal distribution ages, gender. A higher incidence of ever smoking in AI (39.7%) compared with White (23%).	Quantitative. <i>Data Collection.</i> Telephone survey with structured interview. Outcome measures: recall and confirmed recall; perceived effectiveness and emotional ratings. <i>Analysis.</i> GEE models examine effects of ads, gender, race/ethnicity on respondents confirmed recall (CR) and perceived effectiveness (PE) ratings.	54.7% CR at least 1 out of 5 TV ads; 45.8% CR at least 1 of 5/5 radio ads. Highest CR & PE of <i>Artery</i> ad - no ethnic differences with either; youth with higher intentions to smoke report significantly lower PE ratings. Radio ads more effective for girls.	CR and PE do not necessarily translate into behaviour change; those with increased intentions to smoke find ads less effective.
Print Media						
Daley	Both papers describe the	Kansas USA. Convenience	n= 41 in six focus	Qualitative.	Recommendations include: Native design	Second Wind program has

Author Date [Ref]	Aim	Participants location & Recruitment	Participant Numbers and Demographics	Methods and Analysis	Summary of Key Findings relevant to review	Comments
2006 [45] & Choi 2006 [44]	assessment of cultural suitability of the Second Wind smoking cessation curriculum and format for a pan-tribal population.	sample Indian health service clients >18yrs interested in quitting, willing to talk with non-Native investigators.	groups 23 different tribal affiliations, similar demographics to IHS clinic.	<i>Data Collection.</i> 90 minute semi-structured focus groups. Attitudes to the curriculum of Second Wind program and ways to modify it. <i>Analysis</i> Transcriptions coded by 3 independent researchers and thematic analysis. Domain analysis addressing semantic relationship of what makes smoking cessation program Native.	with colour images, oral history and visual understanding; improved family-based content; traditional tobacco use to be included even if not relevant to some tribes; support from Native counsellors preferred with use of talking circles; preserve theme of individual tribes but include Native worldview.	tokenistic Native images. These can be improved in important aspects to do with family, nature spirituality and respect for Elders. Choi's paper also described how the resources were presented to the focus groups.
Daley 2009 [43]	1) To determine if course materials, where appropriate for AI/AN population on three domains: scientific accuracy; readability; cultural appropriateness, prior to implementation and further distribution.	Kansas US. Stage 1: Purposive sample of experts Stage 2: Independent scorers of readability Stage 3: Cultural review panel	Stage 1: n=3 experts, Stage 2: n=2 independent scorers, Stage 3: n=13 community members.	Mixed Methods. <i>Data Collection.</i> Stage 1: Scientific Panel - content analysis. Stage 2: Independent scoring of suitability assessment of materials (SAM), simplified measurement of gobbledygook (SMOG) and Fry readability formula. Stage 3: Focus group discussions on culturally appropriate	1. Minor modifications re scientific content of resources 2. SAM 80%; Fry averaging reading level 7.1; SMOG readability 8.4 3. No culturally insensitive material. Suggestions for improvement: graphics/photos to	Protocol to ensure suitability on all three levels: scientific accuracy; readability levels; cultural appropriateness.

Author Date [Ref]	Aim	Participants location & Recruitment	Participant Numbers and Demographics	Methods and Analysis	Summary of Key Findings relevant to review	Comments
	2) To develop a process to formally test health education materials for other targeted programs.			materials and improvements. <i>Analysis.</i> Stages 1 & 3: descriptive. Stage 2: Chi square test checked congruence between scorers.	include more Native nations; add book of traditional tobacco use; additional Native words; video/audio of elders on traditional tobacco significance.	
Doorenbos 2011 [28]	Design and implementation of a randomised, controlled calendar mail-out to increase cancer-screening services in an urban population of American Indians and Alaska Natives.	US Pacific Northwest. All patients >18yrs on the database of the Seattle Indian Health Board (SIHB), who accessed treatment over prior 2 yrs.	n= 5605 AI/AN: (n=2805 Native calendar with cancer-screening messages; n=2800 control calendar with no messages). 55/56% Female; 44/45% Male. 29/30% current smokers.	RCT. Intervention: calendar + messages; control: no messages. <i>Data Collection.</i> Abstract of patient charts for demographic information and pertinent clinical screening procedures. Lung screening outcomes: prescription, advice or referrals for smoking cessation. <i>Analysis.</i> Chi squared tests evaluated significance in differences in screening outcomes between groups comparing age groups, sex, race (AI/AN vs. other) depending on which calendar received.	Relevant to this review were lung cancer screening outcomes, based on smoking cessation interventions or advice offered to patients on review of patient charts three months after the calendar was current. There was a non-significant difference for any smoking outcome (prescription, advice, referral) between active and control. (6.3% and 7% patients respectively on intention-to-treat basis. $p=0.33$).	The Native art calendar was collaboratively designed with SIHB staff to include Native artwork and relevant health messages. The results suggested that printed materials with health messages are too weak an intervention to produce desired smoking cessation (and other) health screening outcomes.

Author Date [Ref]	Aim	Participants location & Recruitment	Participant Numbers and Demographics	Methods and Analysis	Summary of Key Findings relevant to review	Comments
Wilson 2010 [34]	Examination of how recognition of a national landline number changed after new pack health warnings (PHW) introduced in New Zealand.	New Zealand, recruitment via NZ health survey. Respondent ethnicity prioritized.	n= 1376 in first wave, n= 923 in second wave. Maori n=369, PI n=49, European n= 465, Asian n=40.	Quantitative. <i>Data Collection.</i> Prospective cohort design before and after in two waves; computer assisted telephone survey. Recognition Quitline number on PHW on old and new cigarette packs. <i>Analysis.</i> Paired matched odds ratio weighted for boosted sample of three ethnic groups, bivariate analysis socio-economic status.	24.1% absolute increase recognition Quitline number in sample interviewed in wave 1 &2 (OR 3.31, 95%CI = 2.63-4.21. $p < .001$). Reduction in inaccurate interpretations. Absolute increases in recognition similar for Maori as general population (25.1% and 24.1% respectively).	Concurrent TV ads going on before wave 2, similar to some of the PHW's may be a confounding factor.
Internet						
Swartz 2006 [26]	To test efficacy of automatic behavioural intervention to smoking cessation by video-based Internet website and personalised presentations.	Sample of the general US population, including ethnic subgroups. Recruitment of current daily smokers 18+, considering quitting, at	n=351 (171 treatment, 180 control) 52% female, 48% male. 83.5% white, 6.7% African-American, 4.3% Hispanic, 2% Native	RCT with wait-list control. <i>Data Collection.</i> Internet surveys on enrolment, immediately after and 90 days post intervention. Outcome measures: quit rates (7-day point prevalence); patterns of	Intervention cessation rate treatment group 12.3%, control cessation rate 5% at 90 days ($p=0.015$, OR 2.66, 95% CI 1.18-5.99) intention-to-treat. No sign of interactions between race/ethnicity and other dependent variables, so,	No significant difference in outcome between different ethnic races, including American Indian. AI represented only a small percentage of total groups. Extensive use of

Author Date [Ref]	Aim	Participants location & Recruitment	Participant Numbers and Demographics	Methods and Analysis	Summary of Key Findings relevant to review	Comments
		worksites via posters and e-mails.	American Indian, 3.5% other. 7%, 18-25 years; 38% 26-39 years; 48% 40-55 years; 6%. >55 years.	program use. <i>Analysis.</i> Logistical regression of quit status across predictor variables. Differential treatment effects of predictor variables. Chi squared when predictor variables not significant.	chi squared test used.	video clips with choice of video role models. 12 different content versions allocated depending on ethnicity stated.
Taualii 2010 [41]	To collect data on AI/AN ideas about how to use and modify an existing smoking cessation website.	AI/AN urban youth aged 12 to 18, recruited via flyers and powwows. Phase 1, focus groups on current website. Phase 2: usability testing new website.	Phase 1 n=12; phase 2 n=13. Phase 1 equal gender distribution; five, aged 13 -14, two aged 15-16, 5 aged 17-18. Six past smokers. 13 different tribes Phase 2, 13 youth 12-18 yrs.	Qualitative. <i>Data Collection.</i> Phase 1: Focus group review to make current website more culturally appropriate. Phase 2: Usability testing via website: functionality, cultural relevance, content, ease of navigation, and suggestions for improvement. <i>Analysis.</i> Phase 1: Focus groups thematic analysis. Phase 2: Analysis of quality of participants' experience.	Phase 1: look and feel of website needed to be more Native, including Native graphics and music. Phase 2 responses: website <i>cool and creative</i> , seeing decisions visually displayed, having and comparing choices, site would help both smokers and non-smokers, makes you want to quit smoking.	Example of a collaborative action research design for the development of culturally appropriate messages. Illustrated with before and after images of website windows.

Author Date [Ref]	Aim	Participants location & Recruitment	Participant Numbers and Demographics	Methods and Analysis	Summary of Key Findings relevant to review	Comments
Mobile phone Bramley 2005 [27]	To determine whether a smoking cessation service using mobile phone text messaging is as effective for Maori as non-Maori.	New Zealand English-speaking youths 16+, current smokers, interested in quitting, able to text on mobile phone. Maori targeted by radio mailing lists, magazine ads, Maori providers and networks.	Maori n=355, non-Maori n=1350 Median age Maori, 25 years active group/24 years control; median age, non-Maori, 22 years active group/21 years control.	Single blind RCT. Intervention: mobile text messages; control: follow-up reminder. <i>Data Collection.</i> Questionnaire by text or call, baseline and follow-up. Self-reported quit rates at 6, 12 and 26 weeks. Random sample verified abstinent by salivary cotinine. <i>Analysis</i> Chi square analysis of percentage quit by treatment group. Comparison of Maori to non-Maori. Analysis of covariance number of cigarettes smoked and Fagerstrom test. Reported intention to quit and last smoking status carried forward.	Intervention is as effective for Maori as non-Maori. 26.1% Maori quit in the treatment group versus 11.2% Maori control group at 6 weeks (RR: 2.34, 95%CI: 1.44-3.79). No significant difference between RR for Maori and non-Maori (RR: 2.16, 95%CI: 1.72-2.71). Salivary cotinine showed no difference between over-reporting between Maori and non-Maori - 18% congruent with non-smoking. Relative risk not substantially altered in sensitivity analysis for missing data and salivary cotinine.	Study uses a Kaupapa Maori framework of reporting. Texts were adapted for Maori use with Maori language, Maori health concepts and information on Maori traditions. Discussion points out that this is a good outcome considering a higher prevalence in Maori youth compared to non-Maori youth.

Author Date [Ref]	Aim	Participants location & Recruitment	Participant Numbers and Demographics	Methods and Analysis	Summary of Key Findings relevant to review	Comments
Whittaker 2008 [42]	To develop a pilot youth-orientated multimedia smoking cessation intervention by mobile phone.	Multicultural College NZ. Phase 1 consultation: random selection 16-18yr smokers + non-smokers; phase 2 development: recruited via website; phase 3 pilot study: recruited via radio.	Phase 1, online survey n=180, focus groups n=27. Phase 2, n=41. Phase 3 n=17. Pilot study: 35% Maori, 24% Pacific Islander 18% European.	Mixed Methods: <i>Data Collection.</i> Phase 1: online survey plus 4 focus groups. Phase 2: online survey. Phase 3: Pilot study telephone survey. Outcomes: attitudes to content and format of website, cigarette consumption and self-reported quit rates at four weeks. <i>Analysis.</i> Descriptive statistics.	Phase 3: Nine out of 17 in the pilot study self-reported quit, 50% of the remainder cut down.	Quit rate was not stratified by ethnicity. Unknown how the self-reported quit status was identified. Extensive use of video clips via mobile phone with suitable and believable role models.
Whittaker 2011 [29]	To assess the effectiveness of an interactive multimedia mobile phone intervention for smoking cessation.	NZ wide: recruitment targeted at 16-25 yrs. particularly young Maori. Age >16yrs. daily smokers with video mobile phone who want to quit.	n= 226 (n=110 treatment; n=116 control). 55% NZ European, 24% Maori, 12% PI, 16% other in intervention group. 47% total female. Mean age 27 (SD 8.7).	Single blind RCT. Intervention: choice of role model videos and text; control: 2-wkly general health video message. <i>Data Collection.</i> 7-day point prevalence at 3 time points; continuous abstinence (Russell Standard) plus salivary cotinine at 6 months plus satisfaction survey.	No significant difference in continuous abstinence (intention-to-treat) at 6 months (between intervention (26.4%) and control (27.6%), ($p = 0.8$)). Participants in intervention group reported positive attitudes to support and video role models.	Quit rate was not stratified by ethnicity. Attempt was made to validate quitters with salivary cotinine. Difficulties with recruitment so RCT underpowered.

Author Date [Ref]	Aim	Participants location & Recruitment	Participant Numbers and Demographics	Methods and Analysis	Summary of Key Findings relevant to review	Comments
				<p><i>Analysis.</i></p> <p>SAS version 9.1.3: Chi squared 2-tail tests of intention to treat quit rates by treatment group.</p>		
Other Media						
Johnston 1998 [37]	<p>To describe current practices, knowledge, attitudes to smoking in school children.</p> <p>To develop educational intervention about tobacco use in school children.</p>	<p>Primary and secondary school children</p> <p>In Northern Territory, Australia: three remote communities.</p>	<p>n= 221, only 38 students completed both pre-and post-surveys and attended the intervention</p> <p>Age range was from less than eight to over 16 yrs.</p>	<p>Mixed methods.</p> <p><i>Data Collection.</i></p> <p>Pre-and post-intervention surveys modified from Anti-cancer Council Victoria surveys of secondary school students. Self-reported smoking behaviour pre-and post-intervention, attitudes and behavioural observation to CD-ROM.</p> <p><i>Analysis.</i></p> <p>Descriptive statistics.</p>	<p>Increased knowledge post-intervention but no change in smoking behaviour. CD-ROM popular: One community downloaded stories from CD-ROM and turned it into reading book. CD-ROM used as a reward by teachers. Younger children berated older ones & adults about smoking.</p>	<p>Intervention had multi-components. However, outcomes of the CD-ROM were reported. Due to school absences, there were problems following up some children post intervention.</p>
Mitschke 2010 [36]	<p>Describes development and implementation of tobacco prevention</p>	<p>Hawaii, US</p> <p>Oahu Island.</p> <p>Fifth to eighth grade audiences at multi-ethnic</p>	<p>n=2660</p> <p>Mean age 12 years: 51.4% male; 48.6% female. 6.9%</p>	<p>Mixed Methods.</p> <p><i>Data Collection.</i> Pre-and post-surveys. Questionnaire adapted from existing surveys. Attitudes and beliefs</p>	<p>Drama effective in increasing knowledge of tobacco. Significant difference on 3 items: increased understanding</p>	<p>The travelling drama was made with input from the students through focus groups.</p>

Author Date [Ref]	Aim	Participants location & Recruitment	Participant Numbers and Demographics	Methods and Analysis	Summary of Key Findings relevant to review	Comments
	edutainment drama, Asian and Pacific Island youth. Evaluating impact of the drama on knowledge, attitudes, intended behaviour and change in future intention to smoke.	participating schools.	Pacific Island; 13.8% Native Hawaiian; plus wide variety of other ethnic groups.	assessed according to theory of planned behaviour; intention to smoke; relationship to characters and emotions. <i>Analysis.</i> Chi squared tests, pre-test vs. post on knowledge items. Marginal homogeneity test measures pre vs. post intentions to smoke in future.	of concept and symptoms of addiction, defining second-hand smoke ($\chi^2 = 5.290$, $p=0.021$). Significant decrease in future intention to smoke. Viewers experience range of emotions indicating engagement (mean 3.39 emotions). 71% relate to non- smoking characters.	Incorporates multimedia, video, PowerPoint slides, and anti-smoking TV ads.
Patten 2010 [38]	Assess feasibility and acceptability of a targeted Tobacco Cessation intervention for Alaska Native pregnant women, which included use of a video and educational materials.	Yukon- Kuskokwim Delta W Alaska. Pregnant women >18yrs, <24weeks gestation, tobacco users, want to quit in next 30 days.	Phase 1: n=12 pregnant women in 2 focus groups. n=7 in-depth interviews 5 F + 2M; n= 3 pregnant women pre-test study procedure Phase 2: n=35: 17 pregnant Yupik females intervention; 18 pregnant Yupik females control.	Randomised 2-group design pilot. Intervention: video, cessation guide & phone counselling; control group: brief intervention & targeted brochures. <i>Data Collection.</i> Pre- and post- interviews, self-reported smoking status and salivary cotinine. Feasibility /acceptability measures: recruitment, compliance and satisfaction.	Majority found video and written materials helpful - no significant difference between active and control. Self- reported abstinence rates 6% both groups. Validated abstinence 6% control and 0% for intervention.	Video included stories of local role models to reinforce self-efficacy. Feasibility and acceptability considered poor by authors due inadequate recruitment and interest.

Author Date [Ref]	Aim	Participants location & Recruitment	Participant Numbers and Demographics	Methods and Analysis	Summary of Key Findings relevant to review	Comments
			Mean age 25. 35/33% smoke, 47/44% use Iqmik; 18/22% chew tobacco.	<i>Analysis.</i> Group comparisons: exact test for categorical variables; two-sample rank sum test for continuous variables.		

2.4 Summary

- Indigenous populations have a high prevalence of tobacco smoking, which is not decreasing in line with that of the general population. Despite well-established evidence for anti-tobacco mass media campaigns for the general population, there is limited evidence for the use of anti-tobacco messages for Indigenous people.
- My aim was to summarise published empirical research on culturally targeted anti-tobacco media messages for Indigenous or First Nations people and examine the evidence for the effectiveness of targeted and non-targeted campaigns. This review brings together empirical evidence for both culturally targeted and generic anti-tobacco messages for Indigenous populations in North America, New Zealand and Australia.
- Studies were sought describing mass media and new media interventions for tobacco control or smoking cessation in Indigenous or First Nations populations. Studies of any design were included reporting outcomes of media-based interventions including: cognitions, awareness, recall, intention to quit and quit rates. Then, two reviewers independently applied inclusion criteria, which were met by 21 (5.8%) of the studies found. I extracted data, which was crosschecked by a second author. Both independently assessed papers using SIGN (quantitative studies) and Daly et al (qualitative studies). A total of 21 studies were found (four level 1 RCTs, eleven level 2 studies and six qualitative studies) and combined with narrative synthesis. Eight evaluated anti-tobacco TV or radio campaigns; two assessed US websites; three New Zealand studies examined mobile phone interventions; five evaluated print media; three evaluated a CD-ROM, a video, and an edutainment intervention.

- Although Indigenous people had good recall of generic anti-tobacco messages, culturally targeted messages were preferred. New Zealand Maori people may be less responsive to holistic targeted campaigns, despite their additional benefits, compared to generic fear campaigns. Culturally targeted Internet or mobile phone messages appear to be as effective in American Indians and Maori people as generic messages in the general population. The paper highlights the need for a well-constructed trial comparing generic versus targeted messages with similar message content in Indigenous people.

2.5 Final Word

This paper demonstrated the lack of consistent approaches to the development and application of mass media and new media anti-tobacco messages and interventions for Indigenous peoples. There were few recent papers from Australia, so a study was planned to capture how anti-tobacco messages are being developed in the programs aimed at Indigenous Australian smokers (Study 4, Chapter 5).

To understand more about the subgroup of interest (pregnant Indigenous Australians) I also wished to summarise the literature on knowledge, attitudes and beliefs of Australian Indigenous people on smoking in pregnancy. This is presented in the next Chapter (3).

Chapter 3. Knowledge and views about maternal tobacco smoking and barriers for cessation in Aboriginal and Torres Strait Islanders: a systematic review and meta-ethnography

3.1 Overview

This chapter examines the published literature from Australia on knowledge, attitudes and beliefs about maternal Indigenous smoking, in order to:

- a) Situate pregnant smokers in context with their environment
- b) Discover commonalities across studies
- c) Determine gaps in knowledge about Indigenous maternal smoking in Australia

At the time there were no published results for smoking cessation interventions for pregnant Indigenous smokers in Australia, and no similar review of experiences and attitudes of Australian Indigenous pregnant women. I conducted this study as an initial phase to inform the development of a targeted maternal smoking cessation program under the ITCI 'No Smokes North Coast' program. The relation of the chapter to the conceptual diagram is depicted in Figure 3.1.

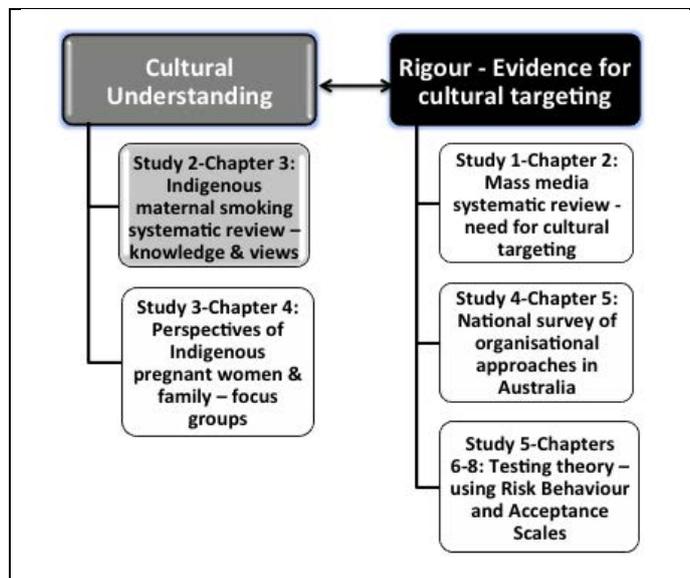


Figure 3.1 Study 2, Chapter 3 in relation to the conceptual model of the thesis for making salient messages for Indigenous tobacco control

This chapter is inserted as the published PDF of the following paper:

Gould GS, Munn J, Watters T, McEwen A, Clough AR. *Knowledge and views about maternal tobacco smoking and barriers for cessation in Aboriginal and Torres Strait Islanders: A systematic review and meta-ethnography*. *Nicotine Tob Res.* 2013;15(5):863-74. doi: 10.1093/ntr/nts211

While respecting cultural diversity, this published review strengthens the evidence from individual studies and enables more robust recommendations to be made for future interventions. Furthermore, this review contributed to changing practice for smoking cessation interventions for Indigenous maternal smokers. For example the review informed the development of health professional training manuals for smoking cessation for Indigenous pregnant smokers by the Cancer Council South Australia. The line of argument in the meta-ethnography and the recommendations I made in this

paper are being used in the training materials and as the basis of group discussions on how interventions can be translated into practice.

3.2 Publication in Nicotine and Tobacco Research

REVIEW

Knowledge and Views About Maternal Tobacco Smoking and Barriers for Cessation in Aboriginal and Torres Strait Islanders: A Systematic Review and Meta-ethnography

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Received February 11, 2012; accepted August 13, 2012

ABSTRACT

Introduction: Maternal smoking rates in Australian Aboriginal women are triple that of the general population, with little evidence for successful interventions. We reviewed the literature to understand smoking and cessation in Aboriginal and Torres Strait Islander women and provide recommendations for targeted interventions.

Methods: Six databases were searched using terms related to smoking, pregnancy, and Aboriginal Australians. Two reviewers independently assessed papers for inclusion and quality. Meta-ethnography synthesized first- and second-order constructs from included studies and constructed a line of argument.

Results: Seven relevant studies were analyzed. The synthesis illustrates 11 third-order constructs operating on the levels of self, family, and social networks, the wider Aboriginal community, and broader external influences. Highlighted are social norms and stressors within the Aboriginal community perpetuating tobacco use; insufficient knowledge of smoking harms; inadequate saliency of antismoking messages; and lack of awareness and use of pharmacotherapy. Indigenous Health Workers have a challenging role, not yet fulfilling its potential. Pregnancy is an opportunity to encourage positive change where a sense of a “protector role” is expressed.

Conclusions: This review gives strength to evidence from individual studies across diverse Indigenous cultures. Pregnant Aboriginal and Torres Strait Islander smokers require comprehensive approaches, which consider the environmental context, increase knowledge of smoking harms and cessation methods, and provide culturally targeted support. Long term, broad strategies should de-normalize smoking in Aboriginal and Torres Strait Islander communities. Further research needs to examine causes of resistance to antitobacco messages, clarify contributing roles of stress and depression, and attitudes to pharmacotherapy.

INTRODUCTION

Australia is a world leader in tobacco control, with smoking prevalence of 16.6% (OECD, 2011). In contrast, Australia’s Indigenous people, like other Indigenous populations worldwide, maintain a high use of tobacco, with current smoking prevalence of 47% (AIHW, 2008). Tobacco use has a long historical precedent in Australian Indigenous populations (Winstanley, 2008) pre-dating European contact. Bush tobaccos or Pituri were chewed and later the Macassans traded smoking tobacco and pipes. Postcolonization, tobacco was used as rations and pay for Aboriginal and Torres Strait Islanders and use became more widespread. Even today, cigarettes are used for bartering and shared between community members. Tobacco use is now well woven into the fabric of Aboriginal

and Torres Strait Islander life. This is of concern as tobacco is known to contribute significantly to the burden of disease in Aboriginal and Torres Strait Islanders (Vos, Barker, Begg, Stanley, & Lopez, 2009), and relevant to this review, to adverse outcomes in pregnancy.

Smoking prevalence during pregnancy is disproportionately high (52%) for Aboriginal and Torres Strait Islander women, compared with their non-Indigenous counterparts (15%) (Laws, Grayson, & Sullivan, 2006). Only 3% of Indigenous smokers become abstinent in the first half of pregnancy compared with 7% of pregnant Australians in general (Wills & Coory, 2008). Smoking during pregnancy is a risk factor for poor maternal and infant health outcomes including miscarriage, still birth, low birth weight (Triche & Hossain, 2007), and sudden infant death syndrome (SIDS) (Anderson, Johnson, & Batal, 2005). Aboriginal

doi:10.1093/ntr/nts211

Advance Access publication October 4, 2012

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Knowledge and views about indigenous maternal tobacco smoking

and Torres Strait Islander babies are twice as likely to be preterm or low birth weight (Laws et al., 2006; Trewin & Madden, 2003) and eight times more likely to die of SIDS (Freemantle et al., 2006). Children whose mothers smoked are more likely to have cognitive, emotional, and behavioral problems, which can persist into adulthood (Rogers, 2009). If, however, during the first 4 months of pregnancy, the mother can quit, the risk of a low birth weight baby decreases to almost that of a nonsmoker (Heath et al., 2006) and problematic behavior such as hyperactivity are lower than continuing smokers (Robinson et al., 2010).

Given the significant impact of smoking on maternal and infant health, and the contribution of smoking to the burden of disease in Aboriginal and Torres Strait Islanders (Vos et al., 2009), effective strategies for cessation for pregnant Aboriginal and Torres Strait Islander women are essential. Unfortunately, there is limited evidence for successful interventions in this population. Current recommendations suggest adoption of innovative, culturally appropriate strategies aimed at pregnant Indigenous women (Lewis, Hickey, Doherty, & Skinner, 2009).

To develop targeted interventions for pregnancy, it is important to have a comprehensive understanding of knowledge and views about smoking from an Aboriginal and Torres Strait Islander perspective and their barriers to cessation. Lumley et al. (2009) have recommended gaining greater insight into the experiences and vulnerabilities of women who continue to smoke in pregnancy. Research ethics guidelines for Indigenous Australians recommend basing community programs on local knowledge and views (NHMRC, 2006). Several studies have been conducted on maternal smokers from different areas of Australia, but it is unknown how transferable the results are to other tribal and language groups. To date, there has been no systematic review to bring together published views on the topic in this population group.

Our objective was to systematically review and synthesize the available literature on maternal Aboriginal and Torres Strait Islander smoking in Australia to identify key knowledge, attitudes, beliefs, and barriers around maternal smoking and cessation. Meta-ethnography, a recommended method for qualitative systematic review (Higgins & Green, 2011), was used to synthesize data from included studies and construct a line of argument (LOA) (Noblit & Hare, 1988). The aim was to enrich the understanding of maternal smoking in Aboriginal and Torres Strait Islander women and explore commonalities across studies, in order to provide recommendations for targeted interventions. Meta-ethnography was chosen as it is essentially a translational process and a rigorous system for developing interpretations from a set of qualitative studies (Noblit & Hare, 1988) in order to bring coherence and clarity. It allows for a rich description of phenomena in primary studies to shape a synthesizing argument (Hannes & Lockwood, 2011). From this analysis, we provide recommendations for policy and practice concerning maternal tobacco cessation interventions for Aboriginal and Torres Strait Islander families.

METHODS

Search Strategy

The following databases were searched through to March 2011: MEDLINE, CINAHL, Embase, psych INFO, Science Direct,

and Australian-specific databases via Informit (see Appendix in the [Supplementary Material](#) online). Searches used a combination of truncated keywords and/or subject headings relevant for each database related to (tobacco or nicotine or smoking) combined with (pregnancy or maternal or mother) and combined with (Aboriginal or Torres Strait Islander or Indigenous). Inspection of publication lists on the Centre for Excellence in Indigenous Tobacco Control and Australian Indigenous Health Infonet Web sites, reference lists of included papers, and key reviews known to authors supplemented the search.

Selection Criteria

Studies were selected irrespective of methodology, providing they were available as full manuscripts of original research, which included the target group of Aboriginal and/or Torres Strait Islander women, to explore and report on attitudes, beliefs, knowledge, or experiences related to maternal smoking and/or barriers to cessation.

Two reviewers (GG and JM) independently screened titles and abstracts and discarded those not meeting inclusion criteria. Full papers of likely studies were then considered independently to determine eligibility. [Figure 1](#) portrays the process of study selection. Where consensus for inclusion could not be reached at any stage (as occurred for two full papers under consideration), a third reviewer (TW) adjudicated.

In the absence of uniform guidelines for reporting methodological rigor of qualitative studies, two checklists were used: the first by Hawker, Payne, Kerr, Hardey, and Powell (2002) as a method of systematically reviewing research quality from different paradigms (qualitative, quantitative, or mixed methods), and second, a hierarchy of evidence-for-practice proposed by Daly et al. (2007). The Hawker appraisal tools enable the calculation of a numerical score for overall methodological rigor across a range of criteria individually graded: these are itemized in [Table 1](#) (Hawker et al., 2002). Ranking takes into account the transparency and methodological rigor of the study's aims, methods, sampling, data analysis, and reporting. Daly's hierarchy proposes to evaluate studies as level I: generalizable, level II: conceptual, level III: descriptive, or level IV: single case studies (Daly et al., 2007).

Two reviewers independently rated studies for methodological quality (JM and TW) (Hawker et al., 2002) and hierarchy of evidence-for-practice (JM and GG) (Daly et al., 2007). Disagreements were resolved by adjudication of a third reviewer, required for one study.

Data Extraction and Synthesis of Findings

Meta-ethnography was used to synthesize the findings from the included studies (Noblit & Hare, 1988). Meta-ethnography often uses Schutz's (1971) notion of first-, second-, and third-order constructs: these were utilized in the analysis. First-order constructs are raw data, for example, participants' attitudes, often represented as quotes; second-order constructs are researchers' interpretations of this data; third-order constructs are higher order concepts connecting those constructs that have resonance with each other (Barnett-Page & Thomas, 2009).

Data were extracted for aims, participant recruitment and demographics, geographic study region and setting, research

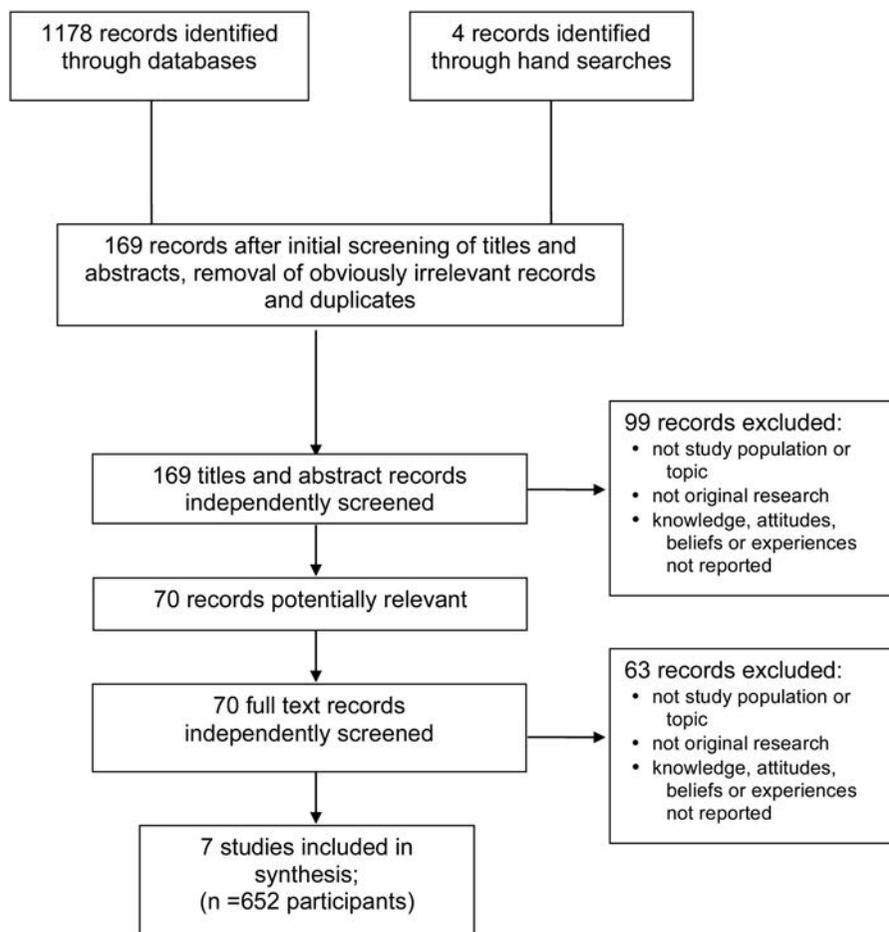


Figure 1. Process of identification of studies for inclusion in the review.

methods, and key findings. Table 2 summarizes the characteristics of included papers. For qualitative data, first- and second-order constructs were extracted and grouped (Hannes & Lockwood, 2011) according to the following headings: experiences of smoking, experiences of environmental tobacco smoke (ETS), knowledge of health effects of smoking and ETS, beliefs about and attitudes to the health effects of smoking and ETS, knowledge about cessation, beliefs and attitudes about cessation, strategies for cessation, and influences on and barriers to cessation. Quantitative data were extracted and included under the relevant subject headings with the second-order constructs.

In determining how studies related, themes were proposed that emerged from the first- and second-order constructs. These were further explored, grouped, refined, and condensed to form emergent thematic third-order constructs. The third-order constructs were checked to ensure they captured all perspectives from included studies.

A LOA (Noblit & Hare, 1988) or synthesizing argument was formed using visual displays (Denzin & Lincoln, 2011) relating the third-order constructs to each other forming an overarching concept (Barnett-Page & Thomas, 2009) revealing a whole amongst parts (Noblit & Hare, 1988). The results were thus linked to the aims of this current review. A composite depiction was selected as a way to enliven the description of the LOA, borrowing a tool from phenomenological research (Moustakas, 1990). Throughout the above processes, authors maintained a reflexive stance by frequently discussing their

assumptions and values and maintaining awareness of their non-Indigenous backgrounds.

RESULTS

Seven out of 1,182 studies met all inclusion criteria (Figure 1). Participants in included papers totaled 652 (640 female): 483 identified as Aboriginal and/or Torres Strait Islander. Study sites were New South Wales, Queensland, Western Australia, and Northern Territory, including rural, remote, and urban settings. The aims of included papers were to assess factors related to maternal smoking in Aboriginal and/or Torres Strait Islanders (Gilligan, Sanson-Fisher, D'Este, Eades, & Wenitong, 2009; Heath et al., 2006; Passey et al., 2009; Wood, France, Hunt, Eades, & Slack-Smith, 2008); to investigate general factors associated with Aboriginal and/or Torres Strait Islander smoking (Johnston & Thomas, 2008); to examine antenatal care for Aboriginal and/or Torres Strait Islanders (Wilson, 2009); and to assess maternal SIDS awareness (Douglas, Buettner, & Whitehall, 2001) (Table 1). Although the three latter papers' focus was not maternal smoking, all met inclusion criteria. The majority of studies provided qualitative data from focus groups or interviews (Douglas et al., 2001; Passey et al., 2009; Wilson, 2009; Wood et al., 2008). Three studies provided quantitative data from questionnaires (Douglas et al., 2001; Gilligan et al., 2009; Heath et al., 2006).

Table 1. Methodological Quality Assessment Rating and Hierarchy of Evidence-for-Practice for Included Studies

Study	Wood et al., 2008	Gilligan et al., 2009	Heath et al., 2006	Johnston & Thomas, 2008	Wilson, 2009	Douglas et al., 2001	Passey et al., 2009
Methodological quality rating (Hawker et al., 2002)							
1. Abstract and title	G	G	P	G	G	G	VP
2. Introduction and aims	F	F	F	G	G	G	F
3. Method and data	F	G	F	F	F	F	F
4. Sampling	F	G	F	F	P	P	P
5. Data analysis	G	G	F	G	P	F	G
6. Ethics and bias	G	G	G	F	G	P	VP
7. Finding and results	G	G	G	G	F	G	F
8. Transferability/ generalizability	F	G	P	F	P	P	P
9. Implications and usefulness	G	G	F	G	G	F	P
Total score	320	350	270	320	280	270	210
Hierarchy of evidence level (Daly et al., 2007)	III	III	III	II	III	III	III

Note. G = good (40 points); F = fair (30 points); P = poor (20 points); VP = very poor (10 points); I = generalizable study; II = conceptual study; III = descriptive study; IV = single case study.

The assessment of methodological quality revealed varied scores. Table 1 details the individual ratings across the criteria for both scales. The three highest rating papers (Gilligan et al., 2009; Johnston & Thomas, 2008; Wood et al., 2008) scored good or fair on all criteria (Hawker et al., 2002). Methodological quality rating using the Hawker scale considered research reflexivity and awareness of bias under item 6 of the scale “ethics and bias.” Four papers rated “good” on item 6 criteria (Table 1). Cultural appropriateness is an important consideration in Indigenous studies. Although there was no separate assessment criterion for “cultural appropriateness,” item 6 of the scale rated ethical considerations and ethics approval. It was thereby anticipated that those Indigenous studies, which underwent formal ethics review, had appropriate methodologies. Based on the hierarchy of evidence-for-practice ratings (Daly et al., 2007), most studies were “descriptive” with the exception of one (Johnston & Thomas, 2008) rated as a “conceptual” study. The top ranking papers in Daly’s hierarchy have a greater potential for transferability.

Synthesis and Description of Constructs

A total of 11 third-order constructs were identified from the analysis. The titles given to the constructs reflect the predominant synthesis and where negative cases or outliers occur, these are identified under the same construct. Where several papers are cited for an individual descriptor, this may give strength to the weight of the evidence. Table 3 shows the spread of these constructs across the included papers.

Third-Order Constructs

Smoking Is a Way of Life

Smoking is seen as a way of life: reported by the majority of studies (Gilligan et al., 2009; Passey et al., 2009; Wilson, 2009;

Wood et al., 2008). It is acceptable and common (Gilligan et al., 2009; Passey et al., 2009; Wilson, 2009; Wood et al., 2008), accompanies many other social activities, such as yarning, alcohol consumption (Wilson, 2009), and companionability (Wood et al., 2008). Limited opportunities in the community (e.g., employment) lead to reliance on smoking to relieve boredom (Gilligan et al., 2009; Passey et al., 2009; Wilson, 2009; Wood et al., 2008). Smoking cessation is a low priority due to multiple, competing community problems. Stressors, associated with family problems and bereavement, are common and linked to smoking (Gilligan et al., 2009; Passey et al., 2009; Wilson, 2009; Wood et al., 2008), as is concomitant domestic violence (Wood et al., 2008). Cannabis and other substance abuse are reported along with smoking (Wood et al., 2008).

Smoking Helps Getting Through the Day

Aboriginal maternal smokers express, in the majority of studies, that smoking helps them deal with everyday life (Gilligan et al., 2009; Heath et al., 2006; Passey et al., 2009; Wilson, 2009; Wood et al., 2008). This construct depicts similar issues to smoking is a way of life but at an individual level. Smoking is used as a way of coping with stress (Heath et al., 2006; Passey et al., 2009; Wilson, 2009; Wood et al., 2008), helping relaxation, enabling time out and used as a reward (Wood et al., 2008). Triggers for smoking include seeing others, especially family, smoking (Heath et al., 2006; Passey et al., 2009; Wood et al., 2008), and after meals and beverages (Heath et al., 2006; Passey et al., 2009).

Smoking Persists Despite Knowledge of Harms

Aboriginal women have some knowledge that smoking is harmful during pregnancy, reported in four studies (Gilligan et al., 2009; Passey et al., 2009; Wilson, 2009; Wood et al., 2008), but the level and specificity of knowledge is variable (Gilligan

Table 2. Summary of Included Studies

Author	Issues explored	Location	Participants	Type of study	Hawker /Daly	Summary of evidence
Johnston & Thomas, 2008	Smoking behavior, obstacles/drivers of quitting, experiences of never-smokers	Northern Territory (NT) Remote	n = 25 Indigenous community; n = 13 Indigenous & non-Indigenous staff	Qualitative. Semi-structured interviews	320 II	Reports protecting young children from environmental tobacco smoke (ETS). Being a role model is important; negative impact of smoking on family
Douglas et al., 2001	Sudden infant death syndrome (SIDS) risk reduction, infant care practices, and non-smoking	North Queensland Urban, Rural, and Remote	n = 195 mothers attending child health or antenatal clinics	Qualitative. Health worker interview.	270 III	Less knowledge of risks with smoking & SIDS in Indigenous compared with Caucasian women, particularly smoking when pregnant
Wilson, 2009	Elements and features of antenatal care important to Aboriginal women	Central Australia, NT Urban & Remote	n = 136 Aboriginal women; young and older women	Qualitative. Focus group or individual discussion	280 III	Negative effects of smoking; stopping or reducing in pregnancy; difficulty quitting; reduced problem solving. Misconceptions tobacco use not harmful
Heath et al., 2006	Smoking habits, views about smoking, nicotine dependence, readiness to change, and barriers to quit.	Townsville, North Queensland Urban	n = 66 Aboriginal and Torres Strait Islanders having maternity care or women's checks	Mixed methodology Survey by IHW	270 III	77% low nicotine dependency scores and 23% mid-high. Beliefs: smoking relieves stress; influenced by friends or family and boredom.
Wood et al., 2008	Context, perceptions, and attitudes of smoking in pregnancy; knowledge of risks; barriers and support for cessation; attitudes to IHW smoking and cessation	Perth, Western Australia Urban	n = 50 Indigenous women of childbearing age and n = 10 IHWs	Qualitative Focus groups and in-depth semi-structured interviews	320 III	Smoking allied to poverty, boredom, unemployment, and stress: impedes cessation. Pregnancy a catalyst for change; smoking reduced but risks discounted/denied; social and financial issues a priority; barriers to role of IHWs
Passey et al., 2009	Meaning and significance of smoking for rural Aboriginal women: barriers and enhancers to quitting	New South Wales Rural	n = 36 Aboriginal women and IHW from five different rural locations	Qualitative Focus groups and semi-structured interviews	210 III	Smoking norms; stress high in pregnancy; allied poor family health and death. Alcohol/drugs harms more obvious; poor knowledge of harm to self and child; relapse after birth
Gilligan et al., 2009	Knowledge, attitudes, and risks of maternal smoking; factors allied to antenatal smoking; rates and patterns of antenatal smoking	Far North Queensland Urban	n = 145 Aboriginal and Torres Strait Islander women attending a health service	Quantitative Interview-survey by Indigenous project officer	350 III	General knowledge of harms. Maternal smokers more likely to have smoking partner, Aboriginal partner, smokers at home, and stress compared with nonsmokers. Belief if exposed to ETS, no point in quitting

Table 3. Representation of Emergent Third-Order Constructs in the Included Papers

Third-order constructs	Wood et al., 2008	Gilligan et al., 2009	Passey et al., 2009	Heath et al., 2006	Wilson, 2009	Johnston & Thomas, 2008 ^a	Douglas et al., 2001
1. Smoking Is a Way of Life	•	•	•		•		
2. Smoking Helps Getting Through the Day	•	•	•	•	•		
3. Smoking Persists Despite Knowledge of Harms	•	•	•		•		
4. Lack of Salience of Health Risk Messages about Smoking	•	•	•	•	•	•	•
5. Resistance to Advice and Smoking Justified	•	•	•	•	•		
6. Reducing Harm, Being a Protector	•		•		•	•	
7. Information Alone Is Not Enough to Change Smoking Behavior	•	•	•	•	•		•
8. Quitting Is Hard	•		•	•	•		
9. Role of Family and Community in Quitting	•	•	•	•	•		
10. Being a Good Role Model Has Importance					•	•	
11. Role of IHWs and Other Professionals Is Challenging	•		•				

^aData from Johnston’s paper was extracted specific to maternal smoking only for the purpose of this review, even though other third-order constructs were consistent with their focus on smoking in Indigenous people in general.

et al., 2009). Those with better knowledge are more likely to have a higher level of education (Gilligan et al., 2009) and are less likely to smoke indoors (Gilligan et al., 2009). In one community, by contrast, some pregnant women did not believe smoking was harmful (Wilson, 2009). There were beliefs, for example, that chewing native tobacco or Pituri is not harmful (Wilson, 2009). [Health effects of native tobacco have not yet been investigated (Winstanley, 2008)]. There is lack of visibility of harm and lack of correlation between poor outcomes and smoking in pregnancy (Wood et al., 2008). Effects such as low birth weight may not be considered harmful or possibly not considered related to smoking (Wood et al., 2008). Smoking is, however, viewed by some as a filthy, smelly habit (Passey et al., 2009) and addictive (Wood et al., 2008).

Information Alone Is Not Enough to Change Smoking Behavior

This construct is related to: smoking persists despite knowledge of harms, but the emphasis here is on suggested interventions for cessation. Smoking prevalence remains high in the community (Gilligan et al., 2009) as information alone is insufficient to support quitting. There is a desire for information about harms of smoking and benefits of quitting, and information sources are remembered (Wilson, 2009). Community suggestions for interventions include proactively seeking help (Wood et al., 2008), quit programs (Heath et al., 2006), free nicotine replacement therapy (Heath et al., 2006; Wood et al., 2008), support or quit groups (Heath et al., 2006), postpartum support (Passey et al., 2009), elders support in own language (Wilson, 2009), and culturally suitable resources (Douglas et al., 2001). First-time mothers may be more receptive before they get complacent about smoking in pregnancy (Wood et al., 2008). However, many

young Aboriginal women seek antenatal care late in pregnancy (Wood et al., 2008).

Lack of Salience of Health Risk Messages about Smoking

The majority of included studies report some level of resistance to health risk messages as follows. Health campaign messages on the detrimental effects of maternal and passive smoking on the baby are considered not to have an impact on Aboriginal women (Douglas et al., 2001; Heath et al., 2006). Television advertising is reported as disturbing and avoidance behavior is exhibited toward media messages (Passey et al., 2009). In two studies, the harms of smoking in pregnancy are discounted or denied (Gilligan et al., 2009; Wood et al., 2008). The dangers of smoking are refuted when babies turn out to be normal (Wood et al., 2008). On the other hand, some community members are sick of the negative impact of smoking on families (Johnston & Thomas, 2008). Many people have noted smoking-related illnesses in their elders (Passey et al., 2009). In one study, older women expressed concern about younger pregnant women smoking (Wilson, 2009).

Resistance to Advice and Smoking Justified

There is variation of receptivity to antismoking advice. Smoking is viewed as a personal choice and people do not like to be told what to do (Passey et al., 2009; Wilson, 2009; Wood et al., 2008). There are many rationalizations for continuing smoking such as “if others smoke around you, while you are pregnant, you may as well smoke yourself” (Gilligan et al., 2009) and a majority view was that stressors make it seem okay to smoke (Heath et al., 2006; Passey et al., 2009; Wilson, 2009; Wood et al., 2008). This theme overlaps with the lack of salience of health risk messages with impacts of smoking being refuted.

Reducing Harm, Being a Protector

Pregnancy is a catalyst to quit or cut down (Wilson, 2009; Wood et al., 2008). Quitting for the child's sake can be more motivating than quitting for one's self. Women expressed wanting to do right by their baby and the importance of their role as a "protector" (Johnston & Thomas, 2008; Passey et al., 2009). Indigenous Health Workers consider harm minimization strategies easier to encourage in maternal smokers than smoking cessation (Wood et al., 2008). Cutting down cigarette consumption during pregnancy is common (Passey et al., 2009; Wilson, 2009; Wood et al., 2008). Concern about exposure to ETS is varied. There may be avoidance of smoking around nonsmoking relatives (Wood et al., 2008), especially children (Johnston & Thomas, 2008; Wood et al., 2008). Mothers attempt to move children from a smoking environment (Wood et al., 2008), although others only protect newborns due to a misperception that only the very young are susceptible to ETS (Wood et al., 2008).

Quitting Is Hard

Quitting is viewed as hard (Passey et al., 2009; Wilson, 2009; Wood et al., 2008), perceived as taking willpower (Wood et al., 2008), and a difficult habit to break (Passey et al., 2009). There is little support for, or pressure to quit (Passey et al., 2009). Some who quit in pregnancy, in contrast, did not find it hard (Wood et al., 2008). People are more motivated if they have a health problem (Wood et al., 2008). Many pregnant women are seen as strongly addicted (Passey et al., 2009) although nicotine dependence in pregnancy was reported as being low to medium (Heath et al., 2006). Views on the use of pharmacotherapy for maternal smoking cessation were under-represented in the studies. Only one study reported the use of quit attempts assisted by nicotine replacement therapy (Wood et al., 2008). Going cold turkey (Wood et al., 2008) and cutting down (Passey et al., 2009; Wilson, 2009; Wood et al., 2008) are the most common methods discussed and resumption of smoking postpartum is common (Passey et al., 2009).

Role of Family and Community in Quitting

This construct overlaps with smoking is a way of life. Family influences feature in five studies and are described as both a help (Passey et al., 2009; Wilson, 2009) and a hindrance (Gilligan et al., 2009; Heath et al., 2006; Passey et al., 2009; Wilson, 2009; Wood et al., 2008) to quitting. Maternal smoking is more prevalent where there is household smoking (Heath et al., 2006; Passey et al., 2009), a partner smoking (Gilligan et al., 2009), or for those with an Aboriginal partner (Gilligan et al., 2009). It is important for family to acknowledge the difficulty of quitting and support quit attempts during pregnancy (Passey et al., 2009; Wood et al., 2008). A community and family approach is required as high community smoking rates are also a barrier to quitting (Heath et al., 2006). Assessing the household environment is suggested, supporting the maternal smoker to quit by encouraging others not to smoke around her (Passey et al., 2009); targeting smoking in male partners is important (Gilligan et al., 2009; Wilson, 2009). Avoiding other smokers socially was suggested (Wood et al., 2008). Wider social determinants and social stress are barriers to cessation (Heath et al., 2006; Wilson, 2009; Wood et al., 2008), including unemployment (Wood et al., 2008), hopelessness (Wood et al., 2008), boredom (Heath et al., 2006; Wood et al., 2008), stress

(Gilligan et al., 2009; Heath et al., 2006; Passey et al., 2009; Wilson, 2009; Wood et al., 2008), racial discrimination (Wood et al., 2008), and domestic violence (Wood et al., 2008).

Being a Good Role Model Has Importance

Being a good role model has salience for maternal smokers and their families (Johnston & Thomas, 2008). Some experience shame in front of the family, or feel they will disgrace their family, if they continue smoking in pregnancy (Wilson, 2009). Most do not want to continue smoking. Older women who quit could influence younger women (Passey et al., 2009).

Role of IHWs and Other Professionals Is Challenging

The role of IHWs was reported mainly in one study by Wood et al. (2008). Health workers reported receiving negative responses when initiating cessation advice (Wood et al., 2008). They avoid adding to the burden of their clients (Wood et al., 2008) and do not want to jeopardize the trusting relationship (Wood et al., 2008). IHWs are aware that smokers do not like to be told what to do (Wood et al., 2008): they find giving general pregnancy information and advice about passive smoking is less challenging than advising cessation (Wood et al., 2008). IHW feel hindered to assist because of lack of protocols to support cessation (Wood et al., 2008). From the women's perspective, although personal choice is emphasized, it is acceptable for health workers to provide encouragement to make positive choices regarding cessation (Passey et al., 2009).

LOA

The LOA was developed to postulate an overarching concept or metaphor by juxtaposing the themed third-order constructs, thus building a picture of how maternal smoking effects and is affected by Aboriginal and Torres Strait Islander communities. All studies fit within the LOA except for Douglas et al. (2001), which had a narrow focus but nonetheless explored knowledge associated with SIDS and smoking.

Figure 2 illustrates the LOA model and represents the positive and negative influences surrounding maternal smoking; the third-order constructs positioned according to their level of influence and connections to each other. It may be noted that views represented are disparate within the self, family, and the community.

The LOA is conveniently described by a composite depiction (Moustakas, 1990). At the centre is the pregnant Aboriginal or Torres Strait Islander smoker. At heart she desires to be a good role model and protector of her developing child. She is reliant on smoking getting her through her day. Although she has some knowledge that smoking is harmful, she persists in smoking. Information alone is not sufficient to help her quit. She believes quitting is hard, and does her best to reduce harm from her smoking by cutting down and protecting children from ETS. As smoking is a way of life in the Aboriginal community, there is little support to quit. She receives both positive and negative support from her surrounding family and social network for being smoke-free. Antismoking messages, coming from both the wider Aboriginal community and externally, are not having a meaningful impact. Even IHWs, who could assist in a more meaningful way, are hampered by lack of protocols. These conflicting demands on the pregnant Aboriginal or Torres Strait Islander smoker produce attitudes of resistance and cognitive dissonance.

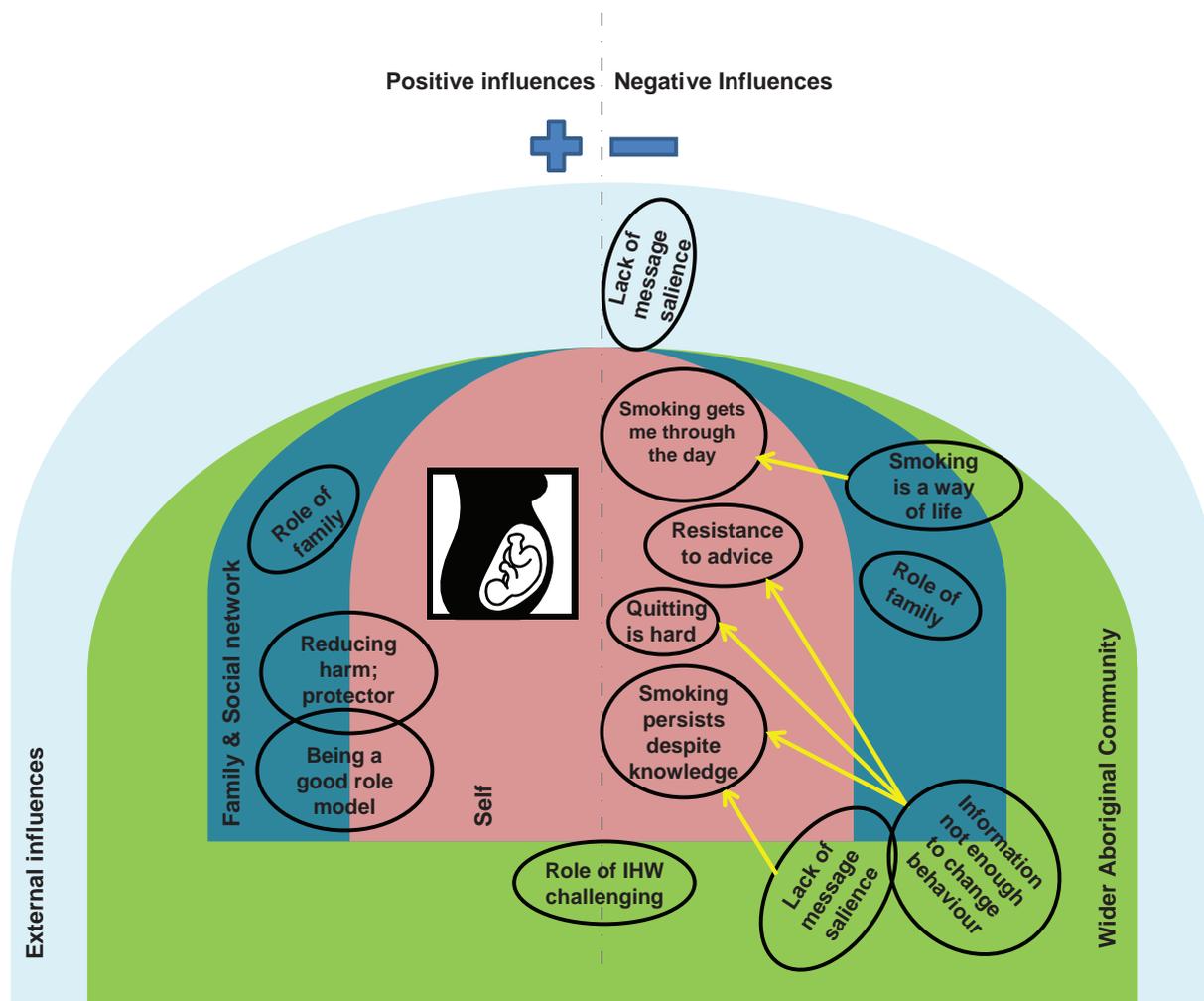


Figure 2. Influences on tobacco smoking and cessation amongst maternal Aboriginal and Torres Strait Islander smokers and their families. The themed third-order constructs are juxtaposed to form a line of argument synthesis, placing the pregnant Aboriginal or Torres Strait Islander smoker (the self) in context of family and social network, wider Aboriginal community, and external influences. Positive and negative influences are depicted.

DISCUSSION

This systematic review has identified key constructs relating to knowledge, attitudes, and beliefs about maternal smoking and cessation in Aboriginal and Torres Strait Islander communities. Meta-ethnography has been used to synthesize data from included studies to a comprehensive summary and propose a LOA.

Results from this review are consistent with various findings on maternal smoking and barriers to cessation during pregnancy in non-Indigenous populations. A systematic review by [Ingall and Cropley \(2010\)](#) similarly found women generally faced barriers to quitting from family and friends, and personal issues such as lack of willpower. Likewise, smoking was embedded in women's lives, and addressing only biological factors was insufficient for cessation. Awareness of smoking harms was present, but women often lacked the confidence or self-efficacy to quit. However, social stigma and negative connotation attached to smoking in pregnancy that other disadvantaged populations experience ([Bull, Burke, Walsh, & Whitehead, 2007](#)) may be less important in Indigenous populations due to smoking being

interwoven in women's social and personal realms ([Cottrell et al., 2007](#)). Operating beyond the higher level of prevalence in the Aboriginal population is a distinctive quality of social connectedness related to smoking ([Johnston & Thomas, 2008](#)). Barriers to quitting are heightened also in other populations of low socio-economic background ([Stead, MacAskill, MacKintosh, Reece, & Eadie, 2001](#)).

The meta-ethnography suggested that male partners who smoke should be targeted. Relatedly, [Gage, Everett, and Bullock \(2007\)](#) found pregnant women abstained for longer if male partners quit in tandem. Similarly, postpartum resumption of smoking reported here in Aboriginal or Torres Strait Islander women is also a risk for the general maternal population where 65%–80% resume smoking by 1 year ([Mullen, 2004](#)).

Resistance to antitobacco messages in Aboriginal maternal smokers as a barrier to cessation was evident; however, it was unclear in this review why such resistance exists. Resistance to cessation advice has been previously linked to factors relevant to this review, such as: socio-economic status ([Pickett, Wakschlag, Rathouz, Leventhal, & Abrams, 2002](#)), skepticism when advice is given by health professionals who smoke ([Hotham, Atkinson,](#)

& Gilbert, 2002), smoker identity with defensive motivation (Falomir & Invernizzi, 1999), and addiction—the more dependent smokers resent advice (MacIntosh & Coleman, 2006) and reject authority (Cottrell et al., 2007). Resistance has also been reported in other maternal populations. Women smokers with previous uncomplicated pregnancies have stronger denial (Bull et al., 2007; Tod, 2003), whereas those fully aware of the impact of smoking in pregnancy are less defensive and more open to quitting (Ingall & Cropley, 2010). Maternal smokers in this review also trusted more in personal experiences than scientific evidence, consistent with research in other pregnant populations (Abrahamsson, Springett, Karlsson, & Ottosson, 2005; Tod, 2003). The Extended Parallel Process Model suggests that such maladaptive responses of denial, avoidance or reactance occur when self-efficacy is low and fear levels are high (Witte, Meyer, & Martell, 2001). Our review suggests some of the elements described above may be operant in Aboriginal and Torres Strait Islander maternal smokers and warrants further exploration.

Papers in this review reported addiction to be a barrier to cessation in Aboriginal maternal smokers (Passey et al., 2009; Wood et al., 2008); however, the one paper (Heath et al., 2006), which quantified dependence, found the majority had low scores on the Fagerström Test for Nicotine Dependence (FTND) (Heatherton, Kozlowski, Frecker, & Fagerström, 1991). This incongruity may relate to alterations in nicotine metabolism in pregnancy (Dempsey, Jacob, & Benowitz, 2002) and the common practice of reducing consumption (Castrucci, Culhane, Chung, Bennett, & McCollum, 2006), rendering the FTND perhaps less reliable in pregnancy. Measuring urges to smoke may be a more accurate gauge of dependency (Fidler, Shahab, & West, 2011).

Stress was noted to be a major factor associated with maternal smoking in this review (Gilligan et al., 2009; Heath et al., 2006; Passey et al., 2009; Wood et al., 2008); however, depression was not explored, which suggests that depression associated with maternal smoking may be under-recognized in this population. In contrast, high depression scores are reported in pregnant smokers from other Indigenous and minority populations (King, Borrelli, Black, Pinto, & Marcus, 1997; Orr, Blazer, & Orr, 2012), which interestingly have been linked with rejection of authority and addiction (Cottrell et al., 2007).

The persistence of smoking despite knowledge of harms may link to the perception that quitting is difficult, coupled with lack of knowledge and availability of effective cessation methods, leading to ineffective cessation attempts. However, views on the use of nicotine replacement therapy were inadequately represented in the studies—an important omission considering this is the therapy of choice if pregnant women cannot quit unassisted. Structural barriers to cessation, such as lack of policy to support IHW-led interventions, was one of a range of possible systemic barriers identified; others such as limited access of maternal Aboriginal and Torres Strait Islander smokers to effective therapies and over-constraining guidelines for medication use in pregnancy have been proposed elsewhere (Gould, McEwen, & Munn, 2011).

On the positive side, however, as with maternal Aboriginal or Torres Strait Islander smokers in this review, most women try to be “good” mothers and protect their babies’ from tobacco smoke (Pletsch, 2006). Being a good role model and a protector has salience for maternal smokers (Johnston & Thomas, 2008), but other salient messages appear to be lacking within the Aboriginal community and from wider society. Reducing cigarette consumption, rather than abrupt quitting, is seen as

an easier option: a factor associated elsewhere with low socioeconomic status (Siahpush, Yong, Borland, & Reid, 2010).

The implications for practice from this review include creating programs to support smoke-free Aboriginal and Torres Strait Islander pregnancies, which treat women in context of their environment. Box 1 contains our suggestions for potential approaches to enrich knowledge of smoking harms in pregnancy, increase salience of antismoking messages, provide culturally targeted quit support, and support the role of IHW in tobacco control. Additionally, long term, broad strategies are needed to de-normalize smoking in Aboriginal communities and address underlying social determinants. Until there is specific evidence for this population, existing guidelines for best-practice cessation strategies for maternal smokers, (Lumley et al., 2009) and smokers in general (West, Evans, & Michie, 2011), should be integrated with innovative approaches tailored to the target population.

Further research is required to elucidate the causes of resistance to antitobacco messages and cessation advice in pregnant Aboriginal and Torres Strait Islander smokers. Response efficacy and self-efficacy are little understood in the target populations. An important evidence gap relates to depression as a potentially coexistent factor in pregnant Indigenous smokers. There is also little known yet about their attitudes to the use of nicotine replacement therapy. Although policy-level issues were raised regarding IHW interventions, other structural barriers were not clear, for example, access to evidence-based treatment. Understanding these factors may improve Aboriginal and Torres Strait Islander women’s abilities to respond to antitobacco messages and cessation interventions.

By synthesizing the available literature, the review gives strength to the evidence from individual maternal studies across a selection of diverse Aboriginal and Torres Strait Islander cultures. We also identified some limitations. The review represented urban, rural, and remote locations, but papers were not found for all states or the Torres Strait Islands. Male participants were under-represented and given their apparent influence on maternal smoking, their views are important. Meta-ethnography is most useful to synthesize themes resulting from qualitative studies and thus this review may not have accurately captured the included quantitative elements. Additionally, each included study had different aims and measured different aspects of the broad topic, thus some individual studies contributed more data to the meta-ethnography than others. Making inferences about the value of each individual study to the meta-ethnography may be problematic. Reporting biases may impact: authors selectively represent first-order constructs, so it is unknown how closely their second-order constructs relate to their first order and papers also varied in reporting of themes. Lastly, meta-ethnography by definition is an interpretive process based on the researchers discerning interests; therefore, this review is only one of a possible set of interpretations (Noblit & Hare, 1988). However, the aim was to enrich understanding and further discourse on maternal smoking in Aboriginal and Torres Strait Islander communities.

CONCLUSION

Social norms and stressors within Aboriginal and Torres Strait Islander communities perpetuate tobacco use in pregnancy. There is lack of knowledge of smoking harms and inadequate salience of current antismoking messages for maternal smokers. Poor knowledge of, access to, and use of evidence-based

Box 1. Recommended Practice-Based Strategies

1. Increase knowledge of harms of smoking in pregnancy
 - i. Address specific effects of maternal smoking on baby and mother
 - ii. Target first-time mothers
 - iii. Promote quitting in early pregnancy and pre-conception
 - iv. Make fetal exposure to smoking more tangible
2. Increase salience of antismoking messages to Indigenous maternal smokers
 - i. Target messages to counter misconceptions and resistance
 - ii. Focus on the incongruence between maternal desire to protect and their continued smoking behavior
 - iii. Support positive attitudes and behaviors
 - iv. Emphasize the importance of positive role models for smoke-free Aboriginal and Torres Strait Islander communities
 - v. Promote the message that with effective treatment, quitting can be a manageable option
3. Provide culturally targeted quit support
 - i. Support harm reduction in pregnancy
 - ii. Support further measures to go completely smoke-free by quitting
 - iii. Provide stress management skills
 - iv. Increase self-efficacy in smokers of childbearing age, maternal, and postnatal smokers
 - v. Provide quit services such as groups
 - vi. Include hands-on activities in quit courses
 - vii. One-to-one consultation for maternal smokers and their families
 - viii. Develop support networks for maternal smokers to encourage quitting
 - ix. Involve the family and household in strategies to quit
 - x. Specifically target male partners
 - xi. Increase knowledge of evidence-based therapies suitable for maternal smokers and their families
 - xii. Remove barriers to access of evidence-based therapies
4. Support role of health professionals
 - i. Policy development to support IHW role in tobacco control
 - ii. Increased training and communication skill development
 - iii. Support for IHW smoking cessation

treatments for smoking cessation in pregnancy are impediments to cessation. Pregnancy is a short window of opportunity to encourage positive change where a strong “protector role” is expressed. By synthesizing evidence from seven relevant studies, this meta-ethnography has offered recommendations for practice and policy to overcome barriers associated with Aboriginal and Torres Strait Islander smoking cessation during pregnancy, these include focusing on the pregnant smoker in context with her environment and social networks.

FUNDING

This work was funded partly by the Australian Government Department of Health and Ageing under the Indigenous Tobacco Control Initiative, and supported by a National Health and Medical Research Council (Australia) and National Heart Foundation (Australia) co-funded post-graduate training scholarship for Indigenous Health Research, grant number APP1039759.

DECLARATION OF INTERESTS

The authors have no competing interests to declare.

ACKNOWLEDGMENTS

We would like to acknowledge the University of New South Wales, Rural Clinical School for their support in the initial part

of this study, including Associate Professor Rick van der Zwan who originally approved the study protocol. The Mid North Coast (NSW) Division of General Practice are acknowledged for their support as managers of the No Smokes North Coast project under which this study was conducted, as an initial phase to inform the development of a targeted maternal smoking cessation program.

SUPPLEMENTARY MATERIAL

Supplementary material can be found online at www.ntr.oxfordjournals.org

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3.3 *Supplementary file*

List of Informit Databases

Australian specific databases via Infomit:

- AMI: Australasian Medical Index
- APAFT: Australian Public Affairs Full Text
- APAIS ATSSIS: Australian Public Affairs Information Service – Aboriginal and Torres Strait Islander Subset
- APAIS: Australian Public Affairs Information Service
- APAIS-Health: Australian Public Affairs Information Service – Health
- ATSIHealth: Aboriginal and Torres Strait Islander Health Bibliography
- FAMILY-ATSSIS: Australian Family and Society Abstracts - Aboriginal and Torres Strait Islander Subset
- FAMILY: Australian Family and Society Abstracts
- Family & Society Plus
- Health & Society Database
- Indigenous Australia
- Indigenous Studies Bibliography: AIATSSIS
- Informit e-Library: Health Collection

3.4 *Summary*

- Maternal smoking rates in Australian Aboriginal women were triple that of the general population, with limited research to determine what interventions might be successful.

- Peer-reviewed and 'grey' literature was appraised to understand smoking and cessation in Aboriginal and Torres Strait Islander women and provide recommendations for targeted interventions.
- Six databases were searched using terms related to smoking, pregnancy and Aboriginal Australians. Two reviewers independently assessed papers for inclusion and quality. Meta-ethnography synthesised first and second-order constructs from included studies and constructed a line of argument.
- Seven relevant studies were analysed. The synthesis illustrates 11 third-order constructs operating on the levels of self, family and social networks, the wider Aboriginal community, and broader external influences. Highlighted were social norms and stressors within the Aboriginal community perpetuating tobacco use; insufficient knowledge of smoking harms; inadequate saliency of anti-smoking messages; and lack of awareness and use of pharmacotherapy. Indigenous Health Workers have a challenging role, not yet fulfilling its potential. Pregnancy is an opportunity to encourage positive change where a sense of a 'protector role' is expressed.
- The review gave strength to evidence from individual studies across diverse Indigenous cultures. Pregnant Aboriginal and Torres Strait Islander smokers require comprehensive approaches, which consider the environmental context, increase knowledge of smoking harms and cessation methods, and provide culturally targeted support. Long term, broad strategies should de-normalise smoking in Aboriginal and Torres Strait Islander communities. Further research is needed to examine causes of resistance to anti-tobacco messages, clarify contributing roles of stress and depression, and attitudes to pharmacotherapy.

3.5 *Final word*

Gaps in evidence were highlighted in the systematic review. In the following chapter (4) I seek to address some of these knowledge gaps and further explore views of women and family members to smoking in pregnancy and the household at one maternity service in NSW with a high prevalence of maternal smoking.

**Chapter 4. *“Nobody smokes in the house if there’s a
new baby in it”*: Aboriginal perspectives on
smoking in pregnancy and in the household in
regional NSW Australia**

4.1 Overview

This study was completed under the ITCI ‘No Smokes North Coast’ program to inform the development of a targeted smoking cessation program on the Mid North Coast of NSW at a local Aboriginal Maternal and Infant Health Service (AHIMS). I aimed to fill some of the evidence gaps revealed by the systematic review from Study 2 (Chapter 3). Thus recruitment strategy and topics for the following study were informed by the previous systematic review. Figure 4.1 places the chapter in relation to the conceptual model of the thesis to further my cultural understanding of maternal Indigenous smoking.

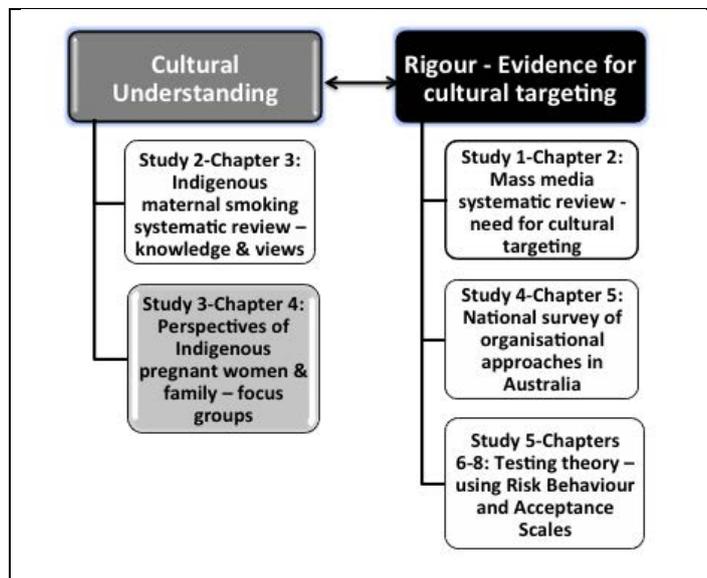


Figure 4.1 Study 3, Chapter 4 in relation to the conceptual model of the thesis for making salient messages for Indigenous tobacco control

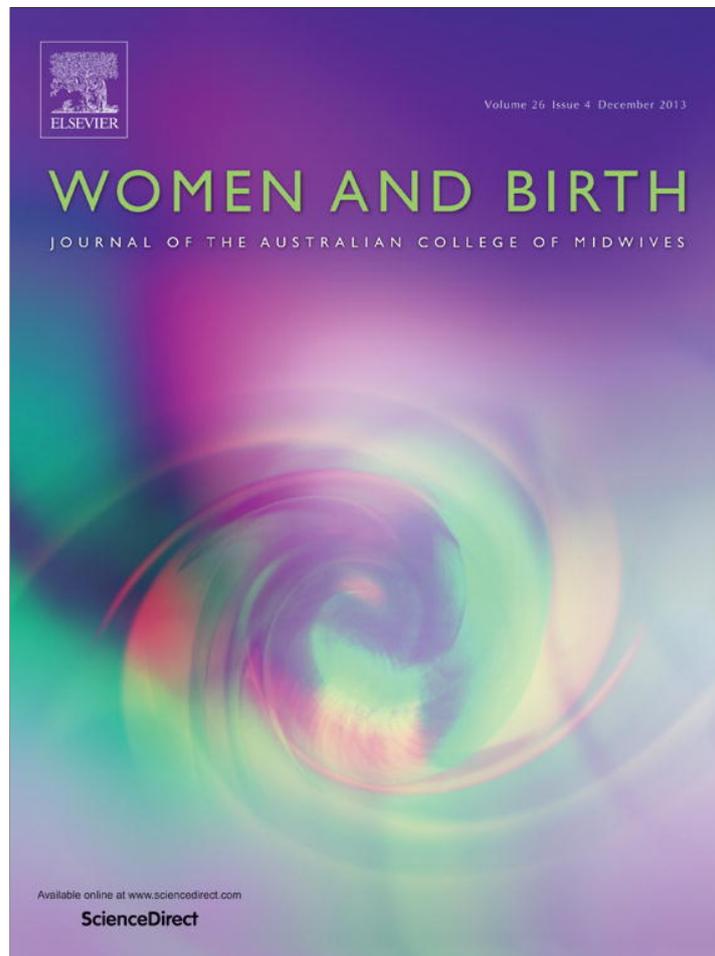
This chapter is inserted as the published PDF:

Gould GS, Munn J, Avuri S, Hoff S, Cadet-James Y, McEwen A, Clough AR. "Nobody smokes in the house if there's a new baby in it": Aboriginal perspectives on tobacco smoking in pregnancy and in the household in regional NSW Australia. *Women and Birth*. 2013; 26(4):246-53.

This publication was selected as *Editor's choice* and has been widely accessed. The Primary Health Care Research and Information Service furthermore highlighted this study as a success story in the publication *Snapshot of Australian primary care research 2014*. The included studies in the snapshot were chosen as those that have made a tangible impact on policy and practice in Australia.

4.2 *Publication in Women and Birth*

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“Nobody smokes in the house if there’s a new baby in it”: Aboriginal perspectives on tobacco smoking in pregnancy and in the household in regional NSW Australia



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ARTICLE INFO

Article history:

Received 16 July 2013

Accepted 12 August 2013

Keywords:

Oceania Ancestry Group

Maternal smoking

Passive smoking

Smoking cessation

Nicotine replacement therapy

ABSTRACT

Background: Smoking prevalence in Aboriginal and Torres Strait Islander pregnant women is quadruple that of non-Indigenous counterparts, impacting on the health of babies and children.

Aims: To explore attitudes and experiences related to prenatal tobacco smoking by Aboriginal women and household smoking, and to provide recommendations for culturally appropriate interventions.

Methods: We conducted five focus groups with clients and family members of a regional NSW Aboriginal maternity service ($n = 18$). Committees, including Aboriginal representatives, oversaw the study. We analysed transcripts with the constant comparative method and developed key categories.

Findings: Categories included: social and family influences, knowing and experiencing the health effects of smoking, responses to health messages, cravings and stress, giving up and cutting down, managing smoke-free homes and cars, and community recommendations. Smoking in pregnancy and passive smoking were acknowledged as harmful for babies and children. Anti-tobacco messages and cessation advice appeared more salient when concordant with women’s lived experience. Reduced cigarette consumption was reported in pregnancy. Despite smoking in the home, families were engaged in the management of environmental tobacco smoke to reduce harm to babies and children. Abstinence was difficult to initiate or maintain with the widespread use of tobacco in the social and family realm.

Conclusion: Anti-tobacco messages and interventions should relate to Aboriginal women’s experiences, improve understanding of the quitting process, support efficacy, and capitalise on the positive changes occurring in smoke-free home management. Focus group participants recommended individual, group and family approaches, and access to cessation services and nicotine replacement therapy for Aboriginal pregnant women who smoke.

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1. Introduction

In Australia the prevalence of smoking in pregnant Aboriginal and Torres Strait Islander women is 49.3% compared with 12.1% for their non-Indigenous counterparts.¹ Prenatal and perinatal smoking perpetuates disadvantage² by being associated with: miscarriage, stillbirth, low birth weight and Sudden Unexpected Death in Infancy (SUDI), hearing and cognitive-behavioural

problems in childhood,² early smoking initiation,³ and inter-generational chronic diseases.⁴

Antecedents to smoking by Aboriginal and Torres Strait Islanders include the historical use of tobacco,⁵ colonisation and the impact of Government policies,^{5,6} racism,⁷ socioeconomic inequities,⁶ the ‘stolen generation’⁸ and the scarcity of culturally appropriate services.⁶ Smoking in pregnant Aboriginal and Torres Strait Islander women is influenced by multiple factors such as sociocultural norms, family influences and stressors, limited knowledge of harms, anti-tobacco messages lacking relevance, and unfamiliarity about and access to cessation methods including nicotine replacement therapy (NRT).⁹ Despite these difficulties,

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pregnant Aboriginal and Torres Strait Islander smokers acknowledge their 'protector role' for the foetus.^{9,10}

Smoking cessation for pregnant Aboriginal and Torres Strait Islander women is a priority,^{11,12} yet evidence about effective interventions is limited for pregnant Indigenous smokers in Australia,^{10,11,13,14} and internationally.^{11,12} Greater insight into the experiences of pregnant women who smoke is needed¹² to develop salient health messages,⁹ culturally-relevant interventions and targeted support.^{11,14} There is also a need to address gaps in knowledge related to Aboriginal and Torres Strait Islander women who smoke such as the use of NRT, responses to anti-tobacco mass media and the management of smoke-free homes.⁹

This study explored the responses of Aboriginal women and family members to issues about smoking in pregnancy and household smoking. The study sought to inform the development of a local cessation program for pregnant Aboriginal women using the views of the women and men involved in the study.

We use the term Aboriginal to refer to the local community and participants as the first peoples of NSW, and Aboriginal and/or Torres Strait Islander peoples when referring to wider Australian research.

2. Methods

We used focus groups as a way of understanding community perspectives and dialogue.¹⁵ Topics for discussion were selected from the literature on Aboriginal and Torres Strait Islanders who smoke when pregnant.⁹ The importance of family and partners to smoking guided sampling.¹⁶ A steering committee including Aboriginal stakeholders oversaw the study. A maternal subcommittee, including Aboriginal members and midwives, assisted in the study design, interview guide, and recruitment process, and gave feedback on the analysis and report. Results were then presented to the Steering Committee and feedback invited. The Aboriginal Health and Medical Research Council (AH&MRC), Area Health Service, University of New South Wales and James Cook University ethics committees provided approval under NHMRC Indigenous research guidelines, which "exemplify a decolonising paradigm".¹⁷ The AH&MRC approved a community report and papers for conferences and publication.

The study was in regional New South Wales, where 62% of pregnant Aboriginal women self-reported smoking.¹⁸ All clients were invited to the study by staff members from a local Aboriginal Maternal and Infant Health Service, and encouraged to bring a partner and/or family member to the focus groups. (Clients are Aboriginal women or female partners of Aboriginal men). Groups were held at a private children's play area chosen by the clients, and at the service premises from February to May 2011. Participants gave written consent and were encouraged to talk freely around the topic areas. Cultural safety was enhanced by the presence of a female Aboriginal project officer (SA). Two midwives from the service provided additional support at the focus group sessions. A short questionnaire collected demographic information at the start of each group, including history about personal and household smoking.

Eighteen community members (16 Aboriginal and/or Torres Strait Islanders), comprising 15 women and three men, with mean age of 30.3 years \pm 11.70 (17–53 yrs), participated in five group interviews. Five women were pregnant with a mean gestation of 28 weeks \pm 11.55 (10–40 wks), and all other women had previously experienced pregnancy. Ten women were current smokers (three pregnant), four were ex-smokers (two pregnant), and all the men smoked. One woman had never smoked. The mean Heaviness of Smoking Index was 3.08 \pm 1.44 (1–5) for all smokers, however the pregnant women scored lower (range 1–2). Indoor smoking was reported in six of fifteen households (40%) with children living in

them, and in two-thirds (4/6) households that included a pregnant woman.

A non-Indigenous female researcher (JM) and SA moderated the audio-recorded groups, later transcribed by JM. Topics included experiences of and attitudes to smoking in pregnancy and cessation, sources of knowledge, sociocultural influences and suggestions for interventions (Box 1 – web only). A felt 'storyboard', depicting a house and yard, was used as a graphic prompt to explore the management of household smoking,¹⁹ and 15 of the participants marked on a photocopy where household smoking occurred: a composite of results was later compiled.

Supplementary material related to this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.wombi.2013.08.006>.

Researchers GG (non-Indigenous female medical practitioner) and JM initiated an inductive analysis using a constant comparative approach, independently open coding transcripts, comparing and contrasting codes across groups, forming axial codes, and then with consensus collapsing the codes.²⁰ For reflexivity they self-reflected then discussed their observations together. When no new information emerged in the last two groups, thematic saturation was reached. Four researchers, GG, JM, SA and SH (non-Indigenous female midwife) met to collaboratively review the analysis and used a 'scissor and sort' technique to develop the final categories or themes. Themes were renamed as the manuscript progressed towards completion, with the approval of authors. The authors took a woman-centred approach and ensured that Aboriginal voices and experiences were prioritised over conceptual frameworks to avoid 'othering'.²¹ The COREQ checklist guided this manuscript.²² The findings were also presented to the local Aboriginal community at a community celebration in 2011.

3. Results

Categories related to tobacco smoking in pregnancy included: social and family influences, knowing and experiencing the health effects of smoking, responses to health messages, craving and stress, giving up and cutting down, managing smoke-free homes and cars and community recommendations. Each researcher-defined theme is allocated a quote as subtitle.

[Codes : FG = Focus Group and number; M/F = male or female; P = participant]

Social and family influences – "[Family members] more or less not so much encourage you to smoke but they prefer you to keep smoking." [FG2; M]

Participants described how smoking was usual in their families and as there were often several smokers in one household, it was difficult to avoid being around other smokers.

When I was living at my mum's . . . I had my 2 sisters and their partners smoking around me, plus mine, yeah so everyone smoking. . . everyone I knew smoked. [FG3; F]

Smoking provided a sense of social connection. Non-smokers or those trying to avoid smoking may feel isolated. . . *she was trying to quit but she said that it sort of like isolated her more. [FG1; F]* Smoking was often a shared activity, especially by couples, and an anticipated part of mutual exchange; causing additional issues when supplies ran low.

Just 9 times out of 10 you see them and it is not hello it's 'Smoke sis? Smoke bro?' . . . it's not 'hello how you going brother?' [FG2; M]

I watch him going back and forward to the smoke packet so I have got to get my fill in now... I've got to get one before I miss out... [FG2; F].

Family members and partners varied in the degree of support they provided to the pregnant woman who wished to quit.

P1: 'You can't do it hun, you's won't make it a week'...

P2: Yeah, they'd be joking with us like...

P1: Like even if we go to our Uncles or Aunties, our Cousins... they would say it too, 'you's won't be able to do it' because they are used to seeing us smoking.

P2: They'd all be saying 'no you's can't do it', seeing us smoke, and they're all smokers and they'd be like 'nuh, you's won't do it'. [FG3; F's]

Conversely, family members may exert pressure to quit smoking, and be critical of the woman smoking when pregnant.

Mum used to rip me every time I used to smoke in front of her she said 'you want to chuck them away' I'd say 'yeah', but I just kept smoking... [FG1; F]

Look at me and see the big belly and like 'what's she doing smoking?'... [FG1; F]

Knowing and experiencing the health effects from smoking – “Smoking has got a hell a lot to do with how fast our mobs dying.” [FG2; M]

Knowing about the harms of smoking came from health messages or experience. Participants appreciated midwives as sources of knowledge and support. Sources included: TV advertisements, pack warnings, schools, car licencing regulations, and family. In aggregate participants demonstrated a reasonable knowledge of the harmful effects from smoking on the baby such as: placental problems, low oxygen supply, low birth weight, prematurity, jaundice, spinal problems, SUDI, and respiratory problems.

They just drum into you it's more of a low body weight and that's what starts them off wrong. [FG2; F]

Some expressed specific gaps in knowledge. *I haven't actually heard the breathing and oxygen type problems. [FG2; F]*

[T]here were things that I did not know that affected kids and like us as well about smoking... [FG1; F]

Smoking was seen potentially as a way to keep birth weight low or offset the effects of a big baby for example if a woman was diabetic.

I have known a few girls that have had diabetes when they are pregnant and they're smokers and they're like saying to me 'oh I can't quit because I am having a bigger baby or I want the baby to be small'... [FG1; F]

One woman was more aware of the effects of alcohol on the foetus than smoking, reflecting a perception that drinking alcohol may be more significant in Aboriginal communities.

Been more of the drink babies that have had the problems and not the smoking babies... so and it never ever sat inside my head that there could be a problem. [FG2; F]

Knowing how smoking affects the pregnant woman was less assured: only high blood pressure and nausea were mentioned. Several had sadly witnessed chronic smoking-related diseases in elders.

My grandfather dies and he smoked ever since he was 14 and he dies last year of cancer and when he dies it kind of got me... my Pop he has passed away from cancer, that kind of scared me. [FG3; F]

Responses to health messages – “What scares ya when you see them ads too, I get up and walk away” [FG3; F]

There was range of responses to health messages from the media and advice given by health professionals. In general smoking was seen as harmful for the foetus and children. Individuals expressed protective attitudes about exposing babies to cigarette smoke in utero, and reported changes in smoking behaviour by cutting down or quitting (links with 'Giving up and cutting down'). Responses to TV advertising could engender strong fear reactions and participants described ignoring the messages.

I just go into the other room and light up another cigarette... scares the hell out of me it does... [FG5; F]

Knowing about the harms from smoking appeared more salient when participants' lived experience was in accord with the messages they received. If in contrast the participants had not known anyone who had experienced harmful effects (especially in pregnancy), these effects were considered less relevant. For example, anti-smoking messages were questioned when individuals experienced themselves or their children as healthy or if others' babies were seen to turn out "normal" despite parental smoking.

[S]he has got 4 kids and she smoked for all of her kids and look at all her kids they are all big and bulky and healthy. [FG2; M]
I heard of all different stuff but I don't know. I don't know whether I believe it cos I've had no problems. Yeah we don't know anyone with any of them and we've all been smokers... [FG5; F]

Women may feel reassured that others had not experienced harmful effects.

You think everyone else does it nothing happened to them, so nothing will happen to me. [re TV ads] [FG2; F].
Just people tend to say 'oh it's not going to hurt you know, it won't affect the baby, it's alright I did it when I was pregnant.' [FG1; F]

Conversely, individuals who experienced the ill effects from smoking with their own baby or others close to them readily acknowledged the risks attached to smoking.

He has got breathing problems now and I reckon that's from smoking all the way through. [FG1; F]
I smoked too much and also I used to smoke yandi [cannabis], there wasn't enough oxygen getting to her, I went all the way but at the end it was a bit complicated and she ended up passing away. [FG2; F]

Participants were frequently cynical about the hypocrisy shown by government policies and messages.

I just have a big gripe with the government because... they're the ones and the organisations that are pushing all this non smoking, non smoking, stop smoking and all the rest of it, but if they were really serious about it stop selling them... [FG2; M]

Participants considered smoking to be their choice. *This is a choice this person is going through, you have to help us by you know not so much forcing and making people feel like scum... [FG2; F]*

I will do it when I am ready. When I want to do it so there is no pressure... I don't want someone to tell me I have got to do it... [FG5; F]

Non-empathetic, or authoritarian attitudes from doctors were not welcomed or helpful.

'I'm the Doctor I know, so you have to do what I say' and I'm sorry you don't tell me what to do you are not my mother you know. [FG2; F]

It comes down to: if I have got to go to a doctor and listen to the lecture and get the prescription don't worry about it. [FG2; F]

Managing smoke-free homes and cars – “Nobody smokes in the house if there's a new baby” [FG5; F]

The focus groups discussed household smoking and smoke-free zones through the felt ‘storyboard’ activity. Fig. 1 depicts a composite of locations where smoking was occurring in the household. A locus of control over exposure to household cigarette smoke was apparent with evidence of community norms being challenged, however it was less clear how this related to partial home smoking bans. Parents expressed forceful sentiments about others smoking around their children.

Yeah my house is my rules. . . what you do in your house is your business. You come to my house I don't care whether you're my Uncle you're my Mother you're my Father, you come to my house you stick by my rules. [FG2; M]

[N]o, you don't smoke in my house . . . I said 'out, I have got a young kid here'. I had to tell her like about 3 times just to you know, 'you go outside to smoke'. . . [FG1:F]

Social situations may be avoided where people would be smoking. *You don't put them in a situation where there is all [smoking]. [FG2; F]*

Even when household members sometimes smoked indoors or in the car most avoided smoking when children were present, and limited indoor smoking to rooms away from babies.

I don't let no one smoke inside the house, I'll smoke in the laundry but I will make sure like even though the smoke still gets through I will put a towel down like behind the door and leave the laundry door and the window like right open. [FG1; F]

There was a consensus about not smoking around newborn babies: *If there's a new baby coming in the house we don't smoke – every window and door gets opened up and we just don't smoke near the baby.*

[FG5; F] However, the age of vulnerability to second-hand smoke was debated, as is seen in this exchange:

P1. Nobody smokes in the house if there's a new baby in it. Don't smoke in the car if there's a new baby in it. But if my kids are in, who are 12, 13, 15 I'll smoke in the car.

Interviewer: . . . what is the age where you change the behaviour?

P1: Well Y's two now and I've been smoking in the house for a long time. . .

P2: . . . that could be 6 months or 8 months I'm not sure a time, but no one smokes near a new baby. [FG5; F's]

Other protective measures were changing clothes after smoking, or wearing a ‘smoking shirt’. One woman reported that a male partner was told to shower after every time he had a smoke. Parents gave examples of children being concerned about parental smoking, and protecting younger siblings.

Our little brother he is so environmental like that. . . he will make all the kids go another way, if we're outside smoking. . . so they don't breath that smoke. [FG3; F]

They [children] say 'you haven't given up the smokes Dad, what if that happens to you?' . . . they are giving him lectures and they are only like 8 and 10. [FG1; F]

There were barriers to trying to smoke outdoors, away from children. Parents expressed conflict when children wanted to follow them to where they smoked.

P1: That's what I stress about sometimes to Mum, I'm out here trying to get away from them to have the smoke but they want to be right next to you.

P2: . . . Causes more stress because you've got screaming kids, we've got little ones where yeah if you try and keep them away they just bellow and bellow and bellow until you come back in. [FG2; F's]

Most people were aware of the smoke-free car regulations but some questioned their effectiveness: *I'm sorry I have never ever seen*

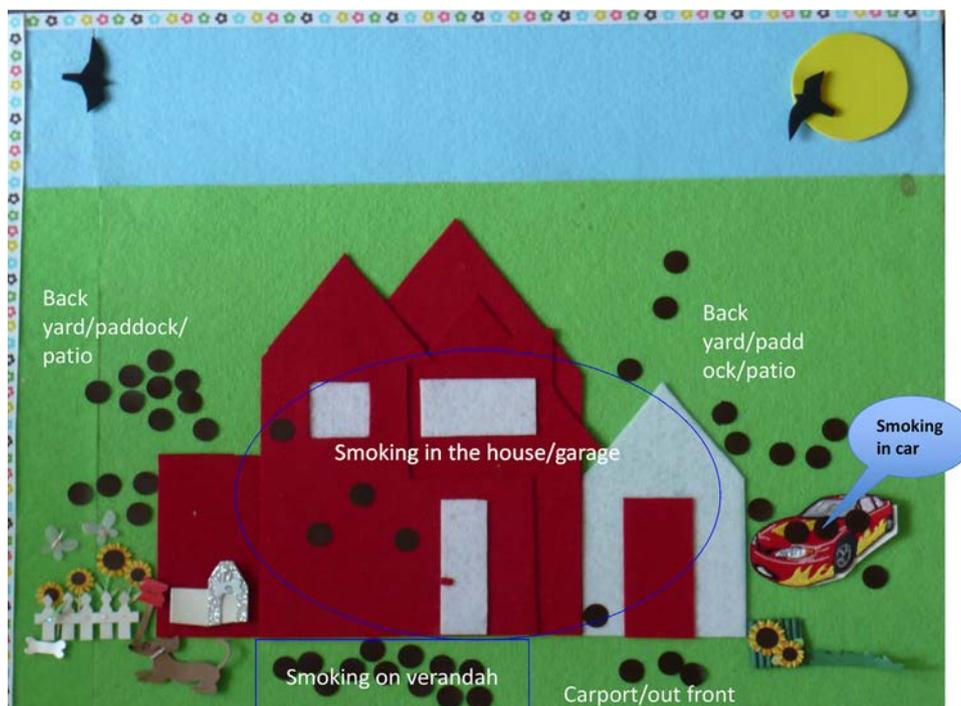


Fig. 1. Compilation on the felt board activity. The photograph depicts all the locations where the participants indicated household smoking was occurring (indicated by brown spots). Most of the smoking was outside of the home, on the veranda, in front of the house, in the carport, back yard, patio or paddock. Fewer households were shown to be smoking indoors. Some participants qualified their representation by stating, “when no kids are there”.

anyone being pulled over all I've seen is people smoking with kids in their car. [FG2; F]

Stress and craving – “I just stress out if I don't have a cigarette.” [FG1; F]

Stress and anxious situations were frequently cited as reasons for smoking. *She gave it away but then she could not deal with the stress that was going on.* [FG1; F]

Descriptions of stress frequently overlapped with symptoms of withdrawal, exemplified by the following: *Stress, the automatic buzzer you know instantly clicks into my head and if I haven't had a smoke for say two or three hours it is an automatic thing that suddenly goes 'you need a smoke' and yeah it's like 'oh, OK I haven't had a smoke...'* [FG2; F].

It is the withdrawals as well... some people they really suffer... not only their mood swings and all that but their whole the emotional side of it. [FG 1; F]

Many households could not afford cigarettes for the whole week, so smokers may spend one or more days in withdrawal, again described as stress.

You could have no smokes and you're stressed out cause you just need that crave you know especially sometimes when you wake up and you haven't got no smokes. [FG3; F].

Other cues were meal times, work breaks, yarning, socialising, sporting events, boredom, watching TV advertisements, drinking alcohol and smelling tobacco smoke.

They were all having a smoke out the back... I could smell it and I thought 'o nuh I need a cigarette now'. [FG3; F]

Even those who were not regular smokers may smoke when drinking alcohol. *I know people that do that they don't smoke unless they are drunk, won't touch it when they are sober...* [FG2; F]

Participants considered cannabis smoking to be high in pregnancy. *A lot of pregnant women... smoke pot.* [FG1; F] One group asked for the recorder to be switched off when they discussed cannabis, possibly due to the attached stigma.²³

Relapse was reported when around other smokers, partners, drinking alcohol, and after the birth. *My partner would go out for a smoke and I just ended up taking it up.* [FG1; F]

I stopped cigarettes for the first couple of weeks, and weed. And then I just sort of broke down one day. [FG5; F]

Giving up and cutting down – “Oh I'm pregnant I have to quit smoking” [FG2; F]

Emotions such as fear or guilt provoked changes in attitudes and smoking behaviour. *Guilt made me quit.* [FG2; F] Some women felt differently about their smoking once pregnant. *But yeah I didn't think there was anything wrong smoking just cos everyone in our family smoked through pregnancy, so I thought I'd be the same but when I fell pregnant, I felt different.* [FG3; F]

'Protection' for the foetus was attempted by cutting down cigarette consumption. *With my babies... I have cut down heaps.* [FG3; F], but smoking more was also reported:

I was craving for more cigarettes when I was pregnant with him like... I used to smoke heaps... [FG1; F]

Pregnant quitters seem to be scarce: those that did quit attracted admiration, especially if they quit unsupported. *But she did it all on her own she didn't have no help or nothing.* [FG3; F] There was also sadness for the scarcity of role models.

Quitting was seen as 'too hard' with resulting discomfort if a woman was not able to quit. *I should be able to just stop for the health of my baby but I just can't.* [FG1; F]

Well I am pregnant now and I smoke but it is just really hard to give up. I want to but I just can't like everyone else around me just smokes and it is just hard I just can't do it. [FG1; F]

I gave up smoking when I was about 7 months, it was hard for me but I just thought of my baby. [FG1; F]

Participants discussed cessation methods in general, not necessarily related to their use in pregnancy. In aggregate the following methods were mentioned: cold turkey, cutting down, nicotine patches, inhalers and gum, herbal cigarettes, Champix, the Quitline, stopping buying cigarettes, hypnosis, will power and exercise. The need for pharmacotherapy was acknowledged. Some claimed success with NRT while others did not know anyone who used it.

She went to the doctor to get help... ever since she's been on the patches she has been really good. [FG1; F]

There were some negative views due to adverse effects, and some preferred to quit unaided or did not understand how NRT could help.

I think it would be easier to give up cold turkey than try and wear patches and that because it would make you want to smoke more wouldn't it because it has still got nicotine in it? [FG4; M]

A few described smokers who had unsuccessfully tried many therapies, indicating a sense of hopelessness.

I have a friend... her and her husband smoke 75 cigarettes a day each... this lady has asthma, so she has a cigarette in this hand and a puffer in this hand and she's on oxygen... she has done hypnosis, she has done patches, she has done those tablets, she's done everything... [FG5; F]

Community recommendations – “If I had a program like that when I was pregnant I probably would have quit by now.” [FG3; F]

Participants suggested approaches to manage smoking in pregnancy via both group and individual interventions. Support was considered vital from family or friends, and from professionals, including access to NRT. Importance was given to the message source and personnel providing interventions. A non-judgmental, positive approach from credible and trusted professionals, such as smoking cessation experts or midwives and/or ex-smoking mentors, was fundamental. The following highlights the “value placed on experiential knowledge” (p. 115).²¹

Don't talk to me about what you have learned out of a textbook... it has to be someone that has lived it and experienced. [FG2; M]

One participant gave clear direction to build on the protective attitudes of pregnant women, and make links to the less tangible effects later in life.

[Y]ou have got to push more 'this is what it is going to do to your child, your child could have this in so many years'. [FG2; F]

Interventions would need to address deeper issues and provide healthy alternates, e.g. creative activities.

They got to take into account pretty much what's going to be underneath the surface... you have to have something in place to keep the non smoker or alcoholic occupied... to keep them active because at the point when they're standing around doing nothing the first thing they are going to do is look for the drink or look for a smoke... [FG2; M]

Targeting the whole family to share responsibility was suggested. *Tying it in with the whole family more than the individual I think because then it's not just one person going home... because I don't think that works very well because it's one person trying to preach.* [FG1:F]

4. Discussion

This qualitative study explored Aboriginal people's attitudes to and experiences of smoking during pregnancy and household smoking at one Aboriginal maternity service in Australia. Our findings revealed multiple perspectives through interlinking factors that influenced maternal smoking. These factors included: social and family influences, lack of support for quitting, lack of relevance of anti-tobacco and educational messages to participants' lived experience, protective parental attitudes to the foetus, babies and children, and the active management of smoke-free homes. The participants made suggestions about what interventions could be effective to tackle maternal smoking.

The focus groups confirmed the social and family influences contributing to smoking in Aboriginal communities,^{6,16,24} which cause difficulties with both Aboriginal women quitting when pregnant, and the maintenance of smoke-free homes. Concordant with other studies, cessation was especially difficult when around other smokers particularly partners who smoke.^{7,9,16,25–27} Johnston et al. similarly reported that Aboriginal women who continue to smoke during pregnancy live with a higher number of household smokers, but also reported reductions in indoors smoking after the birth.²⁵ Despite some of the participants in our study reporting indoors smoking in the demographic survey, the discussions and the felt-board activity revealed the qualitative nuances of the management of household smoke-free zones, which have not been reported before. Furthermore participants were challenging others' smoking practices to protect children and babies. These are positive strategies as creating smoke-free homes are associated with quitting and reduced consumption, although the benefits of partial bans are less certain.²⁸

Consistent with other studies the women in our focus groups were aware about tobacco harms, felt guilty about smoking while pregnant^{7,29} and attempted to change smoking behaviour, with many thinking of quitting.³⁰ As cessation is challenging women were more likely to reduce consumption than quit.^{7,31} Participants in our study suggested pregnant women might risk social isolation by quitting, as smoking has such a strong role in social cohesion.¹⁶ Reducing cigarette consumption may be a compromise so that Aboriginal pregnant women can feel socially connected, yet try to minimise harm. This issue may also reflect the lack of access to effective interventions.¹⁰

Knowledge of smoking harms in aggregate was broad here in this study,^{7,26} but has been described as limited by other researchers.^{27,31} Lower knowledge levels have been associated with smoking indoors and the belief that light smoking is not harmful to the foetus.²⁶ Women in our groups compared information available in the media and from health professionals with their own, family or peers' lived experiences. When views did not match, the legitimacy of the message or threat from smoking may be questioned; frightening TV advertisements were avoided^{7,9,26} and justifications were sometimes made for continued smoking.^{7,9,26} Indigenous peoples prefer Indigenous message sources, and although targeted anti-smoking media have achieved success internationally,³² this has not necessarily occurred during pregnancy.³³

Maternal smokers in other populations have been reported to distrust and refute anti-tobacco messages.²⁹ A recent UK study found similar findings in how women view smoking when pregnant with justifications for smoking being increased with

uncertainties about the mechanisms for harm, a lack of visibility of babies in utero being affected by the mother smoking, reassurance from other smokers who had healthy babies, and by midwives who overly praise cutting down cigarettes without promoting abstinence.³⁴ Although parallels may exist here for Aboriginal women who smoke, additional factors, including distrust of the government and officialdom, may be a legacy from colonisation, dispossession and subsequent multiple disadvantage.³⁵

The women in this study described changes to their attitudes about smoking when pregnant consistent with McBride et al's key constructs of a 'teachable moment', i.e. changes in emotional responses, risk perceptions and role redefinition, with protective instincts experienced by pregnant Aboriginal women in her redefined role.^{7,16,36}

The stress expressed by our participants was intimately linked with cravings for cigarettes and discomfort when running out of supplies, identical with nicotine withdrawal effects.³¹ Reducing cigarette consumption to minimise harm may contribute to a pregnant woman experiencing stronger urges to smoke. Aboriginal pregnant women are often living in difficult psychosocial circumstances^{7,8,26,27,30,31}; their distress potentially amplifies sensitivity to nicotine withdrawal.³⁷ Although the interactions between stressful life events, mood and cessation are complex, in the general population quitters perceive a reduction in stress.³⁸ Whether this applies to the Aboriginal context, and in particular to Aboriginal women, who smoke while pregnant, is not known. However, targeted education can assist smokers to understand the stress-inducing effects of nicotine withdrawal.³⁹ Easing withdrawal symptoms through NRT may be an important strategy. NRT, safer than continued smoking in pregnancy, is recommended for pregnant smokers unable to quit.⁴⁰

These findings from a small study at one service are limited and need to be interpreted cautiously. Social desirability bias may have influenced some participants in reporting their views of household smoking. The strength of the study is its focus on an under-represented target group and the inclusion of pregnant Aboriginal women and their families in consultation about suitable approaches.⁴¹ Care was taken to give credibility and validity to the study through researcher triangulation and consensus and the central role of Aboriginal advisers. Although some of the findings are similar to other studies about Aboriginal smoking in pregnancy,⁹ we have extended and refined understandings of attitudes towards health risk messages about smoking, attitudes to NRT and the management of smoke-free homes. Further research is required to clarify the use of oral forms of NRT by pregnant Aboriginal women, and the effectiveness of potential interventions as suggested by the participants.

5. Implications for practice and policy

These findings have implications for the appropriate development of tobacco control strategies at three levels: media messages, behavioural support and pharmacological treatment.

The static rates for smoking in Aboriginal and Torres Strait Islander pregnant women suggest that prevailing anti-tobacco messages may have been ineffective. During this focus group study an Indigenous-targeted National Tobacco Campaign was released,⁴² and a recent campaign targets smoking by pregnant Aboriginal and Torres Strait Islanders.⁴³ The Tackling Indigenous Tobacco teams are trialling local social marketing strategies: several target pregnancy.⁵² Further culturally sensitive approaches are required to focus on the less tangible effects from smoking on the foetus. These intangible effects are not often publicised in the media, nor is causality effectively linked.⁷ Salient messages need to have the right tone, from credible and accepted sources^{44,45}; an approach supported by this

community's preferences for non-patronising messages. Testimonials from trustworthy sources may raise awareness about the less well-known health risks of smoking, and the intergenerational links to chronic diseases, without Aboriginal women having to experience such distressing effects themselves. Knowledge about how to make a home safely smoke-free for children of all ages requires refinement, and should be aimed at the whole community.⁴⁵

Aboriginal pregnant women who smoke have much to gain from a much more comprehensive supportive environment for quitting. Successful smoking cessation includes the provision of and access to appropriate treatment and services,¹⁰ to help make quitting an easier choice. Best practice midwifery care advocates all approaches are woman-centred, holistic and inclusive of family.⁴⁶ A woman-centred 'teachable moment' approach is recommended as worthy of trial in Aboriginal pregnant women who smoke.³¹ This may be less useful if Aboriginal women present late for antenatal care.⁷ Appropriately tailored approaches³¹ can increase motivation and self-efficacy, with unambiguous advice promoting cessation, rather than reducing, as the preferred option.³⁴ Woman-centred behavioural approaches to smoking also depend on health professionals, midwives and AHW's being willing to raise the issue and engage with pregnant smokers^{7,47} in an empathetic non-judgemental manner. It is essential that the knowledge gaps in the providers are addressed.⁴⁷ Family programs, recommended as a good way to foster enabling environments for quitting,⁴⁸ may support cessation in Aboriginal pregnant women. Cultural beliefs and values need to be taken into account when designing such programs.^{45,49}

First line pharmacological treatment for pregnant smokers is oral forms of NRT (e.g. lozenges).^{40,50} In Australia, oral NRT is not subsidised. We recommend that the Pharmaceutical Benefits Scheme listing of NRT should be extended to include oral NRT to ameliorate the stress-inducing experiences of nicotine withdrawal. As combined NRT (oral and transdermal) has been recently shown to be more effective for pregnant smokers,⁵¹ PBS regulations should allow combined therapy if required. Provision of subsidised oral NRT reduces one of the barriers for Aboriginal pregnant women, however the special needs of Aboriginal pregnant smokers are likely to demand multi-faceted approaches. These should also include culturally sensitive salient anti-tobacco messages, improved patient education, individual, family and community support, and health provider training.

6. Conclusion

This work builds on knowledge from a previous meta-ethnography of studies on smoking by Aboriginal and/or Torres Strait Islander women⁹ by bringing greater attention to issues of household smoking, NRT and views about susceptibility to tobacco harms. Anti-tobacco messages and interventions should relate to Aboriginal women's experiences, improve understanding of the quitting process, support efficacy, and capitalise on the positive changes occurring in smoke-free home management.

Declaration of interests

AM receives a personal income from Cancer Research UK via University College London. He has received travel funding, honorariums and consultancy payments from manufacturers of smoking cessation products (Pfizer Ltd, Novartis UK and GSK Consumer Healthcare Ltd). He also receives payment for providing training to smoking cessation specialists; receives royalties from books on smoking cessation and has a share in a patent of a nicotine delivery device.

Acknowledgements

The Australian Government Department of Health and Ageing Indigenous Tobacco Control Initiative funded this work. GG is in receipt of a post-graduate scholarship for Indigenous health research from National Health and Medical Research Council (Australia) and National Heart Foundation (Australia) APP1039759.

For their generous involvement in this study we would like to acknowledge the Aboriginal community and Elders, staff and clients from the Aboriginal Maternal and Infant Health Service, Coffs Harbour, Mid North Coast Local Health Network; and the University of New South Wales, Rural Clinical School as sponsors. North Coast Medicare Local (previously the Mid North Coast (NSW) Division of General Practice) is acknowledged for their support as managers of the No Smokes North Coast project under which this study was conducted. We thank the participants for their frank discussions about this complex topic. Thanks to A/Professor Rick van der Zwan for helpful comments at the early stage of this project.

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4.3 Summary

- Smoking prevalence in Aboriginal and Torres Strait Islander pregnant women is quadruple that of non-Indigenous counterparts, impacting on the health of babies and children.
- My aim was to explore attitudes and experiences related to prenatal smoking by Aboriginal women and household smoking, and to provide recommendations for culturally appropriate interventions.
- Five focus groups were conducted with clients and family members of a regional NSW Aboriginal maternity service (n=18). Committees, including Aboriginal representatives, oversaw the study. A team of four, including a midwife and an Aboriginal project officer, analysed transcripts with the constant comparative method and developed key categories.
- The categories included: social and family influences, knowing and experiencing the health effects of smoking, responses to health messages, cravings and stress, giving up and cutting down, managing smoke-free homes and cars, and community recommendations. Smoking in pregnancy and passive smoking were acknowledged as harmful for babies and children. Anti-tobacco messages and cessation advice appeared more salient when concordant with women's lived experience. Reduced cigarette consumption was reported in pregnancy. Despite smoking in the home, families were reported being engaged in the management of environmental tobacco smoke to reduce harm to babies and children. Participants indicated that abstinence was difficult to initiate or maintain because of the widespread use of tobacco in the social and family realm.
- Anti-tobacco messages and interventions should relate to Aboriginal women's experiences, improve understanding of the quitting process, support efficacy, and capitalise on the positive changes occurring in smoke-free home

management. Focus group participants recommended individual, group and family approaches, and access to cessation services and nicotine replacement therapy for Aboriginal pregnant women who smoke.

4.4 Final word

This study added new knowledge to the issues of smoking in pregnancy and the management of smoke-free homes in an Aboriginal community in NSW. The study completed my investigation for this thesis into smoking in pregnancy. I then broadened my view further to investigate attitudes about smoking and intentions for quitting in both male and female Aboriginal smokers of reproductive age on the Mid North Coast NSW (Study 5, Chapters 6-8). However before this study is described, I present the findings from a national survey on organisational practices for the development of anti-tobacco messages for Indigenous Australians, in Chapter 5.

**Chapter 5. *Developing anti-tobacco messages for
Australian Aboriginal and Torres Strait Islander
peoples: evidence from a national cross-sectional
survey***

5.1 Overview

From 2009 numerous tobacco control programs started to be implemented nationally in Australia as a response to Closing The Gap Strategy for Indigenous Australians. These were initiated due to The Council of Australian Governments allocating \$1.6 billion to tackle Indigenous smoking and included Tackling Indigenous Tobacco program, the ITCI programs and the targeted 'Break the Chain' National Television Campaign. Prior to this change in policy, a few Indigenous-specific mass media campaigns and projects were developed at a local and regional level, dating back to 1994, as detailed in Ivers et al's literature review.⁴² Indigenous targeted projects have been under-represented in the peer-reviewed literature, and those that were published did not include much detail about how the anti-tobacco messages in the programs had been developed for these populations. This study was planned to gain new evidence and insight into the contemporary state of affairs and the extent of the development of anti-tobacco messages for Indigenous Australians. Figure 5.1 places the chapter in relation to the conceptual overview.

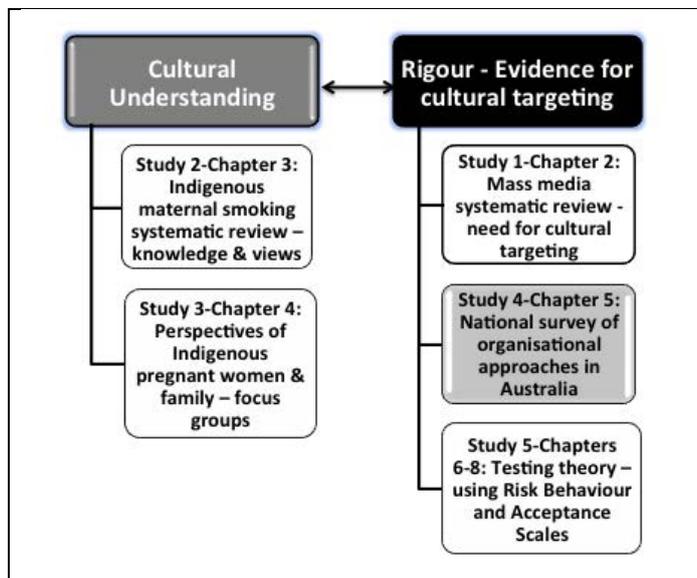


Figure 5.1 Study 4, Chapter 5 in relation to the conceptual model of the thesis for making salient messages for Indigenous tobacco control

This chapter is inserted as the published PDF from:

Gould GS, Watt K, Stevenson L, McEwen A, Cadet-James Y, Clough AR. Developing anti-tobacco messages for Australian Aboriginal and Torres Strait Islanders: evidence from a cross-sectional national survey. BMC Public Health. 2014. 14(250). doi: 10.1186/1471-2458-14-250

The above paper was largely drawn from the quantitative elements of the study and excluded the qualitative content. However the qualitative elements were presented in a conference poster at SRNT-E 2014. The peer-reviewed abstract and the subsequent conference poster are presented as an addendum at the end of this chapter, before the summary.

A more comprehensive report of the study was written and distributed to all the participating organisations and other key stakeholders such as the Tacking Indigenous Smoking Coordinator, Centre of Excellence for Indigenous Tobacco Control and the

Australian Indigenous Info-net, with the aim of informing them in detail about the study findings. This full report specified recommendations to improve the evaluation process for Indigenous mass media interventions. Both the paper and report have been supplied to the University of Canberra who are conducting an independent review of the Tackling Indigenous Smoking program.

5.2 Publication in BMC Public Health

RESEARCH ARTICLE

Open Access

Developing anti-tobacco messages for Australian Aboriginal and Torres Strait Islander peoples: evidence from a national cross-sectional survey

Gillian S Gould^{1,2*}, Kerriane Watt³, Leah Stevenson¹, Andy McEwen⁴, Yvonne Cadet-James⁵ and Alan R Clough¹

Abstract

Background: Smoking rates in Australian Aboriginal and Torres Strait Islander peoples remain high, with limited impact of government measures for many subgroups. The aim of this cross-sectional study was to investigate differences in organisational practice for developing anti-tobacco messages for these target populations.

Methods: Telephone interviews were conducted with 47 organisation representatives using a structured questionnaire based on health communication and health promotion frameworks. Responses were coded into phases of message development, message types (educational, threat, positive or advocacy), target groups, message recommendations, and evaluations undertaken. Cultural sensitivity for message development was divided into surface structure (use of images, language, demographics) and deep structure (use of socio-cultural values). A categorical principal component analysis explored the key dimensions of the findings and their component relationships.

Results: Among organisations interviewed, a community-orientated, bottom-up approach for developing anti-tobacco messages was reported by 47% (n = 24); 55% based message development on a theoretical framework; 87% used a positive benefit appeal; 38% used threat messages. More Aboriginal Medical Services (AMSs) targeted youth ($p < 0.005$) and advised smokers to quit ($p < 0.05$) than other types of organisations. AMSs were significantly more likely to report using deep structure in tailoring messages compared with non-government ($p < 0.05$) and government organisations ($p < 0.05$). Organisations that were oriented to the general population were more likely to evaluate their programs ($p < 0.05$). A two-dimensional non-linear principal component analysis extracted components interpreted as "cultural understanding" (bottom-up, community-based approaches, deep structures) and "rigour" (theoretical frameworks, and planned/completed evaluations), and accounted for 53% of the variability in the data.

Conclusion: Message features, associated with successful campaigns in other populations, are starting to be used for Aboriginal and Torres Strait Islander peoples. A model is proposed to facilitate the development of targeted anti-tobacco messages for Aboriginal and Torres Strait Islander peoples. Organisations could consider incorporating both components of cultural understanding-rigour to enable the growth of evidence-based practice.

Keywords: Aboriginal and Torres Strait Islander peoples, Oceania ancestry group, Tobacco smoking, Anti-tobacco messages, Smoking cessation, Cultural sensitivity, Targeted health promotion messages, evaluation

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Background

In Australia, smoking in the general population has steadily decreased since the introduction of media campaigns, smoke-free legislation and pricing increases [1]. It is currently estimated at 15% [2]. Smoking prevalence in Aboriginal and Torres Strait Islander peoples, whilst also on a downward trend, is 2.6 times that of the general population at 41% [3] and the gap between Aboriginal and Torres Strait Islander daily smokers and the general population has only closed by 2% over the last 10 years [3]. However, daily smoking in Aboriginal and Torres Strait Islander peoples in the 25–34, and 45–54 age groups, and in remote areas, has not declined significantly in the last decade [3].

Factors that contribute to the continued use of tobacco by Aboriginal and Torres Strait Islander peoples include historical use, the effect of colonisation, community norms, and multiple structural and socio-economic inequalities [4]. There are barriers to adequate implementation of tobacco control campaigns in some Aboriginal and Torres Strait Islander communities, especially if remote [4]. Inadequate reach could contribute to lower campaign effectiveness [5]. Moreover there are inequities in health care access and cessation treatments for Aboriginal and Torres Strait Islander peoples [4].

Most mass-media campaign research has been in high income populations, with less emphasis on the special needs of disadvantaged groups such as Indigenous populations [6]. There is limited research into mass media anti-tobacco programs for Aboriginal and Torres Strait Islander peoples with reports of little consistency of approaches [7–9]. In 2011 the National Tobacco Campaign developed the targeted 'Break the Chain' TV campaign, to aid Aboriginal and Torres Strait Islander smokers to acknowledge the health impacts from smoking. The campaign aims to reduce by half the prevalence of smoking among Aboriginal and Torres Strait Islander peoples by 2018 [9]. The Council of Australian Governments 'closing the gap' strategy is currently devoting significant funding for local anti-tobacco programs for Aboriginal and Torres Strait Islander communities [10].

The Ottawa Charter for Health Promotion recommends that health messages are respectful of the cultural needs of diverse populations [11]. Targeting, a popular strategy for behaviour change, has been used with socially disadvantaged and ethnic minorities, and on the basis of culture. Kreuter and Skinner [12] defined targeting as "the development of a single intervention approach for a defined population subgroup that takes into account characteristics shared by the subgroup's members." Although Indigenous peoples have good recall of generic mass media messages these do not necessarily lead to behaviour changes [7]. A recent systematic review indicated that culturally-specific anti-tobacco mass

media programs, when used for Indigenous peoples, have been as effective in promoting quitting as generic messages are on the general population, and moreover they are preferred by Indigenous peoples from westernised nations [7]. However, appropriately controlled comparative studies to measure the efficacy of mass media interventions are scarce [7]. There is also limited evidence for the efficacy of cessation interventions specifically targeted to Indigenous peoples [13].

Less attention has been given to the way anti-tobacco messages are developed for Indigenous populations. Health communication research has shown that highly emotive messages are more likely to be effective in anti-tobacco media campaigns [14]. Fear-inducing messages are most often utilised in negative health effects campaigns [5], but positive emotions, such as humour and pride, can be important to prompt attitude and behaviour changes [15]. It is unknown how organisations are currently developing anti-tobacco messages for Aboriginal and Torres Strait Islander communities, what emotion-based messages are being used, or whether message construction has been informed by health communication and behaviour change theories.

With limited published evidence to guide the development of anti-tobacco messages for the Aboriginal and Torres Strait Islander target groups, and the proliferation of many new community based tobacco teams tackling Indigenous smoking, we believed it necessary to gain a clearer picture of current health promotion practices for tobacco in Australia. We aim to (a) understand what processes are being undertaken in making anti-tobacco health messages for Aboriginal and Torres Strait Islander peoples, (b) understand the range of anti-tobacco messages developed, (c) compare differences according to organisational type, and examine the main components accounting for variations in findings. By providing a snapshot of current and recent practices, these findings contribute to important issues for Indigenous tobacco control as outlined in government policies [16,17].

(Terminology: we prefer to use the term Aboriginal and Torres Strait Islander peoples when referring to the Indigenous peoples of Australia. However we also use the term Indigenous when referring to international literature about Indigenous people in general, and about policies (such as Indigenous tobacco control). Where a study has reported only on one people, e.g. Aboriginal, that term is used).

Methods

Study design

We surveyed Australian organisations involved in the development of health promotional messages for tobacco control with Aboriginal and Torres Strait Islander peoples. Both quantitative and qualitative data were collected to provide multiple standpoints. Only quantitative findings

are reported here, along with a brief qualitative overview of programs. By interviewing one representative from each organisation a degree of intersubjectivity [18] and experiential knowledge was assumed. However we sought functional knowledge to guide future pragmatic considerations for anti-tobacco message development and to open up opportunities for transferability [18].

Sampling

Potential participating Indigenous tobacco control programs were identified from:

- Australian Indigenous Health Info-net website
- Centre for Excellence in Indigenous Tobacco Control website
- Indigenous Tobacco Control Initiative funding recipients
- Tackling Indigenous Smoking Tobacco Teams
- Contacts recommended by other participants, and those known to investigators

Contact was made by telephone where possible. Information sheet, questionnaire, and consent forms were then emailed to potential participants. Eligibility criteria were:

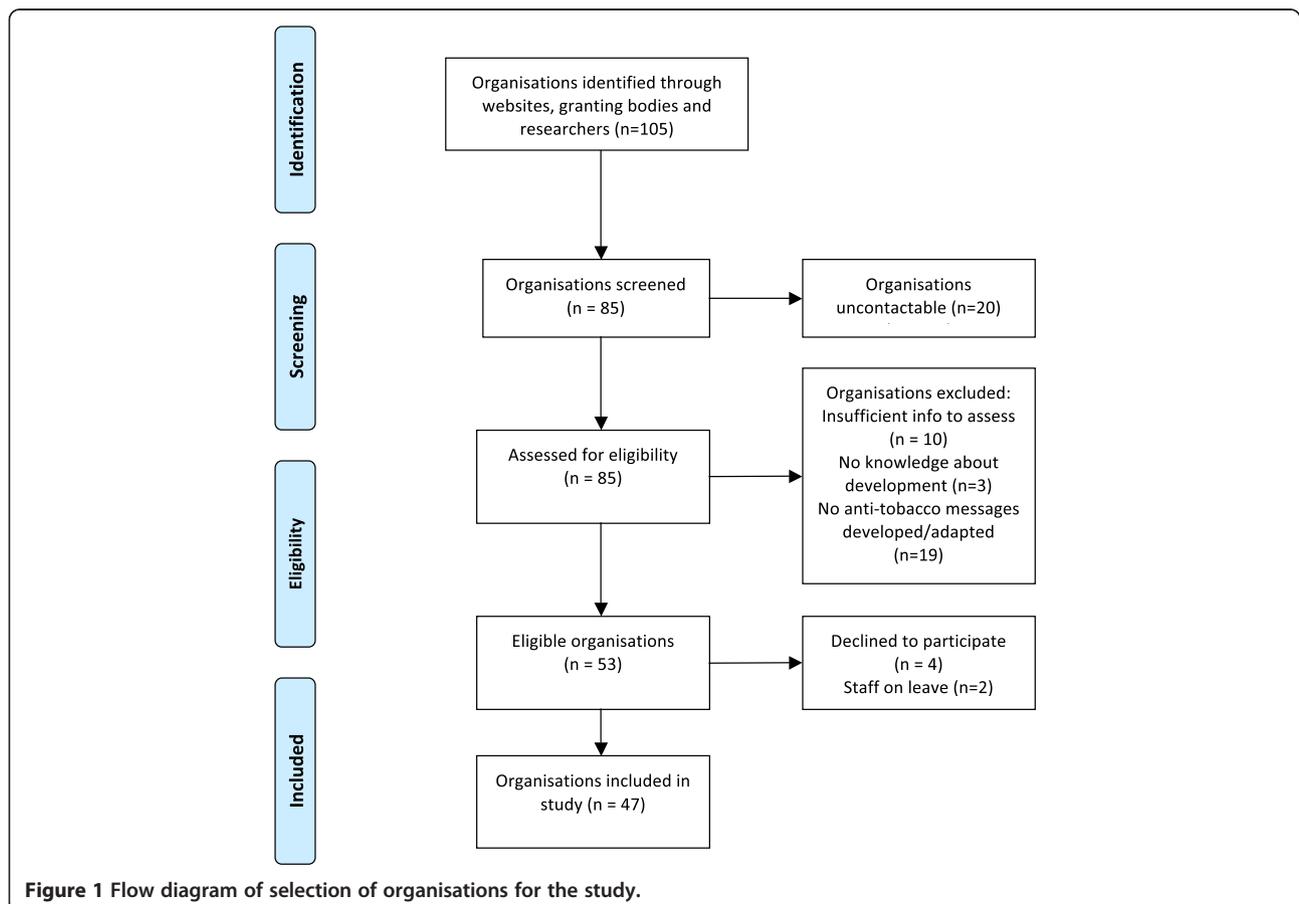
(a) the organisation had to have developed or adapted anti-tobacco messages for Aboriginal and/or Torres Strait Islander peoples; and (b) have someone available who could talk about that development. The unit of analysis was the organisation, however three organisations each reported on two programs (with respondents from different sectors). Eligibility was assessed during the phone or email contact (Figure 1). The response rate was 83% (44/53) of eligible organisations, with 47 people interviewed in total.

Settings and participants

The forty-seven interviews were conducted from September 2012 to May 2013. Those interviewed were located in urban (40%, n = 19), regional (43%, n = 20) and remote (17%, n = 8) localities, with 4–10 organisations in each in each State and Territory in Australia, but with none from Tasmania.

The participating organisations were classified into four groups labelled as follows:

- Twenty-one Aboriginal Medical Services (including one other Aboriginal organisation)– ‘AMSS’ (NB. Services may or may not be ‘community controlled’ so the term is not used here)



- Eight Public Hospitals or Area Health Services and four Government Departments – ‘GOs’
- Six non-government organisations and one Division of General Practice/Medicare Local – ‘NGOs’
- Four universities – ‘Unis’

Survey instrument

The questionnaire was based on several frameworks. Beattie’s Health Promotion Model [19], a cross-classification taken from social theory, was used to define whether the messages were created from a top-down approach or bottom-up approach, and if the focus was individual or collective (Figure 2).

To explore the contribution of cultural targeting to message formation, theories from Kreuter et al. and Resnicow et al. were used. Kreuter et al. proposed five strategies [20] to enhance cultural appropriateness (Table 1). Resnicow et al. recommended surface and deep structures for culturally sensitive interventions [21]. Both models were included to analyse how messages were culturally appropriate, and suitably targeted. Table 1 illustrates correspondences between Resnicow’s and Kreuter’s models, and provides definitions.

Survey topics and variables

Table 2 describes variables from the survey, how they were coded or recoded, and which items are reported here. The survey can be obtained from the authors upon request. Most variables were categorical except where indicated. When cells counts were too small for analyses, organisations were classified according to their orientation for Aboriginal and Torres Strait Islander populations or the general population; and/or AMSs versus ‘other’ organisations.

Table 1 Correspondences between theories for tailoring health messages

Resnicow (2000)	Kreuter (2003)
Surface structure	Peripheral strategies
	Linguistic strategies
	Evidential strategies
Deep structure	Constituent-involving strategies
	Sociocultural strategies

Definitions of terms:

Surface structure: matching materials and messages to ‘superficial’ characteristics of target population.

Deep structure: incorporating cultural, social and historical, mental and psychological forces that influence the targeted health behaviour.

Peripheral strategies: give the appearance of cultural appropriateness by colours, images etc.

Linguistic strategies: make materials more accessible through the use of appropriate language.

Evidential strategies: use epidemiological evidence specific to a population.

Constituent-involving strategies: draw directly on experiences of members of the target group.

Sociocultural strategies: places health issues in context of social and cultural values.

Participants were asked about the incorporation of 16 possible features into message development (responses were yes/no). These features were recoded as either surface or deep structure [21] for analysis. Surface structure included access (e.g. legible print, font, reading age), local languages, use of slang, the ‘look’ or design of the message, and the use of demographic data perceived by the respondents to be pertinent to the target group. Deep structure included Indigenous cultural beliefs, holistic wellbeing, family messages, story-telling, Indigenous role models and community Elders. The number of surface features (out of a possible 11) and the number of deep features (out of a possible 5) reported by the organisations were recorded.

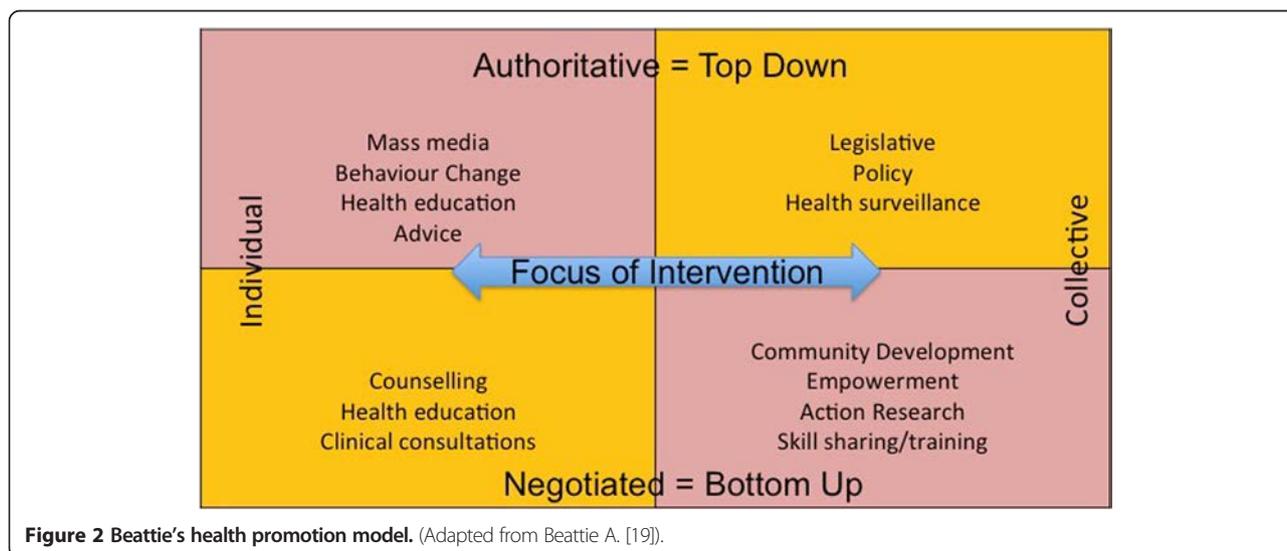


Figure 2 Beattie’s health promotion model. (Adapted from Beattie A. [19]).

Table 2 Variables covered in the questionnaire

Demographic information about participants and their organisation:

- Location of organisation – coded into urban (RA1), regional (RA2-3), or remote (RA4-5), using ASGC-RA*
- Role of person in organisation (6 response options e.g. AHW, administrative, researcher)*
- Organisation type (AMS, hospital/health service, University, research organisation, NGO, GO, other – recoded into AMS, GO, NGO, University)
- Orientation to general population or Aboriginal and Torres Strait Islander peoples

General information:

- Overview of program – open ended
- Adapted or newly made messages (Y/N)
- Messages as stand alone or part of a program (Y/N)*
- Target groups (youth, pregnant, elders, adult men, adult women, other)
- Different message styles for target groups (Y/N)
- Degree messages developed by a bottom-up vs. top-down approach - scale 1 (mostly bottom-up) to 10 (mostly top-down)
- Degree messages aimed at individuals vs. community - scale 1 (mostly individual) to 10 (mostly community)
- Theoretical framework (Y/N – describe if Y)
- Type of messages (7 response options e.g. educational, threat, positive benefit)

Formative phases:

- Community consultation (Y/N)
- How information from the community was gathered (10 response options e.g. community groups, surveys)*
- Topics explored with community (13 response options e.g. knowledge, threat from smoking, barriers to quit)*

Message development phase:

- Cultural challenges (Y/N - describe if Y)*
- Input sources for development (7 response options e.g. community, survey results, expert advice)*
- Personnel used for advice (10 response options e.g. AHWs, other health professionals, health promotion advisors, Indigenous artists) – recoded into Indigenous advisors (Y/N)
- Message features (16 response options e.g. Indigenous theme, health related statistics, effect of tobacco on family) - recoded into number of superficial and deep structures (see text)
- Recommended actions (Y/N)
- Recommended actions if Y (7 response options e.g. quit smoking, see GP, ring Quitline) recoded into referral options <2 or ≥2

Pre-test phase:

- Pre-tests with community (Y/N)
- How pretested (8 response options e.g. informal discussion, reference group, survey)
- Unexpected outcomes (Y/N - describe if Y)*

Table 2 Variables covered in the questionnaire

(Continued)

Resource development/distribution:

- Developed resources (Y/N)*
- Community consulted about resources (Y/N)*
- Resources developed (15 response options e.g. posters, DVD, T-shirts) recoded into print media, digital media, TV ads, merchandise, resources for quit groups, training, and other*
- Area of distribution (5 response options e.g. local, regional)*

Evaluation of messages/resources:

- Messages/resources tested or evaluated (Y/N). 'Evaluations planned' were formulated from notes of discussion about evaluation when N was indicated
- What tested (8 response options e.g. knowledge, quit rates, smoke-free spaces)*

Legend: AMS = Aboriginal Medical Service; GO = government organisation; NGO = non-government organisation; Y = yes; N = no; RA = remoteness area classification; AHW – Aboriginal Health Worker. ASGC-RA = Australian Standard Geographical Classifications - Remoteness Area [22]. *Indicates findings not reported here – for further information contact author or refer to full report [23].

Community consultation

A community consultation was held with six Aboriginal health staff, and one non-Indigenous manager at two health services, in Queensland and NSW. The consultation process tested face and content validity, acceptability and feasibility of the survey instrument from an Indigenous perspective. The questionnaire was then refined and amendments approved by the ethics committee.

Procedure

The questionnaire was administered by telephone by the first author. The responses and notes were entered into a secure survey website. Informed consent was obtained, and issues of confidentiality and anonymity were discussed. James Cook University Human Research Ethics Committee provided approval (reference H4466).

Analysis

Data were analysed with SPSS version 20. Categorical variables were analysed using Pearson chi-squared tests; Fisher's Exact tests were used when expected cell counts were less than five. For example, we tested the association between organisation type (categories: AMSs and 'others' combined) and advice to quit (Yes or No). Kruskal Wallis tests were used to determine association between organisation types (AMS, GO, NGOs and Unis) and the number of deep structures used. Differences between organisational types and the frequency of deep structures used were assessed by pairwise comparisons (Mann Whitney U tests), and the Bonferroni-Holm correction test for multiple comparisons. The correlation between frequency of deep

structures and the reported ratings of Beattie's axes (Bottom-up to Top-down) was analysed with the Spearman rank correlation coefficient. Non-linear categorical principal component analysis (with the CATPCA program) was also conducted [24] in order to reveal the most efficient and meaningful classifications and relationships among variables and organisations.

Results

Program overview

The anti-tobacco messages were reported as being mostly developed for mass media or social marketing i.e. TV, radio, and other media, and/or part of a program. Programs included individual or group cessation, education, and health worker training. Some organisations (19%, n = 9) had adapted other programs to their local community.

Descriptive and non-parametric analysis

Table 3 shows the message characteristics of the four organisations types. AMSs were more likely to target youth ($X^2 = 9.10$, $df = 1$, $p < 0.005$) and advised quitting in their messages ($X^2 = 5.16$, $df = 1$, $p < 0.05$) than the other organisations when their data were combined.

Organisation type and deep structure for message tailoring were significantly associated ($p < 0.05$). The quantity of deep structures used by AMSs was significantly greater

than GOs ($p < 0.05$) and NGOs ($p < 0.05$). Organisations that reported using a bottom-up approach (see below about Beattie's model) were also significantly more likely to use deep structures for messages ($r = 0.463$, $p < 0.001$).

Organisations other than AMSs (combined) were significantly more likely to report evaluating programs than AMSs ($X^2 = 7.59$, $df = 1$, $p < 0.01$). Similarly, when organisations were divided according to orientation to Aboriginal and Torres Strait Islander populations or the general population, the latter were significantly more likely to report evaluating their programs than organisations oriented to Aboriginal and Torres Strait Islander populations ($X^2 = 13.6$, $df = 1$, $p < 0.0005$). However there were moderating structural issues. Many AMSs stated they were in the early stages and had not yet evaluated their programs. Taking this into account, 72% (n = 34) of organisations reported 'evaluated or planned evaluations', and no significant differences then remained between AMSs and the 'other' organisations combined. However when organisations were divided according to orientation to Aboriginal and Torres Strait Islander populations or the general population, the association remained significant ($X^2 = 7.13$, $df = 1$, $p < 0.05$).

Beattie's health promotion model analysis

Figure 3 shows a plot of the ratings given by the participants when they estimated the degree to which their

Table 3 Message characteristics of organisation types

<i>Variable</i>	<i>Total</i> N = 47 <i>n (%)</i>	<i>AMS</i> N = 22 <i>n (%)</i>	<i>GO</i> N = 13 <i>n (%)</i>	<i>NGO</i> N = 8 <i>n (%)</i>	<i>Uni</i> N = 4 <i>n (%)</i>
Target					
<i>Youth target</i>	30 (64%)	19 (86%)	6 (46%)	3 (38%)	2 (50%)
<i>Pregnancy target</i>	26 (55%)	11(50%)	9 (69%)	4 (50%)	2 (50%)
<i>Adults target</i>	24 (51%)	12 (55%)	8 (62%)	4 (50%)	1 (25%)
<i>Elders target</i>	15 (32%)	10 (45%)	3 (23%)	1 (13%)	1 (25%)
Theory used	26 (55%)	9 (41%)	10 (77%)	5 (63%)	2 (50%)
Community consultation	45 (96%)	21 (95%)	12 (92%)	8 (100%)	4 (100%)
<i>Indigenous advisors</i>	46 (98%)	22 (100%)	12 (92%)	8 (100%)	4 (100%)
Message Type					
<i>Educational</i>	35 (75%)	16 (73%)	7 (54%)	8 (100%)	4 (100%)
<i>Positive Benefit</i>	41 (87%)	21 (95%)	10 (77%)	6 (75%)	4 (100%)
<i>Threat</i>	18 (38%)	9 (41%)	3 (23%)	4 (50%)	2 (50%)
<i>Advocacy</i>	37 (79%)	19 (86%)	8 (62%)	7 (88%)	3 (75%)
Action recommended	44(94%)	22 (100%)	11 (85%)	7 (88%)	4 (100%)
<i>Referral options ≥2</i>	31 (66%)	16 (73%)	7 (54%)	5 (63%)	3 (75%)
<i>Recommend to Quit</i>	33 (70%)	19 (86%)	7 (54%)	3 (38%)	4 (100%)
Pre-tested	34 (72%)	18 (82%)	7 (54%)	5 (63%)	4 (100%)
Evaluation	25 (53%)	7 (32%)	7 (54%)	7 (88%)	4 (100%)

Legend: AMS = Aboriginal Medical Service; GO = government organisation; NGO = non-government organisation; Uni = university.

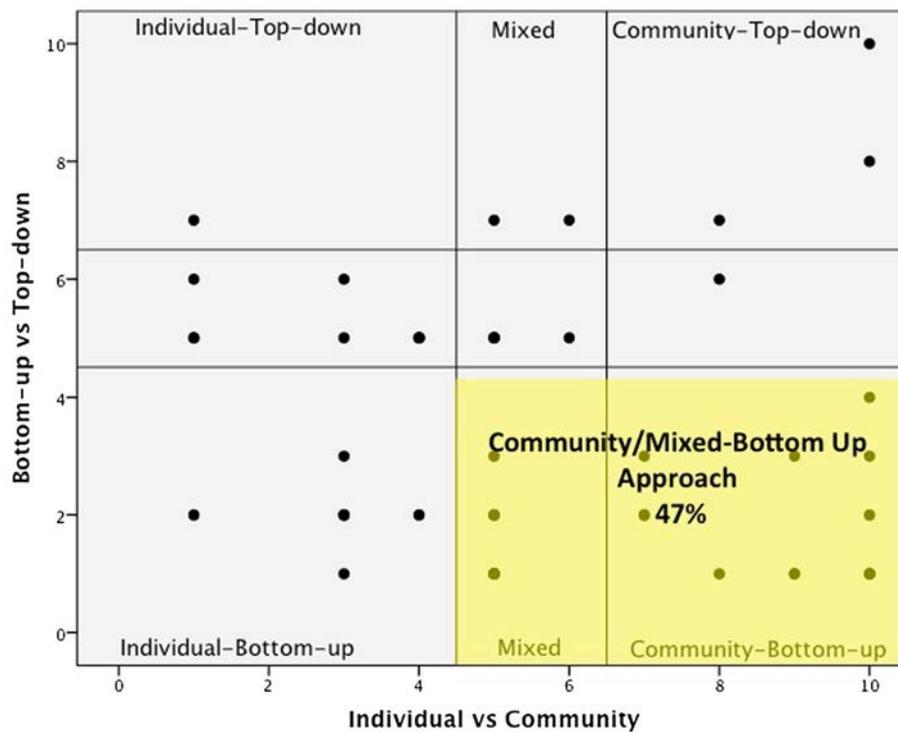


Figure 3 Scatter-plot of ratings of bottom-up vs. top-down and individual vs. community approaches.

organisation had used a bottom-up versus top-down approach, and an individual versus community focus. The y-axis of Figure 3 denotes the continuum between a top-down (authoritative) and bottom-up (negotiated) approach. The x-axis represents a spectrum of an individual versus a collective focus for messages. Quadrants were divided up as per Beattie’s Health Promotion Model, but allowed for central sectors when participants estimated ratings of 5 or 6 on either dimension (designated here as a ‘mixed approach’). Sixty percent (n = 28) of organisations reported using a bottom-up approach; 68% (n = 32) of organisations used either a mixed or community approach. When the dimensions were cross-tabulated, the Community-Bottom-up category (includes ratings in the central sector for mixed community/individual focus) was the largest single grouping reported (47%, n = 24). Community-Bottom-up approaches are commonly termed empowerment or community/participatory development models [19].

Categorical Principal Component Analysis (CATPCA)

To examine potential associations between categorical and numerical variables, we used CATPCA. In a first iteration, initial inclusions were organisation type, orientation, rurality, theory used, individual vs. community approach, top-down vs. bottom-up approach, message features, deep and surface message structure, recommended actions, referral options, pretests, evaluation,

evaluations done/planned, unexpected outcomes, and cultural challenges. When eight of the most relevant items were retained for analysis, based on factor loading scores of >0.4, the CATPCA revealed a parsimonious two-dimensional model with eigenvalues of 2.34 (dimension 1) and 1.79 (dimension 2), together accounting for 53% of the variance in the data.

Figure 4 shows the plotted coordinates for the retained variables, and how the variables relate to one another and to the two dimensions. We named these two principle categories “cultural understanding” and “rigour”. The variables ‘Community’, ‘Bottom-up’, ‘deep features’ and ‘pretest’ are grouped high on dimension 2 and in the lower range of dimension 1. (The ‘surface features’ variable was also in this group, but was removed as it obscured the other vectors). The other items coded as ‘evaluated’, ‘eval done/plan’, ‘theory’, and ‘orientation’ are grouped on the positive scale of dimension 1 and low on dimension 2. The items ‘pretest’ and ‘theory’ are closer to the centroid (0), which means they contributed less to the overall variance.

Figure 5 shows a scatter plot with each organisation (labelled by organisation type) plotted against the two dimensions. A large cluster of AMSs scores high on dimension 2 (cultural understanding). Some ‘other’ organisations (GOs, NGOs, and Unis) are located high on dimension 1 (rigour) but low on dimension 2 (cultural understanding). Organisations that are high on both dimensions (between

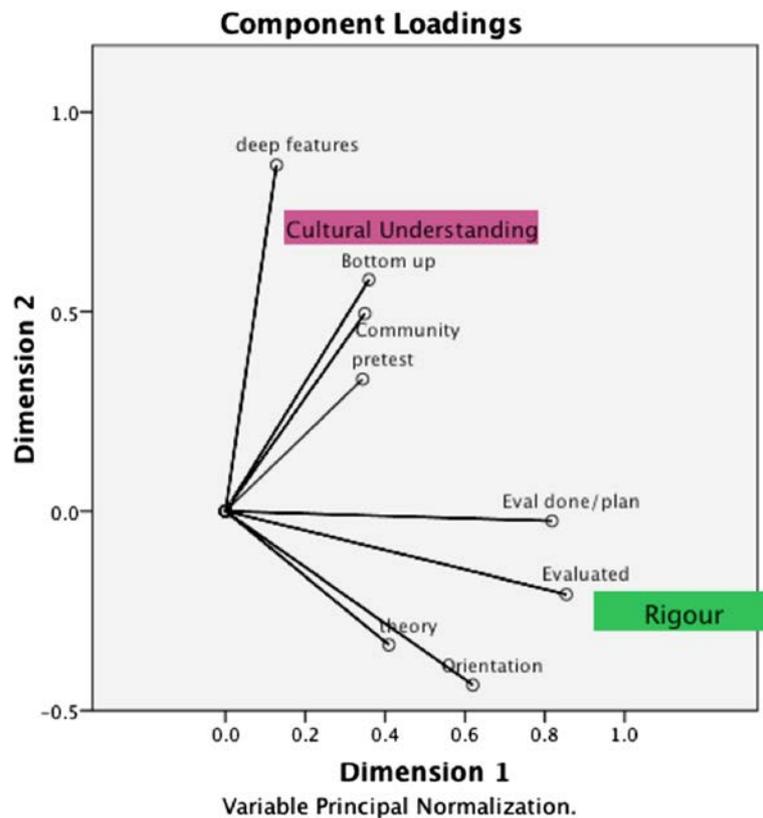


Figure 4 Component loadings from CATPCA on eight retained variables. Component loadings as Pearson correlations range between -1 and 1 in this two dimensional solution. The variables form two groups defined here as “Cultural Understanding” and “Rigour”. The co-ordinates of the end point of each vector are given by the loadings of each variable on the first and second dimensions. The variables closely grouped together in the plot are positively related. Vectors making a 90-degree angle indicate they are not related. Legend: ‘Community’ = Individual vs. community orientation; ‘Bottom-up’ = Bottom-up vs. Top-down approach; ‘deep features’ = numbers of deep message features; ‘pretest’ = a pretest was conducted; ‘eval done/planned’ = an evaluation was either completed or planned; ‘evaluated’ = evaluation was completed; ‘theory’ = a theoretical framework was used; ‘orientation’ = the organisation usually served the general population vs. the Aboriginal and/or Torres Strait Islander populations.

the two principal component axes in the right upper quadrant) combine both cultural understanding and rigour, and may be exemplars for the development of anti-tobacco messages. These include a range of organisations of all types. A few outliers, in the bottom left quadrant of the figure, are low on both components.

Discussion

Our unique study examined the contemporary factors reported to contribute to the development of anti-tobacco messages for Aboriginal and Torres Strait Islander communities. The survey revealed differences in how organisations were developing messages for the target populations. The CATPCA revealed a parsimonious model with two components interpreted as “cultural understanding” and “rigour” explaining the majority of variation in findings. AMSs were demonstrated as strong in providing cultural understanding through culturally sensitive messages and empowerment approaches. Organisations oriented to the general population

demonstrated strength in the use of theory and evaluation. Some organisations of all types provided both aspects, proposed to be best practice.

In regard to the evidence about mass-media tobacco campaigns, there are some cautious comparisons that can be made between Aboriginal and Torres Strait Islander groups and other populations, including those of low socio-economic status (SES) [25]. There is consistent evidence to support the relationship between smoking status and social gradient for Aboriginal and Torres Strait Islander peoples [26], and 57% of Aboriginal and Torres Strait Islander peoples in the lowest three deciles of disadvantage [27]. We outline the literature below about the use of cultural-appropriate messages, the use of theoretical frameworks, recommending people quit smoking, and providing two or more referral options. The findings suggest that some campaigns for Aboriginal and Torres Strait Islander peoples are using these promising features for the development of Indigenous tobacco control programs in Australia.

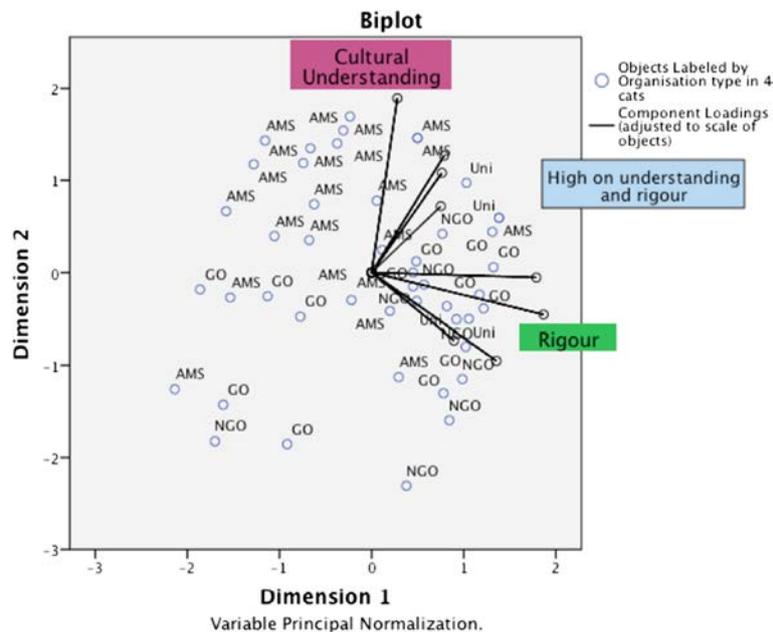


Figure 5 Biplot of the organisation types. Objects represented by circles and the component loadings indicated by vectors from the CATPCA solution on the eight variables. The vectors for the component loadings have been adjusted to the range of the objects for clarity. The organisations that are plotted between the two 'arms' of the vector groups are high on both "cultural understanding" and "rigour". (Variables omitted). Legend: cats = categories; AMS = Aboriginal Medical Service; GO = government organisation; NGO = non-government organisation; Uni = University.

Elements for cultural understanding and developing anti-tobacco messages

Community consultation was engaged in by nearly all the organisations, irrespective of approach. Most organisations used bottom-up approaches (60%), which are more likely to be empowerment models [28]. Empowerment approaches are time-consuming and may not be achievable within limited project frameworks [28]. The focus on combined individual and collective interventions is supported by other researchers [29,30], with 68% in our study using a community or mixed focus. Customisation of health messages applied at the community level, have the potential for wider reach [29]. A recent systemic review suggests that low SES groups require higher exposure to anti-tobacco messages to effect the same changes as mid-high SES groups [5], so campaign reach is critical.

Both surface and deep structures are important to facilitate the recipient's experiences of self-referencing and identification with messages [31]. Surface structures relate to the 'fit' of the message [21]. Surface structures, by being peripherally processed, are useful in those less motivated, however deep structures, more centrally processed, produce longer lasting effects [29]. The finding that the AMSs used more of the deep structures for cultural sensitivity (such as Indigenous world view, spiritual, cultural and family values) relates to message 'salience'.

Media messages also encourage quitting through social networks [5]. The use of social networks is relevant to the local approaches taken in Aboriginal and Torres Strait Islander communities. 'Real stories', used here by several organisations, encourage dialogue amongst smokers and have been effective in low SES communities when paired with information on where to seek help [32].

There is inconsistent evidence about whether threat-based messages are suitable to motivate Aboriginal and Torres Strait Islander peoples to quit. Qualitative research has revealed some avoidance of fear-based messages by Aboriginal people [33,34]. Conversely strong graphic images and those featuring an ill person, have been rated highly by Aboriginal and Torres Strait Islander smokers under experimental conditions [8]. Organisations here used fewer threat-based messages than positive appeals or combined approaches. No organisations used only a threat approach. Threat messages in isolation are less effective for the general population than when combined with a positive approach [29]. For disadvantaged and low SES smokers, negative health effect themes (including testimonials and graphic depictions) are effective [5], especially when combined with how-to-quit messages, but how-to-quit messages on their own are less successful [5]. Recommending two or more referral options, reported here by 66%, has been shown to positively influence message efficacy [29].

There is evidence that targeting youth through media and multi-component community interventions are both effective approaches to prevent smoking uptake [35,36]. As yet there is insufficient research available to be certain these approaches prevent initiation by Indigenous youth [37]. The prominent approach towards youth revealed in our study is pragmatic as young people represent such a large percentage of Aboriginal and Torres Strait Islander communities.

Many organisations in this study used media messages within the context of comprehensive health promotion approaches fostering empowerment: approaches successful in other populations [5,38]. Media campaigns appear to be most effective among low SES smokers when implemented alongside comprehensive programs that include community mobilisation, free access to nicotine replacement therapy, social support and policy changes to transform the social context of tobacco use [25]. Low SES smokers may have less opportunity to support long term abstinence, compounded by low access to services [25]. It is not yet determined whether comprehensive programs are going to be effective for Aboriginal and Torres Strait Islander peoples. Issues of intervention fidelity also need to be taken into account.

Elements for rigour in developing anti-tobacco messages

A good evidence base or assessment of program theory is recommended to avoid an ad hoc process in the development of health promotion approaches [38]. The use of a theoretical basis for message development by more than half of the organisations is promising, as programs that use a higher number of theoretical concepts for tailoring have shown larger effect sizes [29]. Cultural tailoring also improves the impact of theoretical tailoring [39]. Most organisations we surveyed promoted behaviour changes, and many took local and cultural demographical information into account. When these approaches are combined they can produce cumulative effects [29].

Evaluation is important to determine whether objectives have been realised [38], and to build an evidence-base for future interventions, and research translation. Rigorous evaluations are needed to build the evidence base around current tobacco action initiatives in Aboriginal and Torres Strait Islander communities. Carson et al. point to the need for methodological rigour in research that runs alongside community tobacco programs, with adequate control groups, pre and post measures, and meaningful follow-up periods [40]. Resources for anti-tobacco campaign evaluation are available [41]. Evaluations to consider include formalised pre-tests, process evaluation, campaign awareness and recall, community involvement and reach, changes in knowledge, attitudes and beliefs, behaviour change (with standardised and/or validated

quit rates [42]), smoke-free behaviours, and access to cessation services.

Most public health strategies for Aboriginal and Torres Strait Islander communities however are not evaluated, inadequately funded, not sufficiently robust to measure impacts, and not published [43]. This is a structural imbalance that is essential to address [44]. The unique methodological challenges involved in evaluating Indigenous programs, summarised by Cobb-Clarke [45], include small sample sizes which limit the power to detect slight changes, difficulties with appropriate randomisation, and limited meaningful control groups due to the diversity of Indigenous communities. Some communities may be the recipients of several policy-driven multi-faceted programs, so isolating the individual effects of these are challenging. Organisations therefore need to be very well resourced to evaluate program outcomes with dedicated funding, adequate time frames, human resources and expertise. This may include building research capacity.

Recommendations

Our recommendations for cultural understanding-rigour, pending further evidence, include the following:

- Organisations should consider both cultural understanding and rigour in their planning to guide development of anti-tobacco messages for this population.
- Deep structure for messages should be considered early in the project plan, as there may be limited opportunities to redress earlier omissions.
- We recommend synergy of action through partnerships. As organisations have different strengths and capacities, partnerships with organisations from different sectors is pragmatic. However community-based bottom-up approaches (empowerment models) should be maintained throughout.

Strengths of the study

The study, we believe, has effectively captured current strategies occurring Australia-wide. Due to the high response rate, and the contribution of organisations from nearly all States and Territories, spread across urban, rural and remote areas, the study is likely to be transferable to other organisations engaged in Aboriginal and Torres Strait Islander community tobacco control in the near future. CATPCA has enabled us to propose a theoretical model of cultural understanding-rigour as two important components to be considered when planning anti-tobacco messages and programs.

By providing an Australian snapshot of current anti-tobacco message development for Aboriginal and Torres

Strait Islander peoples this research contributes to the following priorities of the National Partnership Agreement on Closing the Gap on Indigenous Health [16] and the National Tobacco Strategy tobacco control objectives [17]:

- Addresses populations with high smoking rates
- Furthers research to guide Indigenous tobacco control policies
- Guides culturally targeted message development through social marketing, mass media and smoking cessation interventions
- Highlights the importance of evaluating tobacco control programs alongside the roll-out of state, territory and national programs
- Recommends strengthening collaboration between Aboriginal and Torres Strait Islander and other organisations

Limitations

Selection bias is likely, as some organisations could not be assessed for eligibility. Organisations may have been missed if their programs were not publicised. Data collection relied upon self-report. Although less likely to occur with an interview where probing was possible, inter-subjectivity inevitably may bias information. Outcomes of programs (i.e. effectiveness) were not evaluated. The study could have been improved by recording length of time since inception of the programs.

Conclusion

The findings demonstrated that organisations in Australia are engaged in developing cultural understanding, fostering empowerment, and responding to the local needs of Aboriginal and Torres Strait Islander communities. Features associated with successful campaigns elsewhere are starting to be used for Aboriginal and Torres Strait Islander peoples. These include the cultural adaptation of messages, the use of theory to inform message development, recommending people quit smoking; providing two or more referral options in the messages.

This study has provided new insight into the current development of anti-tobacco messages in Australia. Based on current and recent practices in Australia, we propose a theoretical 'cultural understanding-rigour' model as important twin aspects to develop evidence for appropriate tobacco control programs for Aboriginal and Torres Strait Islander peoples. The model of cultural understanding-rigour is yet to be tested by project outcomes, and needs further validation.

Consistent with policy recommendations in Australia [17], persuasive anti-tobacco messages should continue to be used to inform and motivate, as part of comprehensive programs that provide support and services for those attempting to quit. Refinement of evaluation and synergy of

action between organisations from different sectors may hasten the goal of closing the gap on Indigenous health caused by tobacco smoking. The future production of guidelines for the development of Indigenous anti-tobacco health promotion programs may facilitate these processes.

Competing interests

AM receives a personal income from Cancer Research UK via University College London. He has received travel funding, honorariums and consultancy payments from manufacturers of smoking cessation products (Pfizer Ltd, Novartis UK and GSK Consumer Healthcare Ltd). He also receives payment for providing training to smoking cessation specialists; receives royalties from books on smoking cessation and has a share in a patent of a nicotine delivery device.

Authors' contributions

GG conceived and designed the study and developed the questionnaire, contributed to the Indigenous community consultation process, conducted the interviews, performed the statistical analysis, and the qualitative analysis, and wrote the manuscript. KW contributed to the statistical analysis, checked the accuracy of the statistical findings, and critically reviewed the manuscript. LS contributed to the Indigenous community consultation process, the questionnaire design and the qualitative analysis, and critically reviewed the manuscript. AM contributed to the study design and questionnaire development, and critically reviewed the manuscript. YC contributed to the interpretation of Indigenous cultural and policy issues relevant to the study. AC contributed to the study design and questionnaire development, recruitment strategy, analysis of data, and interpretation of findings, and critically reviewed the manuscript. All authors read and approved the final manuscript.

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GG is a non-Indigenous General Practitioner and Tobacco Treatment Specialist involved with developing local Indigenous smoking cessation programs in NSW, Australia. KW is a non-Indigenous senior academic and epidemiologist. LS is a non-Indigenous health promotion researcher in Indigenous health. AM is a non-Indigenous expert and researcher in tobacco treatment and services. YC is an Aboriginal elder and senior academic. AC is a non-Indigenous senior researcher of community-based Indigenous substance use and tobacco programs.

Acknowledgements

GG is in receipt of a post-graduate scholarship for Indigenous health research from National Health and Medical Research Council (Australia) and National Heart Foundation (Australia) APP1039759. This study contributes to a PhD in Public Health.

The following organisations have specified that they would like to be named as contributors: Asthma Foundation WA; Cancer Council WA; Central Australian Aboriginal Congress; Dandenong & District Aboriginal Corporation; Malabam Health Board Aboriginal Corporation; Nhulunyu Health Service; WA Country Health Service - Population Health, Goldfields; Winnunga Nimmityjah Aboriginal Health Service; Wuchopperen Health Service Limited. We appreciate the contribution and support of all participating organisations both named and unnamed. We also acknowledge the unerring support from Dr Tom Calma AO for this study, and the Australian Indigenous Info-Net.

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Received: 17 January 2014 Accepted: 18 February 2014
Published: 13 March 2014

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doi:10.1186/1471-2458-14-250

Cite this article as: Gould *et al.*: Developing anti-tobacco messages for Australian Aboriginal and Torres Strait Islander peoples: evidence from a national cross-sectional survey. *BMC Public Health* 2014 **14**:250.

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5.3 Addendum – Qualitative findings

In this section I present qualitative findings from the study that were accepted as a peer-reviewed abstract and a poster for the Society for Research of Nicotine and Tobacco Europe (SRNT-E) Annual Meeting in Santiago de Compostela in September 2014.

Abstract - Cultural challenges when developing anti-tobacco messages for Australian Aboriginal and Torres Strait Islander peoples: qualitative responses to a national cross-sectional survey

Authors: Gould GS, Stevenson L, Cadet-James Y, and Clough AR

Background: Smoking rates in Aboriginal and Torres Strait Islander peoples are high at 41%.

Aims: This study examined responses from organisations about their challenges for developing anti-tobacco messages for the target populations.

Methods: A cross-sectional survey of Australian organisations involved in making anti-tobacco messages for Aboriginal and Torres Strait Islander communities was conducted by telephone interview in 2012-2013. The questionnaire included a discussion on cultural challenges. Organisations that had conducted a pre-test (e.g. had the anti-tobacco messages checked by the target audience before dissemination) were asked about unexpected outcomes to their messages. The interviewer took computer-based notes about the responses. These qualitative data were independently coded by two researchers and underwent thematic analysis.

Results: Forty-seven organisation representatives Australia-wide participated. Eligibility criteria were: the organisation had to have developed or adapted anti-tobacco messages for Aboriginal and/or Torres Strait Islander peoples; and have someone available to talk about that development. The response rate was 83% (44/53) of eligible organisations. Cultural challenges (reported by 51%) were divided into three main themes. The diversity of Aboriginal and Torres Strait Islander cultures was acknowledged: problems arose if some groups were under-represented. Role models needed to be carefully chosen: challenges arose if the role model relapsed to smoking or passed away. Conflicts and delays, although impacting on program development, were often reported as positive learning experiences. Over 50% of organisations that used a pre-test measure reported better than expected outcomes such as overwhelmingly positive responses, local pride, resources being sought after, and non-Indigenous people valuing the messages. Over 30% reported unexpected negative responses, e.g. messages being misunderstood or too confronting.

Conclusions: Cultural challenges are important as they potentially impact on target audience receptivity, and effectiveness of programs. Some of these challenges, in future, could be pre-empted, with careful design and community consultation, by anticipating the three themes of diversity, roles models and conflicts and delays revealed by the organisations, and by being flexible. The mostly positive nature of the unexpected outcomes demonstrated that Aboriginal and Torres Strait Islander communities are receptive to these timely interventions, however these may not be revealed without adequate pre-tests and evaluation.

Poster from SRNT-E Conference 2014

Cultural challenges when developing anti-tobacco messages for Australian Aboriginal and Torres Strait Islander peoples: qualitative responses to a national cross-sectional survey

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Purpose

Smoking rates in Aboriginal and Torres Strait Islander peoples are high at 42% compared with 13% for the general Australian population.^{1,2} This study examined responses from participating organisations about their challenges for developing anti-tobacco messages for the target Aboriginal and Torres Strait Islander populations. The qualitative data was part of a larger study on how messages were being developed.³

Role Models

- Challenge to find a person who had quit for a while to be a role model – so they would not relapse
- Shyness of people to speak out on camera
- There was a photo of a person who died on the brochure – we had to get permission and a warning
- May be disrespectful to Elders – with kids delivering the message
- Community kids worried about clinic staff smoking

Methods

This was a computer-assisted telephone survey of organisations Australia-wide in 2012-13. Eligibility criteria were: the organisation had to have developed or adapted anti-tobacco messages for Aboriginal and/or Torres Strait Islander peoples and have someone available to talk about that development. The response rate was 83% (44/53) of eligible organisations, with 47 interviews conducted. Notes were taken during the interview in response to open-ended questions about cultural challenges relevant to the development of anti-tobacco messages. Those who had conducted a pre-test of messages with communities were further asked about unexpected outcomes. Thematic analysis was undertaken by two researchers independently and results compared.

Figure 1 (below) shows numbers of participating organisations: Aboriginal Medical Services (AMS), Government Organisations (GO), Non-Government Organisations (NGO) and Universities (UNI)

Diversity

- Need to understand the Aboriginal world view
- One region did not like culture being taken into the context [of messages]
- Diverse representation of Aboriginality – different skin colours were deliberate – avoiding stereotypes
- Only incorporated Aboriginal colours in poster and needed to include Torres Strait Islander colours
- Had to have permission from owners of symbols locally
- Many different languages

Results

Cultural challenges: (reported by 51%) were divided into three main themes:

- 1) The diversity of Aboriginal and Torres Strait Islander cultures was acknowledged: problems arose if some groups were under-represented
- 2) Role models needed to be carefully chosen: challenges arose if the role model relapsed to smoking or passed away
- 3) Conflicts and delays were often reported as positive learning experiences

Unexpected outcomes:

- 1) >50% of organisations reported unexpected positive outcomes
- 2) >30% reported unexpected negative outcomes

“People wanted their story told”

Conflicts and delays

- Longer consultation process than expected
- Finding the right artists who agreed with community perspectives
- Delays in getting community people to do art work
- Could have done a better DVD - but followed the lead of the doctor who was pressing for it. But didn't relate that well for youth – it was not captivating
- Political issues between different organisations – who will and won't work [together]

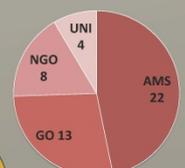
Unexpected outcomes

- Surprised how quickly the ad became a talking point in the household – better circulation than expected
- More of a positive response than expected from both Kooris [NSW Aboriginal people] and non-Aboriginal community – everyone talking about them [messages]
- A lot more people wanting to come on program; [co-ordinator] took our ad to a conference in Canada... [ad] has been showcased in Australian national conferences
- Increase calls to the Quitline – more than expected

Conclusion

These cultural challenges are important as they potentially impact on target audience receptivity and the effectiveness of programs. Some of these challenges could be pre-empted for future programs. Developmental processes for anti-tobacco messages can be aided by careful design and community consultation, and anticipating the three themes of diversity, roles models and conflicts and delays revealed by the organisations, and by being flexible. The mostly positive nature of the unexpected outcomes demonstrated that Aboriginal and Torres Strait Islander communities are receptive to these timely interventions, however positive outcomes may not be revealed without adequate pre-tests and evaluation.

Figure 1



Declaration of interest

GSG receives an Indigenous health post-graduate training scholarship from NHMRC and National Heart Foundation for her PhD, and travel awards from James Cook University and SRNT-E
 LS receives an Australian Postgraduate Award
 ARC receives an NHMRC Career Development Fellowship

References

- 1 Australian Bureau of Statistics 2014 ATSI Health Survey
- 2 AIHW 2013 National Drugs Strategy Household Survey
- 3 Gould et al. Developing anti-tobacco messages for Australian Aboriginal and Torres Strait Islander peoples. BMC Public Health 2014;14(1):250

5.4 Summary

- Smoking rates in Australian Aboriginal and Torres Strait Islander peoples remain high, with limited impact of government measures for many subgroups. The aim of this cross-sectional study was to investigate differences in organisational practices for developing anti-tobacco messages for these target populations.
- Telephone interviews were conducted with 47 organisation representatives using a structured questionnaire based on health communication and health promotion frameworks. Responses were coded into phases of message development, message types (educational, threat, positive or advocacy), target groups, message recommendations, and evaluations undertaken. Cultural sensitivity for message development was divided into surface structure (use of images, language, demographics) and deep structure (use of socio-cultural values). A categorical principal component analysis explored the key dimensions of the findings and their component relationships.
- Among organisations interviewed, a community-orientated, bottom-up approach for developing anti-tobacco messages was reported by 47% (n=24); 55% based message development on a theoretical framework; 87% used a positive benefit appeal; 38% used threat messages. More Aboriginal Medical Services (AMSs) targeted youth ($p<0.005$) and advised smokers to quit ($p<0.05$) than other types of organisations. AMSs were significantly more likely to report using deep structure in tailoring messages compared with non-government ($p<0.05$) and government organisations ($p<0.05$). Organisations that were oriented to the general population were more likely to evaluate their programs ($p<0.05$). A two-dimensional non-linear principal component analysis extracted components interpreted as “cultural understanding” (bottom-up, community-based approaches, deep structures) and “rigour” (theoretical frameworks, and

planned/completed evaluations), and accounted for 53% of the variability in the data.

- Cultural challenges about role models, diversity of cultures, conflicts and delays, and unexpected outcomes could be pre-empted when message development and projects are being planned.
- Message features, associated with successful campaigns in other populations, are starting to be used for Aboriginal and Torres Strait Islander peoples. A model is proposed to facilitate the development of targeted anti-tobacco messages for Aboriginal and Torres Strait Islander peoples. Organisations could consider incorporating both components of cultural understanding-rigour to enable the growth of evidence-based practice

5.5 Final word

This study highlights the importance of two potential components for Indigenous programs: cultural understanding and rigour, to develop a solid evidence base for salient anti-tobacco messages. The questionnaire provided a structure for examining current practices in Australia. The following chapter (6) employs several theoretical frameworks to further examine the factors to take into consideration when Indigenous Australians assess their risks from tobacco smoking and their perceived efficacy for quitting.

**Chapter 6. *Validation of risk assessment scales and
predictors of intentions to quit smoking in
Australian Aboriginal and Torres Strait Islander
peoples: a cross-sectional survey protocol***

6.1 Overview

There are more calls for peer-reviewed research protocols prior to research being published, and several prestigious journals encourage this strategy, not only for clinical trials but also for important observational designs. Few protocols have been published for Indigenous research. Thus I decided to publish this study protocol prior to the completion of the study to strengthen the rigour and accountability for the study. I discussed, in the introduction to this thesis, how a strong evidence base is urgently required on which to base decisions about tobacco control and cessation interventions for this vulnerable target group. The publication of this study protocol provides transparency, and allows the research plan to be scrutinised and improved upon. Furthermore the study is one of a small but growing number that are attempting to validate psychometric measures for use in Indigenous populations.

This chapter is inserted as the published PDF:

Gould GS, Watt K, McEwen A, Cadet-James Y, Clough AR. Validation of risk assessment scales and predictors of intentions to quit smoking in Australian Aboriginal and Torres Strait Islander peoples: a cross-sectional survey protocol. *BMJ Open*. 2014 June 1, 2014;4(6).

This paper is written in the future tense. The majority of the findings from this study are given in Chapters 7 and 8.

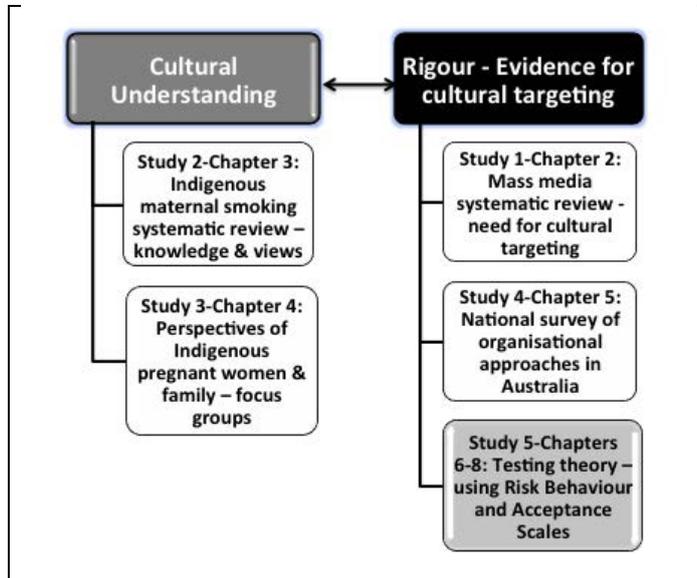


Figure 6.1 Study 5, Chapter 6 in relation to the conceptual model of the thesis for making salient messages for Indigenous tobacco control

6.1 *Publication in BMJ Open*

BMJ Open Validation of risk assessment scales and predictors of intentions to quit smoking in Australian Aboriginal and Torres Strait Islander peoples: a cross-sectional survey protocol

Gillian Sandra Gould,^{1,2} Kerriane Watt,³ Andy McEwen,⁴ Yvonne Cadet-James,⁵ Alan R Clough⁶

To cite: Gould GS, Watt K, McEwen A, *et al.* Validation of risk assessment scales and predictors of intentions to quit smoking in Australian Aboriginal and Torres Strait Islander peoples: a cross-sectional survey protocol. *BMJ Open* 2014;**4**:e004887. doi:10.1136/bmjopen-2014-004887

► Prepublication history and additional material is available. To view please visit the journal (<http://dx.doi.org/10.1136/bmjopen-2014-004887>).

Received 19 January 2014
Revised 14 May 2014
Accepted 20 May 2014



CrossMark

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ABSTRACT

Introduction: Tobacco smoking is a very significant behavioural risk factor for the health of Australian Aboriginal and Torres Strait Islanders, and is embedded as a social norm. With a focus on women of childbearing age, and men of similar age, this project aims to determine how Aboriginal and Torres Strait Islander smokers assess smoking risks and how these assessments contribute to their intentions to quit. The findings from this pragmatic study should contribute to developing culturally targeted interventions.

Methods and analysis: A cross-sectional study using quantitative and qualitative data. A total of 120 Aboriginal and Torres Strait Islander community members aged 18–45 years will be recruited at community events and through an Aboriginal Community Controlled Health Service (ACCHS). Participants will be interviewed using a tablet computer or paper survey. The survey instrument uses modified risk behaviour scales, that is, the Risk Behaviour Diagnosis (RBD) scale and the Smoking Risk Assessment Target (SRAT) (adapted from the Risk Acceptance Ladder) to determine whether attitudes of Aboriginal and Torres Strait Islander smokers to health risk messages are predictors of intentions to quit smoking.

The questionnaire will be assessed for face and content validity with a panel of Indigenous community members. The internal consistency of the RBD subscales and their patterns of correlation will be explored. Multivariate analyses will examine predictors of intentions to quit. This will include demographics such as age, gender, nicotine dependence, household smoking rules and perceived threat from smoking and efficacy for quitting. The two risk-assessment scales will be examined to see whether participant responses are correlated.

Ethics and dissemination: The Aboriginal Health & Medical Research Council Ethics Committee and university ethics committees approved the study. The results will be published in a peer-reviewed journal and a community report will be disseminated by the ACCHS, and at community forums.

Strengths and limitations of this study

- First study on risk assessment scales in the target population.
- Unique approach to smoking in Aboriginal and Torres Strait Islander peoples of childbearing age.
- Draws on well-established and new measures.
- Potential limitations relate to information and selection biases.

Note about terminology: We use the term Aboriginal and Torres Strait Islander peoples, except where previous research has reported findings from only one group for example, Aboriginal people. Indigenous is used here to refer to Indigenous peoples in the international context, and issues, policies or systems, for example, Indigenous health, Indigenous tobacco control.

INTRODUCTION

Australia claims one of the lowest rates of 15.1% of tobacco smoking in Organisation for Economic Cooperation and Development countries.¹ However, several subgroups of the population maintain high rates of smoking.² Tobacco smoking is the main preventable risk factor contributing to the burden of disease in Aboriginal and Torres Strait Islander peoples.³ While there has been a significant drop in Indigenous smoking prevalence over the last 10 years overall, smoking rates are 2.6 times that of the general population at 41%, with higher rates of 50% or more in remote areas.^{4 5} However, prevalence of Indigenous smoking in the age group 25–34 years has not decreased significantly for either gender,⁴ and rates in pregnant Aboriginal and Torres Strait Islander



women are quadruple (49.3%) those of pregnant women in the general population (12.1%).⁶

While it is acknowledged that Indigenous populations across and even within different continents belong to very diverse communities with their own cultures and norms, some broad factors impact on Indigenous peoples in colonised Western nations. American Indians, Alaskan Natives, New Zealand (NZ) Māori and Inuit all have a higher prevalence of smoking than the mainstream populations,⁷ particularly in their reproductive years, resulting in significant health disparities.⁸ Smoking is comparably affected by the social determinants of health, and cultural factors, including for some First Nation peoples ceremonial and spiritual uses of tobacco.⁹ Aboriginal and Torres Strait Islander peoples have a long history of tobacco use.¹⁰ It is believed that the effects of colonisation,¹⁰ the stolen generation¹¹ and racism¹² have all contributed to the contemporary use of tobacco, to the detriment of the health and longevity of Aboriginal and Torres Strait Islander peoples and their future generations. Factors promoting smoking and smoking initiation in Aboriginal and Torres Strait Islander peoples include community and family norms of smoking,¹³ smoking to promote social inclusiveness and cohesion,¹⁴ peer group belonging¹⁵ and daily stressors.¹³

Several studies have explored the knowledge levels of Aboriginal and Torres Strait Islander peoples about tobacco smoking,^{16–18} with more limited exploration about Indigenous attitudes and beliefs about the risks of smoking. There has been some exploration about what antismoking messages are effective and acceptable for Aboriginal and Torres Strait Islander populations,¹⁹ as media messages or as adjuncts to clinical treatment.²⁰ Mainstream antismoking campaigns have shown to be effective in terms of recall and perceived effectiveness by Indigenous peoples in Australia,^{21–22} the USA²³ and NZ,²⁴ but have not necessarily translated into increased quit rates in these populations.²⁵ Aboriginal and Torres Strait Islander smokers in a forced exposure to several television advertisements rated those containing strong graphic imagery or personal narratives as effective for a range of measures including being more likely to quit.¹⁹ Indigenous peoples in the USA, Australia and NZ have a preference for culturally targeted campaigns.²⁵ Aboriginal and Torres Strait Islander viewers aged 16–40 years of the ‘Break The Chain’ campaign in Australia positively rated the targeted advertisement, had good recall and 57% stated they intended to quit in the following month.²⁶ Where culturally targeted campaigns have been tested, alongside generic campaigns, for example, in NZ youth, they proved as effective at supporting Maori to quit smoking as generic messages were for the general NZ population.²⁷

However, attitudes of Indigenous maternal smokers, to prevailing health risk messages about smoking, have been under-researched. A systematic review used meta-ethnography to synthesise the evidence on the

knowledge, attitudes and experiences of maternal smoking by Aboriginal and Torres Strait Islander peoples,¹³ from seven studies.^{14–28–33} The synthesis revealed a lack of salience of media messages and potentially some resistance to advice.¹³ Equally pregnant women have highly protective attitudes towards babies and children.¹³ A recent study of attitudes of maternal Aboriginal smokers and their family members suggested that attitudes about the health risks of smoking may be influenced by messages not matching the women’s lived experiences, coupled with inadequate access to information.³⁴ Limited knowledge about the specific hazards of smoking and cessation,³⁵ and the lack of salience of anti-smoking messages are barriers to effective cessation.¹³ However, a programme using a culturally targeted smoking cessation video with pregnant Alaskan Native smokers was no more efficacious than in the control group.³⁶ Issues less well understood are how Indigenous adults broadly assess their risks in relation to tobacco smoking (not just their knowledge of adverse health effects) and how these assessments are related to their intentions to quit smoking. If attitudes to risk-taking behaviour for smoking and responses to antitobacco messages are not understood it is difficult to formulate effective messages and interventions. There are no best practice guidelines to develop and personalise such messages for Aboriginal and Torres Strait Islander peoples.^{20–37–38}

Our study therefore aims to determine how Aboriginal and Torres Strait Islander smokers of childbearing age assess risks about tobacco smoking and how these assessments are associated with their intentions to quit smoking or seeking help to quit. We further aim to determine which demographic and behavioural factors (such as age, gender, nicotine dependence level, household smoking rules) are predictors of intentions to quit and seek help for quitting. Two risk assessment scales for smoking will be examined for their cultural acceptability, validity and reliability, and their utility as a pragmatic heuristic.

Underpinning theories

Research shows that interventions based on the assessment of risk behaviour can positively influence the risk-taking behaviour that contributes to a range of preventable diseases.³⁹

Witte *et al*⁴⁰ proposed a theory called the Extended Parallel Process Model (EPPM) to explain message processing and subsequent behavioural intentions (Key constructs shown in [table 1](#)).

According to the EPPM, ‘when people perceive a serious and relevant threat, they become scared’, (ref. 40, p. 318) and will take an action to reduce their fear by one of two general pathways. People can either control the danger elicited by the threat by making a positive and conscious shift in attitude and behaviour (called protective motivation or danger control responses). Alternately they may feel fearful and try and

Table 1 Key constructs, definitions and measures (adapted from Witte *et al*⁴⁰)

Definitions of constructs	How measured on RBD scale or other
<i>Perceived threat</i> : awareness of a specific harm in the environment, consisting of	Total of perceived threat scores
<i>Susceptibility to threat</i> : belief about one's risk of experiencing the threat	Subtotal of susceptibility scores
<i>Severity of threat</i> belief about the magnitude of the threat	Subtotal of severity scores
<i>Perceived efficacy</i> : thoughts about ease, feasibility and the effectiveness of averting the threat, consisting of	Total of perceived efficacy scores
<i>Self-efficacy</i> : belief in one's ability to perform recommended response	Subtotal of self-efficacy scores
<i>Response efficacy</i> : belief about effectiveness of recommended response to avert the threat	Subtotal of response efficacy scores
<i>Danger control dominance</i> : the dominant response in the person faced with a threat, who considers themselves able to perform the recommended response, believes the response to be effective, therefore tries to reduce the danger by taking positive action (protective motivation)	High-efficacy score and high-threat score
<i>Danger control responses (protective motivation)</i> : beliefs, attitudes, intentions, and behaviour changes in accordance with the message recommendations	Score from intentions to quit/seek help scales (Wong and Cappella) and responses to MTSS questions
<i>Fear control dominance</i> : the dominant emotional response in the person when faced with a threat, who feels unable to perform the recommended response and/or believes the response to be ineffectual, and tries to psychologically reduce their fear by defensive motivation	Low-efficacy score with high-threat score
Fear control responses (defensive motivation): coping responses that diminish fear	Score from questions about defensive avoidance, denial, reactance, message derogation and perceived manipulation
<i>Critical point</i> : when perceptions of threat begin to outweigh perceptions of efficacy, causing shift from danger control to fear control processes	The exact critical point can vary with topics and populations
<i>Discriminating value</i> : a numerical value used to discriminate between people in danger vs fear control	Formula: $(\sum \text{perceived efficacy}) - (\sum \text{perceived threat}) = \text{discriminating value}$ A positive score indicates danger control processes; a negative score indicates fear control processes
<i>Protective responses</i> : similar to danger control responses, but beliefs/attitudes are centred around protecting others from tobacco smoke	Score from 5 new measures to attitudes about smoking exposure for Aboriginal or Torres Strait Islanders, babies and children

RBD, risk behaviour diagnosis; MTSS, motivation to stop smoking; Σ , sum of.

control the fear unconsciously by denial, discounting or reactance against the threat (called defensive motivation or fear control responses). If people feel no threat at all (perhaps due to a lack of knowledge) there may be a low response to the message. Furthermore Witte *et al*⁴⁰ has shown that the level of perceived efficacy determines whether people engage in danger control or fear control responses.

Witte *et al*⁴⁰ devised and validated a scale called the Risk Behaviour Diagnosis (RBD) scale to measure these responses across four dimensions of perceived threat (perceived susceptibility and severity of threat) and perceived efficacy (response efficacy and self-efficacy). High-threat responses coupled with high efficacy tend to lead to danger control responses, in this case to adopt message recommendations, change attitudes, intentions and smoking behaviour. In contrast, if people feel they cannot adopt the recommended response to avert the threat, because of a lack of efficacy (it is too hard, too

little support or it is perceived as futile to do so), they typically try to control the fear by avoiding the issue, discount the message or may consider the issue is exaggerated.

If fear control processes are initiated, it can be difficult to shift attitudes and there is a need for carefully constructed messages to 'break through defence mechanisms'.⁴¹ Therefore, according to this theory people who are in fear control will need assistance to build up efficacy rather than make them more fearful. Bandura's work on self-efficacy confirms this and he considers self-efficacy is central to any healthy behaviour change.⁴²

The EPPM model is a predominant message design theory,⁴³ and has been widely applied to a range of health behaviours internationally and a wide range of health promotional campaigns, and is the basis of tobacco counter marketing.³⁹ A study by Wong and Cappella⁴⁴ has used the RBD to measure responses to video-based antitobacco



television advertisements. Assessment scales for risk behaviour, including the RBD, have been used in several minority groups and across cultures.^{45–53} However, risk assessment scales for tobacco and the EPPM have not been used or validated for Australian Aboriginal or Torres Strait Islander or other Indigenous populations.

Another theory informing this study is PRIME theory (P-plans; R-responses; I-impulses; M-motives; E-evaluations), which proposes that smokers' motivations are fluid and can change unexpectedly.⁵⁴ The central tenets of PRIME theory include people's wants and needs in the moment, and their self-identity.⁵⁴ West⁵⁵ suggests that a person can be stimulated to make a quit attempt, even if they have not been thinking about quitting, especially if the intervention is repeated and evidence-based therapy offered. A new measure based on PRIME theory, called the risk acceptance ladder (RAL)⁵⁶ (Cattaruzza and West, 2014, in preparation) proposes that the blocks to effective behaviour change can be ascertained by determining the individual level of risk acceptance and at what stage motivation has been stalled. For this study the RAL is modified into the Smoking Risk Assessment Target (SRAT; see methods). If this measure correlates well with message processing it may be also useful to assess Aboriginal and Torres Strait Islander smokers.

Rationale for assessing validity and reliability of the scales for Aboriginal and Torres Strait Islander smokers

Assessment scales, developed for Western populations, are important to validate before use in a cross-cultural context.⁵⁷ Theoretical concepts developed in the context of the dominant Western psychology and communication fields may not transfer into a cross-cultural or Indigenous setting.^{57 58} Preliminary phases of community engagement are an important part of the process of validation, and will be described below.⁵⁸ Results from the validation and reliability process also need careful interpretation with culturally competent advisors.⁵⁸

METHODS AND ANALYSIS

Study overview

This is a cross-sectional study to investigate the validity and reliability of risk assessment scales, and predictors of intentions to quit smoking, for Australian Aboriginal and Torres Strait Islander smokers of both genders, aged 18–45 years old. The study will be conducted through face-to-face interviews in a regional centre in New South Wales (NSW) Australia.

Research questions

1. Are RBD/SRAT and associated measures of tobacco behaviour reliable and valid in Australian Aboriginal and Torres Strait Islander smokers?
2. What are the main predictors of intentions to quit smoking and intentions to seek help for quitting in Aboriginal and Torres Strait Islander smokers?

3. What variables confound the associated factors and intentions to quit and to seek help in Aboriginal and Torres Strait Islander smokers?
4. What smoking-related attitudes (eg, danger/fear control responses) are associated with positive/negative discriminating values on the RBD?
5. What are the associations between the RBD and SRAT?

Study population

Participant recruitment and setting

The study site is a regional centre in NSW. Recruitment into the study will be by personal intercept, primarily at regional community and social events and in other settings likely to yield interest, including a local Aboriginal Community Controlled Health Service (ACCHS). The survey will be administered by face-to-face interview, using where possible a tablet computer, connected by cellular network to a secure on-line survey site. Where connectivity is unreliable a paper survey will be used and data submitted on-line later. The interviewers will be either the first author (non-Indigenous female) or Indigenous research assistants or ACCHS staff.

Aboriginal and/or Torres Strait Islander people, aged 18–45 years old who currently smoke will be included in the study, if they self-report as Indigenous and are in the age bracket. Although we would have preferred to include participants under 18 years, the ethics committee did not support this. Participants will be offered a \$10 shopping voucher for their time.

Sample size calculation

The estimated sample size is 120 participants. Sample size estimations are based on the procedure described by Altman.⁵⁹ Standardised differences for intention to quit smoking and intention to seek help to quit smoking are calculated using means (M) and SDs published by Wong and Cappella⁴⁴ (intent to quit M 2.48, SD 0.78; intent to seek help M 1.85, SD 0.77). These figures are taken from a different population because there have been no relevant studies in Indigenous peoples. A total sample size of 110 is required to detect a significant difference between people in 'danger control' versus people in 'fear control' (according to the RDB scale) and intentions to quit smoking, at $\alpha < 0.05$, and 90% power. An additional sample size calculation was performed to determine the required sample size to detect prevalence of knowledge, attitudes and behaviour within the target population. The required sample size is 100, based on 50% prevalence, 10% precision and 95% CIs. However, for the multivariate analysis 120 participants are required (assuming 6 key variables).⁶⁰

Sampling stratification

Random sampling will not be feasible. To ensure that the convenience sample is as representative of the target group as possible, the sample will be stratified by age group and gender. Data from the 2011 Australian

Table 2 Stratified sampling strategy of target Aboriginal and Torres Strait Islander populations

Age range (years)	Target populations numbers (2011 Census from regional city LGA)				Smoking prevalence (2008 NATSISS)		Per cent of target populations in regional city who smoke		Sample stratified by gender and age group	
	Male	Female			Male	Female	Male	Female	Male	Female
	N	N	Male (%)	Female (%)	N (% of total)	N (% of total)	N	N	N	N
18–24	172	178	38.7	39.7	67 (13.9)	71 (14.7)	17	18		
25–34	142	184	56	50.1	80 (16.6)	92 (19)	20	23		
35–44	154	187	55.5	47.3	85 (17.6)	88 (18.2)	21	22		
Total	468	549			232 (48.1)	251 (51.9)	58	63		

Census determine the population parameters for persons identified as Aboriginal and/or Torres Strait Islander, by age group and gender in the regional city. The proportion of smokers within each age group and gender are estimated using smoking prevalence data from the 2008 National Aboriginal and Torres Strait Islander Social Survey (table 2).⁶¹

As can be seen from table 2, the final sample will be 58 males and 63 female smokers (N=121). This represents 25% of the Aboriginal and Torres Strait Islander smokers aged 18–45 years in the regional city (121/483).

MEASURES/DATA COLLECTION

The survey

The survey will collect quantitative data, requiring categorical responses or responses on Likert scales where appropriate, on participants' smoking behaviours, initiation of smoking, attitudes to smoking and cessation, attitudes to health risks of smoking, experiences with quit attempts and smoking cessation and future intentions to quit smoking or seek help for quitting. The questionnaire will also elicit responses about smoking in pregnancy and the protection of babies and children from tobacco smoke. The participants will be asked to rate the level of support available from family and peers for quitting and professional support. Three open-ended questions are used in the survey: (1) to initially explore general attitudes to smoking; (2) to ascertain whether there is any more the participant would like to say about smoking or quitting at the end of the interview; and (3) to elicit more detail from those who indicate that they do not want to quit smoking. The survey guide includes 'notes sections' on most of the pages, so that the interviewer can record relevant comments or narratives expressed by the participant in the course of the interview. The survey was pilot tested with an Aboriginal Health Worker (AHW), and based on this it is anticipated that it will take approximately 20 min for participants to complete.

The questionnaire includes several instruments

Tobacco dependence scales

Heaviness of Smoking Index (HSI) is an accepted method of assessing nicotine dependence levels,

calculated from the time to first cigarette and number of cigarettes smoked per day. Its reliability has been shown to be better than the longer Fagerstrom Test for Nicotine Dependence.⁶²

Strength of urges to smoke (SUTS) is another measure of dependence found to be more reliable for predicting cessation than the HSI.⁶² It is a routine part of the 'Smoking in England' survey, administered to over 10 000 smokers per annum.⁶³ It is a newer scale for nicotine dependence and is included here, as it has not yet been used with Australian Aboriginal and Torres Strait Islander smokers or other Indigenous populations.

Intentions to quit

The Motivation To Stop Scale (MTSS) uses dichotomous measures (yes/no) for intentions to quit (want to quit, should quit and intends to quit) and has shown good level of prediction for quitting.⁶⁴ Intentions to quit and intentions to seek help (Likert scale) are also adapted from Wong and Cappella.⁴⁴

Risk assessment scales

The RBD Scale consists of a series of questions (Likert scales) on four aspects: severity of threat, susceptibility to threat, response efficacy and self-efficacy.⁴⁰

As a measure of fear control responses participants will be asked to respond to four questions about reactance, avoidance and message derogation on a Likert scale.⁴⁰ Similarly for danger control responses an aggregate score of the five questions on intentions to change smoking behaviour/seek help will be calculated.⁴⁴ Owing to the evidence pointing to strong protective attitudes in the target population, five questions on a Likert scale will be asked to determine protective responses about smoking in pregnancy, around children and for Aboriginal and Torres Strait Islander peoples in general. A protection score will be calculated from these responses.

The RAL is a new measure currently being used in Italy to research a population with high rates of smoking (Cattaruzza and West, 2014, in preparation). The measure has been adapted to the Aboriginal and Torres Strait Islander populations, as below.



Consultative process, face validity and questionnaire adaptation

In the formative phase of the research, before ethics approvals were finalised, several community consultation processes were conducted. The aim was to test the content and face validity, suitability, readability, cultural appropriateness, acceptability and feasibility of the survey instrument. Consultation was through a focus group with Aboriginal and/or Torres Strait Islander people in the target age group and an Aboriginal elder, recruited from an Aboriginal Studies class at a local tertiary college and two Aboriginal Indigenous student liaison staff from the University campus (N=7). Several consultative interviews were also held with a senior AHW specialising in tobacco. Expert input was obtained for the scales from their respective inventors, to informally assess whether they maintained integrity once adapted, rather than assess their cultural suitability for this population (Witte-Cattaruzza-West).

The RBD scales were adapted to tobacco-related risks from the templates in Witte's manual (see online supplementary appendix 1).⁴¹ The community consultation group and AHW requested changes to several questions and suggested additional questions about reasons for smoking initiation. Minor rewording was suggested for some of the RBD core statements to make them more comprehensible to this population. Additionally, several sensitive questions about socioeconomic status and pregnancy were reworded.

The RAL was adapted for the Aboriginal and Torres Strait Islander populations, and was renamed the SRAT as follows:

- A. It was deemed more culturally appropriate to depict the measure as a target with concentric circles (progressing from the outside to the centre) instead of a ladder, for the Aboriginal and Torres Strait Islander populations.
- B. The potential responses of the SRAT were reworded to become more appropriate for the target population, and two additional responses included (see online supplementary appendix 1).

Changes were approved by the HRECs.

ANALYSIS

Box 1 outlines variables that will be measured.

Statistical analyses

On study completion, the data entered through the survey software will be used to generate a summary report and exported directly to SPSS V. 20 for analysis. Descriptive analyses will summarise the data for all variables.

To measure the reliability and validity of the scales the following will be used:

1. Content validity and face validity is qualitatively assessed through the community panel and expert consultation for RBD and SRAT.

Box 1 Variables from questionnaire

Demographics

- ▶ Age
- ▶ Gender (male/female)
- ▶ Aboriginal and Torres Strait Islander status (Aboriginal/Torres Strait Islander/both)
- ▶ SES (calculated from postcode, suburb, income source, healthcare card use, education)—for details contact authors
- ▶ Environmental variables
 - A. Number of smokers in household (1/2–3/>3)
 - B. Pregnant women in the house (Y/N)
 - C. Children in the house (Y/N)
 - D. Complete, partial or no bans for household smoking
 - E. Smoke free behaviours of participants (house and car)

Smoking behaviour variables

- ▶ Nicotine dependence scores (Heaviness of Smoking Index and SUTS)
- ▶ Age of smoking initiation and uptake
- ▶ Factors influencing smoking initiation (11 response options)
- ▶ Patterns of smoking (frequency and type)
- ▶ Smoking by others in social circle (Y/N)
- ▶ Current/previous quit attempts (Y/N)
- ▶ Current/previous use of cessation therapies (Y/N)
- ▶ Level of support for quitting (social and professional) (sliding scales 0–10)

Smoking risk-related attitudes

- ▶ RBD scale resulting a composite score (discriminating value, recoded positive or negative)
- ▶ Threat score (three items for susceptibility plus three for severity of threat on Likert scales of 1–5)
- ▶ Efficacy score (three items for response efficacy plus three for self-efficacy on Likert scales of 1–5)
- ▶ RBD results recoded into four quadrants of high efficacy/high threat; high efficacy/low threat; low efficacy/high threat; low efficacy/low threat
- ▶ Fear control responses score (calculated from questions on avoidance, denial and refuting messages, Likert scales 1–5)
- ▶ Danger control responses score (calculated from questions on intentions to quit or seek help, Likert scales 1–5)
- ▶ Protective responses score (calculated from questions on attitudes about protecting babies/children, Likert scales 1–5)
- ▶ General attitudes about smoking and quitting (13 response options)
- ▶ SRAT (choice of 1 option from 12, will be reduced to 4 categories)

Behavioural intentions

- ▶ Intentions to quit (MTSS) (want/do not want)—if affirmative then how soon intends to quit (3 month/1 month/hope to soon/do not know)
- ▶ Intentions to quit or reduce smoking (Wong and Cappella) (Likert scales 1–4)
- ▶ Intentions to seek help with quitting (Wong and Cappella) (Likert scales 1–4)

Y, yes; N, no; SUTS, strength of urges to smoke; RBD, risk behaviour diagnosis; SRAT, smoking risk assessment target; MTSS, motivation to stop smoking scale.

2. The patterns of correlation will be explored between the RBD subscale scores (susceptibility and severity of threat, and response and self-efficacy) and also for

danger control responses, fear control responses and protective responses.

- Internal consistency of subscales will be assessed with Cronbach's α .

Multivariate analyses will seek the most likely demographic predictors of intentions to quit smoking/seek help for quitting, for example, age, gender, dependence levels, household smoking rules. Psychological factors such as threat and efficacy scores, danger and fear control responses will be analysed to assess whether they further influence the outcome measures.

RBD scores and the SRAT will be examined to see whether participant responses are correlated

Qualitative and open-ended responses will undergo a general inductive thematic analysis,⁶⁵ by two researchers independently. A cut and paste technique will be used for initial coding using Excel spread sheets, and consensus reached by discussion. The themes will be used to enrich the quantitative findings.

ETHICS AND DISSEMINATION

The study is low risk in terms of ethics; however, discussing smoking may be considered a sensitive issue for Aboriginal and Torres Strait Islander participants, and researchers collecting the data will be suitably briefed. The research will adhere to Australia's National Health and Medical Research Council's Values and Ethics in Aboriginal and Torres Strait Islander Health Research 2003 guidelines, that is, reciprocity, respect, equality, responsibility, survival and protection, spirit and integrity.⁶⁶ Examples of reciprocity include the first author sharing her knowledge and skill base (as a general practitioner and tobacco treatment specialist) about tobacco control and research with the participating organisations and their staff members. The participants also would be offered brief advice on smoking cessation if they wished after the interview, and extra resources such as a culturally adapted video. The primary HREC is the Aboriginal Health & Medical Research Council Ethics Committee (AH&MRC), which approved the study with support from the partnering ACCHS (approval number 928). Additional HRECs ratified the primary approval (James Cook University (H4467) and Southern Cross University (ECN-13-242)).

Participants will be approached at community events that are targeted at the local Australian Aboriginal and Torres Strait Islander communities. Potential recruits will be asked if they fulfil the selection criteria and canvassed about their willingness to join in the study. All participants will be provided with a participant information sheet advising the purpose of the study and implications regarding:

- ▶ Objectives of the research.
- ▶ Why the information is being collected and how it will be used, accessed and stored.

- ▶ Voluntary nature of the study, provision for withdrawal of consent, assurance of confidentiality and anonymity.

After the information sheet is explained, the participant will be asked to provide informed consent by having their name typed on the touch screen of the tablet computer and ticking the 'agree' box. All data will be deidentified and data and materials will be stored for 7 years, in a secure location where it will be digitally stored, password protected and only accessed by the researchers.

This study is one of several studies contributing to a PhD Public Health thesis for the first author. Journal articles and presentations at relevant national and international conferences to academics, researchers and stakeholders will disseminate these findings. The outcomes of the study will also inform policy and practice recommendations. A community report will be sent to the partnering ACCHS for dissemination to clients at the service and to the communities who have been involved. Community-based forums will be held as appropriate.

DISCUSSION

This study aims to determine how Australian Aboriginal and Torres Strait Islander smokers of childbearing age assess risks about tobacco smoking and how these assessments are associated with their intentions to quit smoking. We aim to validate two risk assessment scales for Aboriginal and Torres Strait Islander smokers, which could have the potential for research transference to a clinical or public health setting.

The RBD scale was originally designed as a clinical tool to be used in the context of delivering tailored health messages at a clinic for sexually transmitted diseases and HIV testing.⁴⁰ Advice was then adapted to individuals according to their responses.

Primary healthcare practitioners and clinicians are often faced with the task of assisting Aboriginal and Torres Strait Islander smokers to quit smoking. Antitobacco messages do not just lie in the domain of social marketing; they also need to be carefully pitched to maximise receptivity and support behaviour change within the clinical consultation. Little is known about the effectiveness of smoking behaviour change models for Aboriginal and Torres Strait Islander peoples. The trans-theoretical model (or stages of change (SOC)) has been widely used in Australia for Aboriginal and Torres Strait Islander smokers, but outcomes have never been evaluated.⁶⁷ Aboriginal smokers in remote areas have been described as more likely to be in the precontemplative or contemplative stages of change and require more assistance to ready to quit smoking.⁶⁸ Also it is known that motivational interviewing, including that based on the SOC, is not as effective in pregnancy as in the general population⁶⁹ and holds no special advantages over other types of psychosocial counselling.⁷⁰

If the measures under examination here are found to be reliable for the target audiences of Aboriginal and



Torres Strait Islander smokers of childbearing age, then accurate assessments could be made. A new model based on assessment of risk behaviour could have the potential to assess fear versus danger control responses and facilitate the pitching of tailored antitobacco messages for the individual, build motivational tension for quitting and yet avoid engendering fear control responses or resistance.

If people are engaged in fear control processes, messages developed should focus on the efficacy of the recommended response to counteract the high levels of perceived threat. Focusing on threat messages alone may cause the messages to backfire. It is important to emphasise that the recommended responses are feasible and effective to avert the threat from smoking. It is essential to help people develop a belief in their ability to quit smoking, develop supportive environments for quitting and provide easy access to treatment.

Central to building self-efficacy are strategies recommended by Bandura.⁴² He suggests several approaches: building skills, self-control and mastery for quitting; learning about the experiences of others who have successfully quit; verbal persuasion and motivation; helping people adopt a positive mindset and importantly having access to effective therapies.⁴²

Alternatively, if the target audience is in danger control, messages can remind people about the threat of smoking to maintain motivation, while also increasing efficacy for quitting, as above.

People with low threat perceptions may be neither in danger or fear control. They may need to be convinced about the seriousness of or their susceptibility to the threat. This group requires messages aimed at improving knowledge and correcting any misconceptions. This may be best achieved by having messages come from someone who is very similar to the client (possibly through use of tailored videos or personalised narratives).

The SRAT may prove a simplified way to approach risk assessment in this target group, as it demands a single response to a question. The measures require validation for Aboriginal and Torres Strait Islander smokers in this childbearing age bracket, prior to a more formal assessment of feasibility and effectiveness in a clinical setting.

Previous research has demonstrated the strong social and environmental influences on smoking cessation, and the role health professionals play in supporting smoking cessation in Aboriginal and Torres Strait Islander communities.⁷¹ The study will also assess predictors of intentions to quit that include measures of socio-economic position, smoking by friends and household members, support offered by family and health professionals and a range of other factors. These measures have the potential to determine social and health professional influences on intentions to quit smoking in this population. The analysis will determine if once these factors are controlled for whether the responses to the risk assessment measures have any additional impact.

Limitations and strengths

The study will be based on a sample from one regional area of NSW, fostering ownership of the project results for the local partnering ACCHS. Australian Aboriginal groups are diverse and this study will be conducted in just one region. It is unknown how many Torres Strait Islanders reside in the area and how many will chose to participate in the study. As the validity and reliability measures to be used are context specific, they should be considered provisional, pending a larger study. These limitations impact on generalisability and transferability of the findings, although this is a pragmatic constraint for all research in diverse Indigenous groups. Selection bias may be operant if only those more willing to talk about their smoking agree to participate, another inevitable challenge for this kind of research. Recruiting some participants through a health service may favour those already with health problems, and who may already have motivation to quit smoking. There could be information biases: smoking status will be based on self-report and not any objective measures; recall bias may be operant with asking people to recollect their smoking history and perceived level of support for quitting; and social desirability bias with people reporting what they think the researcher wants to hear.

On the other hand, this is the first study as far as we know to validate risk assessment measures for tobacco smoking in a population of Aboriginal and Torres Strait Islander smokers. Health education and behaviour studies are tested for validity and reliability inconsistently,⁷² and very few scales are validated for Aboriginal and Torres Strait Islander populations.⁷³ So the study is needed and an important one, although small and specific to one region. The study takes a unique approach to smoking in Aboriginal and Torres Strait Islander peoples of childbearing age by drawing on well-established and new measures from the health communication and addiction fields. If these measures prove to be valid and reliable they have a high potential for research translation into clinical settings. The outcomes could further inform the development and refining of social marketing policies and strategies for antitobacco messages through all media.

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Acknowledgements The authors acknowledge the valuable input of the Aboriginal community panel and the support of the partnering ACCHS for this survey, and role of the Aboriginal Health Worker in the study, without them the study would not be possible.

Contributors GSG was responsible for the concept and design of the project, developing and adapting the survey instruments and digital format, testing the suitability of the survey for Indigenous participants, conducting surveys, training and supervising Indigenous research assistants to conduct surveys, collating and analysing and interpreting results, writing reports and manuscripts. KW contributed to the research design and statistical analysis and critical review of manuscripts. AM advised on any aspect relating to tobacco smoking, smoking risk behaviours, the survey and critical review of manuscripts. YC-J as Aboriginal academic advisor advised on the Indigenous community consultation processes, recruitment and the cultural interpretation of results. ARC oversaw the study and advised on all aspects, and provided critical review of manuscripts.

Funding This study was funded by the following grants awarded to GSG as principal researcher: National Health and Medical Research Council (Australia) and National Heart Foundation (Australia) post-graduate scholarship for Indigenous health research—APP1039759 and PP 11S 6181, Royal Australian College of General Practitioners and Australian Primary Health Care Research Institute Indigenous Health Award 2013, James Cook University, Faculty of Medicine, Health & Molecular Sciences, Graduate Research Scheme grant 2013 and 2014, ARC holds a National Health and Medical Research Council Career Development Award (APP1046773).

Competing interests None.

Ethics approval Aboriginal Health and Medical Research Council Ethics Committee, Australia; James Cook University, Australia; Southern Cross University, Australia.

Provenance and peer review Not commissioned; externally peer reviewed.

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BMJ Open 2014 4:

doi: [10.1136/bmjopen-2014-004887](https://doi.org/10.1136/bmjopen-2014-004887)

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6.2 *Supplementary file*

Appendix 1: Risk Behaviour Diagnosis Scale (RBD) and Smoking Risk Assessment Target (SRAT)

Readability formulas indicate the Flesch-Kincaid Grade Level for the whole survey, the RBD and SRAT are grade 5, and the SMOG index is grade 4. The estimated reading age is aged 8-10 years, and considered 'easy to read'.

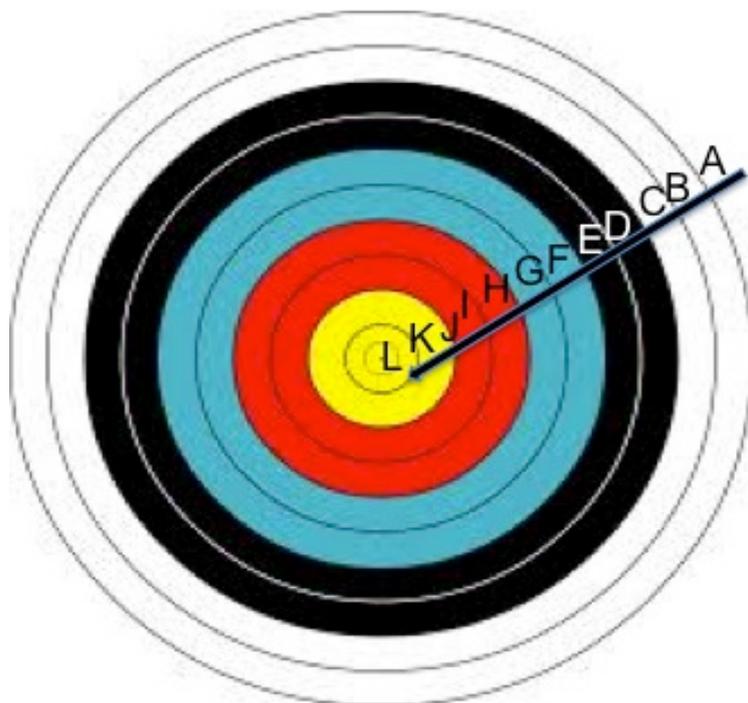
Risk Behaviour Diagnosis Scale

Participants are asked to indicate which response applies best to them depending how strongly they agree or disagree with the statements. (The statements were mixed-up and embedded in a section with others assessing beliefs on fear control responses and protective responses).

	<i>Strongly Agree</i>	<i>Agree</i>	<i>Neither/ Not sure</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
<i>Response Efficacy</i>					
Stopping smoking prevents serious sickness or disease (such as heart or lung disease or cancer)	5	4	3	2	1
Giving up smoking helps avoid serious sickness or disease	5	4	3	2	1
If I stop smoking I am less likely to get a serious sickness or disease	5	4	3	2	1
<i>Self-efficacy</i>					
I am confident I can stop smoking	5	4	3	2	1
I am able to stop smoking	5	4	3	2	1
It is easy to stop smoking	5	4	3	2	1
<i>Susceptibility to threat</i>					
It is likely that I will get ill from smoking	5	4	3	2	1
Smoking could possibly affect my health	5	4	3	2	1
I believe I am seriously at risk of getting ill from smoking	5	4	3	2	1
<i>Severity of threat</i>					
Smoking is harmful to health	5	4	3	2	1
Smoking can severely affect health	5	4	3	2	1
The health effects of smoking are of serious concern	5	4	3	2	1

Smoking Risk Assessment Target (SRAT) – adapted from the Risk Acceptance Ladder (with permission from Cattaruzza and West)

*Participants are asked to indicate which **one** of the following statements is closest to their position when it comes to smoking. This is explained by the interviewer as a big target with question A on the outside ring (see picture below). 'As you move through the rings you get closer to the target of quitting (response A is on the outer ring and as you move further down the list you get closer to the centre. Response L is near the 'bulls-eye'). Your response to this question helps us understand the phases on the journey to quitting and where you personally may be up to.'*



- A. I have never heard that smoking can be harmful
- B. I have heard that smoking can be harmful, but its too scary to think about
- C. I have heard that smoking can be harmful, but I think the risk is exaggerated
- D. I accept that smoking can be harmful, but I do not think it will be for me
- E. I accept that smoking could be harmful for me, but I do not care *very much*
- F. I care that I could be harmed by smoking, but I think the risk is worth it
- G. I do not think the risk of smoking is worth it, but there is no point in trying to stop because the damage has been done
- H. I do not think the risk of smoking is worth it, but I do not think I can stop
- I. I accept that smoking can be harmful, and the danger is part of the attraction
- J. I accept that smoking can be harmful, but I would feel shame if I failed at quitting
- K. I care about the risks of smoking and plan to try to stop, but it is not a priority at the moment
- L. I care about the risks of smoking, and definitely intend to try to stop soon

NB: Items B and J were additions to the original Risk Acceptance Ladder

6.3 Summary

- There is limited knowledge about how Aboriginal and Torres Strait Islander peoples of reproductive age assess the risks about smoking, and their levels of efficacy for cessation. With a focus on women and men of reproductive age, this study aims to determine how Aboriginal and Torres Strait Islander smokers assess smoking risks and how these assessments contribute to their intentions to quit. The study aims to validate risk assessment scales for Aboriginal and Torres Strait Islander smokers in NSW Australia.
- This is a cross-sectional study using quantitative and qualitative data. One hundred and twenty Aboriginal and Torres Strait Islander community members aged 18-45 years will be recruited at community events and through an ACCHS. Participants will be interviewed using a tablet computer or paper survey. The survey instrument uses modified risk behaviour scales, i.e. the RBD Scale and the SRAT (adapted from the RAL) to determine whether attitudes of Aboriginal and Torres Strait Islander smokers to health risk messages are predictors of intentions to quit smoking. The questionnaire will be assessed for face and content validity with a panel of Indigenous community members. The internal consistency of the RBD subscales and their patterns of correlation will be explored. Multivariate analyses will examine predictors of intentions to quit. This will include demographics such as age, gender, nicotine dependence, household smoking rules, and perceived threat from smoking and efficacy for quitting. The two risk assessment scales will be examined to see if participant responses are correlated.
- Ethics and dissemination: The Aboriginal Health & Medical Research Council Ethics Committee and university ethics committees approved the study. The results will be published in a peer-reviewed journal and a community report will be disseminated by the ACCHS, and at community forums.

- A better understanding of attitudes and experiences of smoking and quitting in this age group will add to current knowledge and could assist in better management of smoking for Indigenous Australians. The findings from this pragmatic study should contribute to developing culturally targeted interventions. The study has the potential to inform anti-tobacco messages used in social marketing and counselling approaches in clinical consultations. The study privileges the voices of Aboriginal and Torres Strait Islander peoples.

6.4 *Final word*

Correlations of smokers' attitudes, perceptions of threat and efficacy with intentions to quit smoking may aid the development of tailored approaches. The following two chapters present the results of the study in two further publications. Chapter 7 presents the results of the validation of the RBD Scale, and Chapter 8 reports the results of a multivariate analysis of significant variables and intentions to quit smoking. Please note that the findings about smoking initiation, the MTSS scale, and the SRAT have not been included further in this thesis.

**Chapter 7. Using the risk behaviour diagnosis scale
to understand Australian Aboriginal smoking - a
cross-sectional validation survey in regional New
South Wales**

7.1 Overview

The chapter aims to answer the research question as to whether the RBD Scale and the EPPM on which it is based, could have relevance for Indigenous Australian smokers, and form the basis for targeted and tailored approaches. This chapter presents the findings from the validation of the RBD Scale in an Indigenous Australian population on the Mid North Coast of NSW. The results are thus drawn from the quantitative elements of the study as described in the study protocol in Chapter 6.

This chapter is inserted as the PDF of the published paper:

Gould GS*, Watt K, Cadet-James Y, Clough AR. Using the risk behaviour diagnosis scale to understand Australian Aboriginal smoking - a cross-sectional validation survey in regional New South Wales. *Preventive Medicine Reports*. 2015;2:4-9.

Please note that there is an error in table 2, pertaining to the Cronbach's alpha for "intention to quit". The correct Cronbach's alpha is 0.71.

Figure 7.1 depicts where the study contributes to the evidence for cultural targeting for the thesis.

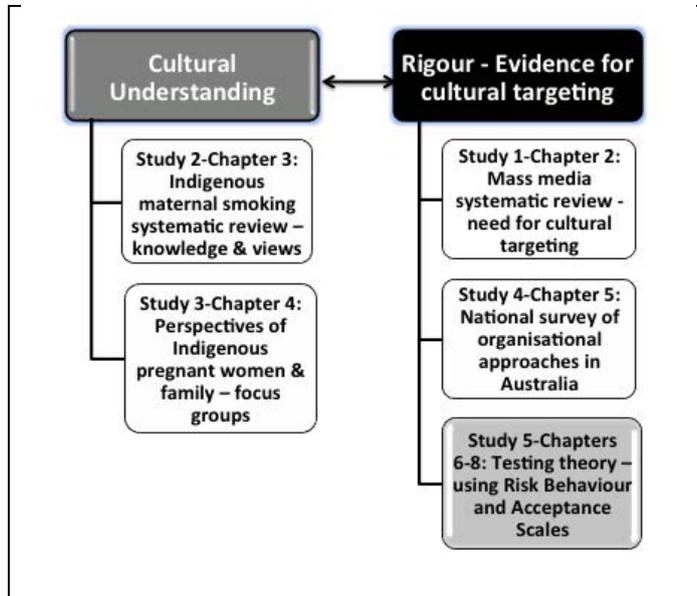


Figure 7.1 Study 5, Chapter 7 in relation to the conceptual model of the thesis for making salient messages for Indigenous tobacco control

7.2 Publication in Preventive Medicine Reports



Using the risk behaviour diagnosis scale to understand Australian Aboriginal smoking – A cross-sectional validation survey in regional New South Wales

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ARTICLE INFO

Available online 7 November 2014

Keywords:

Tobacco smoking
Australian Aborigines
Indigenous population
Risk behaviours
Behavioural medicine
Validation studies
Smoking cessation
Health promotion
Mass media
Health communication

ABSTRACT

Objective. To validate, for the first time, the Risk Behaviour Diagnosis (RBD) Scale for Aboriginal Australian tobacco smokers, based on the Extended Parallel Process Model (EPPM). Despite high smoking prevalence, little is known about how Indigenous peoples assess their smoking risks. **Methods.** In a cross-sectional study of 121 aboriginal smokers aged 18–45 in regional New South Wales, in 2014, RBD subscales were assessed for internal consistency. Scales included measures of perceived threat (susceptibility to and severity of smoking risks) and perceived efficacy (response efficacy and self-efficacy for quitting). An Aboriginal community panel appraised face and content validity. EPPM constructs of danger control (protective motivation) and fear control (defensive motivation) were assessed for cogency. **Results.** Scales had acceptable to good internal consistency (Cronbach's alpha = 0.65–1.0). Most participants demonstrated high-perceived threat (77%, n = 93); and half had high-perceived efficacy (52%, n = 63). High-perceived efficacy with high-threat appeared consistent with danger control dominance; low-perceived efficacy with high-threat was consistent with fear control dominance. **Conclusions.** In these Aboriginal smokers of reproductive age, the RBD Scale appeared valid and reliable. Further research is required to assess whether the RBD Scale and EPPM can predict quit attempts and assist with tailored approaches to counselling and targeted health promotion campaigns.

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Introduction

Tobacco smoking by Indigenous peoples is of major concern globally, with high prevalence rates showing little decline. The decline of smoking in the general population in Western nations is in part due to successful anti-tobacco campaigns. The small downward shift in Aboriginal Australian smoking rates over the last decade has not been replicated in the peak reproductive subgroup of 25–34 years (Australian Bureau of Statistics, 2014), when exposure is highest for babies and children. The disparity in daily smoking rates in Australia is stark at 12.8% for the general population (Australian Institute of Health and Welfare, 2013), versus 42% in Aboriginal Australians (Australian Bureau of Statistics, 2014), with remote community rates up to 85% (Robertson et al., 2013). This raises the question, how can we improve the

effectiveness of tobacco control messages for Indigenous populations and in particular Aboriginal Australians?

Much is known about the historical antecedents of smoking in Aboriginal Australians (Brady, 2002), the impact of the social determinants of health (Shepherd et al., 2011), and the knowledge levels of Aboriginal Australians about smoking (Gould et al., 2013a). Little is known, in contrast, about how Indigenous populations, including Aboriginal Australians assess the threat of smoking, and their perceived efficacy for quitting. Such information is required to inform the development of targeted campaigns.

Indigenous peoples have good recall of mainstream campaigns (Boyle et al., 2010), and highly rate the message efficacy of mainstream campaigns (Stewart et al., 2011), but these campaigns have not translated into quitting behaviour (Gould et al., 2013b; Ivers et al., 2005). Anti-tobacco messages which are not pitched at the right level can fail or have unintended consequences (Witte and Allen, 2000). Fear-based campaigns, for example, have been found to be most effective for those who have high self-efficacy or high motivation (Wong and Cappella, 2009; Peters et al., 2013).

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Targeted approaches are a key objective of Australian national tobacco strategies (Commonwealth of Australia, 2012), and the WHO Framework Convention on Tobacco Control (Article 4) (World Health Organization, 2003), and are preferred by Indigenous peoples (Gould et al., 2013b). In Australia, the majority of organisations developing culturally targeted anti-tobacco messages for Aboriginal smokers avoided fear campaigns and favoured positive and educational messages (Gould et al., 2014a), although the rationale for this approach has not been explored.

It is important to validate psychometric measures before use in a cross-cultural Indigenous context (Drew et al., 2010). Instruments to assess mental health and substance use (Stephens et al., 2013), have been recently validated for Aboriginal Australians, but not tobacco smoking. This study uses the findings from a cross-sectional study of Aboriginal Australians to validate risk assessment scales for tobacco smoking in this population.

Materials and methods

The protocol for the study has been published (Gould et al., 2014b), thus we provide a brief summary of methods.

Study setting and recruitment

In a regional area of New South Wales (NSW) on Australia's east coast, the cross-sectional study was conducted in a community sample of Aboriginal smokers aged 18–45 years from January to May 2014. Quota sampling was used by gender and age groups to represent the target population, calculated from the 2008 Aboriginal smoking prevalence (Australian Bureau of Statistics, 2009), and the 2011 Aboriginal population census (Table 1). Participants (N = 121) were recruited by personal intercept through community events, such as Aboriginal cultural festivals (n = 35) and cultural centres (n = 15), health days (n = 20), sporting events (n = 19), through community/health services (n = 15), street intercept (n = 8) and by personal contact (n = 9). An Aboriginal 'Tackling Tobacco and Healthy Lifestyle Team' facilitated the attendance of the interview team at several local events.

The interviewers included a non-Aboriginal female (author GG), a male Aboriginal research assistant, and a female Aboriginal volunteer who approached potential participants, informed them of the study and canvassed their interest in participating. Author GG trained all the interviewers. The study adhered to the guideline for ethical research in Indigenous populations, and relevant ethics committee approvals as detailed in the study protocol (Gould et al., 2014b).

Theory/calculation

The survey included questions based on the Risk Behaviour Diagnosis (RBD) Scale (Witte et al., 1996, 2001), adapted for tobacco smoking, and the Aboriginal target populations from the Extended Parallel Process Model (EPPM) (Witte et al., 1996, 2001). The central premise of the EPPM is that when under a health risk threat people may control the danger by making a positive shift in attitude and behaviour, termed

'danger control dominance'. Alternately they may feel fearful and try to control the emotion of fear by denial, reactance, or message derogation, called 'fear control dominance' (Witte et al., 2001). The pathways proposed by the EPPM are depicted in Fig. 1.

The level of perceived efficacy (response efficacy and self-efficacy) moderates responses to high threat. People with high efficacy are more likely to be in danger control and change their attitudes or behaviour (e.g. quit smoking). Alternatively, if efficacy is low, people are more likely to exhibit defensive avoidance and fear control. When the perceived threat is low or absent then people may be indifferent, and unlikely to change attitudes or behaviour.

The RBD Scale comprises questions to measure the EPPM constructs (Witte et al., 2001). The scale is used to calculate a discriminating value predicted to be diagnostic for danger vs. fear control. The EPPM has been validated and used for many health risks, including smoking (Wong and Cappella, 2009), and in a wide range of populations (including cross-cultural groups).

We conducted a process of Aboriginal community consultation to test the content and face validity, suitability, readability, cultural appropriateness, acceptability and feasibility of the survey instruments. The process of scale adaption for the Aboriginal target population is described in the study protocol (Gould et al., 2014b).

The RBD subscales and scales for protection responses and fear control responses (details in Supplementary Table A.1) were measured using 5 point Likert Scales. Intentions to quit smoking were measured using 4 point Likert Scales. The total score for each scale was divided by the number of questions in the scale to create mean indices. Median splits around the distribution of scale scores produced binary categories of high-low responses. This resulted in the following variables: total perceived threat (high vs low); total perceived efficacy (high vs low); protection responses (high vs low); fear control responses (high vs low); and danger control responses (intentions to quit: high vs low).

We grouped the responses to the RBD Scale into four quadrants as suggested by Popova (Popova, 2012), subtitled with descriptors from Rimal and Real (Rimal and Real, 2003), as follows:

- I – high threat-high efficacy – responsive
- II – high threat-low efficacy – pro-active
- III – low threat-high efficacy – avoidant
- IV – low threat-low efficacy – indifferent.

Discriminating value was calculated from the formula (\sum perceived efficacy) – (\sum perceived threat) = discriminating value, then categorised into positive (>0) or negative (≤ 0) (Witte et al., 2001).

Statistical analysis

Analyses, including descriptive, were performed using SPSS v20. The internal reliability of the scales was assessed with Cronbach's alpha coefficient. A factor analysis explored the RBD subscale dimensions. Separate chi-squared analyses were performed stratified by each RBD

Table 1

Stratified sampling strategy of target Aboriginal population on the Mid North Coast of New South Wales, and actual sample (N = 121).

Age range (years)	Target population (2011 census from regional LGA)		Smoking prevalence (2008 NATSISS)		% of target populations in regional city who smoke		Proposed sample stratified by gender & age group		Actual sample recruited	
	Male N	Female N	Male %	Female %	Male N (% of total)	Female N (% of total)	Male N	Female N	Male N	Female N
18–24	172	178	38.7	39.7	67 (13.9)	71 (14.7)	17	18	18	18
25–34	142	184	56	50.1	80 (16.6)	92 (19)	20	23	18	23
35–44	154	187	55.5	47.3	85 (17.6)	88 (18.2)	21	22	22	22
Total	468	549			232 (48.1)	251 (51.9)	58	63	58	63

Adapted with permission of the authors (Gould et al., 2014b).

Bold figures indicate total numbers of men and women proposed for the sample and actually recruited.

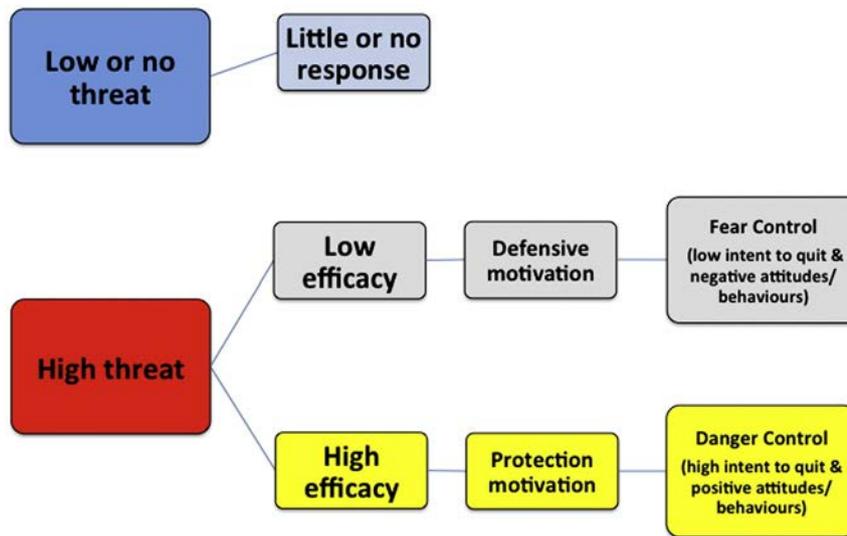


Fig. 1. The extended parallel process model and expected responses to threat and efficacy levels. Adapted from Witte. (Witte et al., 2001).

quadrant to determine whether intentions to quit, protection responses, fear control responses and home smoking rules were associated with RBD quadrants.

Results

Internal reliability

Table 2 lists the internal reliability of each scale. A Cronbach's alpha of 0.7 or over demonstrates acceptable reliability (Tavakol and Dennick, 2011). Some scale results improved when items were removed, resulting in an acceptable reliability level of subscales (approximating $r = 0.7$). As the Cronbach's alpha was lower for the total perceived efficacy scale, this might indicate that response efficacy is slightly different to self-efficacy. The factor analysis revealed three components comprising response efficacy, self-efficacy, and perceived threat (included susceptibility and severity) (results not shown).

Participants

The 121 participants included 116 (96%) tobacco smokers who self-identified as Aboriginal and five smokers (4%) who self-identified as Aboriginal and Torres Strait Islanders. Table 3 details the sample characteristics and scale responses.

Table 2

Internal consistency of the Risk Behaviour Diagnosis Scale and associated scales in Aboriginal smokers (N = 121) in regional New South Wales, Australia in 2014.

Scale	Cronbach's alpha	Adjustments made	Median score (range)
Total perceived efficacy	0.65		3.5 (1–5)
Response efficacy	0.69		
Self-efficacy	0.71	0.82 with removal Q2c	
Total perceived threat	0.79	0.81 with removal Q3c	4 (1–5)
Susceptibility	0.55	0.62 with removal Q3c	
Severity	0.78		
Fear control response	0.58	0.67 with removal Q6a	2.3 (1–5)
Protection response	0.67		4.3 (1–5)
Danger control response			
Intention to quit	1.0*		2.7 (1–4)

Q2c – It is easy to stop smoking.

Q3c – I believe I am seriously at risk of getting ill from smoking.

Q6a – I prefer not to think about the health risks of smoking.

See Table A.1. for further details of scale questions.

The EPPM: danger control dominance and fear control dominance

Table 4 shows the four quadrants as divided according to the EPPM (Popova, 2012). Those in quadrant I with high-efficacy high-threat consistent with the EPPM theory showed high danger control responses i.e. intention to quit smoking ($X^2 = 16.67$; $df = 1$; $p < 0.001$), illustrating danger control dominance. Participants in this quadrant were also significantly more likely to report home smoking bans ($X^2 = 24$; $df = 1$; $p < 0.001$) and protection responses ($X^2 = 26.74$; $df = 1$; $p < 0.001$).

Those with low efficacy and high threat (quadrant II) would be expected to be in fear control dominance according to the EPPM. These participants were significantly more likely to have a home smoking ban ($X^2 = 13.56$; $df = 1$; $p < 0.001$), but there was no difference in relation to protection responses, or intention to quit ($p > 0.05$). Quadrant III with high efficacy and low threat consisted of only nine participants:

Table 3

Characteristics of Aboriginal participants from the Mid North Coast of New South Wales, Australia (N = 121) in 2014.

Demographic characteristics	N (%)
Male	58 (48%)
Female	63 (52%)
Age group (years)	
18–24	36 (30%)
25–34	41 (34%)
35–45	44 (36%)
Home smoking ban	
Complete ban	96 (79%)
Partial/no ban	25 (21%)
Variables from scales	N (%)
Total perceived efficacy	
High	63 (52%)
Low	58 (48%)
Total perceived threat	
High	93 (77%)
Low	28 (23%)
Protection responses	
High	84 (69%)
Low	37 (31%)
Fear control responses	
High	63 (52%)
Low	58 (48%)
Intention to quit	
High	80 (66%)
Low	41 (34%)

*The correct Cronbach's alpha for 'Intention to quit' is 0.71 - erratum will be published

Table 4
Expected efficacy by threat associations according to the four quadrants of the EPPM in 121 Aboriginal smokers in regional New South Wales, Australia in 2014.

	High efficacy (n = 63)	Low efficacy (n = 58)
High threat (n = 93)	Quadrant I: responsive Danger control expected n = 54; 45%	Quadrant II: avoidant Fear control expected n = 39; 32%
Intention to quit	✓***	✗
Home smoking bans	✓***	✓***
Protection responses	✓***	✗
Fear control responses	✗	✗
Low threat (n = 28)	Quadrant III: pro-active Less danger control expected n = 9; 7%	Quadrant IV: indifferent No response expected n = 19; 16%
Intention to quit	✓ ^a	✗
Home smoking bans	✓ ^a	✗
Protection responses	✓ ^a	✗
Fear control responses	✗	✓*

Legend: ✓* significant $p < 0.05$, ✓** significant $p < 0.01$, ✓*** significant $p < 0.001$, ✗ non-significant $p > 0.05$. ✓^a Associated but significance non computable. Adapted from Popova (Popova, 2012).

eight of these had a high intention to quit and home smoking bans, and six had high protection responses. This suggests a pro-active response despite a lower threat from smoking.

The EPPM predicts that low threat combined with low efficacy (quadrant IV) would be associated with low danger control responses or no response. This was confirmed with no significant associations observed for these participants regarding intention to quit, home smoking bans, and protection responses in quadrant IV.

Participants with high fear control responses (denial, avoidance etc.) were significantly less likely to demonstrate an intention to quit smoking ($X^2 = 6.54$; $df = 1$; $p = 0.01$). The only quadrant in which a significant association with fear control responses was demonstrated was quadrant IV, with 15/19 (79%) participants having high fear control responses ($X^2 = 6.37$; $df = 1$; $p = 0.01$), giving evidence for avoidance and denial in this quadrant only (see Table 3). This suggests that the threat level, although classed as low here, was sufficiently high to produce fear control responses.

The majority ($n = 102$; 84%) of participants had a negative discriminating value. A negative discriminating value should, according to the RBD theory, imply 'fear control dominance'. These participants should have a low intention to quit. Paradoxically 'fear control dominance' (negative discriminating value) was significantly associated with increased intention to quit ($X^2 = 5.49$; $df = 1$; $p < 0.05$), with 63 (62%) of those with negative values having a high intention to quit. The anomaly, we believe, reflected the high levels of perceived threat compared to levels of perceived efficacy, in this population, giving mostly negative discriminating value scores. The discriminating value also was not associated with fear control responses.

Discussion

This was the first study known to the authors to investigate how Indigenous peoples assess their risks of smoking using the Risk Behaviour Diagnosis (RBD) Scale (Witte et al., 1996, 2001), developed from the Extended Parallel Process Model (EPPM) (Witte et al., 1996, 2001). In Aboriginal smokers aged 18–45 years in regional NSW the RBD Scale for tobacco smoking risk assessment appeared valid and reliable, as determined by face and content validity and tests of internal reliability.

The constructs of danger and fear control from the EPPM were tested to see if they applied to this population. The interaction between threat appraisal and coping appraisal appear to be important, giving support to the EPPM as a relevant model for this population. The discriminating value was not diagnostic for this sample. The discriminating value has been recently criticised by Popova (Popova, 2012), as it does not differentiate between low and high values of efficacy and threat but only the difference between them.

The division of efficacy and threat responses into quadrants was revealing. Quadrant I smokers with high-efficacy and high-threat gave

the strongest indication of danger control dominance. Quadrant II smokers, with low-efficacy and high-threat, implied fear control dominance, but without direct evidence of high fear control responses. The absence of fear control responses for this quadrant is encouraging, as according to Witte once fear control responses such as denial or reactance set in, they can be difficult to reverse (Witte et al., 2001, p30). Quadrant II participants significantly imposed home smoking bans – demonstrating a protective response to passive smoking, suggesting perhaps a 'partial danger control'. Quadrant III comprised an interesting group of nine individuals expected to demonstrate a lower level of danger control according to Popova (Popova, 2012). However Rimal and Real consider this quadrant pro-active (Rimal and Real, 2003), motivated by considerations other than perceived risk. Quadrant IV smokers unexpectedly showed high fear control responses such as avoidance, rather than indifference.

As fear messages are so ubiquitous in Australian tobacco control programmes, represented most obviously by graphic health warnings on plain packages, it is not surprising that levels of perceived threat were high in our sample. The high perceived threat may also reflect the locally-specific programmes operating in the region in 2010–2012 (Gould, 2013), recently followed by an Aboriginal 'Tackling Tobacco and Healthy Lifestyle Team', raising awareness of the impact of smoking on the Aboriginal community.

Increasing baseline fear levels in those with already high fear perceptions does not necessarily induce positive behaviours. Previous studies showed that using fear appeals in the context of high pre-existing fear is likely to be ineffective (Muthusamy et al., 2009). There is convincing support for high threat messages being effective for behavioural change only where efficacy is high, and vice-versa (Peters et al., 2013). Neurocognitive evidence shows that attention is automatically diverted from high threat messages in a high-risk population (Peters et al., 2013).

Our findings suggest a central role for perceived efficacy. If fear appeals are used they should be accompanied by high efficacy interventions (Witte and Allen, 2000; Peters et al., 2013) – something which may be lacking for Aboriginal smokers, with culturally targeted positively-framed approaches inconsistently available in Australia, especially in remote areas (Robertson et al., 2013; Gould et al., 2014a). The targeted national mass media 'Break The Chain' campaign, with an efficacy message, has been aired in Australia since 2011, but its reach may be inadequate in some areas. The campaign has relied on only one TV advertisement.

A body of knowledge has been built from the EPPM, which is the basis of previous research across many populations and different health behaviours, and informs the planning of tobacco counter-marketing (Witte and Allen, 2000). Witte recommends that interventions should be targeted to the levels of danger control and fear control on a population and individual basis (Witte et al., 1996, 2001). Translating this

advice into practical strategies for our sample, we recommend for quadrants I and III 'how to quit' messages and access to smoking cessation support; for quadrant II messages to build efficacy and also support quitting; and for quadrant IV personalisation of the health risks and strategies to counter denial, reactance etc., and also messages to build efficacy.

Differences in risk assessment and motivation to quit smoking are valid concerns for marginalised populations with high prevalence, such as Indigenous and minority populations. Understanding these differences might have value for the development of tailored tobacco control and cessation interventions.

Study limitations and strengths

The study, with strong theoretical foundations, has laid the groundwork for this type of analysis to be done in a larger sample and in other Indigenous populations. We attempted to minimise bias in several ways: the survey was interviewer-administered so we could include those with low literacy levels; we recruited from a variety of sites to minimise selection bias. These features add to the strength of the study. The study had a number of limitations common to small samples. Response bias may have been operant e.g. some smokers may be unwilling to reveal attitudes of denial and avoidance. The Aboriginal regional sample may limit the generalisability to other Aboriginal peoples.

Conclusions

The RBD Scale may have important implications to fine-tune our approach to tobacco control in Aboriginal Australians through mass media campaigns and smoking cessation strategies. New strategies are especially important in the peak reproductive years, where other approaches do not seem to be working. By assessing smokers in a local area, anti-tobacco messages and mass media can be targeted to the need of the local audience for population based health promotion campaigns. Assessing a smoker using these scales may enable health professionals to offer tailored approaches to cessation. The RBD Scale may be valuable for other Indigenous populations globally and are worthy of further consideration. Further research is required to assess whether these scales can predict actual quit attempts, and assist with tailored approaches to counselling and local health promotion programmes, thus improve the response of Indigenous smokers to tobacco control interventions.

Funding statement

This work was supported by:

- The National Health and Medical Research Council (Australia) and the National Heart Foundation (Australia) post-graduate scholarship for Indigenous health research – (grant numbers APP1039759 and PP 11S 6181)
- The Royal Australian College of General Practitioners and Australian Primary Health Care Research Institute Indigenous Health Award 2013
- James Cook University, Faculty of Medicine, Health & Molecular Sciences, Graduate Research Scheme grants 2013 and 2014
- National Health and Medical Research Council (Australia) Career Development Award (grant number APP1046773)
- None of the funding sources had any involvement with the study design, analysis or interpretation of data; nor in writing or publishing the report.

Contributor statement

GG was responsible for the concept and design of the project, developing and adapting the survey instruments and their digital

format, testing the suitability of the survey for Indigenous participants, conducting surveys, training and supervising Indigenous research assistants, collating and analysing and interpreting results, writing the manuscript, and submitting the study. She takes overall responsibility for the content as guarantor. KW contributed to the research design and statistical analysis and critical review of manuscripts. YCJ as Aboriginal academic advisor advised on the Indigenous community consultation processes, recruitment strategy and the cultural interpretation of results, and provided critical review of the manuscript. ARC oversaw the study and advised on all aspects, and provided critical review of the manuscripts. All authors approved the final version.

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.pmedr.2014.10.004>.

Conflict of interest statement

The authors declare that there are no conflicts of interest.

Acknowledgments

We acknowledge the valuable input of the Aboriginal community panel and the support of the partnering Aboriginal Community Controlled Health Service, and their Tackling Tobacco and Healthy Lifestyle Team for this survey, the Aboriginal Health Worker who advised about the survey, the Aboriginal research assistant, and other volunteers, and the community participants – without them the study would not have been possible. We acknowledge the contribution of Dr. Andy McEwen who advised on aspects relating to tobacco smoking and smoking risk behaviours.

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Supplementary Table: Risk Behaviour Diagnosis Scale and associated scales

Statements requiring responses on Likert Scales 1-5 (strongly disagree to strongly agree)

1. Response Efficacy

- a) Stopping smoking prevents serious sickness or disease (such as heart or lung disease or cancer)
 - b) Giving up smoking helps avoid serious sickness or disease
 - c) If I stop smoking I am less likely to get a serious sickness or disease
-

2. Self-efficacy

- a) I am confident I can stop smoking
 - b) I am able to stop smoking
 - c) It is easy to stop smoking
-

3. Susceptibility to threat

- a) It is likely that I will get ill from smoking
 - b) Smoking could possibly affect my health
 - c) I believe I am seriously at risk of getting ill from smoking
-

4. Severity of threat

- a) Smoking is harmful to health
 - b) Smoking can severely affect health
 - c) The health effects of smoking are of serious concern
-

5. Protection responses

- a) It is better if pregnant women do not smoke
 - b) It is better if partners of pregnant women quit smoking
 - c) It is better if adults don't smoke around children and babies
 - d) It is better if Aboriginal or Torres Strait Islander people do not smoke at all
-

6. Fear control responses

- a) I prefer not to think about the health risks of smoking
 - b) The risks of smoking are exaggerated (or overdone)
 - c) I do not personally believe that smoking is going to affect my health
 - d) The risks of smoking are untrue or manipulated
-

Statements requiring responses on Likert Scales 1-4 (very unlikely to very likely)

7. Danger control responses – intention to quit smoking

How likely is it that in the next 3 months you will:

- a) Quit smoking completely and permanently
 - b) Reduce the number of cigarettes you smoke in a day
 - c) Talk to someone (e.g. friend/family) about quitting smoking
-

Participants are asked to indicate which response applies best to them depending how strongly they agree or disagree with the statements. (The statements were mixed-up. Numbering given here is for ease of reference to questions in the main text). Questions 1-4 in table reproduced with permission from Gould et al. (2014b)

7.3 Summary

- I validated, for the first time, the Risk Behaviour Diagnosis (RBD) Scale for Aboriginal Australian tobacco smokers, based on the Extended Parallel Process Model (EPPM). Despite high smoking prevalence, little is known about how Indigenous peoples assess their smoking risks.
- In a cross-sectional study of 121 Aboriginal smokers aged 18-45 in regional New South Wales, in 2014, RBD subscales were assessed for internal consistency. Scales included measures of perceived threat (susceptibility to and severity of smoking risks) and perceived efficacy (response efficacy and self-efficacy for quitting). An Aboriginal community panel appraised face and content validity. EPPM constructs of danger control (protective motivation) and fear control (defensive motivation) were assessed for cogency.
- Scales had acceptable to good internal consistency (Cronbach's alpha=0.65-0.79). Most participants demonstrated high-perceived threat (77%, n=93); and half had high-perceived efficacy (52%, n=63). High-perceived efficacy with high-threat appeared consistent with danger control dominance; low-perceived efficacy with high-threat was consistent with fear control dominance.
- In these Aboriginal smokers of reproductive age, the RBD Scale appeared valid and reliable. Further research is required to assess whether the RBD Scale and EPPM can predict quit attempts and assist with tailored approaches to counselling and targeted health promotion campaigns.

7.4 Final word

This paper presented the findings from Study 5 of the Aboriginal community-based survey relevant to the measures of validity and reliability of the RBD Scale and associated scales and the EPPM. In Chapter 8 I present further findings of the

analyses from Study 5. Chapter 8 includes the findings related to the multivariate analysis described in the published protocol (Chapter 6), and the emergent themes from the qualitative analysis of participant responses to open ended questions in the community interviews. I explore how the latter support and extend the findings.

**Chapter 8. Predictors of intentions to quit smoking
in Aboriginal tobacco smokers of reproductive age
in regional New South Wales (NSW), Australia:
quantitative and qualitative findings of a cross-
sectional survey**

8.1 Overview

In this chapter I present the quantitative results of a multivariate analysis exploring the predictors of intentions to quit smoking from the previous study. The protocol for this section of the thesis was described in Chapter 6. The chapter culminates in recommendations as to how the findings could relate to clinical applications for this target population.

The chapter is inserted as a PDF of the published paper:

Gould GS*, Watt K, McEwen A, Cadet-James Y, Clough AR. Predictors of intentions to quit smoking in Aboriginal tobacco smokers of reproductive age in regional New South Wales (NSW), Australia: quantitative and qualitative findings of a cross-sectional survey. *BMJ Open*. 2015;5(e007020).

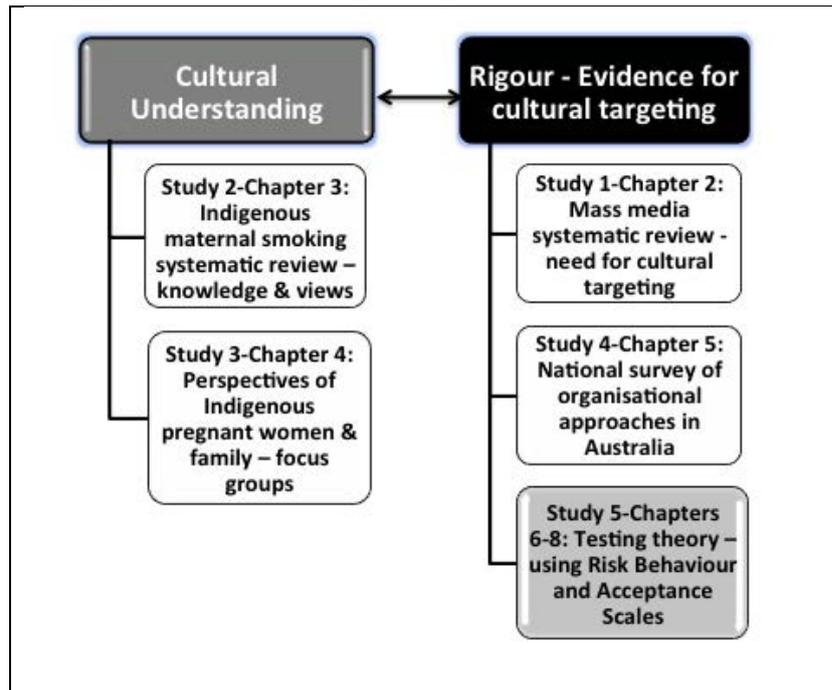


Figure 8.1 Study 5, Chapter 8 in relation to the conceptual model of the thesis for making salient messages for Indigenous tobacco control

8.2 Publication in BMJ Open

BMJ Open Predictors of intentions to quit smoking in Aboriginal tobacco smokers of reproductive age in regional New South Wales (NSW), Australia: quantitative and qualitative findings of a cross-sectional survey

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To cite: Gould GS, Watt K, McEwen A, *et al.* Predictors of intentions to quit smoking in Aboriginal tobacco smokers of reproductive age in regional New South Wales (NSW), Australia: quantitative and qualitative findings of a cross-sectional survey. *BMJ Open* 2015;**5**:e007020. doi:10.1136/bmjopen-2014-007020

► Prepublication history and additional material is available. To view please visit the journal (<http://dx.doi.org/10.1136/bmjopen-2014-007020>).

Received 28 October 2014
Revised 9 February 2015
Accepted 17 February 2015



CrossMark

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ABSTRACT

Objectives: To assess the predictors of intentions to quit smoking in a community sample of Aboriginal smokers of reproductive age, in whom smoking prevalence is slow to decline.

Design, setting and participants: A cross-sectional survey involved 121 Aboriginal smokers, aged 18–45 years from January to May 2014, interviewed at community events on the Mid-North Coast NSW. Qualitative and quantitative data were collected on smoking and quitting attitudes, behaviours and home smoking rules. Perceived efficacy for quitting, and perceived threat from smoking, were uniquely assessed with a validated Risk Behaviour Diagnosis (RBD) Scale.

Main outcome measures: Logistic regression explored the impact of perceived efficacy, perceived threat and consulting previously with a doctor or health professional (HP) on self-reported intentions to quit smoking, controlling for potential confounders, that is, protection responses and fear control responses, home smoking rules, gender and age. Participants' comments regarding smoking and quitting were investigated via inductive analysis, with the assistance of Aboriginal researchers.

Results: Two-thirds of smokers intended to quit within 3 months. Perceived efficacy (OR=4.8; 95% CI 1.78 to 12.93) and consulting previously with a doctor/HP about quitting (OR=3.82; 95% CI 1.43 to 10.2) were significant predictors of intentions to quit. 'Smoking is not doing harm right now' was inversely associated with quit intentions (OR=0.25; 95% CI 0.08 to 0.8). Among those who reported making a quit attempt, after consulting with a doctor/HP, 40% (22/60) rated the professional support received as low (0–2/10). Qualitative themes were: the negatives of smoking (ie, disgust, regret, dependence and stigma), health effects and awareness, quitting, denial, 'smoking helps me cope' and social aspects of smoking.

Conclusions: Perceived efficacy and consulting with a doctor/HP about quitting may be important predictors of intentions to quit smoking in Aboriginal smokers of reproductive age. Professional support was generally

Strengths and limitations of this study

- A novel approach to tobacco research in this population included the Risk Behaviour Diagnosis Scale to examine the predictors of intentions to quit smoking.
- High response rate and recruitment in a wide variety of community settings, using face-to-face interviews, which accommodated for participants with low literacy and allowed for participants' responses to open-ended questions.
- As a small sample in one region, findings may not apply to Indigenous peoples of diverse regions and nations.
- High level of perceived threat in the sample obscured interpretation in those with lower threat levels.
- Longitudinal research is required to determine if these and other predictors hold true for quitting success. [Terminology. We refer to the study population as Aboriginal as these are the First Nation people of NSW. When we use the term Indigenous Australians, it applies to Indigenous peoples of Australia in general, which comprises two distinct populations, Aboriginal and Torres Strait Islanders.]

perceived to be low; thus, it could be improved for these Aboriginal smokers. Aboriginal participants expressed strong sentiments about smoking and quitting.

INTRODUCTION

Tobacco smoking is established as a major contributor to the health gap for Indigenous Australian smokers, representing 12% of the burden of disease, and 17% of the preventable risk factors.¹ 'Closing the Gap' strategies aim to halve the Indigenous smoking prevalence by 2018.² Indigenous smoking prevalence has slowly reduced over the past decade, but daily

smoking is over three times the rate of the general population at 42%,³ compared with 13%.⁴ Some Indigenous subgroups demonstrate no significant prevalence change for daily smoking, such as the 25–34-year-olds (51.5%) and smokers in more remote communities.³ Overall, the remote Indigenous smoking rates are 50.4% compared with non-remote smoking rates of 39.1%; and higher for each reproductive age group: 18–24 years 59.4% versus 38.2%; 25–34 years 59.5% versus 49%; 35–44 years 55% versus 46.3%.³

A research focus on smokers of reproductive ages is important as women and men in these age groups are likely to have contact with unborn babies and children. Parental smoking exposes babies and children to the toxic effects of environmental and inter-uterine metabolites from tobacco smoke, contributing to prenatal and birthing risks, low birth weight and developmental problems.^{5–8} Parental smoking influences smoking initiation in adolescence.⁹ Additionally, through prenatal exposure, children born to mothers who smoke are more likely to become smokers themselves.¹⁰ Smoking can reduce fertility (in both genders), and increases maternal birthing risks.¹¹ Quitting smoking is also important as early as possible in the reproductive years, because after 40 years of age life expectancy reduces by 3 months for every year of smoking.¹²

Australia is a world leader in tobacco control with effective policies spanning mass media interventions, smoke-free environments, pricing and plain packaging, resulting in the sixth lowest Organisation for Economic Cooperation and Development (OECD) national prevalence.¹³ This success has not yet translated into the same level of improvement for Australia's vulnerable First Nations peoples, despite an evaluation of the targeted 'Break The Chain' campaign reporting 23% of Indigenous Australians trying to quit smoking,¹⁴ and an increase in funded Indigenous tobacco control programmes.¹⁵

Having an intention to quit smoking is an important step that precedes making a quit attempt according to health behaviour theories.¹⁶ However, intentions can also be precipitated by changes in health status or impromptu evaluations.¹⁷ International Tobacco Control (ITC) studies enable cross-country comparisons of predictors of intentions to quit and smoking cessation. Predictors vary with culture, but commonly include gender, age, nicotine dependence, motivational factors, health concerns, self-efficacy and past quit attempts and are useful to guide clinical practice.¹⁸ A meta-analysis revealed that past quitting behaviour and motivation to stop smoking are highly predictive of quit attempts, but the predictors of cessation are more associated with nicotine dependence.¹⁹ Although an ITC-related project is underway for Indigenous Australian smokers,²⁰ to date there has been limited research to explore the predictors of intentions to quit smoking, quit attempts or cessation in Indigenous Australians.

This study on Aboriginal smokers of reproductive age in a regional area of NSW examined the predictors of

intentions to quit smoking, in the context of demographic variables, smoking and past quitting behaviours, using a published study protocol.²¹ We included variables from the validated Risk Behaviour Diagnosis (RBD) Scale as potential predictors of intentions to quit smoking.²² The RBD Scale, based on the Extended Parallel Process Model (EPPM), assesses the relative levels of perceived threat (severity and susceptibility to the health threats from smoking) and perceived efficacy (self-efficacy and response efficacy). Quantitative findings were complemented by an analysis of participants' comments about smoking and quitting. These data can be used to inform policies and practice. Furthermore, we were interested in the experiences of participants in consulting with their doctor about quitting, and the level of support they received.

METHODS

A brief summary is given below of the methods already published.²¹ This analysis was part of a larger study in the same sample.^{21 22}

Participants and setting

From January to May 2014, Aboriginal smokers (N=121), aged 18–45 years old, were recruited by personal intercept at a range of community events on the Mid-North Coast NSW, including Aboriginal cultural events, health days and sports events. We used quota sampling by age and gender to represent the target population as closely as possible, as a random sample was unfeasible. We estimated the response rate of participants during the first half of the recruitment, before reaching the age/gender quotas, by keeping a tally of how many were eligible/ineligible (selection criteria—self-identified as Aboriginal or Torres Strait Islander, aged 18–45, current smoker) and those who agreed to participate. A 20–30 min survey was conducted with each participant by author GG, or either a male or female Aboriginal research assistant, using a tablet computer or on paper.

Data collection

Data were collected on demographics, smoking and quitting attitudes and behaviours, age of smoking initiation, home smoking rules, consulting history about quitting and professional support for quitting.

Key variables for this analysis were measured with Likert scales as detailed below. Two of these (perceived threat and efficacy) are from the RBD Scale and measure attitudes to health risks from smoking, and the belief in one's own ability to quit and the value of quitting. Efficacy has central importance in behaviour change according to social cognitive theory.²³ Intentions to quit are from a validated scale used by Wong and Cappella²⁴ to assess a time-related motivational intention, and the protection response and fear control response scales were validated by Gould *et al*²² to assess attitudes to protecting others from smoking, and

potential dis-engagement with health messages. For further details of the questions and scales, see the online supplementary table.

1. Perceived threat from smoking (five items): susceptibility and severity of the threat from smoking
2. Perceived efficacy (five items): self-efficacy and response efficacy—that is, belief in one's ability to quit, and that quitting will make a difference to health risks
3. Intentions to quit smoking in the next 3 months (five items): based on a previous study²⁴
4. A protection response scale (four items): attitudes about pregnant women smoking, partners' smoking, smoking around children and Indigenous smoking in general
5. A fear control response scale (four items): denial, avoidance, derogation of messages and reactance.

The mean score for each scale was obtained and then categorised into high versus low (median split).

Home smoking rules were assessed by a multichoice question offering four options, then recoded into complete ban versus partial/no ban. Having a baby/child at home, consulting history with a doctor or other HP (such as a nurse or an Aboriginal Health Worker) about quitting, and previous quit attempts (currently/in the past) were measured by yes/no options. Previous quit attempts was a filter question for asking further information about quitting, that is, the use of quit medications and the support available from a doctor/HP on their previous/current attempt (on a sliding scale from 0 to 10).

Provision was made to document qualitative responses in several open-ended sections of the questionnaire. Qualitative data were collected during the interviews as follows: at the start when participants were asked what they thought about smoking in general; to elicit more information from those who said they did not want to quit smoking; and at the end in case the participants wanted to provide any further information. Notes were taken by the interviewer to approximate the participant's comments as closely as possible, on a computer tablet or paper survey.

Analysis

SPSS V.20 was used to conduct quantitative analyses. χ^2 tests were used to explore associations between predictor variables and intentions to quit smoking. Clustering effects were determined by examining cross-associations between variables. A visual modelling exercise demonstrated multiple associations (see figure 1).

Binary logistic regression was used to identify the independent predictors of intention to quit smoking. Variables that were significant in crude analyses, on the likelihood of having an intention to quit smoking, were entered into the model and removed one at a time. If the ORs of the remaining variables changed by more than 10%, the variable was retained.

Qualitative data were collated across the surveys, initially male and female separately and then combined.

A general inductive methodology (comprising a five-step process of close reading of the text, identifying segments of information, coding information and labelling categories/themes, reducing overlap of categories/themes, and creating a model of the most important categories/themes) was used to draw emergent themes from the data.²⁵ The data were independently open-coded and grouped by three researchers (GG and two Aboriginal research assistants, EJW and SJ) to maximise reliability (investigator triangulation).²⁶ We did not use any predefined themes in the analysis. Following this initial process, we used a collaborative approach to refine and name the emergent themes and subcategories based on discussions between the team members, privileging the interpretation by the Aboriginal members of the team. This collaborative approach was based on the analysis we used for a previous study,²⁷ while taking into account reflexivity through the members of the team questioning their own and each other's assumptions.

RESULTS

The response rate for the survey (those who agreed as a proportion of those who were eligible) was 89%. Characteristics of participants are shown in table 1. Over three-quarters of participants were assessed as having high perceived threat, only half of the participants had high perceived efficacy on the RBD Scale, and 66% had a high-level intention to quit smoking in the next 3 months. Sixty-seven per cent (n=81) reported having a baby/child at home. Complete home smoking bans were reported by 79% (n=96). This was significantly comprised of 86% (n=70) with a baby/child at home versus 65% (n=26) with no baby/child at home ($\chi^2=7.5$; df=1; p<0.01).

We found that 52% (n=63) had consulted with a doctor/HP about quitting smoking. Eighty per cent (n=97) of participants reported making a previous quit attempt: among these, 11% (n=11) were currently trying to quit or reduce smoking. Nearly half of those reporting quit attempts had tried to quit in the past year; however, 54% (n=52) had never tried smoking cessation medications. The median level of reported support available to those who had consulted a doctor or HP on their previous/current quit attempt (n=60) was 4 of 10 (IQR 1–8). However, 40% (n=24) rated the support available to them as very low, in the range of 0–2, out of a possible score of 10.

Predictors of intention to quit

Table 2 shows the results of the binary logistic regression (unadjusted and adjusted). Two sets of variables were considered multicollinear. These were 'home smoking rules' and 'having a baby/child at home', and 'consulted a doctor/HP about quitting (currently/in the past)' and 'previous/current quit attempts'. In each of these instances, one of the variables was removed from the model after discussion with all authors.

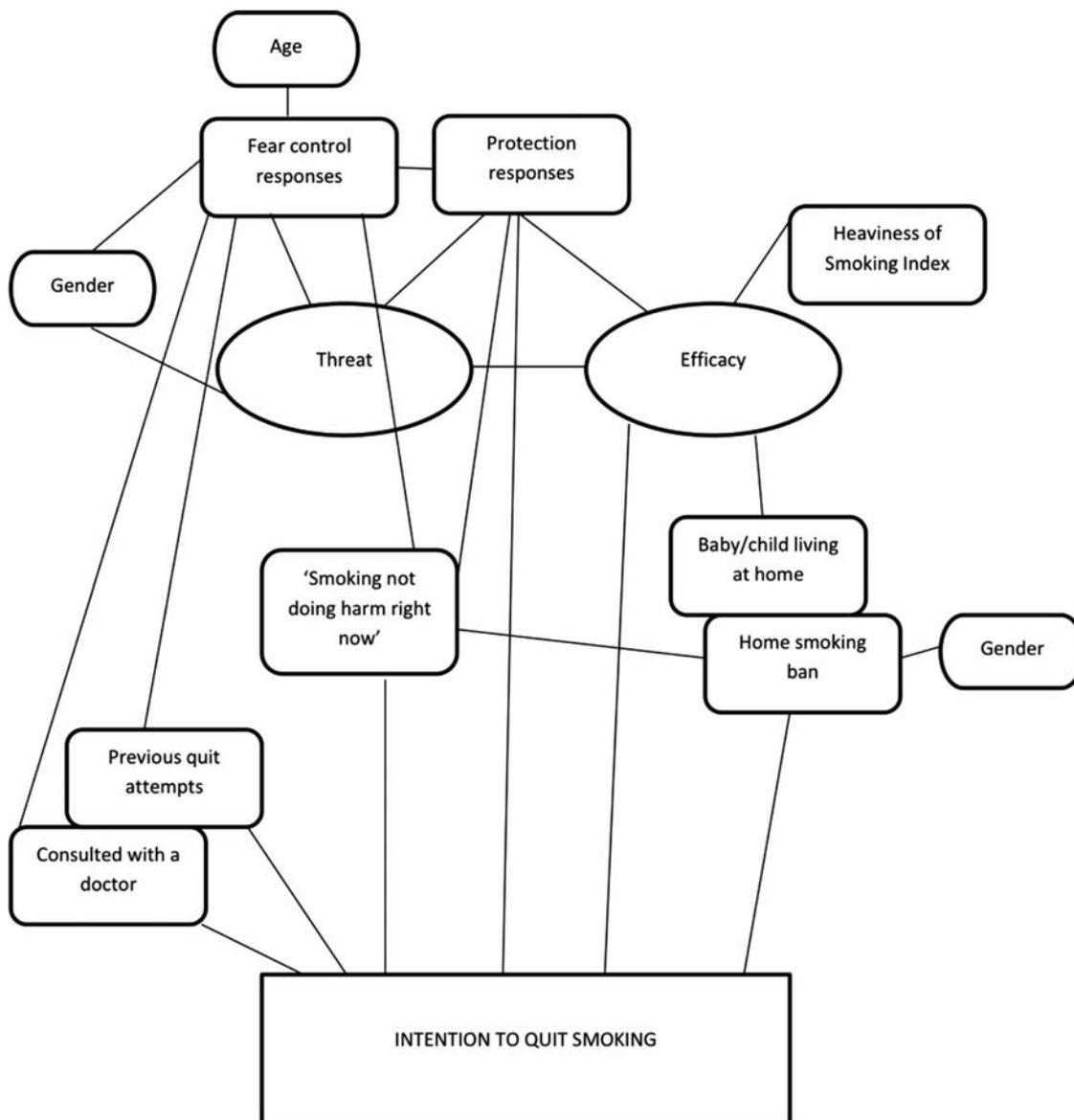


Figure 1 Correspondences in the non-adjusted model of predictors of intentions to quit smoking in Aboriginal smokers aged 18–45 years in New South Wales.

After adjusting for the effect of confounding, significant independent predictors of intentions to quit smoking in the next 3 months were: high perceived efficacy and ‘previously consulted with doctor or HP about quitting’. In addition, the attitude that ‘smoking is not doing me any serious harm at the moment’ was inversely associated with intentions to quit. Confounders were home smoking rules, protection responses and fear control responses. High perceived threat was inversely associated with intention to quit, but not significantly (OR=0.31; 95% CI 0.09 to 1.05). Gender, age and Heaviness of Smoking Index were not confounders and were not included in the model. The model explained 38% (Nagelkerke R^2) of the variance in intentions to quit smoking and correctly classified 80% of cases.

We attempted to assess an interactive effect of threat on efficacy in the model, as an interactive element was suggested when we validated the RBD Scale and the

EPPM.²² When the results were stratified for threat, the same associations were observed for participants in the high threat category, but there were too few participants in the low threat category for the logistic regression to be meaningful (results not shown).

Qualitative findings

Five main themes emerged from the qualitative analysis, namely: negatives about smoking, health effects, quitting, denial, social aspects and ‘smoking helps me cope’. Themes, subcategories and representative examples of the comments made by participants are depicted in table 3. The following subcategories were most frequently communicated by the 121 participants in the open-ended sections: stress was expressed 45 times (women 29, men 16), dependence on smoking 44 times (women 21, men 23) and disgust 39 times (women 22, men 17). Several indicated that the survey had raised

Table 1 Characteristics of 121 participants from the Mid-North Coast, New South Wales

Characteristic	N (%)
Male	58 (48)
Female	63 (52)
Age group (years)	
18–24	36 (30)
25–34	41 (34)
35–45	44 (36)
Main income source (n=1 missing)	
Income support	79 (65)
Working	41 (34)
Healthcare card holder	90 (74)
SEIFA* deciles of postcodes (n=2 missing)	
1–2	73 (60)
3–4	40 (33)
5–9	6 (5)
Education level	
Primary to year 10	56 (46)
Year 11 to year 12	30 (35)
Postsecondary	35 (29)
Baby/child at home	81 (67)
Smokers at home (includes self)	
1	38 (31)
2–3	71 (59)
>3	12 (10)
Home smoking rules	
Complete ban	96 (79)
Smoke-free homes with children	70 (86)
Smoke-free homes with no children	26 (65)
Partial/no ban	25 (21)
Most of the family/social circle smoke	101 (84)
Frequency of smoking	
Daily smoker	102 (84)
Smoke most days	8 (7)
Occasional smoker	11 (9)
Type of tobacco smoked	
Normal cigarettes	110 (91)
Hand-rolled cigarettes	51 (42)
Smoking behaviours	Mean; \pm SD; (range)
Age of first cigarette	13.98; \pm 2.99; (5–25)
Age took up regular smoking	16.11; \pm 3.05; (7–27)
Duration (years) until regular smoker	2; 0.3; (0–11)
Total years of regular smoking	15; 8.22; (1–32)
Heaviness of Smoking Index (0–6)	Median: 3 (IQR 2–4)
Quitting behaviours	
Previous quit attempts	97 (80)
Consulted with doctor/HP about quitting	63 (52)
Used cessation medications	69 (46)
Variables from scales	
Perceived efficacy	
High	63 (52)
Low	58 (48)

Table 1 Continued

Characteristic	N (%)
Perceived threat	
High	93 (77)
Low	28 (23)
Protection responses	
High	84 (69)
Low	37 (31)
Fear control responses	
High	63 (52)
Low	58 (48)
Intention to quit smoking in next 3 months	
High	80 (66)
Low	41 (34)
Intention to seek help to quit smoking in next 3 months	
High	61 (50)
Low	60 (50)

Higher deciles reflect higher relative advantage; lower deciles reflect lower relative advantage. For this sample, all participants who were resident in the local area were deciles 1–4. Participants in deciles 5–9 were not local residents.

*SEIFA (Socioeconomic Index For Areas) was used to estimate socioeconomic status in this study,²⁸ specifically the Index of Relative Socioeconomic Advantage and Disadvantage. HP, health professional.

their awareness about smoking, and many asked for advice and cessation assistance from the interviewers at the completion.

The qualitative findings informed some of the key variables in this study. Perceived threat went beyond physical health concerns, such as disgust, regret and concerns about stigma—these may threaten psychological well-being. Participants reported witnessing tobacco-related illnesses and deaths in their relatives, and were also concerned for their own health.

Perceived efficacy for quitting related to comments about willpower and the use of medications, which may aid quitting. Some reported adverse medication effects (eg, from nicotine patches) and/or being told that quit medications were not suitable for them (eg, varenicline). Stress and dependence were cited as barriers to quitting. When being asked questions about response efficacy for quitting, a few women held the perception that quitting smoking could bring on serious diseases as they had seen elders succumb to cancer after quitting.

Protection responses were illustrated by comments about protecting children and babies from tobacco smoke, concerns about children taking up smoking and wanting to be a good role model for children. Those who said smoking was ‘not a problem’, or they did not think much about their smoking illustrated fear control responses. Some of the younger men gave the impression that they were ‘bullet-proof’.²⁹

Many volunteered at the first question that they wanted to quit smoking, thus indicating an intention to stop. Reasons given for not wanting to quit were mainly stress and enjoyment (mostly by women), and dependence (mostly by men).

Table 2 Association between variables and intentions to quit smoking† in 120 Aboriginal smokers aged 18–45 years from the Mid-North Coast, New South Wales, Australia

Variables in the model	N	Unadjusted OR (95% CI)	Adjusted OR (95% CI)‡
Predictors			
High perceived efficacy	63	3.59 (1.62 to 7.98)**	4.8 (1.78 to 12.93)**
Consulted with a doctor/HP currently/previously	63	4.26 (1.89 to 10)***	3.82 (1.43 to 10.2)**
'Smoking is not doing me harm right now'	24	0.17 (0.06 to 0.44)***	0.25 (0.08 to 0.8)*
Confounders			
High perceived threat	93	0.73 (0.29 to 1.83)	0.31 (0.09 to 1.05)
Protection responses	84	2.97 (1.33 to 6.67)**	1.35 (0.44 to 4.12)
Fear control responses (denial, etc)	62	0.36 (1.16 to 0.8)*	0.65 (0.24 to 1.78)
Complete home smoking ban	95	2.13 (0.87 to 5.26)	1.67 (0.55 to 5.11)
Variables in model not confounders			
Gender–Male	58	0.66 (0.24 to 1.81)	NA
Age 18–24	36	1.0	
25–34	41	1.16 (0.34 to 3.96)	NA
35–45	44	0.96 (0.27 to 3.36)	NA
Heaviness of Smoking Index		0.91 (0.27 to 3.36)	NA

*p<0.05; ** p<0.01; ***p<0.001.

†Assessed from intention to quit (in next 3 months) scale with a median split.

‡Contribution of independent variables to the OR is shown, while controlling for the effects of the others.

HP, health professional.

DISCUSSION

We examined the predictors of intentions to quit in a community sample of Aboriginal smokers of reproductive age in regional NSW, and analysed qualitative responses to the open-ended questions in the survey. To the best of our knowledge, this is the first study to include variables from the RBD Scale as predictors of intentions to quit smoking in an Indigenous population. Perceived threat levels were high in this sample (77%), and 79% of participants reported that home smoking bans were implemented (86% of those with children at home), suggesting that the majority of participants were familiar with messages about smoking harms and smoke-free environments. Predictors of intentions to quit smoking (in the next 3 months) included high perceived efficacy and 'previously consulted with a doctor or HP'. 'Smoking not doing harm right now' was inversely associated with intentions to quit smoking, implying a lack of immediacy of threat and/or lack of priority for quitting. Perceived threat was inversely associated with intention to quit, but the 95% CI just included 1.0. The high level of perceived threat in the sample made it difficult to analyse whether perceived threat was a confounder or an effect modifier.

Some variables, which might have been expected to be significant according to previous research, such as whether most of the participant's family/social circle smoked,³⁰ the number of smokers in the house³⁰ or the age at first cigarette,³¹ were not associated with intention to quit, even in crude analyses. Neither was educational level,³² or other socioeconomic indicators,³² but this sample from a low socioeconomic region may have been too homogeneous to detect differences. However, socioeconomic disadvantage may impact on the short-term success of quit attempts.³³ Although we were not able to

demonstrate an interactive effect with different levels of perceived threat and efficacy on quit intentions in this study, complex interactions have been suggested by the RBD Scale validation.²²

The qualitative data added richness to the quantitative findings and confirmed some of the intensity implied by the high perceived threat levels, with an emphasis on disgust and health concerns in many. Several of the qualitative themes and subcategories in this study have been previously noted in Indigenous Australian smokers, namely: the social norms and family influences of smoking,^{27 30 34–39} association of smoking with alcohol intake,^{39 40} concerns about the health effects and the financial costs,³⁵ protecting children from tobacco smoke,^{27 34 41 42} a desire to quit smoking,^{43 44} concerns about nicotine dependence,^{30 39 44} the stigma of smoking^{27 44} and smoking as a stress-reliever and stress as a barrier to quitting.^{27 30 34–39 41 44 45} The exacerbation of stress when not smoking may be interpreted as an overlap with nicotine dependence and withdrawal symptoms, as described previously in this population.^{27 46} The importance of willpower for quitting may be allied to the concept of resilience for Indigenous smokers, which in turn can be augmented with social and professional support.⁴⁵

A systematic review of studies across several vulnerable populations in high-income countries, including Indigenous peoples, reported that smoking was used as a coping mechanism, a way to deal with stressors in everyday life and a barrier to quitting.⁴⁷ This review also demonstrated that historical, social and cultural norms fostered continued smoking and was a barrier to quitting within Indigenous peoples. The low ratings for HP support in our sample were also confirmed by Twyman *et al's*⁴⁷ systematic review, suggesting a lack of support

Table 3 Themes, subcategories and examples of comments made in response to open-ended questions in the study with 121 Aboriginal smokers in regional New South Wales, Australia

Theme	Subcategory	Examples
Negatives about smoking	Disgust	'I hate it', 'horrible', 'disgusting', 'filthy dirty habit', 'shitty', 'it stinks'
	Dependence	'too far gone to break the habit', 'I depend on it', 'very addictive'
	Regret	'didn't think about what I was doing when I was younger', 'wish I never started'
	Cost	'very expensive', 'over paying price'
Health effects	Stigma	'really bad social stigma', 'fed up being told we're bad'
	Health	'watched my father die from heart disease...sits in the back of your mind', 'just lost my mother from cancer...don't want to end up like her'
	Protecting others	'don't want to touch baby with smoking hands', government should ban cigarettes, 'break the cycle'
Quitting	Misconceptions	'I've seen elders give up then develop cancer', 'I'm scared quitting will cause cancer'
	Wanting to quit	'don't want to smoke any more', 'wish I could give up', 'I'm trying to quit'
	Willpower	'it's a matter of willpower', 'I know my own willpower'
	Support	'would like to have group support, not do it alone'
Denial	Quit medications	'patches don't work for me', doctor told some that medication was unsuitable, requests for further information, desire to try medication
	Smoking is no problem	'don't think much about it', 'not much to say about it', 'don't really see myself as a smoker'
	Quitting not a priority	'not worried about quitting at the moment', 'couldn't be bothered [to quit]', 'smoking is a convenience'
Social aspects	Enjoyment	'I like it, makes me feel better', 'I enjoy having a cigarette',
	Social and family influences	'more of a social thing', 'doing it with the crowd', 'family all smoked'
'Smoking helps me cope'	Alcohol	'a few more with drinks', 'need a smoke to go with a drink'
	Stress relief	'gets me through the day', 'calms your nerves', 'helps me cope with stress and anxiety',
	Stress as barrier	'tried to give up often...but its relaxing', 'be stressed out all day [if didn't smoke]'
	Time out	'sit and have a smoke for 5 minutes and I can think', 'time out from the kids'
	Dealing with weight	'that's why I restarted smoking, to loose weight [after childbirth]'

from health and service providers for quitting in vulnerable populations in general, including Indigenous peoples.

However, ours is the first study as far as we know to report intense expressions of disgust for smoking, and regret for starting in this Australian Indigenous population. Disgust has been linked with the moralisation of smoking, rejection and stigmatisation.⁴⁸ Disgust has been reported in qualitative studies with disadvantaged smokers and non-smokers in the UK,⁴⁹ and young Australian women.⁵⁰ Regret was reported as a near universal experience in 90% of smokers from high-income countries in the ITC study.⁵¹ Regret was associated with perceived addiction and failed quit attempts, but not with ethnicity.⁵¹

Strengths of the study were the novel approach to researching smoking in this population, the high response rate and recruitment in a wide variety of community settings, using face-to-face interviews, which accommodated for participants with low literacy and allowed for capturing the participants' responses to open-ended questions. Several limitations of this study should be noted. It was a small sample in one region, and findings may not apply to Indigenous peoples of

diverse regions and nations. As with any such research, selection and information bias may be operant (the survey relied on self-report). By limiting the study to current smokers, we were not able to assess how ex-smokers perceived professional support for quitting. The qualitative data relied on documenting the participant's comments on the computer tablet or paper survey, rather than audio recording and transcribing the dialogue. This meant the quotes were approximated. We considered that audio recording would be too intrusive for a survey of this nature.

The relevance of these findings in an Aboriginal community sample of reproductive age, where prevalence is slow to decline, is that these factors can be used to guide strategies for cessation.

Implications for practice and policy

It is important to encourage Aboriginal smokers of reproductive age to (1) make more quit attempts and (2) support those quit attempts to give smokers a better chance of success. Smokers in this age range have much to gain by reducing exposure to babies and children, and protecting their own health as quitting before age 40 is essential for maximum health benefits.¹²

Identifying those who are more likely to make a quit attempt, may enable tailoring of messages and supportive approaches. As perceived efficacy was an important predictor in this population, tobacco control messages could be strengthened with more focus on building efficacy for quitting, such as increasing motivation and vicarious achievement through real testimonials from successful quitters.⁵² Self-efficacy may be enhanced through acknowledging incremental success via the clinical encounter.²³ Having access to evidence-based treatment will also increase perceived efficacy, and is vital for those who cannot quit unaided. A few misperceptions may need to be addressed, with some women being caught between the threat from smoking and fear of quitting as a potential instigator of cancer. Increasing knowledge and health literacy can be easily achieved through a variety of means. Capitalising on smokers' feelings of regret, if confirmed by other studies, may be possible through careful social marketing guided by Aboriginal community consultation. Regret has been a theme in some of the Indigenous 'Rewrite Your Story' social marketing campaigns.⁵³ However, the 'pedagogy of disgust' is more controversial as a persuasive device.⁵⁴ Lupton argues that there is insufficient recognition of the unintended consequences of provoking disgust in tobacco control campaigns, as disgust can marginalise already vulnerable populations, and create disempowerment rather than choice.⁵⁴

If a patient had previously consulted with a doctor/HP about quitting smoking, they were nearly four times as likely to have a time-defined intention to quit smoking, suggesting that these smokers should receive priority for further support from clinicians. The low ratings of perceived support from an HP implies that cessation approaches, the patient experience of quit support, and/or access to services could be improved, or that the population has an unrealistic expectation of what support is available. Medical professionals have a duty to provide high quality equitable support in a culturally competent manner to all smokers.⁵⁵ Qualitative research reported that positive interactions from health professionals were important to foster success for Aboriginal ex-smokers.⁴⁴ One of the subtle barriers to cessation for disadvantaged smokers is service level reinforcement of smoking, or smoking being overlooked as a major priority.⁵⁶

This study may inform policies and practices about how antitobacco and cessation messages could be used in regional strategies and clinical interventions for smoking cessation for Aboriginal smokers in this age range. We cautiously suggest that improvements could be achieved through clinician training,⁵⁷ offering all Aboriginal smokers evidence-based management for smoking including pharmacotherapy and counselling,^{55 58} personalisation of health promotion messages based on efficacy for this age-group and addressing any structure barriers for access.^{47 59}

While the above approaches are not new, it makes good translational sense to ensure that they are

consistently applied in this population. Nonetheless, few cessation interventions have been designed to enhance efficacy.⁶⁰ In an Aboriginal population, like this one on the Mid-North Coast NSW, further heightening of the already high perceived threat levels may be not required, and could possibly be counterproductive.²² This study has implications therefore for regional health promotion programmes that could assess levels of threat and efficacy and on the basis of this provide tailored messages and interventions. Those with intentions to quit smoking may not change their behaviour due to the attitude-behaviour gap, so a prospective longitudinal study is required to determine if these, and other predictors, hold true for quitting success.

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Acknowledgements The authors acknowledge the valuable input of the Aboriginal community panel and the advice of the Aboriginal Health Worker about the questionnaire. The authors thank the partnering Aboriginal Community Controlled Health Service for supporting the study and facilitating local cultural protocols. The authors acknowledge the valuable assistance from Aboriginal research assistant E J Williams and Aboriginal research volunteer Sharne Johnson. Lastly, the authors are grateful to all the participants for sharing their experiences.

Contributors GG was responsible for the concept and design of the project, developing and adapting the survey instruments and digital format, testing the suitability of the survey for Aboriginal participants, conducting surveys, training and supervising Aboriginal research assistants, collating, analysing and interpreting results and writing the reports and manuscripts. KW contributed to the research design and statistical analysis, checked all statistical findings and critically reviewed the manuscripts. AM advised on aspects related to tobacco smoking, smoking risk behaviours and the survey, qualitative analysis and a critical review of the manuscripts. YCJ as the Aboriginal academic advisor advised on the Aboriginal community consultation processes, recruitment and the cultural interpretation of results. AC oversaw the study and advised on all aspects, including assisting with the logistic regression, advising about the presentation of results and critical reviewing all manuscript drafts. Aboriginal research assistant EJW and Aboriginal research volunteer SJ recruited and interviewed participants and contributed to the qualitative data analysis and its interpretation.

Funding This work was supported by the: National Health and Medical Research Council (Australia) and National Heart Foundation (Australia) postgraduate scholarship for Indigenous health research (GG)—APP1039759/PP 11S 6181; National Health and Medical Research Council Career Development Award (AC)—APP1046773; Royal Australian College of General Practitioners and Australian Primary Health Care Research Institute Indigenous Health Award 2013; James Cook University, Faculty of Medicine, Health & Molecular Sciences, Graduate Research Scheme grants 2013 and 2014.

Competing interests AM receives a personal income from Cancer Research UK via University College London. He has received travel funding, honorariums and consultancy payments from manufacturers of smoking cessation products (Pfizer Ltd, Novartis UK and GSK Consumer Healthcare Ltd). He also receives payment for providing training to smoking

cessation specialists; receives royalties from books on smoking cessation and has a share in a patent of a nicotine delivery device.

Ethics approval Ethics approval was granted by the Aboriginal Health and Medical Research Ethics Committee and ratified by James Cook University and Southern Cross University Ethics Committees, and adheres to guidelines for Aboriginal and Torres Strait Islander research.⁶¹

Provenance and peer review Not commissioned; externally peer reviewed.

Data sharing statement Information regarding unpublished data is available by emailing the first author. The unpublished data comprise the results of the Smoking Risk Assessment Target and the Motivation to Stop Smoking Scale in the sample, referred to in our protocol.²¹

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Supplementary Table: The Risk Behaviour Diagnosis Scale and associated scales validated for Aboriginal smokers (18-45 years) in New South Wales and their median scores

Statements requiring responses on Likert Scales (1 - strongly disagree to 5 - strongly agree)	Median scores sub-scales (range)
Total Perceived Efficacy (response efficacy + self-efficacy)	3.5 (1-5)
<i>1. Response Efficacy</i>	
a) Stopping smoking prevents serious sickness or disease (such as heart or lung disease or cancer)	
b) Giving up smoking helps avoid serious sickness or disease	
c) If I stop smoking I am less likely to get a serious sickness or disease	
<i>2. Self-efficacy</i>	
a) I am confident I can stop smoking	
b) I am able to stop smoking	
Total Perceived Threat (susceptibility + severity)	4 (1-5)
<i>3. Susceptibility to threat</i>	
a) It is likely that I will get ill from smoking	
b) Smoking could possibly affect my health	
<i>4. Severity of threat</i>	
a) Smoking is harmful to health	
b) Smoking can severely affect health	
c) The health effects of smoking are of serious concern	
5. Protection responses	4.3 (1-5)
a) It is better if pregnant women do not smoke	
b) It is better if partners of pregnant women quit smoking	
c) It is better if adults don't smoke around children and babies	
d) It is better if Aboriginal or Torres Strait Islander people do not smoke at all	
6. Fear control responses	2.3 (1-5)
a) The risks of smoking are exaggerated (or overdone)	
b) I do not personally believe that smoking is going to affect my health	
c) The risks of smoking are untrue or manipulated	
Statements requiring responses on Likert Scales 1-4 (very unlikely to very likely)	
7. Intention to quit smoking	2.7 (1-4)
<i>How likely is it that in the next 3 months you will:</i>	
a) Quit smoking completely and permanently	
b) Reduce the number of cigarettes you smoke in a day	
c) Talk to someone (e.g. friend/family) about quitting smoking	
8. Intentions to seek help with quitting	2.3 (1-4)
<i>How likely is it that in the next 3 months you will:</i>	
a) Seek professional support to help you quit smoking	
b) Enroll in a smoking cessation program (if available at minimal cost)	

Participants indicates which response applied best to them depending how strongly they agree or disagree with the statements. Questions 1-4 reproduced with permission from Gould et al. (21)

8.3 Summary

- The objective of this study was to assess associations between perceived efficacy, perceived threat and intentions to quit smoking in Aboriginal smokers.
- The cross-sectional survey involved 121 Aboriginal smokers, aged 18-45 years from January-May 2014, interviewed at community events on the Mid North Coast NSW. Response rate was 89%. Qualitative and quantitative data were collected on smoking and quitting attitudes, behaviours and home smoking rules. Perceived efficacy for quitting, and perceived threat from smoking, were assessed with a validated Risk Behaviour Diagnosis (RBD) Scale.
- Logistical regression explored the impact of perceived efficacy, perceived threat, and consulting history on self-reported intentions to quit smoking, controlling for potential confounders i.e. protection responses and fear control responses, home smoking rules, gender and age. Participants' comments regarding smoking and quitting were investigated via inductive analysis, with the assistance of Aboriginal researchers.
- Two-thirds of smokers intended to quit within three months. Perceived efficacy (OR=4.8;95%CI=1.78-12.93), and consulting previously with a doctor or health professional (HP) about quitting (OR=3.82;95%CI=1.43-10.2) were significant predictors of intentions to quit. Perceived threat was a confounder. 'Smoking is not doing harm right now' was inversely associated with quit intentions (OR=0.25;95%CI=0.08-0.8). Among those who reported making a quit attempt, after consulting with a doctor/HP, 40% (22/60) rated the professional support received as low (0-2/10). Qualitative analyses indicated that themes regarding attitudes toward smoking were: the negatives of smoking (i.e. disgust, regret, dependence and stigma), health effects and awareness, quitting, denial, 'smoking helps me cope' and social aspects of smoking.

- Perceived efficacy and consulting with a doctor/HP about quitting may be important predictors of intentions to quit smoking in Aboriginal smokers of reproductive age. Professional support was generally perceived to be low thus could be improved for these Aboriginal smokers. Aboriginal participants expressed strong sentiments about smoking and quitting.

8.4 Final word

This study was the last in a series of studies to examine how to make salient messages for Indigenous Tobacco Control. The last three chapters have focused on the community-based study using the Risk Behaviour Diagnosis Scale. The study had a high response rate, and the recruitment in a wide variety of community settings, using face-to-face interviews, accommodated participants with low literacy and allowed for participants' responses to open-ended questions. Longitudinal research is required to determine if perceived efficacy threat and other predictors hold true for quitting success.

The findings from all of the thesis studies will now be integrated in the following Discussion section (Chapter 9).

Chapter 9. Discussion

This thesis summarises the evidence from several studies to gain understanding and answer the question – how to make salient tobacco control messages for Indigenous Australians? I used multiple methodologies, including systematic reviews of the literature (Studies 1 and 2), qualitative approaches (Studies 3-5), and quantitative methodology (Studies 4 and 5), based on theoretical frameworks for health promotion and behaviour change theories. Furthermore, attention has been given to privileging the voices of the Indigenous participants. This thesis addresses issues not only related to anti-tobacco messages but maternal smoking, and the validation of risk behaviour scales in Indigenous Australians. In this discussion section I integrate the findings from the studies, address my research questions, discuss the implications of the study findings, and make comparisons with other research. Recommendations for policy and practice, and implications for further research are described in the Conclusion (Chapter 10).

Firstly, the thesis provides preliminary evidence about the development and utilisation of culturally targeted tobacco control messages. A systematic review of the international literature on Indigenous peoples in Western nation states (Study 1) and a national survey of organisational practices in Australia (Study 4), together achieved this aim. Figure 9.1 below utilises a conceptual model that I proposed in Study 4, comprising twin components of cultural understanding and rigour. Studies 1 and 4 form the right-hand arm of the model, providing evidence for cultural targeting.

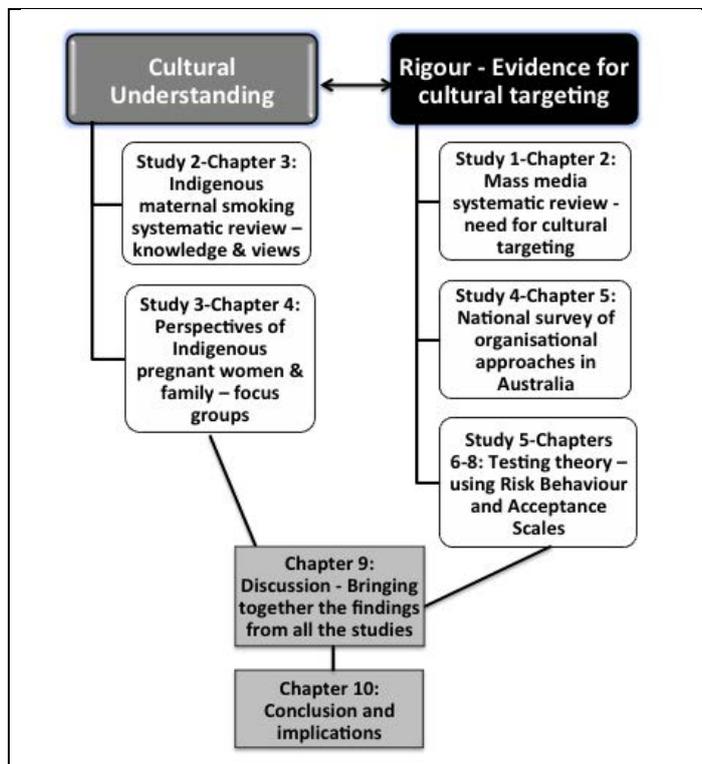


Figure 9.1 Discussion and Conclusion sections in related to thesis elements

Secondly, the thesis advances the understanding of how Indigenous Australians view the issues of smoking and quitting, in pregnancy and in the reproductive years. This was achieved through (1) a meta-ethnography of previous research on maternal smoking in Indigenous Australians, (2) an in depth exploration of views from Aboriginal pregnant women and family members in regional NSW, and (3) a community based survey of men and women aged 18-45 years in regional NSW. These three studies contributed to cultural understanding. However, as the latter study was theory-driven and aimed to validate risk assessment scales for Indigenous smokers, I placed it in the rigour arm of Figure 9.1.

Finally, this research validated the EPPM and the RBD Scale for Indigenous Australian smokers of reproductive age in regional NSW. Study 5 was also used to analyse the

predictors of intentions to quit smoking. Study 5 produced a potential new tool to assess how Indigenous Australians perceive the threat from smoking and their efficacy for quitting. I indicate how this tool may be used for health promotion and communication campaigns and in a clinical setting.

I propose that cultural understanding and rigour combine to form best practice in this field. Therefore the two strands in Figure 9.1 come together in this Discussion to answer the three questions that formed the basis of this programme of work:

1. Is the message 'getting through' about the harms of tobacco smoking i.e. having an impact on Indigenous Australians?
2. Can we* develop more salient tobacco control and cessation messages for Indigenous Australians?
3. If so, how do we make tobacco control and cessation messages more effective?

9.1 Is the message 'getting through' about the harms of tobacco smoking to Indigenous Australians?

In evaluating this question we need to understand the connections between message content, message delivery, message acceptance and action in response to the message. Guidance is taken from the American Cancer Society's Global Dialogue Campaign Development Toolkit, which outlines all phases from message development to dissemination and evaluation.¹⁸⁹ It is logical that awareness of messages occurs before knowledge/attitudes/beliefs change, and health behaviours change as a consequence.¹⁸⁹ I therefore examine three facets of health behaviour that include evaluations, motivation and planning and behavioural changes. In the individual these facets of behaviour change may or may not be sequential as explained in the

* 'We' here includes a collaborative approach with Indigenous Australians and relevant organisations and researchers.

introduction, in the section on health behaviour theories (section 1.13). The impact of tobacco control messages on Indigenous Australians are therefore summarised as they relate to: (1) awareness - evaluations and attitudes about smoking and tobacco control messages, (2) motivation - intentions or plans to reduce or quit smoking, seek help for quitting and create smoke-free homes and (3) behaviour changes – reducing smoking, quitting and smoke-free homes.

9.1.1 Awareness - evaluations and attitudes about smoking and tobacco control messages

The impact of tobacco control messages and modes of delivery for Indigenous peoples were assessed in this thesis. The systematic review of studies that examined the effect of anti-tobacco messages for Indigenous peoples (Study 1), demonstrated that overall, there is good recall of generic and culturally targeted mass media messages[†]. Moreover, collectively the studies indicate that Indigenous adults and youth highly rate the perceived or personalised effectiveness of generic and culturally targeted anti-tobacco advertisements. Mass media messages assessed in the review included graphic and narrative forms of advertisements. Despite an equivalency in ratings, Indigenous peoples from Western nation states in the review expressed preferences for culturally targeted messages. Only one study (conducted among youth in Hawaii) examined emotional engagement as a variable, and found such engagement to be significant for a culturally targeted edutainment drama. The evidence suggests a positive effect on awareness, evaluations and attitudes from culturally targeted and generic messages in Indigenous adults and youth in the target populations. However more tacit effects from culturally targeted messages cannot be discounted.

[†] The review in Study 1 included Indigenous peoples from USA and NZ as well as Australia, so where findings apply only to one population they may not be transferable to other Indigenous peoples. Where studies did not include Indigenous Australians their findings should be interpreted with caution, as a guide only.

By comparison, an evaluation of the targeted 'Break the Chain' NTC in Australia indicated that the campaign resonated well with the Indigenous target audience. Unprompted recall by Indigenous respondents was 19%, and prompted recall 77%.¹⁹⁰ A large number of respondents (81%) stated that the advertisement related to them. Over half (57%) indicated they were planning to take action in the next month to reduce smoking or quit. A generic campaign, evaluated by the same respondents, had 81% prompted recall, was also considered easy to understand, believable and thought provoking, but did not elicit the same level of self-identification as the 'Break the Chain' campaign.¹⁹⁰ It should be noted of course that plans to quit smoking do not always lead to quitting behaviour.

Awareness, attitudes and evaluations of anti-tobacco messages for maternal Australian Indigenous smokers revealed a different picture. Evidence comes from a systematic review of knowledge and views of Indigenous maternal smoking in Australia (Study 2), and a qualitative focus group study (Study 3). There was no research measuring campaign recall in Indigenous pregnant women, but the qualitative data indicated awareness of mass media messages. Both studies showed current anti-tobacco messages lacked salience in pregnancy. Moreover, there was a mismatch in prevailing messages and women's lived experiences about smoking, for example a reported lack of visibility of harm for babies and children. Other family members were seen to have smoked in pregnancy without obvious adverse outcomes. Consequently, some messages were mistrusted and others caused reactance. Participants reported that anti-tobacco messages were sometimes too confronting when a woman was pregnant, and thus avoided or denied. These attitudes align with concepts of cognitive dissonance, dis-engagement and self-exempting beliefs reported in other studies about smoking in pregnancy.^{191, 192} The concept of cognitive dissonance has not, however, been validated in Indigenous populations. Not all women responded in these ways to

messages about smoking, and it was a small and unrepresentative convenience sample.

When women experienced adverse outcomes in their own or others' children, they expressed shame and guilt for smoking. Some women were concerned about the stigma of smoking with a 'big belly'.¹⁹³ Messages about the harms of smoking may be interpreted as being salient in these cases. Some pregnant smokers reported sudden changes in risk perception and role definition, and strongly protective attitudes when they become pregnant, consistent with McBride et al's definition of a pregnancy being a 'teachable moment'.¹⁹⁴ Despite these sentiments, some women experienced inner conflict if they were unable to quit smoking. A lack of self-efficacy for quitting, coupled with the stressors of everyday life, meant a pregnant woman reported continued use of tobacco to 'get through her day'. Some women reported even stronger urges to smoke in pregnancy. These findings suggest that pregnancy may be both a risk for persistent smoking, and an opportunity for change in Indigenous Australian women.

In 2012 the 'Quit for You Quit for Two' campaign was released as part of the Australian NTC 'More Targeted Approach'.¹⁹⁵ The campaign aim was to reduce smoking prevalence in pregnant women among high-need and hard to reach groups. Target groups included Indigenous pregnant women. In the second wave evaluation, unprompted campaign recall was low (less than 10%) in the Indigenous people interviewed; prompted recall was higher, especially in females who had been pregnant or were contemplating pregnancy (61%). Attitudes to the campaign were generally positive, with advertisements considered easy to understand, believable, and thought provoking. Almost three-quarters of smokers said they intended to take further action in the next month as a result of the campaign, and 40% considered quitting. These ratings were generally higher than in the first wave evaluation of the campaign, but again they do not represent actual health behaviour change.

Evaluations about environmental exposure to tobacco smoke featured in the focus group study (Study 3). Attitudes ranged from adults' views about protecting their children from ETS and maintaining smoke-free homes, to children's concerns about parental smoking and protecting younger siblings from ETS. Attitudes to ETS indicated that study participants were heeding the messages about the harms of passive smoking. Parents challenged other community members not to smoke around their children, and children expressed worry and concern about parents and younger siblings. These reports may need to be interpreted with some caution, as they were not objectively validated. Discrepancies of 2-7% between reports from different family members regarding home smoking rules have been noted in other populations,¹⁹⁶ and some Indigenous infants in reported smoke-free homes had raised level of cotinine.¹⁹⁷ In a disadvantaged UK population, a qualitative study revealed that smoke-free rules could be transient, fluid, and non-effective especially if caregivers were living in difficult and complex situations.¹⁹⁸

Children's anxieties about parental smoking, raised by the Aboriginal community members in the focus groups (Study 3) have been described in other populations.¹⁹⁹ Another local project also conducted under the 'No Smokes North Coast' program in the same Aboriginal community more directly revealed similar anxieties. Primary and secondary school Aboriginal children enrolled in the project made their own posters and messages about smoking. Many children targeted their messages to family members. The posters carried themes about fears of losing family members to ill health and death, and mothers becoming distanced by smoking.^{200, 201} These findings give substantiation to parent's reports from Study 3.

The community based study (Study 5) revealed the majority of Aboriginal smokers of reproductive age (77%) experienced high-perceived threat from smoking. This implies high levels of awareness of the harms from smoking, and fearful responses to anti-tobacco messages in this NSW sample. On the contrary, a smaller group of smokers

(16%), having low-perceived efficacy and low-perceived threat, were significantly more likely to have attitudes of denial, avoidance or reactance (fear control responses). The validated RBD Scale was based on physical health threats, yet the qualitative data suggested additional psychological threats of disgust, regret and stigma about smoking. Strong psychological attitudes to threat may not have emerged had the surveys only collected quantitative data.

Similarly in the organisational survey (Study 4) qualitative data demonstrated that culturally targeted messages were generally well received. Aboriginal community responses often exceeded the expectations of the organisations developing the messages. A positive response to the targeted messages reported by non-Indigenous smokers was an unexpected finding. Conversely, the organisations indicated that some anti-tobacco messages and modes of delivery were too confronting, and some messages caused cultural misunderstandings. Local targeted programs were thus being noticed, raising awareness and changing attitudes about smoking in Indigenous Australians. Local contexts and cultural diversity need to be taken into consideration to avoid unexpected negative outcomes.

The combined evidence for this thesis indicated anti-tobacco messages were having a positive impact on most Indigenous peoples, on the level of evaluations and attitudes. However, an important caveat is that smoking in pregnancy requires special consideration. Anti-tobacco messages that may work well in other contexts may engender attitudes of avoidance, denial and reactance in pregnancy. The 'Quit for You Quit for Two' campaign, released after my research, with its gentle references to improving pregnancy outcomes, appears to be pitched at the right level.¹⁹⁵ Pregnancy adds an additional layer of stress for some Indigenous women depending on their life circumstances. Multiple stressors in pregnancy, compounded by smoking and/or trying to abstain, may influence a woman's self-efficacy and her attitudes about anti-tobacco messages. Moreover, Aboriginal participants (Study 3) sometimes expressed their

discomforts from reduced smoking or abstinence as psychological stress, without awareness that these symptoms could be triggered by nicotine withdrawal.¹⁰⁴ Researchers have noted similar considerations with smoking in pregnancy in other marginalised and low SES populations.²⁰²

9.1.2 Motivation - intentions or plans to reduce or quit smoking, seek help for quitting and create smoke-free homes

Evidence for changes in motivation and intentions to reduce or quit smoking, or establishing home smoking bans, came from all of the studies in this thesis. Some of this research only applied to Indigenous peoples overseas. A culturally targeted youth drama project in the USA was associated with an increase in intentions to avoid smoking (Study 1). The systematic review revealed that a culturally targeted holistic TV campaign stimulated increased Maori calls to the New Zealand Quitline, but a generic campaign increased calls to a greater degree. These results signify increased motivation and intentions to quit smoking. Australian organisations reported that messages they developed became a talking point in the community, were well circulated and induced people into cessation programs, suggesting that anti-tobacco messages stimulated intentions to quit smoking (Study 4).

Results of Studies 2 and 3 indicated that pregnant Australian Indigenous smokers are aware of some of the harms associated with smoking, and despite complications already described, they reported intentions to cut down or quit. Cutting down as a harm reduction and/or quitting strategy in pregnancy has been reported in other populations of maternal smokers.²⁰³ However, due to risk of compensatory smoking, significant health gains are only realised if cutting down is made with the use of NRT.²⁰⁴ Preliminary studies on pregnant smokers suggest that using NRT while cutting down is safe, although this approach has not found its way into formal guidelines.^{205, 206} For others, smoking cessation was regarded as 'too hard', impeding intentions to quit or

reduce consumption (Studies 2 and 3). A lack of support from family and partners impairs pregnant women's intentions to change their smoking behaviour, and their confidence to try.

The idea of 'partial danger control' was introduced in Study 5. Partial danger control could be defined as taking the positive action of creating a smoke-free home, to avoid the dangers of ETS, while not intending to quit smoking in the near future. This concept was supported by discussions about the relative ease of instituting home smoking bans compared to quitting (Study 3). Partial danger control was epitomised by smokers who had high-perceived threat and low-perceived efficacy in Study 5. These smokers did not appear to be in denial or to be avoiding messages, but neither did they have high protection responses. Nevertheless they significantly instituted home smoking bans, indicating a cognitive rather than an emotional response.

Intention to quit smoking was the key outcome measure for Study 5, which presented valuable new knowledge about predictors for smoking and quitting in a NSW Aboriginal population. High-perceived efficacy for quitting was strongly associated with intentions to quit in the following 3 months. Similarly, consulting with a doctor in the past was significantly associated with intention to quit smoking, and 50% of participants reported a high intention to seek help with quitting in the near future. Although perceived threat levels were not significantly associated with intentions to quit smoking, those who believed "smoking is not doing any harm right now" were significantly less likely to have an intention to quit smoking. This finding suggests that a lack of immediacy of threat might impede quit intentions.

In summary, this evidence shows a progression beyond changes in awareness, evaluations and attitudes about smoking by Indigenous people, to an expression of increased motivation, plans and intentions to change behaviour. These intentions were demonstrated by qualitative data and quantitative analyses. Again, pregnancy was an area for special consideration, and a lack of support for some women impaired their

confidence to quit. Intentions to reduce smoking appeared to be a preferred option to quitting. Behavioural changes will be summarised in the next section.

9.1.3 Behavioural changes - reducing smoking, quitting and smoke-free homes

Reports of behavioural changes were evident in all of the studies in the thesis, ranging from creating smoke-free environments, reducing consumption, making quit attempts and seeking help with quitting. I indicate below where evidence was to the contrary in some cases. Positive strategies by Australian Indigenous smokers to keep their homes smoke free were reported in Studies 2-5, and these ranged from partial to complete bans. The majority (79%) of surveyed NSW Aboriginal smokers reported a complete home smoking ban (Study 5). This percentage rose to 86% in those who had a baby or child at home. Parents avoided exposing babies to ETS in homes and cars, and to third-hand smoke on clothing, yet others smoked in the car when children were not there (possibly not understanding they were contaminating the car with third-hand smoke particles).

Some parents in Studies 2 and 3 believed it was only necessary to take avoidant action around new-born babies. Other studies have also noted the issue about starting to smoke around children as they reach toddler stage – this was observed in a study in a low SES population in the UK.²⁰⁷ The authors suggested that once babies become more mobile it was harder for the mother to leave them unattended to go outside for a smoke. The researchers viewed this dilemma as competing discourses of motherhood: being a good mother who stays with her child and does not smoke versus the mother who, by needing a smoke, leaves the child alone so not to expose them to ETS.²⁰⁷ This issue was hinted at in Study 3 when parents complained that children wanted to be with them when they went out for a smoke, so it was difficult finding the space to smoke freely and perhaps 'safely'.

A new trend towards challenging social norms for Indigenous smoking was apparent in Study 3. Parents strategised ways of tackling community members about their smoking practices to protect their children, and maintain a smoke free home (Study 3). It appeared that the requests that parents made to others not to smoke around their children sometimes needed to be quite insistent to have the desired effect. Protective activities also involved removing children from social situations where they could not be safe, in relation to ETS exposure. Community members were confronted on issues of respect for younger members of the family. In parents who smoke, these endeavours could be classed as further evidence of 'partial danger control'.

In terms of quitting behaviour, the systematic review (Study 1) revealed several mass media and new media interventions resulting in increased quitting behaviour. In New Zealand and USA culturally targeted messages resulted in equivalent quit rates in Maori and American Indian smokers compared to generic messages for the general population for mobile phone messages, in the short term. On the other hand, there was no evidence that recall of anti-tobacco messages in Indigenous Australians translated into increased quit rates from the studies included in the review. In Study 5, a high percentage (80%) of community participants reported making a previous quit attempt: among these 11% were currently trying to quit or reduce consumption, 47% had tried in the past year, and 41% attempted to quit more than a year ago. Only 46% of those who had tried to quit had used any cessation medications. However, 40% of community participants who had seen a doctor when previously making a quit attempt, rated the available support as low (0-2 out of a possible score of 10).

In summary, there was some evidence from all the studies in this thesis that tobacco control messages are having an impact in terms of changes in behaviour. Behaviour changes were most strongly demonstrated in relation to ETS, and the salience for Australian Indigenous families of maintaining smoke free homes and cars to protect babies and children. This importance of ETS to Indigenous Australians has been

supported by population-based studies demonstrating an increasing prevalence of smoke-free homes and upward trends for home smoking bans and compliance.^{54 110}
¹⁹⁷ The percentage of children living in a home with a complete home smoking ban in Study 5 (86%) was similar to that reported by Aboriginal people in the 2012 NSW Health Survey (85.3%),³⁶ but less than the percentage reported in a combined study in the Northern Territory and a New Zealand Maori sample (95%).¹⁹⁷ Having four optional responses available in the survey question on smoke-free homes (in study 5) rather than a binary yes/no option may have resulted in less social desirability bias (reported as a limitation in some other studies).

Australian studies indicate that Indigenous non-smokers are exposed to cigarette smoke despite not smoking themselves. In a national survey, serum cotinine levels consistent with a likely exposure to ETS (cut off 140nmol/L cotinine) were found in 14% of Indigenous Australians who self-reported being an ex-smoker, and 6% who self-reported as never smoking.²⁰⁸ Indeed in remote areas, where prevalence is higher, 22.5% of non-smokers had high cotinine levels indicating ETS exposure.²⁰⁸ Among the Aboriginal Birth Cohort study in Darwin NT, 47% of young adults self-reporting as non-smokers recorded urinary cotinine levels higher than a 50ng/ml cut-off.²⁰⁹ Unfortunately, smoke-free interventions aimed at Australian Indigenous and Maori families were not associated with improvements in the rates of acute respiratory illness in children over a 6-month period.¹⁹⁷ Walker et al's paper calls for action to promote cessation as the only reliable way to protect children from ETS. Their study suggests that third-hand smoke particles may linger in furnishings and surfaces, and it may take a long time for a home to become non-toxic.^{210, 211} Consistent with this view, international studies confirm that non-smokers exposed to tobacco smoke are exposed to high levels of particulate matter in homes without a smoking ban.²¹²

Reduced smoking consumption, quit attempts and cessation are consistent with the downward trend of cigarette consumption and smoking prevalence in Indigenous

Australians, in some areas and age groups. This indicates that tobacco control messages and measures are being heeded. Even so, pregnant women in my studies and systematic review were more likely to reduce consumption than quit, and although quit attempts were reported, they were seldom reported as successful. Pregnant women who did quit were highly regarded as role models, and role models were seen to have salience as possible messengers for this population. Pricing is reported as a major factor in driving down prevalence for low socio-economic groups,²¹³ and issues about price and financial stress featured to some extent in the qualitative findings of Study 5. It is, of course, complex to determine the causality of the smoking behaviour changes when Australia has instigated such a broad range of tobacco control practices.²¹⁴⁻²¹⁶

9.2 Can we improve tobacco control and cessation messages for Indigenous Australians?

Evidence for the need to improve tobacco control messages and related cessation approaches came from all of the thesis studies. Studies 1 and 2 outlined various evidence gaps, which I also address in the concluding comments on further research. Studies 3-5 focussed on the individual factors and highlighted potential areas for improvement. Study 4 took an organisational approach through a national survey, with recommendations for improved practices and policies.

9.2.1 Improvements for individuals

Lack of awareness and some incorrect perceptions about smoking, quitting and the vulnerability of different individuals to tobacco smoke need to be pro-actively addressed. Specific beliefs elicited in these studies, and corresponding recommendations for targeted approaches are suggested below (Table 9.1). These

approaches can be promoted through mass media messages, new media, social media and via the clinical encounter. Approaches and messages to counter misperceptions need to be handled in a sensitive way with full Aboriginal consultation, and pre-tested before use. Consideration could be given to the use of ‘inoculation’ methods to pre-emptively forewarn youth about counterarguments for maternal smoking.²¹⁷

Table 9.1: Suggested responses to misperceptions identified in the studies

Belief	Study	Suggested response
Smoking is not harmful in pregnancy (or to Indigenous women or babies)	2 & 3	Improve educational messages for pregnancy and explain causality. Preferably portray Indigenous people in educational materials
If others smoke around you when you are pregnant, you may as well smoke yourself	2 & 3	Emphasise the benefits of cessation to mother and baby and address relative influences of smoking and ETS. These messages will address response efficacy - i.e. cessation is worthwhile and effective
Its OK to smoke if you are stressed and smoking is a good way to deal with stress	2 & 3	Educate smokers on the stress-inducing effects of withdrawal and how these can be treated. Promote cessation as a means of becoming less stressed in the long term. Assess individuals for anxiety and depression; provide supportive counselling and treatment for underlying anxiety and depression. Consider oral forms of NRT to reduce withdrawal effects. Educate health professionals on how to approach these topics
Cutting down smoking in pregnancy is sufficient to avoid smoking-related health problems for mother and child	2 & 3	Encourage cessation over reduced consumption (unless using NRT). Explain simply about compensatory smoking. A hand-held CO meter may assist in monitoring compensatory smoking and motivating quit attempts
It is OK to resume smoking after birth	2 & 3	Emphasise the benefits of staying smoke free for the mother herself and the child. Build efficacy for abstinence

If there is no obvious effect from smoking on babies, this means they are healthy	2 & 3	Effects of smoking on the foetus need to be made more tangible in a culturally appropriate manner. The connection between low birth weight and later obesity and diabetes, heart disease needs to be promoted
Smoking in pregnancy is OK to keep birth weight low if you are pre-diabetic	3	Educational messages. Pre-empt this topic in smokers and non-smokers who are pre-diabetic, or pre-diabetic, and first mothers who may be nervous about birth
Only new-borns or young children are susceptible to the harms of ETS	2 & 3	Educational messages emphasising the ETS risks are high for all children (and everyone else including pregnant non-smoking mothers) – make the effects more tangible in culturally appropriate ways
Smoking is OK in the car if children are not present	3 & 5	Educate on the concept of third-hand smoke particles
Quitting can bring on cancer or other serious illnesses	5	Messages are needed to explain the time-frame of cancer induction i.e. cancer can have been induced many years before it is diagnosed, and that quitting does not bring on cancer – it is always better to stop smoking
Smoking cessation has a lower priority compared to other problems	2, 3 & 5	Health professionals need to receive training about how to support cessation whilst providing access to services to improve socio-economic and personal circumstances. Build efficacy in smokers and promote benefits of quitting. Health professionals should offer practical assistance with cessation
Discussing smoking can jeopardise relationships with AHWs and other health professionals	2	As above. Also smokers are likely to have the expectation that AHW and other health professionals will raise the issue. AHWs may need assistance to quit smoking themselves as they are important role models
NRT could make you want to smoke more, and/or NRT is harmful for the baby	3	Address individual concerns about NRT and explains how NRT works. Provide enough knowledge so Aboriginal women can make an informed decision about whether to take NRT or comparing the risks to continued smoking

Legend: CO carbon monoxide; ETS environmental tobacco smoke; NRT nicotine replacement therapy; AHW Aboriginal Health Worker

Wearing a smoking shirt and showering after smoking were some strategies reported by participants to avoid third-hand smoke affecting babies and children. ETS avoidance strategies were also reported in another study involving Australian Indigenous and Maori smokers,²¹⁸ however it was not revealed who had advised Indigenous families to adopt such measures and what the evidence is for these approaches to circumvent third-hand smoke. It is uncertain whether measures to cover up when smoking should continue to be promoted, as they may make the smoker feel more comfortable about continuing to smoke, or delay the institution of complete home smoking bans and parental smoking cessation.

There are some general principles that need to be taken into account when planning health education for Indigenous Australians. Trudgen suggest several factors, which I summarise below.²¹⁹

1. Information needs to be delivered in a culturally appropriate way.
2. Health education must be approved and controlled by appropriate leaders of the community, before going to the rest of the community.
3. Information source needs to be credible.
4. Community needs to be convinced, and proposed changes need to be seen to be relevant.
5. Whole community needs to be taught rather than expect Elders or children to pass on messages, as this can cause divisiveness and messages could be culturally rejected, leading to loss of faith in Elders.

Improvements in individual approaches to tobacco control and smoking cessation clearly need to go beyond educational and informational strategies. Applying a holistic lens to the design of complex interventions can take into account education and persuasion, a range of tailored behaviour change techniques, pharmacotherapy,

supportive environments, and policy and practice changes. This approach may be best accomplished through an overarching model of behaviour change such as the Behaviour Change Wheel (BCW) based on the COM-B system (Capability, Opportunity, Motivation and Behaviour) and PRIME Theory.²²⁰ The BCW was developed from a systematic analysis of multiple behaviour intervention frameworks. The centre of the BCW consists of three main ingredients necessary for volitional behavior to occur – capability (physical and psychological), motivation (automatic and reflective), and opportunity (social and physical). Two outer layers complete the model: an intervention layer and a policy layer. In 2014, I published a paper that applied the BCW to the issue of smoking by Indigenous Australian women in pregnancy (see Appendix A).²²¹ My article provided a comprehensive lens to examine where the barriers and enablers lie in relation to smoking cessation in this vulnerable target group, and how these factors impact on the capability, opportunity and motivation for behaviour change. Another comprehensive theory of behaviour change that may in the future be applicable to develop comprehensive approaches is CEOS Theory, with its focus on behaviours that are hard to maintain and hard to resist or eliminate.¹⁶⁵

9.2.2 Improvements in organisational approaches

Improvements for anti-tobacco messages could be effectively made by organisational approaches. Qualitative data from the national survey of organisations illustrated some of the challenges for developing culturally targeted anti-tobacco messages. These challenges should be pro-actively addressed, Cultural challenges encompassed the diversity of Aboriginal cultures and world-views, the choice of role models and conflicts and delays. Challenges and suggestions for how they can be pre-empted are summarised in Table 9.2. Choosing role models requires a delicate approach as Indigenous people tended to be shy, role models may relapse to smoking, and protocols have to be observed if people featured on the messages die. Some of the

reported delays involved the use of Indigenous artwork and artists, and long community consultation processes.

Table 9.2 : Addressing cultural challenges for developing tobacco control messages

Themes	Challenges	Solutions
Diversity of cultures	<ul style="list-style-type: none"> Stereotyping Different language groups and tribes Artists not experienced in health 	<ul style="list-style-type: none"> Use ethical guidelines to address issues of cultural diversity and heterogeneity Try to include representatives for all target groups in formative evaluation Have a mechanism for decision-making Induct artists and give guidance on what required from suitable mentors
Role Models	<ul style="list-style-type: none"> Role models may relapse Community members may die 	<ul style="list-style-type: none"> Respect individual sensitivities about how people are portrayed Provide support and follow up Discuss issues with all role models up front If appropriate consider contracts for permissions from person/family to use media in the event of death
Conflicts and delays	<ul style="list-style-type: none"> Time Communication processes and relationship building Working with non-Indigenous staff 	<ul style="list-style-type: none"> Adequate time frames need to be factored in Bottom-up approaches have great potential but need more time Set up good processes for communication from the start Use local knowledge to include all sectors of the community in consultation Plan for ways to resolve issues Be responsive to changing priorities Provide cultural training for non-Indigenous staff

The CATPCA analysis (Study 4) revealed the importance of empowerment or bottom-up community-based approaches. Empowerment approaches, coupled with the use of deep structure for messages, were predominantly achieved by AMSs. Deep message structure relates to the saliency of the message, whereas surface structure assists with message fit: both are necessary. Pre-tests are important to gauge responses of the target audience and to enable adjustments to messages before implementation. Study

4 showed that evaluation was only being instituted or planned for a small percentage of AMSs as opposed to more of the GOs and Universities, and similarly the use of theoretical foundations were emphasised more by the latter group. Collaborations are recommended to build on the strengths of different organisation types. Improvements in the development and evaluation of tobacco control messages can be thus made on the organisational level (locally, regionally and nationally). A structure for evaluations is suggested in the next section.

Again the BCW is a tool to potentially aid the identification of gaps in public health knowledge and service provision for Australian Indigenous smokers.²²¹ A related theoretical domains framework (TDF) has been validated for the implementation of interventions for many behaviour changes at the individual and organisational level.²²² A new guide by Michie et al provides a useful structure to design interventions using the BCW and the TDF.²²³ I am planning studies over the next few years using these tools for a smoking cessation intervention for pregnant Indigenous women.

9.3 How can we improve tobacco control and cessation messages for Indigenous Australians?

Recommendations have been made for improved approaches for Indigenous smoking throughout the publications in this thesis. Some of these approaches will be discussed further as they apply to tobacco control and cessation messages. The meta-ethnography (Study 2) provided recommendations for improvements in education, salience of anti-tobacco messages, cessation and professional practice. Furthermore, practical suggestions were made by the Aboriginal community for improved approaches to address smoking by pregnant Aboriginal women, such as individual and group interventions, and access to NRT (Study 3). Of importance was who delivers the messages and intervention, i.e. their level of experience, expertise and acceptability to the Aboriginal community. Focus group participants also recommended highlighting the

longer-term effects of smoking, and suggested that messages need to make the health effects on the foetus more tangible. A summary of how perceptions can be pro-actively addressed has been presented in Table 9.1. Fostering creative activities and addressing deeper issues may increase salience. In Studies 3 and 5 participants volunteered the suggestion that the government should ban tobacco. A countrywide smoking ban is not an unreasonable suggestion considering New Zealand is planning to go smoke free by 2025: an idea supported by Maori communities.⁶⁴

9.3.1 Building efficacy for quitting

Manipulated experimental studies show self-efficacy is a central mechanism for behaviour change.²²⁴ A person's appraisal of self-efficacy is influenced by self-knowledge, skills and opportunity.^{224, 225} Self-efficacy shows mixed results as a predictor of intentions to quit and smoking cessation in population health and interventional studies.^{226 227-230} Interventional studies are influenced by the time-point for assessing self-efficacy i.e. at baseline, early in the quit attempt or post-treatment, and whether relapse was accounted for. Self-efficacy was a predictor for contemplating smoking cessation in Kuwaiti smokers,²³¹ yet in another study self-efficacy was more strongly associated with the action phases of quitting.²³² Pre-treatment self-efficacy was a predictor of quit attempts and end of treatment success for smokers in an Australian cessation program,²³³ and a US program.²³⁴ Only post-treatment efficacy was a predictor for long-term abstinence.²³³ A systematic review of 54 studies that examined self-efficacy and smoking cessation found self-efficacy to reliably predict cessation, with a small to moderate effect size.²²⁷

A range of efficacy levels is likely in any community. In this research, perceived efficacy was a key association of intentions to quit smoking (Study 5), and can be conveniently assessed. The RBD Scale is proposed as a tool to identify smokers with low efficacy

who may need a more intensive approach and support. Bittoun's treatment pyramid also advocates that hard-to-treat and more dependent smokers need more intensive assistance.²³⁵ The RBD Scale could be modified with an appropriate calculator and algorithm to assess relative levels of perceived efficacy and threat in Indigenous patients. Those with high efficacy may manage with brief interventions. Those with low threat and low efficacy may need personalised approaches to increase the relevance of cessation and build efficacy, while addressing misperceptions and underlying defensive motivations.

Strategies to improve efficacy can be targeted at response efficacy (such as helping people believe that making the change is worthwhile and likely to be effective at averting the threats from smoking) and self-efficacy (assisting the person in believing they have the ability to change, and boosting their confidence to make a quit attempt). It seems that different types of self-efficacy govern different stages of the quitting process.²³⁶ Executing strategies and attaining goals can distinguish between different types of self-efficacy.²²⁴ Although most types of self-efficacy predict intention to quit, only skill efficacy (confidence in using skills to cope with barriers to the goal) was predictive of quit attempts and short-term cessation.²³⁶ The more clearly the means to accomplish the task were specified, the more valid the self-efficacy judgments were.²³⁶ Future research into self-efficacy in Indigenous smokers should take into consideration a more detailed analysis of different types of self-efficacy, and measure smoking behaviours over two time-points.

Relapse has also been associated with low self-efficacy. Cessation failure and relapse can impair post-treatment self-efficacy.²³⁷⁻²³⁹ Smokers with base-line low self-efficacy were more likely to lapse to smoking, and low self-efficacy measured dynamically predicted a next-day lapse.²³⁹ Relapsing smokers exhibited lower levels of self-efficacy in situations where they relapsed before.²⁴⁰ However in a group of African-American

smokers, relapse did not impair self-efficacy and motivation.²⁴¹ Improving self-efficacy for smoking relapse may be a valid approach in Indigenous Australians.

Self-efficacy has seldom been utilised in the design of interventions, and interventions to promote self-efficacy are scarce. Since the concept of self-efficacy was originally introduced there have been suggestions for enhancement in clinical settings, such as skills training, homework tasks, and 12-step motivational models.^{165, 242-244} Few of these recommendations have undergone empirical testing for smoking cessation. A review of self-efficacy for the treatment of substance use disorders (including tobacco) found self-efficacy was a partial mediator of treatment outcome. Self-efficacy interacts with the quality of the therapeutic relationship: a potentially relevant factor for Indigenous peoples.²⁴² Kadden et al's review reports on several studies where a connection was made between goal-achievement, success experiences and increased self-efficacy among smokers.²⁴² However self-efficacy has mostly been analysed in secondary analyses: i.e. assessing whether the treatment enhanced efficacy, and whether the enhancement led to improved outcomes.²⁴²

Increasing self-efficacy as a deliberate measure could encourage quit attempts and smoking cessation success in Australian Indigenous populations. Self-efficacy strategies for Indigenous Australians should take into account the different stressors Indigenous people encounter, such as racism and the social norms of smoking, and moreover build internal resilience for change.²⁴⁵ The enhancement of self-efficacy is possible via media sources and in the clinical encounter. The RBD Scale could be a useful tool applied to these endeavours.

Health promotion strategies at a local and regional level can be tailored to the levels of perceived threat and efficacy. Normative means for threat and efficacy of target populations and subgroups can be determined with a suitable sample size (Witte et al recommend at least 50 people).¹⁴⁷ This would enable messages to be targeted at the appropriate levels, and improve recipients' identification with their specific risks for

smoking and corresponding calls to action. Some Tackling Indigenous Smoking programs have targeted their messages using slogans such as “Smoking It’s Killin’ Our Mob”, to raise awareness of the collective threat from smoking.²⁴⁶ If alternatively, as in the Mid North Coast NSW Aboriginal community, threat levels are high, then time and resources need not be expended on further elevating perceived threat. Approaches delivered through mass media and social media can include exposure to vicarious experiences from personal testimonials with the suggestion of “if I can do it you can too”, such as in the ‘Break the Chain’ campaign,¹⁹⁰ and the ‘Re-write Our Story’ campaign.²⁴⁷

A balance however needs to be achieved between generalised versus local targeted tobacco campaigns. To some extent this depends on how the Indigenous community is defined. Targeting Indigenous Australians through national campaigns may not accommodate the diversity of all Indigenous peoples, while targeting narrowly defined groups will be resource-intensive and may constrain mass approaches.

In the Case Study below, I propose how the findings from the studies in Study 5 could be applied to anti-tobacco messaging at a local level, as a case study of the Mid North Coast NSW.

9.3.2 Case study of the Mid North Coast Aboriginal Community

This box illustrates how the finding from the Mid North Coast could be applied to anti-tobacco messaging regionally. As outlined in the introduction, this regional area has been fortunate to host several local strategies since 2006, and currently has a Tackling Indigenous Smoking Team operating. Recent local strategies include mass media messages via billboards and TV, informed by local market research. The current advertisement is a collectively orientated heuristic-style ad focusing on smoke-free communities – showing Aboriginal people having fun, perhaps with the inference if you go smoke-free you too can have more fun. Heuristic type messages are peripherally processed and predominantly recommended for those not ready to change, to introduce the idea of a healthier option. The following relevant results recently presented to the CEO at the managing ACCHS, will form part of a community-based report (see Figure 9.2).

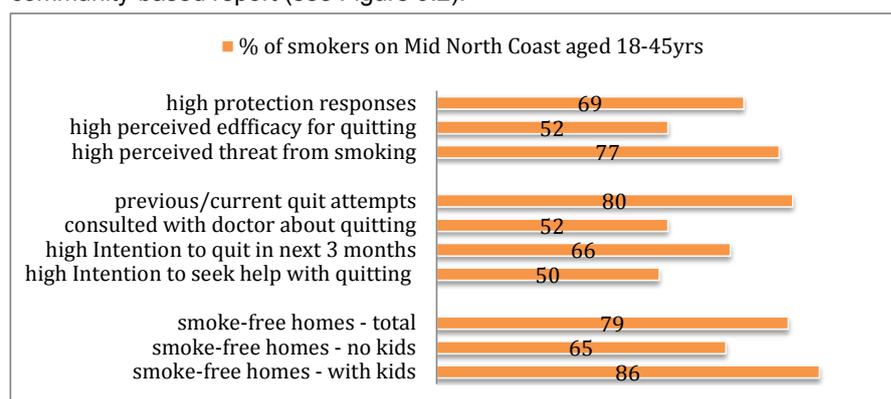


Figure 9.2 Attitudes, quitting experiences and smoke-free homes of Mid North Coast Aboriginal smokers aged 18-45 years

Considering these results it appears that the majority of local Aboriginal smokers are aware of the threat of smoking, have high protection responses and have already instituted home smoking bans. Two-thirds intend to quit but only 50% intend to seek help to quit, and about half had high levels of efficacy. In this case messaging could be addressed to the issue of improving smokers' chances of quitting. To improve the quality of a quit attempt, evidence-based approaches such as counselling and pharmacotherapy could be promoted. A mass media advertisement could be structured along the lines of 'let's take the next step' or 'go to the next level' i.e. quitting is the best way to protect their children, and how-to-quit messages provided such as promoting a visit to the local GP or using the Aboriginal Quitline. Of course this approach would need to be in full consultation with the local Aboriginal community.

Doctors and health professionals have important roles to build efficacy and support quitting. According to participants' ratings of professional support (Study 5), the patient experience and perception of professional quit support could be improved. Offering evidence-based therapies and assistance to all smokers, irrespective of their 'readiness to quit' may be a worthwhile strategy.^{248, 249} However, assessing the 'stage of change' and trying to move people to the 'next stage' has not been shown to be effective in Australian Indigenous smokers.²⁵⁰ Successful behaviour change techniques for smoking cessation for pregnant smokers in the UK include counselling to raise motivation and build self-efficacy, with positive short-term outcomes in clinical settings.²⁵¹

Approaches to raise self-efficacy could potentially be formulated according to Bandura's principles of performance attainments. These principles include building skills, self-control and mastery for quitting, learning from others who have successfully quit, verbal persuasion and motivation, helping people adopt a positive mind set, and importantly having access to effective therapies.²⁵² Self-efficacy may need to be targeted differently for making a quit attempt, as opposed to maintaining abstinence, and preventing relapse.¹⁶⁵ Such approaches are worthy of attention, but need to be trialled in a well-designed study.

9.3.3 Supporting quit attempts and cessation

Mounting evidence supports the use of culturally tailored smoking cessation interventions for Indigenous populations to aid successful quit attempts. An updated Cochrane review of smoking cessation interventions for Indigenous smokers is being finalised by a team of which I am part, and will be presented at the Thoracic Society of Australia and New Zealand Annual Scientific Meeting 2015.¹²⁴ Preliminary pooled results show a statistically and clinically significant effect in favour of the intervention

(RR 1.53; 95% confidence intervals 1.09 to 2.16; p=0.01). This Cochrane meta-analysis removed the only study to directly compare a culturally targeted versus generic intervention.²⁵³ The RCT, removed from the sensitivity analysis, compared a culturally targeted versus a generic intervention for smoking cessation for American Indian and Alaska Native smokers (plus 12 weeks of varenicline).²⁵³ The findings showed no statistical difference between conditions at the 6-month follow-up: however overall abstinence was 20% on an intention-to-treat basis with 7-day point prevalence (not the most robust outcome measure of abstinence). The culturally tailored materials included print materials as a cessation booklet, and new media as a CD-ROM. However there was an unexplained higher trend for attrition in the culturally tailored group (qualitative data about the participant's experiences are yet to be published).

Whether culturally targeted approaches to smoking cessation are more effective than generic approaches for Indigenous peoples, is a question that remains to be answered. The above comparative study was not included in Study 1, as it was completed after Study 1 had been published.²⁵³ However, a goal for future research may be to answer the question 'are culturally targeted approaches equally effective compared to generic approaches?' In a patient-centred approach, if two interventions are equally effective but the patient prefers one more than the other, his/her choice should be supported.²⁴⁸

9.3.4 Collaborative approaches

Lastly, I propose that collaborative approaches can improve the delivery of targeted programs. Study 4 presented the concept that best practice on the organisational level could come from a combination of cultural understanding and rigour. As different organisations have different capacities, this approach could be achieved through partnerships and synergy of organisations that have expertise and resources in their respected strengths (Figure 9.3). Strengths included cultural understanding in the

Aboriginal organisations and methodological strengths in universities and GOs. Iterative evaluation cycles will help grow evidence. However, community-based bottom-up approaches (empowerment models) should be maintained. Several of the participating organisations in Study 4 reported that collaborative approaches were already occurring. Partnerships may also assist movement forward to a new phase of more formalised research running alongside Indigenous tobacco projects. Policy documents and national strategies have recommended a collaborative approach in Australia.¹³⁶

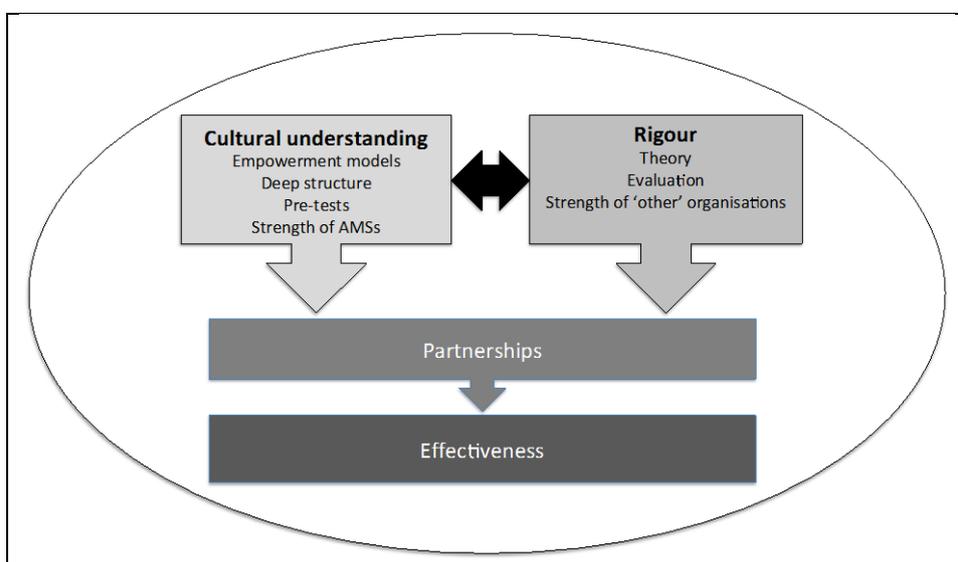


Figure 9.3 Synergy of strengths of organisations to improve effectiveness

9.3.5 Improving evaluation of campaigns for Indigenous Australians

Evaluation can cover four basic areas, based on the American Cancer Society's Global Dialogue Campaign Development Toolkit (Table 9.3).¹⁸⁹ The toolkit provides guidelines on the development of tobacco campaigns, which include sections on special populations, market testing and evaluating media campaigns and community programs. Every program will differ depending on their goals and objectives. The first

three evaluation types in Table 9.3 should be considered by all projects and a plan devised up front on how these will be tackled. The fourth type, long-term outcome evaluation, may be out of the scope of local and regional projects. Formative research is assessed by pre-tests. If appropriate, these could include more formalised elements, therefore easier to track and report on. Daley et al suggested a three stage method of assessing resources for Native Americans for scientific accuracy, readability and cultural appropriateness.²⁵⁴ Community evaluation needs to involve local stakeholders in meaningful ways.²⁵⁵

Table 9.3: Recommendations for tobacco control campaign evaluation

Evaluation Aspect	Purpose	Timing	What to test	Suggested Methods
Formative evaluation	Test concepts and messages based on formative research with the community	Developing campaign materials or program	Acceptability of messages/resources Readability Content	Focus groups Steering Committee/Reference Group Surveys
Process Evaluation	How well the campaign or program is working Unforeseen obstacles	Implementation of campaign or program	Community partners involved Use of resources Events conducted Numbers attending events Receptivity of target group Numbers of TV/radio ads aired	Observation Amount of resources used Hits on website/use of social media Survey Focus groups Interviews
Outcome Evaluation – short-term and intermediate	Determines if goals being realised Unexpected outcomes	Evaluate when changes expected – depends on goals and length of project Pre and post testing is ideal so changes can be tracked	Awareness/recall of messages Community involvement and reach Knowledge/attitudes/beliefs Behaviour e.g. quitting and smoke-free zones Access to quitting Services	Surveys Focus Groups Interviews Quit attempts & Quitting: self-reported or validated by CO readings Smoke-free zones: self-reported or observed Calls to Quitline, visits to AMS/GP
Long-term Outcomes	Long term effects	At end of campaign or later	Prevalence of smoking Smoke-free households	Pre and post population studies – large surveys

Evaluation may not always be a requirement of a project, but it is essential to provide good evidence to disseminate out to the community and to peers, helps build 'best practice' and may help ensure on-going funding,²⁵⁵ by giving evidence for effective implementation. Evaluation is important to give essential feedback to communities and staff members,²⁵⁶ and celebrate 'small wins' to keep up motivation and interest. Evaluation of current tobacco projects helps establish which approaches are worthy of more formal research. Future initiatives should be designed with strong research and evaluation components from inception.¹²¹

Policy changes are required to ensure funding cycles are realistic and long enough to achieve the goals and objectives of the programs. Many programs are funded on short cycles of 2-3 years, which makes it challenging to adequately achieve both the formative stages of a complex bottom-up program and rigorous evaluation. Thus interventions and programs need to be of sufficient duration. Uncertainty about refunding may result in the loss of experienced staff members. High staff turnover has the potential to destabilise programs and slow down the delivery of quality outcomes.

9.4 Lessons learnt about Indigenous research during this thesis

This research presented opportunities to reflect on my involvement with Indigenous health research as an empathetic ally, albeit from an outsider perspective.¹⁸⁵ In this section I give some examples of: (1) the lessons learnt from the Indigenous community engagement and the ethics application process; (2) how this thesis contributed to some of the seminal values inherent in Indigenous research; and (3) lessons learnt about publishing Indigenous research.

9.4.1 Community engagement and ethics applications

Care was taken with each of the studies to ensure the recommended community engagement approaches were followed. These entailed three separate consultation processes. Study 3 took a community based participatory approach – a methodology that complements decolonising approaches, and allowed the staff from the service and some Aboriginal community advisors to have an active role in the research.¹⁸³ Community consultations were with a local steering committee, with Aboriginal representation, overseeing the whole project under which Study 3 formed a part, and a subcommittee at the local AMIHS including Aboriginal Health Workers. Study 4 involved community consultations at a national level with the coordinator of the Tackling Indigenous Smoking program and the Australian Indigenous Info-net director, plus health promotion and Indigenous program staff in two states (NSW and Queensland). Study 5 involved community consultation with a local ACCHS that took responsibility for helping me understand and observe local Aboriginal cultural protocols, and a panel of Indigenous students and support staff at a local tertiary institute.

I navigated a fine line between what the ethics committee suggested for my research, and the capacity of the ACCHS to be involved (Study 5). The ethics committee in reviewing my submission suggested extensions to the community engagement process and required that the ACCHS take a more active role in interpreting the research. The ACCHS executive and CEO considered those requirements to be beyond their capacity. At one point they indicated a desire to withdraw from the research, as it had become too large a commitment. This gave me the opportunity to present a scaled-back version of the project to the ethics committee with the rationale that the need of the local community was paramount. Thus I was able to thankfully re-engage with the community. This also becomes an example of the importance of Aboriginal community control of the research.

9.4.2 Net Benefits for Aboriginal communities

This focus of this research on tobacco smoking is such a vital area of importance for Indigenous health of net benefit for Aboriginal communities. The studies raised awareness in local Aboriginal communities about the importance of smoking cessation. However there were also some pragmatic and direct translational outcomes. After Study 3 was completed at the AMIHS service I attempted to institute a culturally targeted program for maternal smokers that aligned to the suggestions made by the focus groups and the staff at the service. We supported the service by providing free oral NRT supplies for the pregnant smokers, and instituted smoking cessation training for all of the staff including the midwives. These approaches were part of the 'No Smokes North Coast' project so it is difficult to ascribe them to this research thesis in isolation. I also formulated a pragmatic guide for doctors and midwives at the AMIHS and ACCHS to deliver evidence-based approaches for counselling and commencing NRT. The published version of this guide is in Appendix A.²⁵⁷ Study findings were presented back to the Aboriginal community in community reports. In the case of Study 3 this occurred at the celebrations of the 10th anniversary of the AMIHS.

9.4.3 Reciprocity

I had several opportunities to reciprocate with the Aboriginal community by providing health professional education and training for smoking cessation. These opportunities included sharing my expertise as a Tobacco Treatment Specialist with Aboriginal staff members at the ACCHS and the AMIHS (Studies 3 and 5), and getting involved in community-based interventions at the ACCHS. I also advised the ACCHS on approaches to improving anti-tobacco mass media messages and cessation strategies. A great deal of sharing of resources and experiences occurred with the participants in Study 4. Many of the participants worked in rural and remote organisations and

welcomed the opportunity to talk to a colleague in their field. I still keep in touch with some of them by email. In addition, as part of the Aboriginal community study, interviewers took a pragmatic opportunity to assist participants who wanted information and support for quitting at the end of the survey (Study 5).

9.4.4 Enhancing Aboriginal knowledge and skills

The opportunity to enhance Aboriginal knowledge and skills in research involved formal employment of Aboriginal staff who had no prior experience in these fields. Employees included an Aboriginal project officer and Aboriginal research assistants, who received training in the collection of data and data analysis. However, Aboriginal Health Workers at the services also became more familiarised with research processes. Although these staff had not been involved in research before, their contribution was highly regarded and acknowledged by me and other members of the team.

9.4.5 Publishing the research

The NSW AH&MRC ethics committee guidelines mandated that no research could be published without their prior approval. This resulted in some delays as it could take several months before feedback was obtained. However the Board of the AH&MRC Ethics Committee provided valuable feedback and comments, which were taken into consideration when I prepared revisions to the submitted papers. It was beneficial also to know that the AH&MRC board of Aboriginal advisors had approved the research publications. Their feedback added strength to the validity of the findings.

Chapter 10. Conclusion

In this Conclusion I outline the strengths and limitations of this thesis, discuss implications for theory, summarise my practice and policy recommendations and suggest avenues for further research.

10.1 Strengths

The strength of this thesis lies in its novel approach to smoking in Indigenous Australians. My motivation for this thesis came from my experiences and observations over a decade of being a GP and a Tobacco Treatment Specialist, and nine years working with local Aboriginal communities on the Mid North Coast of NSW. Therefore, the research is grounded in practical knowledge of the field. Coupled with this I used a strong theoretical foundation where appropriate in the studies. I also bring to the work my broader experience as a medical practitioner and in public health.

Where possible, for the empirical studies, I used face-to-face interviews with Aboriginal people out in a natural community setting. This approach optimises the likelihood of recruitment and the authentic reporting of views. The national survey was conducted by phone interviews, but these allowed for extended conversations, often becoming a source of support for the participant. Many of the participants discussed issues about geographic isolation, and were keen to share my expertise and resources. All of the empirical studies were conducted after thorough consultation processes with Aboriginal organisations, ACCHSs and Aboriginal representatives from a range of settings. The research had significant support and contribution from a team of people, who I have acknowledged in the preliminary section.

This research aimed to find potential instruments to advance our understanding of how Indigenous Australians appraise their risks from smoking. Within the limitations

described below, I attempted to validate these instruments, potentially for further use with this population. The strength of this research is in the use of multiple methodologies and methods, chosen judiciously to enable multiple perspectives. I believe this type of expansive approach is important when exploring issues related to marginalised populations, and pertinent to the spirit and integrity of Indigenous research. Retaining scientific rigour while not losing cultural understanding and the voice of the people is an ideal worthy of aspiration. The integration of the findings at the data analysis stage is the 'heart of mixed methods'.¹⁸⁸ These approaches make a significant contribution to the quality and relevance of the findings.

10.2 Limitations

The limitations of each study have been detailed in the respective chapters. Overall the main limitation of the empirical studies was the small sample sizes, and the infeasibility of using random sampling techniques in the contexts of the individual studies. This was somehow inevitable in studies of this scope in a local area. The response rates, however, were good for the national survey and the community based survey, and the sampling strategy that was used for the latter ensured that it closely matched the population demographics of the area. The focus group study, although a convenience-based sample, reached saturation of themes. Larger sample sizes for the quantitative studies may have enabled further subgroup analyses. The small samples taken from one area of NSW can of course limit transferability and generalisability to other Indigenous Australians and Indigenous peoples elsewhere. However, this will always be a constraint unless large population based or multi-centred studies are undertaken – unfortunately out of the scope of this PhD. Such research is warranted but with broader surveys designed specifically for the purpose.

Selection bias, information bias (such as social desirability bias) and response bias are always a potential concern. I tried to minimise information bias by being able to probe and collect qualitative data to expand my findings, providing triangulation of findings with insights from different kinds of data. The validation of the RBD Scale did not include test-retest reliability measures. It was anticipated that the interview would act as a brief motivational intervention, and changes in views over several days for a retest may not be meaningful in the context of the instrument validity/reliability. Study 5 participants reported that the interview heightened their awareness about the harms of smoking. The interviewers also noticed that during the short timeframe of the interview many participants became more enthusiastic about quitting, and this gave support to a retest probably not being a reflection of the stability of the RBD constructs.

Overall it was not the intention of this thesis to systematically compare Indigenous Australians with the general population. Comparisons have been used judiciously, for example comparing attitudes to smoking of pregnant Indigenous women with women from other vulnerable populations, and tobacco control strategies for low socio-economic populations where research was less evident in Indigenous populations. This is justified since, if mainstream strategies were working, then high smoking prevalence would not persist among Indigenous Australians. Additionally, comparisons across cultures sustain the perception of a deficit model, increasingly seen as culturally insensitive in Indigenous health research generally.

10.3 Relevance of the thesis

In the current climate Australia is still looking for better ways to aid Indigenous Australians to become free from the scourge of tobacco smoking. The publications generated from this thesis add new knowledge on how to make tobacco control

messages and associated interventions more salient, more culturally appropriate, and above all, more effective. This research has been featured in summaries of Indigenous evidence for example in a book chapter on Indigenous smoking,¹²¹ and the 2014 PHCRED Snapshot,²⁵⁸ and to date has been cited over 30 times.

10.3.1 Implications of the thesis for theory

The thesis focused on the use of Witte et al's EPPM and the RBD Scale applied to Indigenous Australian smokers of reproductive age. While recognising that this theory has limitations in considering only two main axes of perceived efficacy for quitting and perceived threat from smoking, two other scales were used to test important concepts in this population, i.e. protection responses and fear control responses (e.g. denial, avoidance). The discriminating value of the RBD Scale, calculated by subtracting the threat score from the efficacy score, was not meaningfully related to the outcome measure of intention to quit smoking in the sample recruited. The discriminating value was analysed both as a raw score and a transformed score, but neither of these results was consistent with the proposed theory, or helped explain the other findings. Inconsistencies with the discriminating value have been noted previously.¹⁵⁶ The fact that most of this population had a mean perceived threat level that was higher than their mean perceived efficacy meant that most of the respondents should be in 'fear control' or defensive motivation, according to the EPPM, and therefore not intending to quit smoking. This was not borne out in the study.

The four quadrants of the EPPM (high efficacy-high threat; high efficacy-low threat; low efficacy-high threat; low efficacy-low threat) showed meaningful associations with attitudes, intentions and behaviours in the target group.¹⁵⁶ The participants belonging to the low threat-low efficacy quadrant were the only ones who significantly demonstrated fear control responses. In one sense it would not be surprising that these participants

rated threat levels to be lower as they were in 'denial' about the harms of smoking, however those in the high efficacy-low threat quadrant exhibited positive attitudes, behaviours and intentions. Future explorations should focus on these four quadrants and/or devising an alternative way of calculating a discriminating formula.

A new pathway of 'partial danger control' was hypothesised for the EPPM. This pathway related to community members exhibiting high threat but low efficacy, who instituted home smoking bans without necessarily having significant intentions to quit smoking. There was also evidence for this pathway from the qualitative studies, with smokers sometimes firmly challenging other community members to protect their children, while continuing to smoke themselves. This alternate pathway warrants further exploration. Other factors that may have implications for theory in this model, but were not specifically explored, are collective efficacy, and people's ways of appraising the psychological threats from smoking.²⁵⁹

The main tenet of the EPPM that was supported in this exploration appears to be perceived efficacy. This concept is also well supported by Bandura, the comprehensive theories of PRIME and CEOS, and the BCW. As noted in Chapter 9.3.1 interventions to improve efficacy may be useful for this population.

10.3.2 Summary of recommendations for practice

For pregnancy in particular (and also by extension those of reproductive age) my key recommendations are:

1. Align tobacco control messages with the lived experience of Indigenous pregnant smokers, and make causal links more tangible for the short and long-term harms of smoking on the mother, baby and child.
2. Refine messages about smoke-free homes and proactively address misperceptions.

3. Improve access to comprehensive approaches for women that include partners and family. These approaches should include behaviour change techniques (such as building motivation and efficacy for quitting) and provision of suitable forms of NRT from trained health professionals. Advice about quitting (rather than reducing consumption) should be empathetic yet unambiguous, both during pregnancy and for those in their reproductive years (unless using NRT as part of a treatment plan). The Quit For New Life program in NSW has been designed along these lines.²⁶⁰

On the organisational level, I recommend that superficial and deep structure should be used to collaboratively develop tobacco control messages. In addition, I recommend bottom-up-community-based approaches, and pre-testing of messages on the Indigenous target groups before dissemination. As discussed, a synergy of approaches can build on the strengths of different organisation types.

10.3.3 Summary of recommendations for policy

My key policy level recommendations are as follows:

1. Address structural barriers to the provision of equitable services for Indigenous smokers, such as targeted quit support in all areas of Australia.
2. Place a range of oral forms of NRT on the Pharmaceutical Benefits Scheme for pregnant Indigenous smokers, and promote the use of combination therapy if required for heavier smokers. As chair of a subcommittee for the Australian Association of Smoking Cessation Professionals, I have been exploring how oral forms of NRT can be made more accessible for Indigenous pregnant smokers. My correspondence with the Minister of Health about this issue is in Appendix A. Negotiations are on-going.
3. Enhance evidence-based smoking cessation training for AHWs and other health professionals, and service-level policy changes to support cessation. These

improvements have the potential to improve the quality of quit attempts for Indigenous Australians.

4. Invest in an expanded Indigenous NTC with a wider range of anti-tobacco and cessation messages, some targeted to pregnant women, and continue regional media campaigns.
5. Organisations should consider incorporating components of cultural understanding-rigour to enable the growth of evidence-based practice. Funding bodies could require these twin approaches, and expect organisations to evaluate their programs using a range of agreed procedures. If an organisation is not sufficiently resourced to do this alone, partnerships should be formed with another relevant organisation.

10.4 Further research and directions

There are many areas where further research is required to improve outcomes for Indigenous Australians in the fields of tobacco control and smoking cessation. I plan to address some of these issues in my future research.

The systematic reviews (Studies 1 and 2) in Chapters 2 and 3 identified several evidence gaps. Comparative studies with Indigenous peoples on the efficacy of culturally targeted versus generic anti-tobacco messages should be undertaken. Such studies should include measures of recall and effectiveness and collect longitudinal data to measure quit attempts and cessation. For maternal Indigenous smokers, an important evidence gap exists in relation to the association of depression and smoking. Depression could be monitored through routine antenatal practice and its association with tobacco smoking subsequently assessed. Little is known about the attitudes of Indigenous pregnant women to NRT and their adherence to this therapy: these topics deserve exploration to inform future interventions.

The RBD Scale warrants further research. The validity and reliability of the RBD Scale should be confirmed with a larger sample and in other Indigenous populations, for example in Indigenous peoples in other areas of Australia, in Maori smokers or American Indians. The RBD Scale can be adapted and used to determine the levels of perceived threat and efficacy in Indigenous pregnant smokers. Adding psychological threats from smoking, such as disgust, regret and stigma, into the scale may broaden its scope. If successful, the RBD Scale can be developed into a clinical tool used to assess relative degrees of perceived threat and efficacy to provide tailored cessation advice, and used for training health professionals. The RBD Scale may thus further enable targeted approaches for local campaigns and tailored approaches for behaviour change techniques.

Funding for rigorous trials of new approaches should be expedited for Indigenous tobacco control. These approaches should preferably include multi-centred collaborations to enable larger sample sizes. I am pursuing interstate collaborations that could lead to this goal. Media campaigns need longitudinal follow up measuring quit attempts and cessation success, over several waves. Two RCTs involving the improved training of health professionals in evidence-based approaches for smoking cessation will be commenced in the next couple of years. One is targeted at pregnant Aboriginal women in NSW based on my published guidelines for counselling and the initiation of NRT in this population (Appendix A).²⁵⁷ The second RCT will be a similar community based multi-centred trial in South Australian Aboriginal communities.

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Appendices

Appendix A - Outputs and awards	157
<i>A pragmatic guide for smoking cessation counseling</i>	157
<i>Exploring the barriers and enablers to smoking cessation</i>	158
<i>Patient-centred tobacco management</i>	159
<i>Making "Blow Away The Smokes" DVD</i>	160
<i>Re Eades Medical Journal of Australia letter 2013</i>	161
<i>Re Thomas Medical Journal of Australia letter 2013</i>	162
<i>Re Berlin Letter British Medical Journal Online 2014</i>	163
<i>"Are functional beliefs about smoking a proxy for nicotine withdrawal symptom reduction?" Correspondence published in Tobacco Control</i>	164
<i>Letter from Federal Assistant Minister for Health</i>	165
<i>Letter from Vice Chancellor University of Newcastle</i>	166
<i>Summary of Publications since 2010</i>	167
<i>Summary of awards and grants since 2010</i>	170
Appendix B - Surveys	172
<i>Study 3.1 Demographic Survey</i>	172
<i>Study 3.2 Focus group interview guide</i>	173
<i>Study 4 Survey Form</i>	174
<i>Study 5 Consent and survey form</i>	175
Appendix - C Permissions	176
<i>Journal copyrights permission summary</i>	176
<i>Nicotine and Tobacco Research Permission</i>	176
<i>Australasian Epidemiologist permission grant for material reproduction</i>	177
<i>Journal of Smoking Cessation permission</i>	178
<i>Wiley, Drug and Alcohol Review permission</i>	179

Appendix A - Outputs and awards

A pragmatic guide for smoking cessation counseling

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A Pragmatic Guide for Smoking Cessation Counselling and the Initiation of Nicotine Replacement Therapy for Pregnant Aboriginal and Torres Strait Islander Smokers

Gillian S. Gould, Renee Bittoun and Marilyn J. Clarke

Journal of Smoking Cessation / *FirstView* Article / March 2014, pp 1 - 10
DOI: 10.1017/jsc.2014.3, Published online: 31 March 2014

Link to this article: http://journals.cambridge.org/abstract_S1834261214000036

How to cite this article:

Gillian S. Gould, Renee Bittoun and Marilyn J. Clarke A Pragmatic Guide for Smoking Cessation Counselling and the Initiation of Nicotine Replacement Therapy for Pregnant Aboriginal and Torres Strait Islander Smokers . Journal of Smoking Cessation, Available on CJO 2014 doi:10.1017/jsc.2014.3

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A Pragmatic Guide for Smoking Cessation Counselling and the Initiation of Nicotine Replacement Therapy for Pregnant Aboriginal and Torres Strait Islander Smokers

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Smoking prevalence of pregnant Aboriginal and Torres Strait Islander women is quadruple that of pregnant women in the Australian population, and is associated with significant adverse outcomes in pregnancy. While cessation is a priority, there is as yet little evidence for effective interventions. This paper provides a pragmatic approach to addressing the complexities of smoking in pregnant Aboriginal and Torres Strait Islander peoples and informs clinicians about the initiation of nicotine replacement therapy (NRT) in pregnancy. Experts agree that nicotine replacement is safer than continuing to smoke in pregnancy. Although a pharmacotherapy-free attempt is initially recommended, if abstinence is not able to be achieved in the first few days, the women should be offered an accelerated option of NRT starting with oral forms and then, if required, progressing to nicotine patch or combined oral and transdermal therapy. Support should be offered for at least 12 weeks and post-partum. Offering counselling and cessation support to partners and family is also important, as is linking the woman in with appropriate social and community support and Aboriginal specific services. As long as oral forms of NRT are not included in the Pharmaceutical Benefit Scheme for Aboriginal and Torres Strait Islander women a significant and inequitable barrier will remain.

Keywords: tobacco smoking, Aborigines, Australian, smoking cessation, nicotine replacement products, prenatal care

Introduction

Smoking prevalence of pregnant Aboriginal and Torres Strait Islander women (49.3%) is quadruple that of pregnant women in the general population (12.1%) (Li, Zeki, Hilder & Sullivan, 2012). Only 9.6% of Aboriginal and Torres Strait Islander women who smoke quit in pregnancy compared with 18.4% of pregnant smokers generally (Li et al., 2012). Pre- and perinatal smoking, as well as exposure to second hand smoke in childhood, are major factors associated with adverse outcomes for both mother and child, including miscarriage, stillbirth, low birth weight, birth defects, Sudden Unexpected Death in Infancy, respiratory problems, glue ears, cognitive-behavioural problems, and early smoking initiation (Hofhuis, de Jongste,

& Merkus, 2003). The benefits of quitting on birth weight are maximised with cessation before 20 weeks gestation, but only 3% of pregnant Aboriginal and Torres Strait Islander smokers are reported to achieve this (Wills & Coory, 2008).

Aboriginal and Torres Strait Islander peoples belong to culturally and geographically diverse communities. Local factors need to be taken into consideration when interpreting tobacco control and cessation research in other populations and other Indigenous communities. Translational issues may arise for example if applying findings from an urban population to a remote community, and across different Aboriginal Nations. Prevalence of smoking varies by remoteness in Australia and can be over

80% (Robertson, Conigrave, Ivers, Hindmarsh & Clough, 2013), with diverse patterns of use amongst Aboriginal and Torres Strait Islander remote communities (Clough, Guyula, Yunupingu & Burns, 2002).

Despite an overall decrease in daily smoking in Aboriginal and Torres Strait Islander peoples over the last decade from 53% to 43%, there have been no significant changes in rates in remote communities, nor a significant drop in the rates in the peak reproductive age group of 25–34 years for either gender (>50%) (Australian Bureau of Statistics, 2013).

A systematic review on smoking in pregnant Aboriginal and Torres Strait Islander women synthesised seven papers, covering five urban, two rural and two remote communities (Gould, Munn, Watters, McEwen & Clough, 2013a). The synthesis revealed complex factors that foster maternal smoking such as sociocultural norms, family influences and stressors. Quitting is perceived as hard, and smoking is often justified in the face of challenging life circumstances, and existing anti-tobacco messages lack relevance. Conversely, women express strong protective attitudes to the foetus and look up to positive role models. Women have limited knowledge about harms from tobacco use and treatment options, such as nicotine replacement therapy (NRT) (Gould et al., 2013a; Gould et al., 2013b). Attitudes of Aboriginal and Torres Strait Islander communities to NRT have not been satisfactorily explored (Eades, Sanson-Fisher & Panaretto, 2013; Gould et al., 2013b).

Additional systemic barriers have been identified that may affect the health practitioner's ability to provide equitable therapy, such as the lack of subsidy for oral forms of NRT (Gould, McEwen & Munn, 2011) and excessive caution in prescribing NRT (Gould & McEwen, 2013). While the oral forms of NRT are not subsidised by the Pharmaceutical Benefit Scheme (PBS) in Australia, the costs are likely to be prohibitive for low socio-economic smokers, including pregnant Aboriginal and Torres Strait Islander women. NRT is the only option for assisted cessation as other pharmacotherapies, such as Varenicline and Bupropion, are contra-indicated in pregnancy in Australia (Zwar et al., 2011), although a cohort study is underway to explore the effects of these medications in pregnancy (Havard et al., 2013).

Guidelines for treatment of smoking in pregnancy vary internationally. The UK NICE guidelines recommend NRT patches for women who cannot quit unaided (NHS, 2010) and NRT (both oral and patches, often combined) are offered to pregnant smokers if they wish to use them. The Australian RACGP guidelines suggest an initial attempt unassisted by NRT, then offering oral forms of NRT if a woman is unable to quit; if this is not successful patches can be used (Zwar et al., 2011).

Health professionals may be reticent to initiate NRT in pregnant smokers, and the issue remains controversial because of the concerns about the use of nicotine on the foetus (Forest, 2010; Osadchy, Kazmin & Koren,

2009). A recent Cochrane review determined that there is as yet insufficient evidence that NRT is effective or safe in pregnancy (Coleman, Chamberlain, Davey, Cooper & Leonardi-Bee, 2012), but the review reported there were no statistically significant adverse foetal outcomes when comparing NRT to controls. Experts however have concluded that using NRT is generally safer than smoking in pregnancy (Bittoun, 2010; Forinash, Pitlick, Clark & Alstat, 2010). Surveyed UK general practitioners (GPs) reported being unsure about the safety of NRT in pregnancy, and low confidence in their ability to prescribe NRT in pregnancy, despite the majority also believing that NRT in pregnancy was likely to be safer than smoking (Herbert, Coleman & Britton, 2005). Price et al. report the majority of US obstetricians in their study did not prescribe NRT because of a lack of confidence and lack of smoking cessation training (Price, Jordan & Dake, 2006). In Australia healthcare providers who have better knowledge about NRT were more likely also to assess smoking status in pregnant Aboriginal and Torres Strait Islander clients (Passey, D'Este & Sanson-Fisher, 2012).

NRT patches have been shown to produce higher abstinence rates than placebo at one-month follow up (21.3% vs. 11.7%), but in the long-term were not efficacious in pregnancy (Coleman et al., 2012): however adherence was a major issue, with most of the women not taking the medication for more than 4 weeks (Oncken, 2012).

Another issue is that higher than normal NRT doses may be needed due to increased nicotine metabolism in pregnancy (Dempsey, Jacob & Benowitz, 2002). The Cochrane review recommends using higher doses of NRT in future research (Coleman et al., 2012). A recent UK study of over 3000 pregnant smokers showed that when two forms of NRT were used concurrently (i.e. combined NRT patch and an intermittent form) there was a significant increase in abstinence compared with no treatment, (OR = 1.93, 95% CI = 1.13 to 3.29, $p = 0.016$) while monotherapy with a NRT patch showed no significant benefit (OR = 1.06, 95% CI = 0.60 to 1.86, $p = 0.838$) (Brose, McEwen & West, 2013). Safety issues of combined NRT could not be addressed in this type of study design, however authors make the case that combination NRT delivers nicotine without carbon monoxide and the multitude of other reproductive toxins absorbed from cigarette smoke.

Comprehensive and often intensive interventions are recommended for pregnant Aboriginal and Torres Strait Islander women (Lumley et al., 2009) but so far evidence to guide successful interventions by health practitioners and policy makers is lacking (Eades et al., 2012; Lumley, 2009).

In the absence of evidence for approaches to managing smoking in pregnant Aboriginal and Torres Strait Islander women, this paper offers pragmatic guidance for the practitioner to enable the timely initiation of NRT and supportive counselling. The guidance is based on a synthesis of available literature, expert opinion and clinical

experience and speculates on how these may be applied in the Aboriginal context. Consideration will be given to some of the issues a GP, obstetrician or other clinician may be likely to encounter during management.

Screening the patient

Practices should pay attention to cultural safety for Aboriginal and Torres Strait Islander clients, so women feel encouraged to attend for follow-up healthcare (Belfrage, 2007). Access issues are important and financial burdens should not become a barrier to attending.

All pregnant women should be routinely asked about their smoking in a non-threatening way, and nicotine dependence assessed. Smoking may be under-reported in this population. Using a written multiple-choice format aids disclosure in the general population, but literacy issues may need to be taken into account, in this population (Australian Government Department of Health and Ageing, 2012). Box 1 suggests a simplified verbal version. Using a conversational style of history taking has merit in the Aboriginal context, asking the woman to tell her smoking story.

Midwifery approaches recommend a sensitive woman-centred dialogue building on trust and a long-term relationship (Ebert, Van Der Riet & Fahy, 2009). A full smoking and cessation history should be taken. History includes age of initiation, length of smoking history, cigarette consumption, previous quit attempts and duration of smoke-free episodes, and whether cessation aids have been used previously, their effectiveness and any side effects. Cigarette consumption may be hard to quantify if cigarettes are shared and household finances prevent supply for the whole week (Gould et al., 2013b). Ask whether other household members smoke and assess smoking locations such as at indoor/outdoor smoking at home, in the car and at work. Initial engagement is vital to encourage the woman to be comfortable to come back and see you a second time, and not feel shamed about her smoking or that she is a 'bad mother' for smoking.

Several drugs, including caffeine, interact with the liver metabolism of polycyclic aromatic hydrocarbons (produced by tobacco smoke), resulting in higher bioavailability of the drugs, so the usage of caffeine and other drugs should be assessed. On smoking cessation, caffeine effects may result in increased anxiety and restlessness, and therefore be confused with nicotine withdrawal symptoms (Bittoun, 2010). This effect is independent of NRT use. A reduction in caffeine intake should be advised, and other drugs may need monitoring.

The question arises as to what is the best measure of nicotine dependence in pregnancy?

- Addiction levels are believed to be low in Aboriginal and Torres Strait Islanders during pregnancy (Panaretto, 2009; Robertson et al., 2013), based on the Fagerström Test for Nicotine Dependence (FTND) or Heaviness

of Smoking Index (HSI). However clinical experience suggests the full range of dependence.

- As the above measures depend on the number of cigarettes smoked per day and many pregnant women try to reduce their smoking when pregnant, such measures may not accurately reflect their addiction level.
- Dependence scales (i.e. FTND and HSI) do not capture the potential for compensatory smoking or the high levels of discomfort from craving that a pregnant woman may experience when reducing.
- The Strength of Urges to Smoke (SUTS) scale may therefore give additional information about dependence (Fidler, Shahab & West, 2011), and should be measured at each visit (Table 1).
- Carbon monoxide (CO) can be measured by the healthcare provider with a hand held expired breath CO monitor, available in Australia, easy to operate and reasonably priced.
- The CO monitor can be used to estimate the foetal carboxyhaemoglobin (FCOHB%) in the pregnant smoker and partner (if smoking). These measures may serve as opportunities to educate about the effects of smoking on the foetus (Table 1).
- Pregnant women may also be using cannabis and the clinician should ask about and address this issue in a non-judgemental way. Cannabis smoking can cause a high CO reading.

Counselling

Pregnancy is a teachable moment for smoking cessation (Gould et al., 2013b; McBride, Emmons & Lipkus, 2003). Aboriginal and Torres Strait Islander women are conscious about wanting to do the best for their baby and have protective instincts about shielding them from smoke (Gould et al., 2013a; Gould et al., 2013b): they are more likely to reduce cigarette consumption than quit (Gould et al., 2013a; Gould et al., 2013b), however this is similar for pregnant women internationally (Graham, Flemming, Fox, Heirs & Sowden, 2013). A study in regional NSW revealed that some Aboriginal and Torres Strait Islander women may question the importance of the harmful effects from smoking in pregnancy, if others around them have not been seen to be affected by tobacco smoking and may be adverse to an authoritative or judgemental approach (Gould et al., 2013b). Counselling techniques based on the stages of change, and motivational interviewing, have been shown to be less effective in pregnancy (Hetteema & Hendricks, 2010; Lumley et al., 2009). However several other behaviour change techniques for pregnant smokers have been associated with successful programmes internationally, including increasing self-efficacy and goal-setting, and facilitating coping (Lorenatto, West & Michie, 2012). Box 1 shows a recommended approach to counselling. Even brief counselling

Table 1
Suggested assessment tools for pregnant smokers

Heaviness of Smoking Index (HSI)	Strength of Urges to Smoke Scale (SUTS)	Carbon Monoxide and FCOHb%	
How soon after waking do you smoke your first cigarette? (TTFC)	In general how strong have the urges to smoke been?	COppm	FCOHb%
0. 60+ minutes	1. Slight	>20	5.66
1. 31 – 60 minutes	2. Moderate	19	5.38
2. 6 – 30 minutes	3. Strong	18	5.09
3. Within 5 minutes	4. Very strong	17	4.81
How many cigarettes do you usually smoke each day? (CPD)	5. Extremely strong	16	4.53
0. ≤10		15	4.25
1. 11–20		14	3.96
2. 21–30		13	3.68
3. ≥31		12	3.40
Total Score Interpretation:		11	3.11
0–2 = very low dependence		10	2.83
3 = low dependence		9	2.55
4 = moderate dependence		8	2.26
5 = high dependence		7	1.98
6 = very high dependence		6	1.70
		5	1.42
		4	1.13
		1–3	<0.85
		CO levels of 6 or less indicate non-smoker	
		<i>Adapted from Smokerlyser Chart</i>	
		<i>Bedfont Scientific Ltd. Issue 11 -</i>	
		<i>January 2011, Part No: LAB261</i>	
HSI score:	SUTS Score:	CO reading:	FCOHb%:

can have a beneficial effect on cessation in a clinical setting. Understanding the sociocultural context is essential – for an overview of potential factors see Gould et al.’s review (2013a).

In preparation for quitting the woman is advised to start extracting herself from environmental cues as this will result in less urges to smoke. It is helpful if she smokes outside even if the household is not yet smoke-free (Mills, Messer, Gilpin & Pierce, 2009) Other cues can be separated, such as not smoking with coffee or when on the phone. In areas of very high smoking prevalence, constant cue exposure will be problematic, and should be sensitively addressed.

To capitalise on the teachable moment we recommend encouraging a trial of cessation in the following week, aiming for abstinence of at least 2 days. Make a quit plan with your patient (see Box 2) and encourage her to fill it out with your help (being mindful of literacy issues). The sample quit plan has sections to assist with problem solving of challenges for smoking cessation and encourages

the use of self-rewards. It is important to build a sense of self-efficacy, and emphasise choice.

Linkages with local Aboriginal Medical Services and Aboriginal Maternity Services are recommended, if the client wishes to use them. Some Aboriginal communities have Tackling Indigenous Smoking and Healthy Lifestyle teams with Aboriginal smoking cessation counsellors, but these do not cover every remote community. Where available these teams can be accessed for additional support and follow up. The Ministry of Health NSW, through the Aboriginal Maternal & Infant Health Services (AMIHS) have started the Quit For New Life programme, which provides counselling and free oral forms of NRT, and cessation services for family members. It is recommended to be proactive in helping the woman and her family link in with social and community services, including Aboriginal specific health and community services that can assist in addressing her environmental stressors such as financial or housing issues, and specific problems such as domestic violence, and mental health concerns.

Box 1.

Counselling pregnant Aboriginal and Torres Strait Islander women

- Develop your own non-judgemental way of introducing the topic of smoking e.g. “Some things we can do to help you and baby have a healthy pregnancy, like regular check-ups; some things you can do yourself like eating well and resting, and some things we can do *together*, like helping reduce your and the baby’s exposure to tobacco smoke”. To elicit knowledge level you may ask an open ended question “What do you think/know about tobacco smoke and pregnancy?”

- Use the ABCD approach to structure counselling:

A – Ask about smoking – “I hope you don’t mind me asking, but does anyone at home smoke?” Followed by “do you smoke?” then take a smoking history. “Some women smoke more when pregnant, some smoke the same, or some smoke less – what’s been your experience?”

B – Brief advice to quit and offer all pregnant smokers assistance with quitting. “Have you had a time in this pregnancy or in the past when you tried to go a whole day without smoking? How did you go?” If appropriate suggest a trial of stopping smoking in the next few days for 1–3 days. Emphasise importance of taking one day at a time. Explain withdrawal effects and link with stress (see below).

C – Cessation aids. “One of the things we can really help you with is to quit smoking. If you cannot manage it alone, we can use nicotine to help the cravings.” Introduce the idea of NRT and explain risks and benefits. Discuss previous experiences with NRT and address myths. Explain also in context to the other chemicals in cigarettes. Measure CO reading and explain implications. If indicated offer samples of oral NRT for the current or following week, and follow-up in a few days to a week.

D – Discuss family, social and cultural context for smoking, and challenges for quitting. It may be helpful to find out what salient others in the family have said about smoking in pregnancy.

General Points:

- Encourage quitting early in pregnancy
- Encourage quitting rather than cutting down consumption
- Provide foundation knowledge by using simple educational materials to explain about smoking in pregnancy, e.g. “what’s in a cigarette”
- Stress is a common reason for smoking in Aboriginal and Torres Strait Islander communities, and is cited as a barrier to quitting. The ‘stress’ caused by not smoking may not be understood as a nicotine withdrawal effects. A simple way of educating about this is to use a visual guide.
- The patient-education diagram below (figure 1) shows how nicotine levels go up with each cigarette smoked and go down in between cigarettes. This has a yo-yo effect all day on the feel-good chemicals (dopamine) and a smoker is in and out of withdrawal all day. These symptoms of withdrawal are often perceived as ‘stress’. For a full list see DSM V.

Initiation of NRT

Discuss the potential of using NRT (see [Figure 2](#)) from the first visit. Explain the risks and benefits of using NRT replacement in pregnancy, so the client can make an informed decision. Plan to see the pregnant smoker weekly or earlier. If the initial attempt is not successful (i.e. the patient is unable to abstain for 2–3 days), with the client’s consent, move swiftly onto pharmacotherapy so as not to lose momentum with the quit attempt (Gould & McEwen, 2013). Discuss options of different forms of oral NRT. As nicotine metabolism is faster in pregnancy higher doses than usual may be required (Dempsey et al., 2002), and 4mg oral intermittent forms can be used as required for cravings.

As intermittent oral NRT is not subsidised on PBS, it will need to be bought over the counter. Cost may be a prohibitive factor for many Aboriginal and Torres Strait Islander smokers. In remote areas oral forms of NRT may not be available at retail outlets. The argument about costs saved by not purchasing cigarettes may not be so applicable because of the way supplies of cigarettes are purchased and shared as a family (Gould et al., 2013b). Consider obtaining your own supplies of oral NRT from sources such as Cancer Council or the local health district who sometimes have funding for low socio-economic populations, or from pharmaceutical companies. Some Aboriginal Medical Services may also have oral NRT supplies

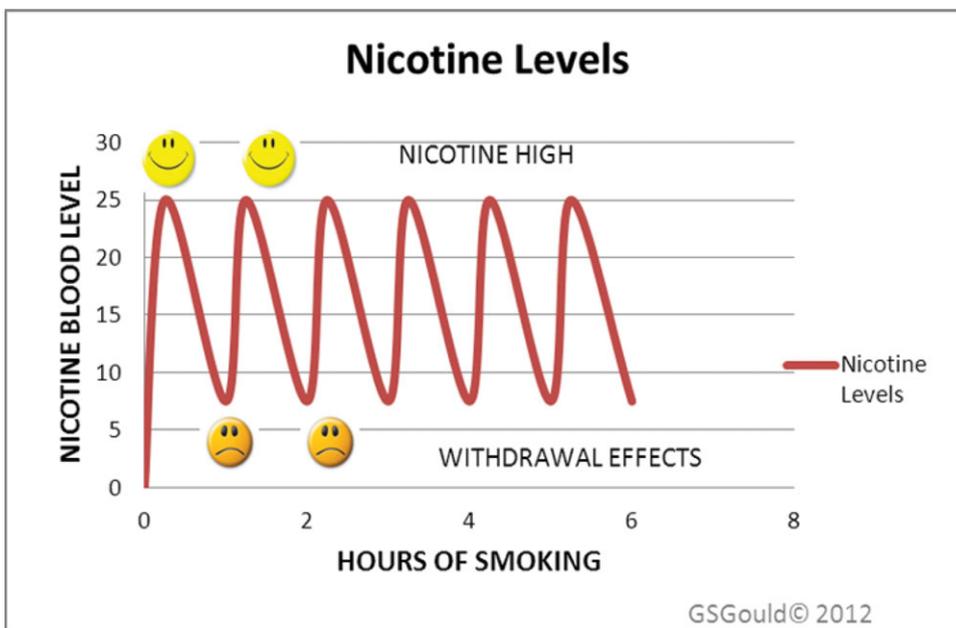


Figure 1

(Colour online) Patient education guide for nicotine levels, withdrawal and stress Source: Gould, G. Give Up The Smokes Aboriginal Quit Café - a new concept in intensive quit smoking support for Aboriginal and Torres Strait Islander people. Coffs Harbour: The Mid North Coast (NSW) Division of General Practice, Galambila Aboriginal Health Service and Dr Gillian Gould. 2012, page 35. ISBN 978-0-9873410-0-6. Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License. A more detailed version may also be found in Bittoun R, Stop Smoking - Beating Nicotine Addiction Sydney:Random House, 1993, p48. ISBN 0-09-182795-7

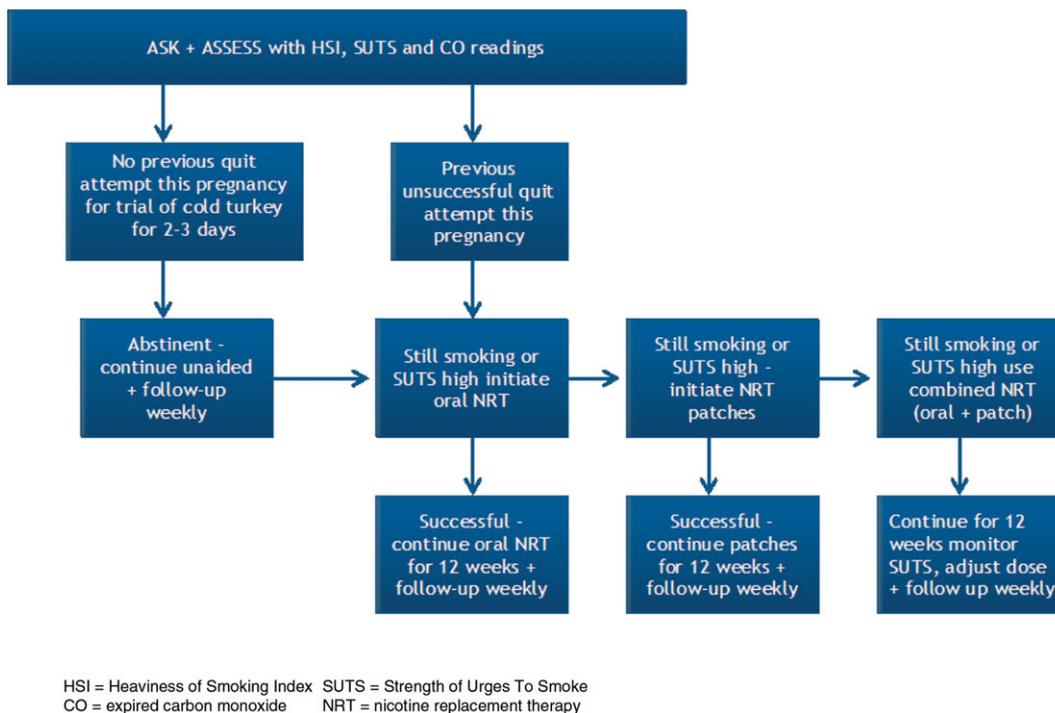


Figure 2

(Colour online) Flow chart for initiation of nicotine replacement therapy

to distribute. Clinicians in NSW may consider linking the client in with the Quit for New Life program via AMIHS, to gain access to oral NRT.

less than smoking, NRT products are not as bio-available as cigarettes, and there are differences between the levels of absorption of the products (Fant, Henningfield,

Box 2.

Example of a quit plan for pregnancy

MAKING A PERSONAL QUIT PLAN

My Quit Method

- Cold Turkey
- Nicotine Gum
- Nicotine Lozenges
- Nicotine Inhaler
- Nicotine Spray
- Nicotine Patches

My Quit Date _____

My Quit Strategies

- Exercise _____
- Quitline 13QUIT or 13 7848
- Group Support
- Other support _____
- Reduce caffeine
- Make the home & car smoke-free

Key Challenges

Challenge	How I will address this

My rewards for not smoking

- _____
- _____
- _____

Adapted from: Gould, G. Give Up The Smokes Aboriginal Quit Café - a new concept in intensive quit smoking support for Aboriginal and Torres Strait Islander people. Coff's Harbour: The Mid North Coast (NSW) Division of General Practice, Galambila Aboriginal Health Service and Dr Gillian Gould. 2012, pages 108-110. ISBN 978-0-9873410-0-6. Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License.

If oral forms of NRT are not suitable, move swiftly on to 16-hour patches (removed at night). The 16-hour patch comes in two strengths: 15 mg and a recently released 25 mg; the latter will be included in the PBS this year, and is suitable for those smoking more than 10 cigarettes per day. Although guidelines caution that the NRT dose should be

Shiffman, Strahs & Reitberg, 2000; McEwen, West & Gaiger, 2008). Anticipate in this population that there may be some 'weaning off' of cigarettes. Although pre-cessation NRT is not recommended in pregnancy, it is suggested that clinicians take a balanced view with individual cases. For example if a woman normally smokes 10

cigarettes a day and is now smoking 2 cigarettes a day and using 6 lozenges, encourage complete cessation within 2 weeks by increasing dose of lozenges, and assisting her to set a definite quit date. Clinicians should consider that it would be worse if she went back to full smoking, and need to continue to build efficacy.

Combination therapy (NRT patch and an oral form) may be required for more dependant smokers. Therapy should be encouraged for 12 weeks, but anticipate adherence may be an issue as encountered in clinical trials (Onken 2012). However, even short periods of abstinence in pregnancy may have beneficial effects on foetal growth (Heil et al., 2008). Women registered under the PBS Closing the Gap Co-payment measure can receive prescribed NRT patches at no cost, providing the prescription is appropriately annotated (Australian Government Department of Human Services - Medicare, 2013).

Follow-up support

Encourage the pregnant smoker to return no matter how successful or unsuccessful the quit attempts have been. Give positive feedback and help build on successes and strengths. Each visit, check SUTS and CO readings. Consider a faxed referral to the Quitline for their call-back service as an adjunct. Most Quitlines have Aboriginal counsellors, and if the woman identifies as Aboriginal or a Torres Strait Islander a culturally appropriate service can be provided.

Partners and family members may not be supportive of the pregnant woman quitting, and may undermine her quit attempts (Gould et al., 2013b). Suggest that partners and family may attend with the patient or separately for consultation regarding their own smoking and learning how they can best support the quitter. Encourage smoke-free home and cars. You may promote the notion of preparing the environment for the baby as an additional rationale. Support should be offered for at least 12 weeks and post-partum. Initial sessions may need to be fairly intensive to cover all the issues that are important in the context of smoking in pregnancy. If the clinicians practice does not allow for this then referral options need to be considered. It is recommended to adapt approaches to the individual community and work in partnership with local Indigenous staff and Aboriginal Medical Services especially in rural and remote settings.

Many pregnant mothers relapse or may not intend to stay abstinent after the birth, yet there is currently no evidence-based strategy for relapse prevention (Lumley et al., 2009). However mothers who quit for themselves and not just their baby may have a higher intention to remain abstinent post-partum. As visits with the pregnant mother progress ask her to reflect on what she will gain from remaining smoke-free after the birth.

Ancillary resources

At least half of the Australian programmes aimed at Aboriginal and Torres Strait Islander communities focus on smoke-free pregnancies (Gould et al., 2014). There may be quit groups at the local Aboriginal Medical Service that you can refer to. Several sources of support that you may pass on to your clients involve new media, although not all 'smart phones' operate in remote areas:

- Quit for You, Quit for Two phone App for maternal smoking <https://itunes.apple.com/au/app/quit-for-you-quit-for-two/id549772042>
- Blow Away The Smokes DVD – a guide to quitting cigarettes for Aboriginal & Torres Strait Islander smokers www.blowawaythesmokes.com.au
- Sticking It Up The Smokes Facebook site <http://www.facebook.com/StickinituptheSmokes>

Policy changes required

The National Tobacco Strategy, the Closing the Gap strategies and the National Aboriginal and Torres Strait Islander Health Plan all recommend comprehensive approaches (Australian Government Department of Health, 2012; Commonwealth of Australia, 2012; Council of Australian Governments, 2008). These should include Aboriginal and Torres Strait Islander specific smoking cessation and support services, family-based programmes, and strategies to improve delivery of smoking cessation services, including NRT.

Access to oral forms of NRT is essential to effectively initiate treatment for pregnant women. Application needs to be made to the Pharmaceutical Benefits Advisory Committee to place a range of oral forms of NRT on the PBS. Without equitable access to suitable forms of NRT pregnant women from low socio-economic backgrounds are further disadvantaged.

Better education is required for medical professionals and specialists in how to counsel Aboriginal and Torres Strait Islander smokers, initiate NRT and how to work with the smoking cessation guidelines for pregnancy. It is important for training to address both the opportunities and barriers that a clinician may experience in trying to tackle smoking with a pregnant woman. The training needs to include culturally safety issues, and the important role that partners and family members can play in helping support the woman quit smoking.

Conclusion

The prevalence of smoking by pregnant Aboriginal and Torres Strait Islander peoples is slow to decline. There is a clear need for comprehensive approaches which include improved access, culturally safe practices, supportive counselling and the incremental use of NRT. All clinicians should be able to raise the issue of smoking with pregnant Aboriginal and Torres Strait Islander women, and become more familiar with how to initiate NRT in a timely

manner for Aboriginal and Torres Strait Islander populations. This paper provides a pragmatic approach to smoking cessation for pregnant Aboriginal and Torres Strait Islander smokers and their families and hopes to address some of the educational needs of health professionals to become more adept at tackling smoking in these disadvantaged and marginalised groups.

Acknowledgements

None

Financial Support

Dr Gillian S. Gould is in receipt of a National Health & Medical Research Council Post-Graduate Indigenous Research Training Scholarship co-funded by the National Heart Foundation (Grant number APP 1039759)

Conflict of Interest

None

Ethical Standards

Not Applicable

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Exploring the barriers and enablers to smoking cessation

Round Table

Exploring the barriers and enablers to smoking cessation in pregnant Aboriginal and Torres Strait Islander women with the behaviour change wheel

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Abstract

Tobacco smoking is the most important reversible risk factor for maternal and infant health for Aboriginal and Torres Strait Islander peoples. This article uses the Behaviour Change Wheel to examine the factors affecting smoking cessation for pregnant Aboriginal and Torres Strait Islander women and suggests avenues to strengthen support. It is necessary to find innovative ways to engage and educate pregnant smokers and those of child-bearing age, improve access to existing services, build on the positive changes occurring in smoke-free homes, and provide practical assistance for smoking cessation.

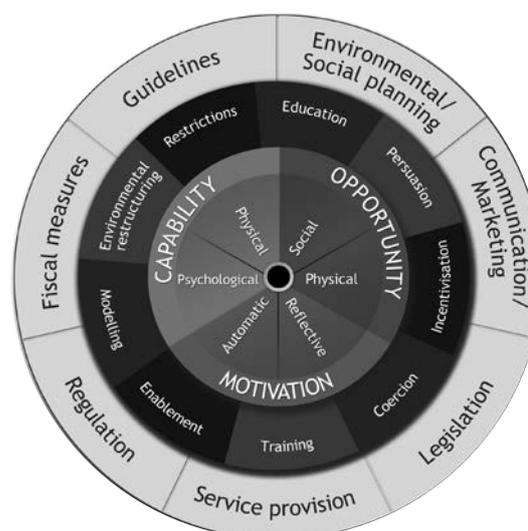
Tobacco smoking perpetuates the disadvantages experienced by Aboriginal and Torres Strait Islander peoples in Australia¹, especially when the foetus is exposed during pregnancy.² Tobacco smoking is a major risk factor for poor maternal and infant outcomes.³ The rate of smoking in Aboriginal and Torres Strait Islander women during pregnancy is 49.3%, over four times the rate of their non-indigenous counterparts (12.1%)⁴, and few successfully quit during the first 20 weeks of gestation.^{4,5} Aboriginal and Torres Strait Islander women face personal and environmental barriers to quitting, and important systemic barriers.^{6,7} However, some important potential enablers have been identified.^{6,8}

This article uses the Behaviour Change Wheel (BCW)⁹ to examine some of the factors affecting smoking cessation for pregnant Aboriginal and Torres Strait Islander women and suggests avenues to strengthen support. The BCW (Figure 1), as a parsimonious non-linear model, was developed out of a systematic analysis of behaviour intervention frameworks... using an overarching model of behaviour to link interventions to potential behavioural targets.⁹ It provides a useful structure for this topic.

The centre of the BCW consists of three main ingredients necessary for volitional behavior to occur – capability (physical and psychological); motivation (automatic and reflective); and opportunity (social and physical). In the

middle layer are interventional functions that are common to the behavioural aspects in the centre and the policy layer on the outside.

Figure 1: The Behaviour Change Wheel (reproduced with permission from Michie and West⁹)

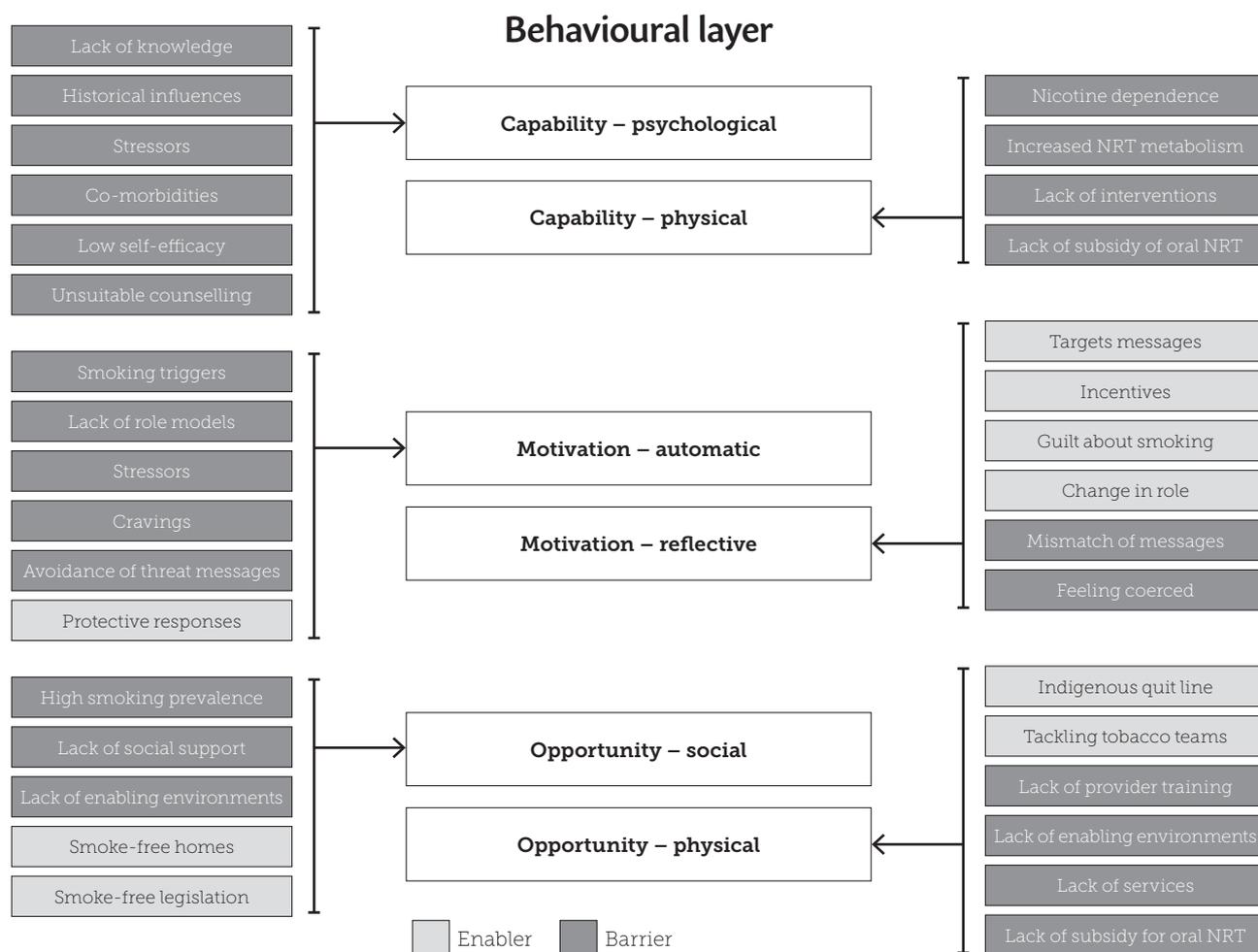


- Sources of behaviour
- Intervention functions
- Policy categories

Behavioural layer – capability, motivation, opportunity

Figure 2 shows the barriers and enablers to smoking cessation as they affect the behavioural layer of the BCW. These barriers and enablers ultimately impact the personal level, but the effect of the environment, and policies are also of paramount importance. All three ingredients of capability, motive and opportunity need to be present for a pregnant Aboriginal or Torres Strait Islander smoker to quit. As can be seen with the wealth of barriers it is not surprising that only 3% of pregnant Aboriginal or Torres Strait Islander smokers quit before 20 weeks gestation.⁵ The enablers are factors that can be targeted for strengthening.

Figure 2. Barriers and enablers to smoking cessation for pregnant Aboriginal and Torres Strait Islander smokers, and how they impact on capability, motivation and opportunity



Capability

Aboriginal and Torres Strait Islander pregnant women face cognitive, mental and emotional barriers, which impact on their psychological capability to stop smoking. These include lack of detailed knowledge about the harms of smoking,^{6, 8, 10} although in general most know that smoking is harmful. Stressful life circumstances may also impact on a women's psychological capability to quit. Tobacco smoking in Aboriginal and Torres Strait Islander peoples has been associated with colonisation and dispossession¹¹, the 'stolen generation'¹², racism¹³, and low socioeconomic status.¹⁴ Quitting smoking requires a certain type of mental stamina and energy¹⁵, which may be impaired when life is tumultuous, or one has comorbid mental health or substance abuse problems.¹⁶ Pregnant Aboriginal and Torres Strait Islander women may have low self-efficacy and low response efficacy for quitting but these questions are under-researched.

Physical capability is more difficult to quantify, but includes nicotine dependence, stress-inducing withdrawal symptoms¹⁷, and the increased nicotine and cotinine metabolism in pregnancy¹⁸, which makes adequate medication levels more difficult to achieve with nicotine replacement therapy (NRT) products.

Motivation

Automatic motivation involves emotions and impulses, and reflective motivation involves evaluations and plans. As smoking continues to be widespread in Aboriginal and Torres Strait Islander communities, environmental cues from family, partners and friends smoking continue to trigger smoking and are a barrier to quitting in pregnancy.^{6, 8} Automatic impulses are generated when having intense cravings, with many Aboriginal and Torres Strait Islander pregnant smokers citing stress and cravings as key factors for lapsing and relapsing.^{6, 8} A lack of positive role models also impinges on success.^{6, 8} Studies have shown that Aboriginal and Torres Strait Islander pregnant smokers are motivated to quit smoking or cut down their consumption of cigarettes in order to protect their baby^{6, 8, 10}; some women may find this an automatic or instinctive response to becoming pregnant.⁸ Strong and positive enablers for quitting include the protective attitudes of Aboriginal and Torres Strait Islander women, guilt about smoking, and their esteem of positive role models.^{6, 8} Pregnancy thus provides a 'teachable moment' to reflect on the changes in a woman's role¹⁹, increased susceptibility to harm, and to discuss cessation.²⁰ Social marketing through TV advertisements have a mixed response. Some women find the negative images too

threatening and avoid watching them, and advertisements have been reported to prompt further smoking.⁸ Mass media campaigns can, however, prompt a more reflective response and prompt the woman to think about her smoking. The targeted 'Break The Chain' campaign has been favourably received²¹, and more recently the 'Quit For You, Quit for Two' campaign also targets Aboriginal and Torres Strait Islander pregnant smokers. However, existing anti-tobacco messages were reported to lack salience for Aboriginal pregnant women in one recent study as the messages did not match with their lived experience.⁸ In terms of coercion to quit, Aboriginal and Torres Strait Islander women believe it should be their choice whether they quit or not, and do not like to be 'told what to do'.^{6,8} A respectful, non-judgmental stance needs to be maintained by health professionals.²⁰

Incentives for quitting also operate at the level of motivation. Several trials of material or financial incentives in pregnancy have shown success²², and there has been some preliminary success in a pilot study of this in pregnant Aboriginal and Torres Strait Islander women.²³ However, some controversy exists about further trials of these approaches in Australia.²³

Opportunity

Social and physical opportunities for cessation may be lacking in pregnancy in Aboriginal and Torres Strait Islander target groups. The high prevalence of smoking works against social opportunities to quit or get support from friends and family for quitting.⁶ Physical opportunities for smoking cessation may also be scarce for Aboriginal and Torres Strait Islander pregnant smokers in some areas with limited access to medical services²⁴, and health professionals that lack the knowledge and training to appropriately aid cessation in pregnancy.^{25,26} Antenatal care providers who do not assess smoking status are less likely to provide advice and some may not think it worth offering help due to a perceived lack of success.²⁵ Enabling environments for cessation are receiving more attention²⁷, as we know that people who only smoke outside are more likely to quit²⁸, and children whose parents smoke outdoors or do not smoke at all may be less likely to take up smoking.²⁷

Policy layer – legislation, communication/marketing, service provision, guidelines, environmental/social planning, fiscal measures, regulation

Australia is recognised as a world leader in tobacco control policies, with one of the lowest smoking rates of OECD countries at 15.1%.²⁹ Inadequate implementation of government policies, however, may impact on the benefits from smoking restrictions and legislation. These factors impact mainly in rural and remote areas³⁰, and include inadequate reach of anti-tobacco marketing strategies³¹, targeted to Aboriginal and Torres Strait Islander communities. Women living in remote and rural areas are particularly at risk from a lack of health resources. Although many Tackling Tobacco and Healthy Lifestyle teams are being funded as part of the 'Closing The Gap' program on

Indigenous chronic disease, these are not available in every community.³² Furthermore, many are still in their early stages of development and recent funding cuts threaten the programs' sustainability.³³⁻³⁴ A recent national survey found that 55% of surveyed organisations targeted their anti-tobacco messages or cessation programs to Aboriginal and Torres Strait Islander pregnant women.³³ Most organisations used educational or positive messages, and avoided threat campaigns, with some holding the opinion that these were unsuitable for Aboriginal and Torres Strait Islander peoples.³³ There are, however, systemic problems with getting these targeted programs robustly evaluated, uncertainty about future funding, and therefore delays in knowing what approaches are going to be the most promising.³³ Most of the State-based Quitlines are now employing Aboriginal advisors. This will hopefully improve access to culturally competent quit services.

There are also several critical systemic barriers surrounding current practice guidelines and policies that may limit success in reducing smoking rates among Aboriginal and Torres Strait Islander women during pregnancy. These include limited access to expert tobacco treatment services; the use of ineffective forms of counselling (such as reliance on stage-based counselling techniques, which are less effective in pregnancy)³⁵; delays in the use of NRT^{36,37}; practitioners' inexperience with prescribing NRT in pregnancy, and the absence of subsidised oral forms of NRT in Australia.²⁰

Clinical practice guidelines for smoking cessation have been rather restrictive for smoking cessation in pregnancy with concerns about the lack of efficacy and safety of NRT, and limited knowledge and use of effective behavior change techniques. Combined forms of NRT with a patch and an oral (intermittent) form appear to be the most effective in real-life settings³⁸; however, this approach does not yet feature in official Australian smoking cessation guidelines for pregnancy.^{20,39}

Intervention layer – environmental restructuring, restrictions, education, persuasion, incentivisation, coercion, training, enablement, modeling

Existing and potential interventions relate to both the behavioural and policy layers. Capability can be improved by health education, counseling, building self-efficacy and psychosocial support^{22,40}, and on the physical side, maintaining suitable doses of pharmacotherapy to treat nicotine dependence. Enabling interventions need to include both components of behaviour change techniques and medication if the woman cannot quit unaided by NRT.²⁰

Reflective motivation can be improved through increasing personal agency via education, increasing understanding, targeted and persuasive messages at the mass media level^{41,42}, and through the clinical encounter.³⁵ Behaviour change techniques can also target incentivisation, training, and enablement.⁴³ Associative and imitative learning, restructuring the environment, smoke-free town planning,

and smoking outside the house, rather than indoors^{28,44}, can all theoretically improve automatic motivation. However, isolation in pregnancy by keeping away from supportive family and friends can be a barrier impinging on success.⁸ Role models, who may be smoking, can be supported and exposure to success stories heightened through narrative mass media messages, and personal testimonials depicting real people's stories.^{33,41,45}

Opportunities for smoking cessation can be improved by environmental restructuring to create enabling social and physical environments, improved training for health professionals, improved and more equitable access to health services, system-level changes to embed smoking cessation into routine antenatal services, and positive role models.

Policy interventions need to be equitably applied so they can support health professionals to engage in evidence-based approaches and be more proactive in managing smoking cessation in pregnant Aboriginal and Torres Strait Islander smokers. These also include targeted TV ads that resonate better with pregnant women, and smoking cessation support for family and partners. Comprehensive programs that take into account the family network and wider social context are recommended.⁴⁰

A recent clinical practice guide had been published to assist the clinician to provide culturally competent evidence-based approaches to pregnant Aboriginal and Torres Strait Islander smokers, and promote expedited use of NRT in sufficient doses to be effective, with the use of combined NRT if required.²⁰ These new guidelines need to be supported by health professional training, and with feedback for fidelity of application. Clinicians are hindered in practicing evidence-based approaches and caring for their Aboriginal and Torres Strait Islander patients while there are fiscal barriers to providing appropriate forms of NRT for pregnant smokers. The situation can only be resolved by provision of with subsidised oral forms, preferably on the PBS in Australia, as the women are unlikely to be able to afford supplies themselves.⁷

Summary

Personal and environmental barriers include social patterns of tobacco use, family and partners smoking, stressful life events, misconceptions or lack of knowledge, existing anti-tobacco messages lacking salience, inadequate support and low efficacy for quitting. There are also several critical systemic barriers surrounding current practice guidelines and policies that may limit success in reducing smoking rates among Aboriginal and Torres Strait Islander women during pregnancy. These include limited access to expert tobacco treatment services, delays in the use of NRT, practitioners' inexperience with prescribing NRT in pregnancy, and the absence of subsidised oral forms of NRT. However Aboriginal and Torres Strait Islander women want

to do the best for their babies, and are motivated by strong protective attitudes and positive role models. A more proactive approach towards smoking cessation for pregnant Aboriginal and Torres Strait Islander women may be necessary including finding innovative ways to engage and educate pregnant smokers and those of child-bearing age, within existing services. However, education and advice on their own are insufficient, and women will need practical help and support with quitting.²² Many of these areas are as yet under-researched, such as the way pregnant women assess their risks for smoking and their level of efficacy for quitting⁴⁶, what would be the best type of counselling and support for pregnant Aboriginal and Torres Strait Islander smokers, and whether supporting health professional and clinicians to better deliver smoking cessation assistance will improve outcomes in smoking for these vulnerable target groups.

Acknowledgements

Gillian Gould is in receipt of a postgraduate scholarship for Indigenous health research from the National Health and Medical Research Council (Australia) and the National Heart Foundation (Australia).

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Patient-centred tobacco management

COMMENTARY

Patient-centred tobacco management

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Abstract

Patient-centred tobacco management approaches tobacco smoking as a chronic disease and can be offered to all smokers irrespective of their attitude to quitting. Maintaining a long-term relationship with smokers enables the adoption of flexible solutions and shared goals. It is argued that patient-centred tobacco management potentially heightens the chances of eventual abstinence for smokers who are unable, or not yet ready to quit. [Gould, GS. Patient-centred tobacco management. Drug Alcohol Rev 2013]

Key words: smoking cessation, nicotine dependence, harm reduction, chronic disease, patient-centred care.

Tobacco smoking is the largest preventable cause of death and disease in Australia [1], with 50% of smokers dying from their smoking [2], and higher risks for smokers with mental health diagnoses [3]. Every year a person who continues to smoke past 40 years reduces his or her lifespan by three months [2]. Despite this, tobacco is not well managed in practice, with a US study showing as few as 4% of smokers receive medication compared with 57% for hypertension and 46% for diabetes [4]. Low success rates of 25–30% even with the best treatment [5] may be a disincentive for the clinician and patient [6]. This paper aims to reframe cessation interventions within a long-term management approach, akin to management strategies for other chronic diseases [7].

A patient-centred tobacco management (PCTM) approach is proposed based on the premise that tobacco smoking is a chronic disease defined by ‘illnesses that are prolonged in duration, do not often resolve spontaneously, and are rarely cured completely’ [8]. While smoking starts as a lifestyle choice, secondary dependence and tertiary health issues soon compound smoking risks. The majority of smokers quit unaided [9]: these constitute a higher proportion of younger smokers and those of moderate-high socioeconomic

status [10]. Successful quitters in general are from less disadvantaged backgrounds [11]. This leaves a widening health inequality gap for smokers from low socio-economic status groups [11], Aboriginal and Torres Strait Islander peoples [12], prisoners [13] and smokers with co-morbidities [14]. Such sub-populations continue to experience very high rates of smoking [15]. The present paper argues that practitioners need to adopt a new approach to the provision of smoking interventions among smokers who are unable or not yet ready to quit.

Over the years tobacco smoking has been redefined as a medical problem mainly due to the serious impact of smoking on health [16]. While some reject the medicalisation of smoking cessation [9], medical treatment enables cessation for those otherwise unable to do so, and is unlikely to deter the 69% who choose to quit ‘cold turkey’ [10]. Treating smoking as a chronic disease potentially shifts clinician and patient expectations in a favourable direction. This is especially relevant for dependent smokers who, by definition, continue to smoke despite significant social, financial and health consequences. Clinicians treating other chronic diseases do not lose interest in helping their patients, for example those with hypertension or

Box 1. *Components of PTCM.*

1. Assessing the disease and illness of tobacco smoking and its sequelae.
2. Integrating the assessment with the understanding of the whole person and their smoking history.
3. Finding common ground between clinician and patient and developing an agreed tobacco management plan.
4. Incorporating both prevention and health promotion for tobacco smoking and allied lifestyle factors, such as addressing excessive alcohol use.
5. Building a long-term relationship between the clinician and patient, recognising that the management of smoking may be a longstanding challenge, requiring flexible solutions and repeated attempts.
6. Allocating resources realistically depending on the capacity of the clinician to provide, for example, longer consultations.

diabetes, who may not respond readily to treatment. Similarly patients with chronic diseases take a long-term view and usually work in partnership with their health provider to achieve better management.

Patient-centred approaches are becoming widely used in medical practice [17], underlie the principles of national Australian chronic care programs [18] and are recommended throughout medical training [19]. Patient-centred medicine is defined in a recent Cochrane review as a ‘philosophy of care that encourages: (i) shared control of the consultation, decisions about interventions or management of the health problems with the patient; and/or (ii) a focus in the consultation on the patient as a whole person who has individual preferences situated within social contexts’ [20]. The emphasis is reorientated away from the clinician’s to the patient’s needs and concerns [21] and improves patient satisfaction [22].

The patient-centred method according to Stewart *et al.* covers six components [23]. Box 1 applies these components to PCTM.

In PCTM the practitioner’s role is to assist the smoker to outline, then achieve, their tobacco management goals. It is always preferable for a smoker to quit smoking permanently as soon as possible: a goal not necessarily feasible for all smokers. The practitioner’s objective of abstinence, held as best practice, may initially take second place for the smoker who is unable or unwilling to quit. In time shared goals are addressed, as the clinician continues to encourage the patient to make healthier choices.

The PCTM approach may be well suited to many smokers with high levels of nicotine dependence or those from sub-populations with very high rates of smoking. The PCTM approach is appropriate for smokers irrespective of their motivational ‘stage’ [24]: the patient need not be ‘ready’ to change nor hold any specific attitudes other than wanting or at least agreeing to manage their smoking better. Offering treatment impacts the patient’s motivational system [25]. When faced with an offer of support, even patients who were not thinking about quitting respond positively [26].

The patient’s tobacco management goals may vary along a spectrum. Potential goals are outlined in Table 1 (not recommended in pregnancy or lactation). There is growing evidence that harm reduction strategies are effective in leading to eventual abstinence [28], although the degree of health benefits remain uncertain [28].

The patient’s reasons for entering into a PCTM program primarily include concerns about health and the financial cost of cigarettes, with many smokers already trying to reduce consumption, even if not ready to quit. While motivation may be discussed there is to need to weigh up the pros and cons of quitting, nor adhere to any mnemonics or structured interviewing. For PCTM simply start wherever the patient is at according to the potential spectrum of goals (Table 1), and adjust the approach accordingly. It is helpful to record previous quit attempts, cigarettes per day and the time-to-first-cigarette, which is the most sensitive indicator of dependence [39].

Best practice is to offer behavioural support and pharmacotherapy [40] as part of a holistic PCTM approach. A combination of behavioural support and medication increases the chances of successful cessation by 70–100% [5]. Smokers who have previous failed attempts may have lost confidence in their ability to quit [41], yet be willing to try pre-abstinence therapy. Regular follow-up increases the patient’s chance of success: more intensive approaches are advantageous [5,40], and go with the territory of chronic disease management. The approach gives opportunities to address co-morbid drug, alcohol and mental health problems.

First-line pharmacotherapies in Australia are nicotine replacement therapy, varenicline or bupropion [42]. The long-term use of NRT or varenicline is feasible. Although in Australia most patients can only get one 12-week course per year on the subsidised Pharmaceutical Benefits Scheme (PBS), Aboriginal and Torres Strait Islander patients are eligible for two courses. Other countries, such as the UK and New Zealand may not have these restrictions. In Australia,

Table 1. Spectrum of goals for PCTM and evidence

PCTM goal	Rationale	Evidence	Effect (Authors, year)
Temporary abstinence	Smoking inconvenient or prohibited: with non-smokers, in smoke-free spaces, travelling, at work, or when hospitalised or incarcerated.	Smokers who use NRT for temporary abstinence have an increased propensity to quit [27].	Quitting associated with NRT use at work (OR 2.39; CI 1.05–5.47; $P < 0.05$); at home (OR 2.41; CI 1.46–4.00; $P < 0.001$); in ‘other situations’ (OR 2.39; CI 1.10–5.21; $P < 0.01$) (Beard <i>et al.</i> , 2013)
Reduced tobacco consumption	Pharmacotherapy to safely reduce and avoid compensatory smoking and elevated CO levels [28,29], or long-term reduction [30].	NRT to reduce smoking associated with a higher likelihood of quitting compared with reducing unaided [31].	Quit attempts in those reducing with NRT compared with reducing without NRT (OR 3.23; CI 1.49–7.01; $P < 0.01$) (Beard <i>et al.</i> , 2010)
Long-term approach to abstinence	CDTQ over 6 m or harm reduction over extended period [30,32], eventually achieving abstinence [33].	Gradual no less effective than abrupt cessation [34]. CDTQ doubles chances of quitting [33].	Sustained abstinence NRT 6–18 m compared placebo (RR 2.06; 95% CI 1.34–3.15) (Moore <i>et al.</i> , 2009)
Prepare to quit with pre-abstinence pharmacotherapy (NRT, varenicline or bupropion)	Pre-abstinence treatment eases smoker into quitting; allows NRT titration to avoid withdrawal, attenuates smoking reinforcement [35]. Usually quit during 2nd week. Consider for those not ready to quit.	NRT/varenicline associated with increased quit attempts in smokers not currently trying to quit [36,37]. Pharmacologic smoking-reduction interventions significantly increased long-term abstinence in those not ready to quit [38].	Efficacy of pharmacotherapy in smokers ‘not ready’ (OR 2.33, 95% CI 1.43 to 3.79) (Asfar <i>et al.</i> , 2011)

CDTQ, cut-down-to-quit; CI, confidence interval; CO, carbon monoxide; m, months; NRT, nicotine replacement therapy; OR, odds ratio; PCTM, patient-centred tobacco management; RR, relative risk.

varenicline can be prescribed for an extended course of 24 weeks providing the patient is abstinent at the end of the 12-week course. However patients can opt to purchase extended supplies of bupropion and varenicline on a private prescription, which may be cheaper than continuing to smoke, and NRT is available at many retail outlets.

Dosages of NRT should be titrated to the level of tobacco consumption using the Bittoun algorithm, based on pharmacokinetic evidence that many smokers do not receive sufficient nicotine replacement from a single NRT patch [43]. Heavier smokers and those with a short time-to-first-cigarette require increased dosage of nicotine replacement. The use of combined oral and transdermal forms of NRT are useful for smokers who have break through cravings [44]. Although not routinely used other medications can be combined such as NRT with either bupropion [45] or varenicline [46,47] if monotherapy is not successful.

A smokerlyser meter to measure exhaled carbon monoxide (CO) is recommended [48] and makes the

PCTM more precise. CO readings should be recorded at every visit. As treatment progresses one would like to see:

- CO decreasing as pharmacotherapy is commenced.
- CO reductions concordant with reduced tobacco consumption.
- As time-to-first-cigarette increases, CO should decrease.
- CO of 6 or less ppm 24 h after smoking abstinence

Patients are motivated by serial reductions in CO readings [49], and give feedback that the smokerlyser helps them keep honest about their smoking. The test provides a focus to discuss successes and challenges. Those with higher CO readings require higher doses of NRT or combined therapy even if the number of cigarettes smoked may be relatively low, depending on their smoking topography [50].

Smoking cannabis raises CO readings. If the patient does not want to stop smoking cannabis, they should at

Box 2. *PCTM case study.*

Maree*, aged 69, smoked 35 CPD and has had >12 quit attempts. She tried NRT, varenicline (not tolerated), hypnosis, acupuncture, self-help materials and a health farm. The longest abstinence was 2 weeks, 20 years ago. She states: 'I want to achieve this [quitting] more than anything in my life'. She has COPD, osteoporosis and is on anti-depressants. She has been consulting with me as a Tobacco Treatment Specialist for over a year. At the first visit with Heaviness of Smoking Index of 6, she is very dependent. I commenced one NRT patch instructing her to increase to two patches after a week. CO reduced from an initial reading of 38 ppm to 21 ppm when smoking about 10 CPD on one patch, then to 19 ppm with four CPD on two patches. I suggested she add an oral form of NRT, but these caused hiccups. A few times she discontinued treatment and went back to smoking 35 CPD after social situations, and on holiday. A return to smoking worsens her COPD. The main challenge is to encourage Maree to persist with NRT and emphasise that smoking <5 cigarettes on two patches is preferable and less damaging than smoking 35 CPD.

Maree now believes she is self-sabotaging her progress and asks to see a psychologist. A psychological assessment reveals significant levels of anxiety, but few depressive symptoms. Adding psychosocial mood management to smoking cessation interventions is useful for smokers with current or past depression to increase long-term cessation [52]. Another option is to trial bupropion (replacing her current anti-depressant) in combination with NRT. Maree is almost there, now only smoking two to three per day with her most recent CO reading down to 13 ppm on two patches and nicotine oral spray.

*not real name. CO, carbon monoxide; COPD, chronic obstructive pulmonary disease; CPD, cigarettes per day; NRT, nicotine replacement therapy.

least stop mulling tobacco with it, as part of their PCTM plan. Once tobacco management is underway, many patients opt to reduce their cannabis use [51].

A case study (Box 2) illustrates some of the PCTM principals: a long-term relationship with a smoker who, despite high motivation and significant chronic disease, finds it challenging to achieve abstinence. The case illustrates the effective use of serial CO readings to monitor the harm reducing strategy of cutting down consumption on NRT.

Potential barriers in Australia to the implementation of PCTM include for the patient: the unsubsidised cost of oral NRT or prolonged pharmacotherapy once the PBS entitlements are used up; maintaining long-term motivation; and access to a health provider willing to negotiate harm reduction. Barriers for the practitioner include: the lack of PBS support for off-label prescribing, increased dosage or combination therapy; and tobacco use not qualifying as a chronic disease or a mental health problem for Medicare Extended Primary Care items. An approach to the PBS authority to widen the prescribing regulations for NRT is warranted.

It is pragmatic in Australia to incorporate PCTM into the usual primary care of other chronic diseases through: age-related health checks, General Practitioner Management Plans and Mental Health Care Plans, along with the institution of recall systems for those continuing to smoke.

Research is required to pilot the PCTM approach with longitudinal follow-up of those choosing one of the PCTM goals (Table 1), to ascertain abstinence or harm reduction outcomes, with the use of biomarkers to determine improved health status. Studies could also assess clinician satisfaction.

Summary

PCTM approaches tobacco smoking as a chronic disease, and can be offered to all smokers irrespective of their attitude to quitting. PCTM aims to assist patients to manage their smoking according to their own agenda, along a spectrum from not smoking when inconvenient, to harm minimisation or preparing to quit. Offering therapy to smokers increases their chances of quitting, even if they are unmotivated. Pre-abstinence pharmacotherapy and the use of a CO meter both aid management. Maintaining a long-term relationship enables the adoption of flexible solutions and shared goals. PCTM potentially heightens the chances of eventual abstinence for smokers who are unable or unwilling to quit, and supports practitioners' engagement with their patients who smoke.

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Making "Blow Away The Smokes" DVD

Making *Blow Away the Smokes* DVD for Indigenous smokers—the journey and lessons learnt

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Abstract

Objective: To describe the process of making a smoking cessation DVD for rural and regional Aboriginal smokers on the North Coast NSW, from concept through to production and distribution.

Background: Indigenous smoking prevalence is high in Northern NSW. Audio-visual messages are useful for Aboriginal health promotion. The aim of the *Blow Away The Smokes* DVD was to provide a culturally appropriate self-help resource to be viewed at home, or with an Aboriginal Health Worker.

Methods: Community consultation occurred through the No Smokes North Coast Steering Committee, and Arts/Media subcommittee, both included Indigenous community representatives. A working party was formed with a smoking cessation expert, Aboriginal project officers and a media expert to develop a brief and tender process to find a suitable producer.

The content of the DVD was based on consultation with the local Aboriginal community and stakeholders as recommended by Brady's report *Vaccinating with Videos* and evidence from previous research. Script development was a collaborative process between the producer and the medical director, with feedback from Aboriginal community representatives. Salient anti-tobacco and cessation messages were designed to be positive, re-enforcing and build efficacy. A range of trusted community members, Elders, Indigenous role models, ex-smoking mentors and experts presented the messages. Animated sections were included for visual impact: to entertain, educate and change the pace. The narratives of people's own stories and community dialogues were unscripted, allowing for spontaneity and a documentary feel. The DVD contains an extra feature for maternal smokers and a facilitated version for groups viewing with a health professional.

Filming occurred over a 2 week period with strong input from Aboriginal community members across the mid-North Coast. The DVD was pre-tested with a convenience sample of nineteen community and health professionals. The survey instrument was adapted from a questionnaire used to measure Indigenous responses to TV anti-smoking advertisements.

Results: The DVD was highly rated on scales measuring believability, acceptability, relevance, cultural suitability and effectiveness. The DVD was launched in December 2011 and distributed across the North Coast NSW through Aboriginal Medical Services and community organisations, and a dedicated web site. The web site received 300,000 hits in the first 6 months of it going live. The DVD has received favourable reviews from both professionals and community members across Australia.

Conclusion: *Blow Away The Smokes* is a unique and effective health promotion product, which has been developed co-operatively with the local Aboriginal community and is suitable for rural and regional smokers to educate, inform, inspire and support smokers to quit.

Recommendations: When funding the development of Indigenous health promotion media adequate resources and timelines are required, including a substantial evaluation phase. A network of industry mentors to support development and a central depository for distribution of high quality resources are recommended. *Blow Away The Smokes* DVD is worthy of more formal evaluation and distribution through the Quitline so it can be made available to all Indigenous smokers in Australia.

Objective

To describe the process of making a smoking cessation DVD for rural and regional Aboriginal smokers on the North Coast NSW, from concept through to production and distribution, and reflect on implications for practice and policy.

Background

Indigenous smoking is the most significant remediable health risk factor affecting Indigenous Australians, and represents 12% of their burden of disease.¹ Smoking prevalence in Indigenous people is historically higher on the mid North Coast of NSW than the national average for Indigenous Australians, with rates of 59.5% for adult Aboriginal people² and 62% for Indigenous pregnant women³, compared to the national average for Indigenous Australians of 47%⁴ for adults and 52% for pregnant women respectively.⁵ Indigenous smoking rates are approximately triple those in the general Australian population, and in some remote areas, even higher. There has been little sign of a decrease in Indigenous smoking prevalence over the last 10 years, and the question is raised as to whether existing anti-tobacco messages are having an impact among Indigenous smokers.⁶ As part of a comprehensive tobacco control and smoking cessation program for the mid North Coast NSW a DVD was made to potentially give a wide reach for anti-tobacco and cessation messages.

Audio-visual messages are considered useful for Aboriginal health promotion.⁷ There has been a recent upsurge in the use of media in Indigenous health promotion and story telling, with many media projects specifically tackling Indigenous smoking being funded by the Tackling Indigenous Tobacco program.⁸ Recently the International Day of the World's Indigenous People 2012 was marked by the theme "Indigenous Media, Empowering Indigenous Voices" supporting media based initiatives aimed at empowering Indigenous communities.⁹ Aboriginal media strategies have not, however, been discussed by any major Australian government report and there have been few evaluations of locally made productions.^{6,7}

The role of the media in health promotion is fourfold to:

- inform people about negative effects of unhealthy behaviours and correct misconceptions
- motivate people to adopt healthy behaviours using emotional arousal and stimulate word-of-mouth communications on the issue
- advocate for change by creating a legitimate agenda for the issue and increasing community awareness
- direct people to where to get help.¹⁰

Mass media health promotion is designed indirectly to influence the climate of opinion, create shifts in community awareness but may not necessarily promote immediate changes in health behaviour.¹¹ It is considered vital to "get the message right" by producing materials with the right language, tone, content and style that can achieve the message objectives and suit the target audiences' background and lifestyle.¹⁰ In the case of electronic media, the choice of presenters is of import and can be aligned with their professional expertise, personal attractiveness or similarity to the target audience, in order to maximise message acceptance.¹⁰

Brady considers that audio-visual media are most successful for Indigenous people when integrated into programs, ie audio-visual plus personal contact.⁷ Tailored videos (designed to appeal to a specific target group) were found to be effective for promoting smoking cessation in white smokers in five randomised controlled trials in primary care settings in the USA.¹² A collaborative process is recommended for content development taking into account different perspectives.¹² Local participation in the production of media-related resources has a positive influence on the level of acceptance of media messages.⁷

However, conversely, in Alaskan Native pregnant women, a smoking cessation video was found to be ineffective due to poor uptake and acceptability.¹³

The aim of the *Blow Away The Smokes* DVD,¹⁴ was thus to provide a sustainable, culturally-appropriate, evidence-based, self-help resource to be viewed at home, or with an Aboriginal Health Worker (AHW) in a primary care setting.

Methods

Funding application

Application was made to the Department of Health and Ageing through the Indigenous Tobacco Control Initiative in 2009, for a comprehensive tobacco control and cessation program called No Smokes North Coast by a partnership of organisations on the mid North Coast of NSW. The DVD represented about one seventh of the overall budget. The funding was restricted to two years and was not to be used for research.

Formative research

In preparation for the project I attended a pre-conference workshop on the development of tobacco control mass media at the Asia Pacific Association for the Control of Tobacco in October 2010. In the making of the *Blow Away The Smokes* DVD we used principles from the Persuasive Health Message Framework¹⁵, the toolkit from the Global Dialogue for Effective Stop Smoking Campaigns¹⁶, Aboriginal Health Promotion guidelines¹⁷, and Brady's recommendations from *Vaccinating with Videos*.⁷ It is important to involve the target audience in the developmental stage and identify potential barriers and concerns of the community concerned.¹⁶ Eakin et al proposed several formative steps in developing tailored DVDs: determining goals and objectives, community consultation, drafting the script, selecting the cast, filming and editing.¹² The journey of the *Blow Away The Smokes* DVD production is described accordingly.

Step 1—Goals and objectives

The primary goals for the DVD were laid down in the funding application. The aim was to produce an educational resource that would also give practical help for those quitting smoking. We aimed to feature smoking cessation stories from real people, to be presented by one or more Indigenous role models and locals from the Aboriginal community and have the DVD made by a professional production team. The DVD was to be modelled on the successful Health Smart DVD for smoking cessation¹⁸, but contain further elements as relevant to the target audience with a high motivational tone.

Step 2—Community consultation phases

Community consultation occurred through the No Smokes North Coast (NSNC) Steering Committee, and a specially formed Arts/Media subcommittee. The Steering Committee consisted of both Indigenous and non-indigenous representatives from the health, community and educational sectors. Initially a quality assurance workshop was held with AHWs from local Aboriginal Community Controlled Health Organisations (ACCHOs) and NSNC project staff in January 2011. Participants were canvassed about the aims and content of the DVD. They considered that the DVD should:

- Follow culturally appropriate designs, images and story lines
- Target specific audiences which were the focus of the NSNC project—ie youth, adults and Elders and pregnant smokers
- Be inspirational and educational

- Act as a training medium for practitioners of the NSNC Give Up The Smokes smoking cessation programs
- Have some practical and interactive parts to engage participation
- There were some concerns over potential stereotyping of Aboriginal people in any artwork or animation

A sub-committee for Arts/Media under the NSNC project was formed. This sub-committee's role involved advising on and supporting the development of NSNC arts and media-based resources to ensure that all content was culturally acceptable, educationally appropriate and supported NSNC outcomes to reduce the impact of tobacco use amongst Aboriginal and Torres Strait Islander people in the Mid and North Coast of NSW. Members included Area Health Service managers and health promotion staff, administrators, managers and AHWs from ACCHOs, NSNC director and project staff, and community Elders.

A survey was conducted to provide opportunity for further input from the Steering Committee as to what elements should be included in the DVD, which health and community people should feature in it, and how the DVD should be used. Information from the community consultation and the survey was directed to the Arts/Media sub-committee to assist in all stages from developing the brief, tender process, development, production and distribution of the *Blow Away the Smokes* DVD.

Step 3a–The brief and engaging a production team

A DVD working party was formed with a smoking cessation expert (the medical director of the NSNC program), Aboriginal project officers and a media industry expert to develop a brief and the tender process to find a suitable producer. The tender was advertised in local, regional and state newspapers. The tender process was stringent and went from an initial expression of interest through several stages. Applicants were short-listed and then required to submit a 'treatment' (an outline about how they would develop the DVD, the content and engage the local communities, see Box 1).

Box 1 Treatment for Tender Process

Please could you address how you would accomplish the following?

1. Engage the local Aboriginal community in the making of this DVD
2. Address the issue of smoking for Aboriginal smokers and their families
3. Promote smoking cessation and smoke-free culture for Aboriginal smokers and their households
4. Promote the use of evidence-based therapies (eg nicotine replacement therapy or nicotine patches) to Aboriginal smokers wanting to quit smoking
5. A suitable format and story line useful for the target audience
6. Development of other formats of the film to use as a
 - a. Facilitated film
 - b. Resource for youth
 - c. Resource for pregnant smokers and their families
7. Budget within \$65,000 for making and distributing the DVD. The budget and costing has to include making copies and a distribution strategy. We would envisage the distribution to be primarily through service providers who provide services to the Aboriginal community on the North and mid North Coasts.

There was a further selection process through an interview (see Box 2 for interview questions), with a selection panel consisting of the DVD working party and other Aboriginal staff. The successful

applicant was chosen for his ability to produce a high quality product, engage with the Aboriginal community and use an Aboriginal crew where possible.

Box 2 Interview Questions

1. Please tell us what interested you in applying to make this DVD?
2. We would like to know how you would go about engaging Aboriginal communities for this Project:
 - a. What is your previous experience in engaging Aboriginal communities in filmmaking?
 - b. How would you go about engaging various areas of Aboriginal communities across two nations (Gumbayngirr and Bundjalung)?
3. How would you propose to work as a team with subject matter experts (e.g. tobacco and health promotion experts) who are members of our partner organisations?
4. What testing strategy would you adopt to demonstrate that you have developed a flexible and effective resource?
5. a. What is your timeframe from start to finish of the project? b. How would you go about the process of employing Aboriginal people, including recruiting Aboriginal crew, and how would this affect your timeframe?
6. Sometimes in Aboriginal communities, things don't always run smoothly. Could you give us an example of a challenging situation that you have dealt with in a similar situation?
7. Do you have any questions?

Step 3b–Developing the script

The overall content of the DVD was based on consultation with the local Aboriginal community and stakeholders who were involved from early stages as recommended by Brady⁷, and evidence-based guidelines for smoking cessation.^{19,20} Script development was a collaborative process between the producer and the medical director, with feedback from Aboriginal community representatives and the Arts/Media committee. Salient anti-tobacco and cessation messages were designed to be positive, reinforcing and build efficacy.^{15,21} A range of trusted community members, Elders, Indigenous role models, ex-smoking mentors and experts presented the messages. Animated sections were included for visual impact: to entertain, educate and change the pace. The narratives of people's stories and community dialogues were unscripted, allowing for spontaneity and a documentary feel. Street interviews used a vox pop (voice of the people) style. The producer developed storyboards for the animated sections and the team worked closely through the pre-production phase.

Step 4–Selecting Cast

The successful applicant as part of his 'treatment' had suggested the Aboriginal presenter, Alec Doomadgee, and a sample video footage had been submitted as part of the tender process. This allowed the selection committee to have a feel for how the DVD would be designed and how the presenter would perform. Suitable local cast were suggested by several sources: the Aboriginal production manager, the NSNC Aboriginal project officer, the medical director and the producer through knowledge of and consultations with the mid North Coast Aboriginal communities from Grafton, Coffs Harbour, Nambucca, Bowraville and Macksville.

Step 5–Filming

Filming was planned for and occurred over a two-week period with strong input from Aboriginal community members across the mid-North Coast. Some flexibility of timing allowed for potential

disruption such as the possibility of family or community sorry business (the death of an Aboriginal person). The producer/director liaised with the medical director who also attended various shootings of health professionals to ensure the medical and health messages stayed on track.

Step 6—Editing and post-production

Several rough cuts of the DVD and animation sections were viewed and critiqued by the Arts/Media committee and the Steering Committee members, and adjustments made. Samplers of the DVD were also sent to Dr Tom Calma (National Coordinator Tackling Indigenous Smoking) and smoking cessation experts for review at critical points. The final cuts were reviewed in detail and allowance was made for refinements to the messages portrayed especially by health personnel, as it was considered vital that the anti-smoking and health messages would not conflict or cause confusion. It was necessary to trim the timing of several scenes to keep up interest.

Pre-test survey

For quality assurance, the final cut of the *Blow Away The Smokes* DVD was pre-tested with a convenience sample of nineteen community and health professionals. The questionnaire was adapted from a survey instrument used to measure responses to TV anti-smoking advertisements, which had been validated for Indigenous smokers.²²

The questionnaire used 5 point Likert scales to measure the extent to which participants considered the DVD:

- was easy to 'Understand'
- was 'Believable'
- was 'Relevant' to them or their family
- made them 'Stop and Think'
- made them feel 'Uncomfortable'
- made them more 'Concerned' about their smoking
- made them more likely try to quit (Motivated)
- provided 'Good Reasons' to quit smoking
- taught them something new (New Information)
- was an 'Effective' anti-smoking DVD
- would make them likely to talk to someone else about the DVD (Discuss)
- was 'Culturally Suitable' for Aboriginal people
- would make someone want to 'Seek Help' to give up smoking

In addition to the Likert responses of 'strongly disagree', 'slightly disagree', 'neither agree nor disagree', 'slightly agree' and 'strongly agree', there was an option to nominate 'not applicable' as the sample included non-smokers. Viewers were asked a series of open-ended questions on what they learnt from watching the DVD, which parts were most motivating, and which they liked best, any content that was difficult to follow, and general comments. Responses were anonymous.

In the analysis, the closed responses were recoded into binary responses. Ratings of slightly agree and strongly agree were classified as positive responses, and ratings of 'neither agree nor disagree', 'slightly disagree' and 'strongly disagree' were classified as neutral or negative responses. As in Stewart's study

component analysis was performed yielding two composite scales and several stand-alone items.²² The first scale, Message Acceptance, comprised of the items Understand, Believable and Relevant. The second scale, Personalised Effectiveness, comprised of Stop and Think, Concerned, Motivated and Good Reasons. Results from the composite scales are defined in the pre-test as positive (where all sub-categories were consistently positive); partially positive where there was a combination of positive responses for some sub-categories and neutral or negative, for others; or wholly negative. Six single-item outcomes were New Information, Uncomfortable, Effective, Discuss, Culturally Suitable, and Seek Help.

Content of *Blow Away the Smokes* DVD and distribution

In the *Blow Away the Smokes* DVD, presenter Alec Doomadgee meets with smokers, ex-smokers and both Indigenous and non-Indigenous health professionals to talk about the effects of smoking on Aboriginal and Torres Strait Islander people, and how to quit smoking cigarettes. He listens to people's stories of success and struggle with cigarette smoking, and the benefits many have got from quitting smoking, including interviewing role models such as sports people, a musician, and community Elders. Along the way, Alec finds out some of the support, methods and medications available to help Aboriginal and Torres Strait Islander people "blow away the smokes". Sections cover the cultural use and history of smoking, what is in a cigarette, how people get addicted to nicotine, the use of nicotine replacement therapy and other medications, the physical and emotional consequences of tobacco-related illnesses and death for the community and its effect on Elders, maternal smokers, babies and children, and how to avoid relapse. The tone is varied but humour is used in parts to lighten the serious topic. The DVD has a supplementary feature showing extended interviews with Indigenous community members and Elders and an interview about smoking in pregnancy with Indigenous obstetrician Dr Marilyn Clarke. The extended features also include a facilitated version of the DVD for an Aboriginal Health Worker or other health professional to watch the DVD with others in chaptered sections, with suggested 'trigger' questions as discussion points for a yarn up at the end of each chapter.

The DVD was launched in December 2011 and distributed over the North Coast of NSW (from Tweed Heads to Scotts Head) by the producer who personally delivering over 3000 copies to community and health facilities, such as Aboriginal Medical Services, Area Health Services and community organisations with Aboriginal clientele. A dedicated Blow Away The Smokes web site was developed which received 300,000 hits in the first 6 months of going live in December 2011.¹⁴ The DVD is available for free download. The DVD has received favourable reviews from the Australian Indigenous Health InfoNet²³ and health professionals across Australia.

Results

Pre-test survey

The 19 participants (16 female) in the pre-test survey of the *Blow Away the Smokes* DVD were a convenience sample from the Arts/Media subcommittee of NSNC and attendees at train the trainer sessions for the Aboriginal Give Up the Smokes Quit Café. Participants were from Coffs Harbour, Grafton, Nambucca Heads, Kempsey and Inverell. Thirteen identified as Aboriginal, one as Aboriginal and Torres Strait Islander, and 5 as neither. Age range of the participants was 21 to 58. 26.3% (5/19) were daily smokers, 31.6% (6/19) ex-smokers and 42.1% (8/19) reported to have never smoked

Table 1 summarises the survey results. The DVD rated very highly on composite scales and items measuring Message Acceptance, New Information, Effective, Discuss, Cultural Suitability, and Seek Help. Personalised Effectiveness was affected by smoking status. Most of the smokers (5 out of 6 smokers) indicating positive responses to the composite scale, and the majority of the non and ex-smokers at least indicated a partially positive response. As this scale consisted of items such as being concerned about personal smoking behaviour, it was less relevant to those not currently smoking. Those responding not applicable or not filling out the question were excluded from the analysis. Those

respondents who were smokers were more likely to feel uncomfortable during the DVD; this was a proxy question for cognitive dissonance regarding their smoking.

Table 1 Summary of results from pre-test survey of *Blow Away The Smokes* DVD

Scales and items	Positive response	Partially positive	Neutral or negative response	Comments
Message acceptance	89% (16/18)	11% (2/18)	0%	
Personalised effectiveness	33% (6/18)	61% (11/18)	6% (1/18)	This composite dependent on smoking status with 5/6 of the positive responses from smokers
New information	88% (15/17)		12% (2/17)	
Uncomfortable	25% (4/16)		75% (12/16)	Dependent on smoking status—all those with a positive response were smokers, and only one smoker and all non and ex-smokers responded negatively (ie did not feel uncomfortable viewing DVD)
Effective	100% (17/17)		0%	
Discuss	100% (17/17)		0%	
Culturally suitable	100% (17/17)		0%	
Seek help	100% (17/17)		0%	

Table 2 Summaries of some of the open-ended responses

Responses to open-ended questions
<p>Lessons learned from watching the DVD</p> <p>“The different chemicals in a cigarette and the difficulties people face quitting”</p> <p>“How very dangerous it is”</p> <p>“It’s not easy to quit, but with help out there you can quit, Very informative.”</p> <p>“There are more people than you know that struggle with it, but a lot of them have overcome it”</p> <p>“The strength of those people who have quit. The major health issues that develop and the range of support available to stop smoking”</p> <p>“The importance of support while giving up smoking. Smoking is not a part of Aboriginal culture and its time to QUIT”</p>
<p>The most motivating part of the DVD</p> <p>“The peoples real stories and identifying their triggers”</p> <p>“Definitely the pregnancy part”</p> <p>“Seeing my own mob talking about the dangers of smoking and ways of quitting”</p> <p>“Talking about the benefits of quitting”</p> <p>“The kids puppet show and the elders story”</p> <p>“Knowing how common smoking is—it was good to see successful ex-smokers. Encourages others to give up. Community effort emphasised benefit to health and family life”</p> <p>“How one of the men said he had a stroke because of smoking and all the health problems that can lead to death. Also where the footballers said how they can breathe better and are more active playing football. “</p> <p>“The young mother who said she’d had miscarriages that were related to smoking while pregnant. Also to see and know that there are indigenous people attempting and succeeding to give up. To see people that you know on the DVD inspires you to follow in their footsteps”</p> <p>“The fact that other people have achieved it with support”</p>

Which parts of the film did you like

“The humour in the cartoon. You can’t be too negative or people may be overwhelmed and feel that they cannot change their smoking behaviour”

“The elders telling their stories and the kids puppet show and the kids message”

“Recognising local elders and people spreading the message”

“Hearing other peoples stories and seeing them telling them”

“How it showed what NRT you can use (as a non smoker I didn’t know). Actually seeing them was appropriate for me so I know what to show people”

“The fact that it was straight up knowledgeable and the animated sections were very powerful”

“The whole film”

Other comments

“Video ‘tad’ too long”

“The DVD gets the message across in a very enjoyable informative way—brilliant”

“Put the DVD out in other communities”

“Very motivating”

“Hope this DVD is distributed widely”

“Great achievement”

Discussion

Viewers rating the *Blow Away The Smokes* DVD in the pre-test indicated that the resource was effective and suitable for the target audience on a number of scales including Message Acceptance, Effectiveness and Cultural Suitability. Open-ended responses revealed a plethora of positive viewpoints indicating the DVD was highly informative and motivational. It was not possible under the constraints of the funding to further evaluate the DVD or conduct any clinical trial.

Lessons learnt and implications for practice and policy

The lessons learnt from making the DVD were overall positive ones, they have been outlined below into two categories: success factors and primary challenges.

Success factors

- Consistent involvement of the Aboriginal communities and other key stakeholders
- Careful choice of production team
- Aboriginal production manager and presenter
- Adequate budget with contingency funding (overall approximately \$90,000 was spent)
- Combination of medical expertise, industry experts, cultural liaison and creative and cultural input
- Defined shooting schedule with flexibility
- Stereotypes avoided in the animation by animating the real characters of presenter Alec Doomadgee and the Aboriginal production manager Anne Louis

Primary challenges

- Development can be time-consuming
- There was a concern from the Arts/Media committee about naming medications which may contravene the Medicines Act but this was cleared by discussion with Medicines Australia who indicated the content was acceptable for educational use

- Requires equipment to be watched
- Can not be sure the DVD will be watched at home
- DVD fixed in content and can become dated
- Unable to evaluate impact of the DVD under this program funding with limited timeframe

A resource guide offering support for trainers and trainees in using the *Blow Away The Smokes* DVD could have potentially augmented the educational value of the resource for health professional training.

Implications for practice/policy

DVDs are a worthwhile Indigenous health promotion tool. They circumvent some of the concerns about low literacy levels in Indigenous and rural populations, act as ‘pamphlets of electronic media’, have the ability to raise sensitive issues for discussion, and can build on the tradition of story telling in Indigenous communities.⁷ There is a body of expertise from several sources starting to build that can assist in making culturally appropriate health DVDs. However a specific set of guidelines or a ‘how to’ guide for development of Indigenous health promotion DVDs would be of use to program managers and funding bodies, to lead those unfamiliar with the media through the steps required in successful production, with cautions about pitfalls to avoid. These guidelines could be generic covering a range of health topics. Consideration could be given to accompanying educational resources with a short trainer’s guide.

Although new electronic media such as DVDs and social media are becoming popularised, the evidence needs to keep abreast of these newer formats for health promotion and education tools, so best practice principles and evidence-base is developed. Media projects are not necessarily complete once the resource is developed. There is consequently a need for dedicated funding to specifically evaluate the impact of such media on the target audience, to measure both attitude and behaviour changes in the viewers, and also evaluate how service and health professionals are utilising the resources.

To adequately achieve the goal of producing effective new media resources and interventions and adequately evaluating them, community-based programs need to be of sufficiently long duration, preferably not less than 4-5 years. Establishing programs in Indigenous communities demands a necessary and often prolonged lead in time for community consultation, especially where the use of arts and media is concerned. We were very lucky when making our DVD that the process went smoothly during the filming. Had it been otherwise and there were disruptions such as sorry business, we may not have been able to achieve our goal.

Building up a network of media industry advisors and mentors for health DVDs could be an additional strategy. Without the accessibility to our industry mentor, Tony Wickert, we may have been struggling to choose the right producer/director, a positive factor that was critical to our success. We would like to see the *Blow Away The Smokes* DVD made available to all Indigenous smokers in Australia, perhaps through the Quitlines. A centralised depository of Indigenous health promotion resources would be an asset to aid dissemination and sharing of knowledge across Indigenous communities Australia-wide.

Conclusion

Blow Away The Smokes DVD is a unique and effective health promotion product, which has been developed co-operatively with the local Aboriginal community and is suitable for rural and regional smokers to educate, inform, inspire and support smokers to quit.

Summary of key recommendations

- Develop guidelines for media-based Indigenous health promotion
- Adequate funding and timelines for evaluation of resources

- Build up a network of media industry advisors and mentors
- Centralise availability of Indigenous health promotion resources
- Funding to make *Blow Away The Smokes* DVD available to all Indigenous smokers in Australia.

Acknowledgments

I would like to thank members of the Gumbanygirr, Bundjalung and Yaegl Aboriginal communities, and Elders from the Mid North Coast NSW, staff from ACCHO's and the Mid North Coast Local Health Network, including other individuals who made guest appearances, for their generous involvement in making the *Blow Away The Smokes* DVD. In addition the work could not have been completed without such a great team of film production staff, FiL Baker producer/director, Alec Doomadgee presenter, Anne Louis production manager, Adam Sebire on camera, David Knight animator, and NSNC project staff, Tony Wickert our industry mentor and other advisors. The Mid North Coast (NSW) Division of General Practice are acknowledged for their support as managers of the No Smokes North Coast project, and UNSW Rural Clinical School as project partners. Thanks also to Craig McLachlan, UNSW, for assistance with the pre-test analysis. The Department of Health and Ageing Indigenous Tobacco Control Initiative funded this work. The author is currently supported by a post-graduate scholarship for Indigenous health research from NHMRC (Australia) and National Heart Foundation (Australia) APP1039759.

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Re Eades Medical Journal of Australia letter 2013

An intensive smoking intervention for pregnant Aboriginal and Torres Strait Islander women: a randomised controlled trial

TO THE EDITOR: We comment on practical aspects of the approach to maternal Indigenous smoking raised in the study by Eades and colleagues.¹

Pregnant smokers face barriers to quitting; however, we believe some additional barriers are systemic,² including excessive caution in prescribing nicotine replacement therapy (NRT). Guidelines for maternal smoking cessation recommend an unassisted attempt before considering NRT.³ There is no agreed definition of a “failed quit attempt”, or for how long a pregnant woman should persist unaided before NRT is tried. In this study, two failed attempts were a prerequisite. In a practice setting, this may be overcautious; intermittent NRT is considered less hazardous than continued smoking in pregnancy.⁴ If a pregnant woman is unable to abstain for 2–3 days, an accelerated option of intermittent NRT should be considered, to keep up momentum with the quit attempt. The attendance rate dropped from 64% at 3–5 days to 35% at 7–10 days — perhaps lost opportunities for initiating pharmacotherapy. The article does not detail the type of NRT (oral or transdermal), dosage, duration of treatment, compliance rates, or the management of side effects. These aspects would be of interest to smoking cessation practitioners.

Although this trial was unsuccessful, it should not discourage health professionals from delivering intensive interventions to pregnant Indigenous smokers. NRT is most effective when prescribed by a cessation specialist or medical practitioner, rather than bought over the counter.⁵ Additionally, behavioural support should ideally be for 4–7 sessions.⁶ Until a trial includes this level of support, intensive approaches should not be discounted.

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If a pregnant woman is unable to abstain for 2–3 days, an accelerated option of intermittent NRT should be considered



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Acknowledgements: Gillian Gould receives a National Health and Medical Research Council training scholarship for Indigenous health research, cofunded by the National Heart Foundation, and has received grants from the Australian Government Department of Health and Ageing to develop Indigenous smoking cessation programs.

Competing interests: Andy McEwen has received travel funding, honoraria and consultancy payments from manufacturers of smoking cessation products (Pfizer, Novartis UK and GlaxoSmithKline Consumer Healthcare). He also receives payment for providing training to smoking cessation specialists, receives royalties from books on smoking cessation, and has a share in a patent for a nicotine-delivery device.

doi: 10.5694/mja12.11221

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IN REPLY: Although our trial¹ did not decrease quit rates with an intensive intervention, health professionals should continue to deliver appropriate intensive smoking interventions to pregnant Indigenous women.² Guidelines advise the exercise of caution with the use of nicotine replacement therapy (NRT) in pregnancy,³ given the lack of trial data supporting its use.⁴ A recent trial of NRT in pregnancy found similar rates of adverse pregnancy and birth outcomes among women who used NRT and those who did not.⁵ Our study recommended NRT after at least two attempts to quit without NRT. NRT gum was prescribed by the treating doctors, with a preference for intermittent doses rather than continuous low doses through the use of NRT patches, in line with current guidelines.³ Women were provided with a week's supply of NRT but, for reasons that were not clear, none

returned for repeat supplies. The frequency with which NRT was prescribed, provided and used by women was not recorded with sufficient accuracy to allow interpretation. No definite conclusions about the efficacy of NRT can be drawn from our study and further research is necessary.

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Acknowledgements: We acknowledge our coauthors in the original study: Mark Wenitong, Catherine D'Este, Conor Gilligan and Jessica Stewart.

Competing interests: No relevant disclosures.

doi: 10.5694/mja12.11298

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Re Thomas Medical Journal of Australia letter 2013

2008. A significant overall reduction in heavy smoking was observed with a corresponding increase in the proportion of light smoking.

This is an interesting epidemiological observation but it should not be misinterpreted as a public health achievement or as a desirable goal in itself. As Thomas rightly points out, reducing daily cigarette intake is not an effective harm reduction strategy.

Smokers who reduce their daily cigarette intake by more than 50% compensate by having deeper and more frequent puffs to maintain their nicotine levels, thereby neutralising any potential health benefit.² Even reducing smoking intensity to very low levels (1–4 cigarettes per day) carries substantial risks. Furthermore, there is no evidence to indicate that smoking reduction is associated with a subsequent increase in abstinence rates, unless medication is used.³

The most likely explanations for the reduction in smoking intensity in Indigenous communities are the rising cost of smoking and public health measures, although there are evidence gaps in the research.⁴ Smoking is still regarded as normal in Indigenous communities and there is scant evidence of a shift in attitudes to smoking.⁵ Under these circumstances, there is unlikely to be any benefit from reduced daily cigarette consumption in terms of health or abstinence rates.

The goal for clinicians, smokers and communities should always be complete smoking cessation, which has proven, sustained and substantial health benefits.

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Acknowledgements: Gillian Gould holds a postgraduate training scholarship for Indigenous health research from the National Health and Medical Research Council and the National Heart Foundation.

Competing interests: Colin Mendelsohn has received honoraria for teaching, consulting and travel from Pfizer and GlaxoSmithKline. He is on Pfizer's Champix Advisory Board and has served on GlaxoSmithKline's Nicotine Replacement Therapy Expert Panel.

doi: 10.5694/mja12.11693

Changes in smoking intensity among Aboriginal and Torres Strait Islander people, 1994–2008

TO THE EDITOR: The recent study by Thomas¹ documents the change in smoking intensity of Australian Indigenous people between 1994 and

“ self-regulation is failing to prevent exposure of children and young people to alcohol advertising ”

Pierce et al



“ The goal for clinicians, smokers and communities should always be complete smoking cessation ”

Mendelsohn et al

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IN REPLY: Nowhere in my article do I promote reducing the number of cigarettes patients smoke, rather than smoking cessation, as a goal for clinicians. Mendelsohn and Gould have created their own straw man with which to argue.

I explain in the third paragraph of the Discussion that the population changes in smoking intensity may have been caused by previously heavy smokers cutting down (with only modest health benefits) or by younger cohorts never becoming heavy smokers (which will lead to greater health benefits).¹ There are early signs of the more important latter change occurring, as has been shown in the United States with more detailed datasets.²

Mendelsohn and Gould are wrong to dismiss these changes as mere epidemiological curiosity. They are a public health achievement, probably caused by the public health measures that I described and which they acknowledge. Together with previously reported trends in smoking behaviour, these changes should lead to lower rates of sickness and early death due to smoking in Aboriginal and Torres Strait Islander people.

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Acknowledgements: I am supported by a National Heart Foundation Career Development Award Fellowship.

Competing interests: No relevant disclosures.

doi: 10.5694/mja12.11839

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Re Berlin Letter British Medical Journal Online 2014

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Helping doctors make better decisions

Nicotine patches in pregnant smokers: randomised, placebo controlled, multicentre trial of efficacy

Unadjusted conversion ratio underestimates nicotine dose

7 May 2014

The study of the nicotine patch in pregnancy by Berlin (1) was well conducted and powered but did not find increased smoking cessation rates compared to placebo control, in spite of attempting to correct for the inadequate nicotine dosing and poor compliance seen in previous studies.

Apart from the issues raised by the authors and the accompanying editorial, (2) one possible explanation for the disappointing result is the failure to allow for the increased rate of nicotine and cotinine metabolism in pregnancy in calculating the replacement nicotine dose.

The dose of nicotine replacement was based on a conversion ratio derived from a previous study of 10 men and 10 non-pregnant women. (3) In this study, 1 mg of nicotine per day was found to equate to each 12.5 ug/L of salivary cotinine. However, this formula needs to be modified for pregnancy as cotinine levels in pregnancy are significantly lower for a given dose of nicotine compared to non-pregnant populations. The clearance of nicotine and cotinine is much faster (60 and 140% respectively) and the half-life of cotinine is much shorter (8.8 versus 16.6 h) during pregnancy. (4)

A study of cotinine levels in 40 pregnant women found that the median cotinine per cigarette in pregnancy is about one third of the cotinine level found postnatally (3.5ng/ml vs 9.8ng/ml). (5) The authors conclude that 'the available equivalencies between cotinine level and nicotine intake obtained from adult non-pregnant populations cannot be directly applied during pregnancy'.

A similar study of 21 pregnant women (third trimester), concluded 'At steady state,

while receiving nicotine patch therapy and not smoking ... morning serum cotinine levels were significantly lower in pregnant subjects compared with non-pregnant women'. (6)

Therefore, the dose of nicotine prescribed for the pregnant women based on serum cotinine using the unadjusted conversion formula may have been less than optimal. This would explain why the mean daily dose of nicotine prescribed was low (18mg in the nicotine patch group) compared to a median daily dose of 35.5mg prescribed for men and non-pregnant women in a previous trial using the same formula. (7)

The absence of a significant difference in nicotine withdrawal and craving relief between the active and placebo groups is also consistent with nicotine underdosing.

Further studies in pregnancy which use this method for calculating the dose of nicotine for individual patients should consider using a modified conversion ratio based on values from pregnant women, so that adequate nicotine replacement can be assured.

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Competing interests: Dr Colin Mendelsohn has received payments for teaching, consulting and conference expenses from Pfizer Australia, GlaxoSmithKline and Johnson & Johnson Pacific. Dr Gillian Gould receives an NHMRC and National Heart Foundation postgraduate research scholarship.

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"Are functional beliefs about smoking a proxy for nicotine withdrawal symptom reduction?" Correspondence published in Tobacco Control.

Are changes in functional beliefs about smoking a proxy for nicotine withdrawal symptom reduction?

Gillian S Gould, Medical Practitioner Alan Clough, Andy McEwen

James Cook University

NOT PEER REVIEWED Fotuhi et al concluded in their interesting study of patterns in smokers' cognitive dissonance-reducing beliefs that rationalisations about smoking change systematically with changes in smoking behaviour(1). Moreover, they argue that: i) changes in attitude on quitting are higher for 'functional' beliefs rather than 'risk-minimising' beliefs and ii) if smokers relapse these functional beliefs return to pre-quit levels, iii) that changes in beliefs follow the changes in behaviour (quitting), suggesting that iv) these changes are rationalisations invoked in the service of motivation to reduce cognitive dissonance and that v) smokers are able to reduce dissonance by modifying their beliefs in ways that help to rationalise their continued smoking.

We wish to suggest an alternative understanding. The functional belief items include questions such as "smoking calms you down when you are stressed or upset" and "smoking helps you concentrate better". We propose that these items are not examples of dissonance-reducing attitudes but are representations of smokers' genuine experiences of nicotine withdrawal 'in between' cigarettes or on quitting, i.e. 'stress' and 'poor concentration'(2). In this way they are more a proxy for the physiological states induced by nicotine deprivation rather than attitudes and beliefs per se. Therefore 'risk-minimising beliefs' such as 'the medical evidence that smoking is harmful is exaggerated' and 'you've got to die of something, so why not enjoy yourself and smoke' may more truly represent cognitive dissonance, as they do not overlap with experiences indicating withdrawal symptoms.

A misinterpretation of these withdrawal symptoms by smokers and a commonly held belief that smoking reduces stress will undoubtedly result in the kind of results that the authors report - but should these results really be interpreted as supporting their hypothesis? Once smokers stop smoking, withdrawal symptoms subside over ensuing weeks (3), with 'functional' justifications for smoking naturally receding. They would return when the smoker then recommences to a physiological state of dependency and nicotine deprivation.

The theory of reasoned action holds that attitude changes precede behavioural change (4). The authors conclude that their study shows conversely, for smokers that their changes in attitudes are likely to be a result of their changes in smoking behaviour. This interpretation does not prove causation if these 'cognitive-dissonance' measures are more an indication of the presence of physiological symptoms rather than attitudes and beliefs per se.

We do agree, however, with Fotuhi et al's proposal that public health measures should target smokers' beliefs that smoking reduces stress. This would promote greater understanding about the withdrawal process and link it to why pharmacotherapy can be a useful adjunct to quitting and thereby increase their sense of response and self-efficacy (5).

We have been working in Australia with Indigenous smokers who have a high prevalence of smoking. One of the teaching tools we have developed is a simple visual model to explain to the lay public in the context of a group or personal intervention why smoking increases stress levels, how withdrawal symptoms make smokers more stressed and how nicotine replacement therapy can be efficacious (6).

Resistance to anti-tobacco messages, and cognitive dissonance will most likely continue to plague smokers who do not feel able to quit. Although for Indigenous smokers, knowledge acquisition alone may not be enough to support successful cessation (7), we believe smokers' justifications for smoking may also represent the truth for them of their experiences of withdrawal, and a lack of understanding about nicotine deprivation.

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Conflict of Interest:

None declared



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Tobacco Control

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Research paper:

Patterns of cognitive dissonance-reducing beliefs among smokers: a longitudinal analysis from the International Tobacco Control (ITC) Four Country Survey

Omid Fotuhi, Geoffrey T Fong, Mark P Zanna, Ron Borland, Hua-Hie Yong, K Michael Cummings

Tob Control tobaccocontrol-2011-050139 Published Online First: 3 January 2012 doi:10.1136/tobaccocontrol-2011-050139

[\[Abstract\]](#) [\[Full text\]](#) [\[PDF\]](#)

Re: "Are functional beliefs about smoking a proxy for nicotine withdrawal symptom reduction?" by Gillian S Gould, Alan Clough, and Andy McEwen

Omid Fotuhi, Department of Psychology Geoffrey T Fong, Mark P Zanna, Ron Borland, Hua-Hie Yong, K Michael Cummings

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NOT PEER REVIEWED Response to letter:

In our recent study--using a large set of nationally representative samples of smokers from Canada, the US, the UK, and Australia--we reported on the longitudinal patterns of smoking-related beliefs and how these beliefs vary with changes in smoking status. We found a consistent pattern of attitude-behaviour congruence: smokers highly endorsed risk-minimizing beliefs (e.g., "I have the genetic make-up that allows me to smoke without any health problems") and functional beliefs (e.g., "Smoking helps me concentrate"). But the most interesting finding was the longitudinal pattern of how these justifications for smoking changed over time as their smoking status changed: smokers endorsed these beliefs the least when they had quit; and again endorsed these beliefs to their pre-quit levels if they relapsed back to smoking, whereas the levels of endorsement of these beliefs stayed low among those smokers who had quit smoking and were able to stay quit in the long-term. We proposed that the waxing and waning of these smoking-related beliefs as a function of smoking status were driven by motivations to reduce cognitive dissonance (Festinger, 1957)--a fundamental human motivation to maintain consistency between one's attitudes and one's behaviours.

In response to these findings, Gould, Clough, and McEwen have offered a thoughtful commentary. In addition to writing about the importance for public health measures to target smokers' erroneous beliefs that smoking reduces stress, they agreed with our view that smokers are driven to modify their risk-minimizing beliefs because of their motivation to reduce dissonance.

However, Gould et al. suggest that an alternate mechanism is responsible for the longitudinal pattern of functional beliefs that we report in our study. Rather than being driven by dissonance-reducing motivations, they suggest that higher endorsements of functional beliefs among smokers are "representations of smokers' genuine experiences of nicotine withdrawal 'in between' cigarettes or on quitting."

We, on the other hand, do not see a contradiction between their interpretation and ours. Rather, we suggest that the physiological reactions to withdrawal and dependence are the starting point for the cognitive dissonance process. This is a view that has long been shared by dissonance researchers (e.g., Zanna, Cooper, & Taves, 1978; Croyle & Cooper, 1983).

So the Gould et al. account does not, at the core, differ from our account. They are pointing out the nature of the reasons for the justifications, which is the whole point of our argument: the fact that smokers are addicted and that they suffer withdrawal symptoms leads to the search for justifications for their smoking (rather than saying that "I am addicted"). The physiological symptoms of dependence and withdrawal can, therefore, lead to effects far outside the realm of the physiology of the smoker.

Thus, their account is not an alternative explanation—it may well be the starting point for what then become biases in cognitions to justify smoking.

In addition, when looking at the data from our study, we note that non-quitters endorsed both risk-minimising and functional beliefs more, compared to successful and failed quitters, at all three waves—even at times when all three groups were smoking (wave 1). Because it is unlikely that the pattern of risk-minimizing beliefs (e.g., "You've got to die someday, so why not enjoy yourself and smoke") is driven primarily by withdrawal symptoms—and given the strikingly similar pattern for both functional and risk-minimizing beliefs—we suggest that, at least in part, similar dissonance-reducing processes may also be responsible for the shifting of functional beliefs as smokers vacillate between smoking and having quit.

Furthermore, let us be clear that we do not claim that all smokers' smoking-related beliefs are distortions that serve only to reduce dissonance. We fully acknowledge that there may, in fact, be unique and genuine physiological experiences of nicotine consumption and withdrawal. We propose, however, that these experiences can more effectively be captured by specific measures that tap into the visceral aspects of nicotine addiction. For instance, the Hughes (1992) article cited by Gould and colleagues nicely captures these physiological experiences among quitters at various time points (e.g., increased irritability, hunger, restlessness, and cravings to smoke). These items are more directly representative of physiological responses to nicotine consumption and withdrawal than some of our functional beliefs measure (e.g., "Smoking is an important part of your life" or "Smoking makes it easier to socialize").

In fact, we would even argue that in comparison to risk-minimizing beliefs, functional beliefs are more readily employed in the service of dissonance reduction because they are less likely to be countered by reality constraints (Kunda, 1990). Specifically, we think that the functional beliefs in our study [(1) "You enjoy smoking too much to give it up"; (2) "Smoking calms you down when you are stressed or upset"; (3) "Smoking helps you concentrate better"; (4) "Smoking is an important part of your life"; and (5) "Smoking makes it easier for you to socialize"] are exactly the kind of malleable beliefs that smokers commonly employ—more so than the risk-minimizing beliefs which may be countered by rational thought (e.g., "The medical evidence that smoking is harmful is exaggerated")—to rationalize a behaviour that they know is harmful to their health.

Nonetheless, we appreciated the comments by Gould et al. because they encouraged us to take a closer look at our data and, consequently, to further think about our original interpretation of the findings.

We hope that further research continues to explore the role of attitudes in the domain of health behaviour, and specifically addictive behaviours, such as smoking. Experimental studies that more clearly determine causality and studies that examine the taxonomy of rationalizations commonly used by smokers would be especially useful for the advancement of this research topic. These findings would also have the important potential of informing policies to more effectively help save lives.

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Conflict of Interest:

None declared

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Published 27 August 2012



Letter from Federal Assistant Minister for Health



Senator the Hon Fiona Nash
Assistant Minister for Health
Senator for New South Wales
Deputy Leader of the Nationals in the Senate

Ref No: MC14-010794

Dr Gillian Gould
Australian Association of Smoking Cessation Professionals
PO Box M195
Missenden Road
CAMPERDOWN NSW 2050

Dear Dr Gould

Thank you for your correspondence of 15 August 2014 to the Minister for Health and Minister for Sport, the Hon Peter Dutton MP, on behalf of Australian Association of Smoking Cessation Professionals and the Royal Australian and New Zealand College of Obstetricians and Gynaecologists, regarding affordable and suitable cessation therapy for Indigenous pregnant smokers. Your co-signed letter has been referred to me as Assistant Minister for Health with portfolio responsibility for this matter.

In response to your concerns raised, I can advise that the Pharmaceutical Benefits Advisory Committee (PBAC) considers each Pharmaceutical Benefits Scheme (PBS) listing submission having regard to the safety, clinical effectiveness and cost-effectiveness (value-for-money) of the medicine for the intended use, in comparison with other available treatments. The Australian Association of Smoking Cessation Professionals can make a submission to the PBAC to extend the PBS listing of nicotine replacement therapy to include other forms, such as the oral items (lozenges, gum or oral spray) by following the listing process available on the PBS website at www.pbs.gov.au/info/industry/listing/listing-steps.

In 2011, the listing of nicotine transdermal patches on the PBS was extended to include all eligible individuals in Australia (it was previously only available to Indigenous consumers), as a result of an application made by a consortium which did not represent, or were part of, a pharmaceutical company.

Additionally, the Close the Gap Pharmaceutical Benefits Scheme Co-payment measure improves access to PBS medicines for eligible Aboriginal and Torres Strait Islander patients living with, or at risk of, chronic disease. Eligible patients registered at general practices participating in the Indigenous Health Incentive under the Practice Incentive Program or Indigenous health services in urban and rural settings are able to receive annotated prescriptions that reduce the cost of prescriptions down to the concessional rate for general patients, and to a nil contribution for concessional patients.

The Government considers improving the health outcomes for Aboriginal and Torres Strait Islanders as a core priority and in the 2014 Budget \$94 million has been committed over four years for the Better Start to Life approach as a component of the Indigenous Australians' Health Programme. Better Start to Life will involve the phased expansion the New Directions: Mothers and Babies Services (\$54 million to expand from 85 to 136 by 2018).

A key focus of the New Directions: Mothers and Babies Services is to increase access to antenatal care. The provision of quality antenatal care provides an opportunity for brief interventions for risk factors, such as smoking cessation interventions which cannot only help women reduce or stop smoking but also have an impact on birth weight and pre-term birth.

On a related matter, a review of the Tackling Indigenous Smoking programme will be undertaken in 2014. The review will provide advice to the Government to ensure that programmes to address high rates of smoking are based on the most up-to-date evidence, and are delivered in the most appropriate, effective and efficient way. The University of Canberra has been engaged to undertake the review, and will contact you as part of the consultation process in the next few weeks. Your research on smoking cessation counselling and nicotine replacement therapy for pregnant Indigenous smokers will be provided to the review team for consideration.

Thank you for raising this matter.

Yours sincerely



FIONA NASH

24 SEP 2014

Letter from Vice Chancellor University of Newcastle

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24 October 2014

Dr Gillian Gould
James Cook University
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Dear Dr Gould

I wish to extend my warmest congratulations to you your outstanding success in the recent National Health and Medical Research Council (NHMRC) major grants announcement. To be awarded the three Fellowships listed below for funding commencing in 2015 is an exceptional achievement.

APP1092085 - 'Training clinicians in culturally competent smoking cessation guidelines for behaviour change counselling and pharmacotherapy management for Aboriginal and Torres Strait Islander pregnant smokers'.

APP1090510 - 'Improving strategies to support pregnant Aboriginal women to quit smoking'

APP1092028 - 'Improving strategies to support pregnant Aboriginal women to quit smoking'

The NHMRC Early Career Fellowship (ECF) and Translating Research into Practice (TRIP) schemes are highly competitive and your success is a significant achievement.

Your contribution to the overall success of The University of Newcastle in the 2015 NHMRC application round is both recognized and greatly appreciated, and we look forward to welcoming you to our research community in the near future.

I wish you all the best in pursuing your research.

Yours sincerely

Caroline McMillen
Vice-Chancellor and President

*I wish you
could
accept all
three!*

Summary of Publications since 2010

Published

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Summary of awards and grants since 2010

Significant Awards

NHMRC Early Career Fellowship - Australian Public Health & Health Services Fellowship APP1092028 \$369,436	2015-2019
NHMRC Early Career Fellowship - Aboriginal and Torres Strait Islander Health Research Fellowship APP1090510 \$369,436	2015-2019
NHMRC TRIP Fellowships Grant co-funding offered by Cancer Institute NSW and the National Heart Foundation APP1092085 \$272,911	2015-2016
Family Medical Care Education and Research Grant Royal Australian College of General Practitioners (RACGP) \$10,000	2014
Chris Silagy Research Scholarship RACGP \$15,000	2014
National Lead Clinicians Group 2014 Awards for Excellence in Innovative Implementation of Clinical Practice Cultural Competence in Indigenous Care \$3000	2014
Indigenous Health Award from RACGP and Australian Primary Health Care Research Institute \$7169	2013
James Cook University Biostatistics for Public Health - High Distinction	2013
James Cook University Epidemiology for Public Health - High Distinction	2012
James Cook University Qualitative Methods for Tropical Health - High Distinction	2012
NHMRC & National Heart Foundation Post-graduate Indigenous Health Research Training Scholarship \$109,358	2012-2014
Rex Walpole Travelling Fellowship (RACGP) \$2500	2013
Standing Strong Together Award from National Aboriginal and Torres Strait Islander Faculty RACGP \$2500	2010

Other grants

Society for Research on Nicotine and Tobacco (SRNT) travel bursary to attend SRNT-Europe conference Santiago de Compostela Spain 1000 Euros	2014
Graduate Research Scheme Grant, Faculty of Medicine, Health & Molecular Sciences, James Cook University \$2400	2014
Graduate Research Scheme Grant, Faculty of Medicine, Health & Molecular Sciences, James Cook University \$2148	2013
Primary Health Care Conference (PHCRIS) Canberra sponsored delegate fee and travel award \$420	2012
Cancer Council Travel Award attend Oceania Tobacco Conference in Brisbane \$1000	2011
SRNT Travel Award to attend SRNT-Europe conference Antalya Turkey Sept 2011, 500 Euros plus delegate fee	2011
Dept. of Health and Ageing Indigenous Tobacco Control Initiative 'No Smokes North Coast' \$700,000	2010-2012
NSW Institute for Rural Clinical Services and Teaching research grant, \$15,000	2010-2011

Appendix B - Surveys

Study 3.1 Demographic Survey

Participant Code _____



UNSW
THE UNIVERSITY OF NEW SOUTH WALES



Health
Mid North Coast
Local Health Network

“Designing a culturally targeted smoking cessation program for maternal smokers and family members on the mid-north coast of NSW. Phase one - focus group interviews ”

Participant Information

Confidential information: This page will be removed to de-identify data then destroyed

Name: _____

Date of Birth: _____

Gender: male / female (please circle one)

Today's Date: _____ 2011

Participant Information and Questionnaire

Please answer the questions as best you can. The research assistant will be very happy to help you in any way.

1. Are you of Aboriginal or Torres Strait Islander Origin? **Yes / No** (Please circle one)

Please answer questions 2 to 5 if you are female, if you are male go to question 6.

2. Are you currently pregnant? **Yes / No** (Please circle one)

3. If you are pregnant, how many weeks pregnant are you? _____ weeks

4. If you are pregnant, is the father of your expected baby Aboriginal or Torres Strait islander origin? **Yes / No / Unsure** (Please circle one)

5. How many times have you been pregnant? _____ times

6. Do you smoke? **Yes / No** (Please circle one)

7. If you smoke, how soon after you wake do you smoke your first cigarette? **Within 5 minutes** (Please tick one)
6-30 minutes
31-60 minutes
61 minutes or more

8. How many cigarettes a day do you smoke? **10 or less** **11-20**
21-30 **31 or more**

9. If you **do not** smoke now, did you smoke previously? **Yes / No**

10. Do people smoke inside your home? **Yes / No** (Please circle one)

11. Is there anyone who is currently pregnant living in your home? **Yes / No** (Please circle one)

12. Is there a baby or children currently living in your home? **Yes / No** (Please circle one)

13. If there is a baby or children living in your home can you please list how many and their ages?

Study 3.2 Focus group interview guide

Script for focus group questioning: Pregnant mums and/ or families:

“Designing a culturally targeted smoking cessation program for maternal smokers and family members on the mid-north coast of NSW. Phase one - focus group interviews ”

Focus group:

Record small group (focus group) discussions with semi- structured, opened ended, interview style questioning with researcher acting as a moderator

Initiate with “ice breaking activities”

This script of questions is not to be followed word for word and will be used by the moderator to stimulate discussion around the topics

Smoking

- From your experience, what is it like being pregnant and a smoker.....
(Explore...What’s good about it What is less good or bad about it?)
- What do you think about cigarette smoking and pregnancy.....
 - (explore knowledge, beliefs, misconceptions of risks, degree of risk and any perceived benefits)
(explore knowledge, beliefs environmental smoke)
(explore....what is the main source of information leading to this knowledge and social influences on knowledge and beliefs)
- What do you think makes you or those around you want to have a smoke.....
(*Acknowledgement of dependence*)
- What is your experience with smoking in your household and the car.....
 - (explore who in household smokes.....interactive activity felt board)
 - (explore if there is a decision maker surrounding the acceptance of smoking in household / car)
 - Educational statement to be delivered surrounding illegal nature of smoking in car with children ≤ 16 years old present in vehicle
- How do you think you could get smoking outside the house and car
(explore what support would be needed- who and how)

Quitting

- What are your experiences of giving up or trying to give up smoking (or others around you)
(explore..... what would encourage you to give up.)
(explore..... pregnancy as an opportunity motivator/ catalyst)
(explore , methods tried, what has helped / made it hard)
(explore..... in particular, attitudes and beliefs around Nicotine Replacement Therapy)
(explore..... attitudes to attempting to quit)
(explore..... barriers to attempting to quit)
(explorebeliefs about risk reduction to the individual if they successfully quit)
- What do you think would help you or those around you to give up smoking

Programs

- Can you tell me about any help, services or programs you or your family can use to help give up smoking.....
- What would you want in a program to help you give up smoking.....
(explore how to run.... when, where, who would you want to come, who you would want to run it, what support outside program)
(explore What would encourage attendance, what be a deterrent)
- Is there anything else you would like to say about smoking and pregnancy, quitting, or changing smoking habits in your household?.....

Study 4 Survey Form

Default Question Block**Information and Consent Form****Introduction**

This study collects information about what anti-smoking messages have been developed by organisations for Aboriginal and Torres Strait Islander tobacco control.

Aims

Dr Gillian Gould is conducting the study, and it will contribute to her PhD at James Cook University. She intends to produce a set of guidelines to inform how anti-smoking messages can be developed and used for Aboriginal and Torres Strait Islander people.

Procedures

You will be asked to complete a survey via a telephone interview or on-line. The interview or survey should take approximately 30 minutes. Some questions will require knowledge of how your organisation has developed anti-smoking messages, or resources; you will be able to view the questions prior to the interview/survey so you can have the answers to hand. You can ask other people in your organisation for the information and get approval from a manager if required.

Participation

This study is voluntary and you can stop taking part at any time without explanation or prejudice. You may withdraw any unprocessed data from the study. Audio recording of the phone calls is preferred. You will be asked at the beginning of the phone call for your consent for the survey, and if it can be recorded. You may accept or refuse recording. All audio recordings will be destroyed at the end of the study.

Risks/discomforts

The questions are not personal and should not cause distress. If you do not have the information, it is OK to tick the boxes that indicate, "I don't know". If you feel upset in any way, advise the researcher if on the phone, or stop the on-line survey, and either save the form to come back to it later or discontinue the survey.

Benefits

It is hoped through your participation that more will be known about how anti-smoking messages are developed and used for Aboriginal and Torres Strait Islander people. If you know of others that might be interested in this study, please give them our contact details so they may volunteer for the study.

Confidentiality

Your responses and contact details will be strictly confidential. The data collected will be stored in the HIPPA-compliant, Qualtrics-secure database until the primary researcher has deleted it. The combined unidentified data will be used for a report that will be distributed to participating organisations, and in research publications and conference papers. You will not be identified in any way in publications. If the researcher wishes to showcase any of the resources your organisation has either produced or researched she will get back to you or your organisation to obtain written permission.

Questions about the research

If you have any questions about the study, please contact Dr Gillian Gould, School of Public Health and Tropical Medicine, James Cook University, Mobile: 0403615563 (preferred contact), Email: gillian.gould1@my.jcu.edu.au

I have read, understood, and printed a copy of, the above consent form and desire of my own free will to participate in this study.

- Yes
 No

Name

Address

Phone(s)**Email****Employer****Job Title****Supervisor****May I contact you**

- Yes
 No

Best time to call?**What is or are the name(s) of your anti-tobacco projects?****Which best describes your role?**

- | | |
|---|---|
| <input type="checkbox"/> Indigenous Health Worker | <input type="checkbox"/> Researcher |
| <input type="checkbox"/> Administrative | <input type="checkbox"/> Other Health Professional |
| <input type="checkbox"/> Academic | <input type="checkbox"/> Other, please specify <input type="text"/> |

Which best describes your organisation?

- | | |
|---|--|
| <input type="radio"/> Aboriginal and Torres Strait Islander Medical Service/
Aboriginal Community Controlled Health Organisation | <input type="radio"/> Divisional of GP or Medicare Local |
| <input type="radio"/> Public or Hospital Health Service | <input type="radio"/> Non-Government Organisation |
| <input type="radio"/> University/Tertiary Institute | <input type="radio"/> Government Organisation |
| <input type="radio"/> Research Organisation | <input type="radio"/> Other, please specify <input type="text"/> |

Is your organisation...

- Only for Aboriginal and/or Torres Strait Islander people
 Mainly for Aboriginal and/or Torres Strait Islander people
 For the general population

Has your organisation developed anti-tobacco messages for Aboriginal and Torres Strait Islander people?

- Yes
 No

Some general questions.

Were the anti-tobacco messages adapted from existing anti-tobacco messages?

- Yes
- No

Were the messages part of a program or were they a stand-alone activity?

- Part of a program
- Stand-alone activity

Please provide more information.

What was the target audience for your messages?

- Youth
- Pregnant Women
- Adult women
- Adult men
- Community elders
- Don't know
- Other please provide more information
 -

If you have marked more than one, did you develop different messages or message styles for the different target audiences?

- Yes
- No
- Don't know

Please rate what degree the messages were aimed at individuals versus the whole community?

Mostly individual | | Mostly community

Please rate what degree the messages were developed by bottom-up approach (negotiated with community) versus a top-down approach (driven by authorities).

Mostly Bottom-up | | Mostly Top-down

Was a theoretical framework used to help support the way the messages were put together?

- Yes, please state or describe the framework used
 -
- No
- Don't know

What were the types of anti-tobacco messages developed?

- Educational message (e.g. informs about health issues in a non-emotional manner)
- Threat or fear appeal (e.g. uses negative emotions to persuade people to quit because of harms of smoking)
- Positive benefit appeal (e.g. shows the positive side - you will live a healthier life if you quit)
- Heuristic appeal (e.g. creates a mood, shows non-smokers living more carefree)
- Advocacy appeal (e.g. promotes smoke-free environments, equality issues)
- Don't know
- Other, please state
 -

Formative Stage of Message Development

Did your organisation find out information from your community to help develop the right messages for your target audience?

Yes, please describe

No

Don't know

Which best describes how this information was gathered (choose more than one if applicable).

Community group

Men only community group

Women only community group

Questionnaire/Survey

Steering committee/reference group

Informal discussion groups

Word-of-mouth feedback

Other please state

No gathering of information

Don't know

Which of any of the following did you explore (choose as many as apply):

Knowledge about health risks of smoking

Threat of smoking to the target audience

Belief that following the messages or advice would prevent the risks from smoking

Beliefs/attitudes/myths about smoking

Community norms/opinions about smoking

How well the target audience relates to messages about smoking

Ability of the target audience to response to the message

Barriers to the target audience being able to do the recommended action (e.g. quit smoking)

Who the target group wanted to hear the anti-smoking message from (e.g. health professional/ expert/celebrity /sportsperson)

Preferences for an Indigenous theme or message

Preferred message form (for example DVD/print/brochure/poster)

Preferred channel for the message (for example TV/radio/newspaper etc)

Other, please state

Message Development Phase

Did you encounter any cultural challenges in developing the messages or any artwork associated with them?

Yes, please describe

No

Don't know

Please indicate which of the following your organisation applied to your message development phase

- Input from community
- Results from community group/surveys
- Expert advice or literature review
- Created from other campaigns with cultural adaptation
- Created from other campaigns without cultural adaptation
- Message developed without prior consultation
- Other, please state

Please indicate if advice from any of the following personnel were used in the message development (select all that apply)

- Aboriginal and/or Torres Strait Islander Health Worker or Indigenous Health professional
- Aboriginal and/or Torres Strait Islander community elder
- Aboriginal and/or Torres Strait Islander community representative
- Aboriginal and/or Torres Strait Islander artist
- Doctor or GP
- Tobacco or health promotion expert
- Media consultant
- Non-Indigenous artist
- Don't know
- Other, please state

Please explain how this process occurred.

Which of the following did you incorporate when you developed the messages? Select as many as apply.

- | | |
|--|---|
| <input type="checkbox"/> General features to make message more accessible e.g. simplicity in presentation; large, legible print | <input type="checkbox"/> Local language or "Indigenous English" or "slang" to communicate messages |
| <input type="checkbox"/> Reading age level appropriate to the target group, e.g. simple, short, familiar words | <input type="checkbox"/> Translated existing pamphlets into local language |
| <input type="checkbox"/> Clear unambiguous, advice in the message | <input type="checkbox"/> Developed new messages/ resources using local language |
| <input type="checkbox"/> Indigenous theme (portraying Indigenous people/Indigenous images or art/Indigenous issues) | <input type="checkbox"/> Local community elders or key community people included in development of the messages |
| <input type="checkbox"/> Colours, images and pictures that identified with your target group | <input type="checkbox"/> Storytelling or testimonials from Indigenous people |
| <input type="checkbox"/> Culturally appropriate images, language and art | <input type="checkbox"/> Positive role models |
| <input type="checkbox"/> Title or headline stated the message was for Indigenous people | <input type="checkbox"/> Linked health issue to holistic wellbeing including Aboriginal or Torres Strait Islander culture, beliefs and family |
| <input type="checkbox"/> Health-related statistics or information relevant to the target group, e.g. rates of smoking or 'closing the gap' information | <input type="checkbox"/> Used a generic theme (i.e. non-Indigenous people/images /issues) |
| <input type="checkbox"/> Messages included the effect of tobacco on the family or community | <input type="checkbox"/> Not known |

Did the message/s recommend people take action or change their behaviour?

- Yes
- No
- Don't know

What were the recommended actions? (select all that apply)

- Quit smoking
- See Aboriginal Medical Service or Indigenous Health Worker
- See GP
- See community health service such as Alcohol, Tobacco and Other Drugs Service
- Create smoke-free environments (such as home and car)
- Ring the Quitline
- Other, please state

Pre-test of messages

Were the messages tested or tried out with some community members before making them widely available?

- Yes
- No
- Don't know

How did you test or try them out? (select all that apply)

- Informal discussions or asking people what they thought
- Steering committee/reference group feedback
- Questionnaire/ survey
- Community - men's group
- Community - women's group
- Community group - mixed
- Don't know
- Other, please state

Were there any unexpected outcomes from the use of the messages or associated art?

- Yes, please describe
- No
- Don't know

Resource Development & Distribution

Did your organisation develop resources with these messages?

- Yes
- No
- Don't know

Did you ask your community group the type of resources they would like to promote the messages?

- Yes
- No
- Don't know

What resources did your organisation develop? (tick as many as apply)

- | | |
|--|---|
| <input type="checkbox"/> Posters | <input type="checkbox"/> Stickers/Magnets |
| <input type="checkbox"/> Pamphlets/Booklets | <input type="checkbox"/> T-shirts or other apparel |
| <input type="checkbox"/> Resources for Quit Groups | <input type="checkbox"/> Website |
| <input type="checkbox"/> Resources for training courses for health professionals | <input type="checkbox"/> Social network (e.g. Facebook) |
| <input type="checkbox"/> CD- Rom | <input type="checkbox"/> Apps (e.g. for smart phone/i-phone/i-pad) |
| <input type="checkbox"/> DVD | <input type="checkbox"/> Hit-net |
| <input type="checkbox"/> TV advertisement | <input type="checkbox"/> Other, please specify <input type="text"/> |
| <input type="checkbox"/> Radio Advertisement | |

Over what area where your resources distributed?

- Locally only
 Regionally
 State-wide
 Nationally
 Don't know

Would your organisation be able to provide a sample of the resources that were used with the health messages?

- Yes
 No
 Don't know

Evaluation of Messages or Resources**Did your organisation evaluate or test the impact of your messages/resources? (e.g. test for changes in attitudes or smoking behaviour as the result of the message/resource)**

- Yes
 No
 Don't know

What was tested? (tick all that apply)

- Knowledge about health risks of smoking
 Beliefs and attitudes towards smoking
 Number of cigarettes smoked
 Self-reported quit rate
 Quit rate validated by biochemical test (e.g. carbon monoxide readings or cotinine levels)
 Smoke-free behaviors (e.g. smoking outdoors /not smoking in car)
 Other, please state
 Don't know

Would your organisation be able to provide any document about your program results? (e.g. written or published report or PowerPoint presentation)

- Yes
 Maybe
 No

If yes, and the results have been published or are available on a website, please provide reference, publication details or link in the box below:

If you wish to upload any files such as reports, results or samples of your messages/resources, you may do so here.

If the results are not publically available, can we please contact you to get a copy of the results?

- Yes
- No

Study 5 Consent and survey form

RISK BEHAVIOUR AND RISK ACCEPTANCE OF SMOKING IN ABORIGINAL AND TORRES STRAIT ISLANDERS

Informed consent (explain purpose of study and ask to sign below. Offer copy of the Participant information sheet)

I acknowledge that:

- 1. I have received the Participant Information Statement and have had the opportunity to ask questions. I understand the purpose of the research and my involvement in it.**
- 2. My participation in the research will involve an interview and the completion of an on-line survey by the researcher.**
- 3. I have the right to withdraw my consent and cease any further involvement in the research project at any time without giving reasons and without any penalty. This will not affect any services that I receive.**
- 4. Any information I provide during the course of this research will remain confidential. Where the results of the research are published, my involvement and my personal results will not be identified**
- 5. I understand that if I have any complaints or questions concerning this research project I can contact the principal researcher, the Chairperson or CEO of the local Aboriginal Community Controlled Health Service; or the Chairperson of the AH&MRC Ethics Committee or Dr Gillian Gould.**

My Name is: _____ (confidential, will not be used to identify you)

I consent to be interviewed and complete the survey on the above basis.

Signature: _____ Date: _____

Office use: Location _____ (Galambila, SCU, Community Event or Other)
Participant ID _____
<input type="checkbox"/> Information sheet
<input type="checkbox"/> Consent form

Please answer the questions as best you can. Please try to answer ALL questions even though some sound similar.

*** = compulsory questions that must be answered**

Section 1: First some questions about yourself...

1. What is your age _____*
(if under 18 or over 45 then thank you but the survey is only for those 18-45)

2. What is your gender? (Please tick one) *

- Male
- Female

3. Are you of Aboriginal or Torres Strait Islander origin? (Please tick one) *

- No, (thank you for your time but the survey is only for Aboriginal and/or Torres Strait Islander people)
- Yes, Aboriginal
- Yes, Torres Strait Islander
- Yes, Aboriginal & Torres Strait Islander

4. What is your current postcode _____ and suburb/town _____

5. How far did you get with your education? (optional) (please tick one box - choose highest level got to)

- Primary school
- High school to year 10 (includes if left between yr 7-10)
- High school to year 12
- Trade Certificate
- Currently doing apprenticeship/trade certificate
- TAFE
- Tertiary - undergraduate
- Tertiary - postgraduate
- Currently at university/TAFE

6. Where do you mainly get your income? (optional) _____

7. Do you have a health care card (optional) (tick one)

- No
- Yes

Notes section (interviewer)

Section 2: These questions are about your tobacco smoking, where you smoke, and others that may be affected by smoke, or smoking around you...

8. Do you currently smoke tobacco? (tick one) *

- Yes**
- No** I used to smoke tobacco but have quit completely (thank you for your time but the survey is only for those still smoking)
- No** I have never smoked tobacco of any type (thank you for your time but the survey is only for smokers)

9. What do you think about smoking in general? (open ended)

10. What age did you try your first cigarette?_____

11. What age did you take up smoking?_____

12. What influenced you to take up smoking? (tick as many as apply)

- Peer pressure
- Friends smoking
- Family smoking
- Lighting cigarettes for others
- To be cool
- Curiosity
- Stress
- For weight control
- Boredom
- With alcohol
- With cannabis
- Other

13. Do most of your friends/social circle smoke? (tick one)

- Yes
- No

14. How many smokers (include yourself) usually live in your household? (tick one) * (if 'one' selected go to Q16)

- One
- 2-3
- More than 3

15. If more than one, are any of the other smokers Aboriginal and/or Torres Strait Islanders? (tick one)

- Yes

- No
- Don't know

16. Is a baby or child usually living in your household? (tick one)

- Yes
- No

17. Is a pregnant woman living in your household? (tick one) (optional)

- Yes
- No
- Don't know
- Not applicable

18. How does your household manage places where smoking allowed? (tick one) *

- Complete ban on smoking inside and on verandah/immediate area outside
- Smoking only on verandah/immediate area outside (not inside)
- Smoking allowed in some rooms and on verandah/immediate area outside
- People can smoke anywhere in or outside

19. Do you smoke in any of these places? (tick as many as apply)

- Yes - Indoors at home
- Yes - Outdoors at home
- Yes - Inside a car
- No - I do not smoke in any of those places

20. What do you smoke? (Please tick as many as apply)

- I smoke normal cigarettes (tailor-made)
- I smoke hand-rolled cigarettes (rollies)
- I smoke a pipe or cigars
- Other (please state)_____

21. How often do you smoke? (Please tick one) *

- Every day
- Most days (4 or more days a week, but not every day)
- Some days (1-3 days a week)
- Very occasionally (less than once a week)

22. How many cigarettes do you smoke per day when you do smoke? (Please tick one) *

- 10 or less
- 11-20
- 21-30
- 31 or more

23. How soon do you have your first smoke after waking in the morning when you do smoke? (Please tick one) *

- Within 5 minutes
- 6-30 minutes
- 31-60 minutes
- over 60 minutes

24. How much of the time have you felt the urge to smoke in the last 24 hours? (Please tick one)

- Not at all
- A little of the time
- Some of the time
- A lot of the time
- Almost all the time
- All the time

25. In general how strong are your urges to smoke (in the last 24 hrs)? (Please tick one)

- Slight
- Moderate
- Strong
- Very strong
- Extremely strong

Notes section (interviewer)

Section 3: now some questions about your experiences with quitting...

26. Have you ever consulted with a doctor or other health professional about quitting? (tick one)

- Yes
- No

27. Has a doctor (or other health professional) advised/suggested for you to quit? (tick one)

- Yes
- No

28. Have you had any quit attempts (when you intended not to smoke again) or are you trying to quit now? (tick one) * (if 'no' skip to Section 4, Q33)

- Yes
- No

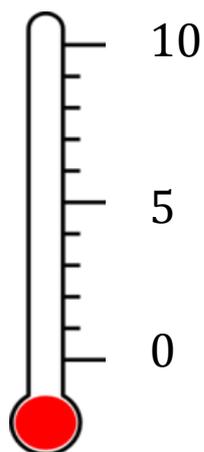
29. If 'yes' - when was your last quit attempt? (tick one)

- Trying to quit at the moment
- Trying to reduce at the moment
- Within the last 6 months
- Between 6-12 months ago
- Over a year ago

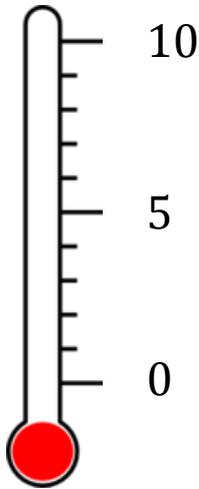
30. Have you used any quit medications in any of your quit attempts (i.e. Nicotine patches/gum etc., Champix or Zyban) (tick one)

- Yes in the past
- Yes currently on medication
- No

31. Please rate how much professional support was/is available to you when you tried to quit or if trying now (e.g. from a doctor, nurse or other person or service) (Circle or mark anywhere on the thermometer - the numbers are just a guide)



32. Please rate how much social support was/is available to you when you tried to quit or if trying now (e.g. from family/friends) (Circle or mark anywhere on the line - the numbers are just a guide)



Notes Section (interviewer)

Section 4: these questions are about your attitudes to smoking and quitting

33. Which one of these best describes you?

(Please tick one only)

- I REALLY want to stop smoking → Continue to question 34
- I want to stop smoking → Continue to question 34
- I think I should stop smoking but don't really want to → Skip to question 35
- I don't want to stop smoking → Skip to question 36

34. About how soon do you want/intend to stop? (tick one)

- 3 months
- 1 month
- Hope to soon
- Don't know when

35. Please tell me more about why you don't really want to stop smoking?

36. Please tell me more about why you wish to keep smoking?

37. Please answer each question by circling which numbered response applies to you depending on how likely you are take the following actions (*answer all questions please*) *

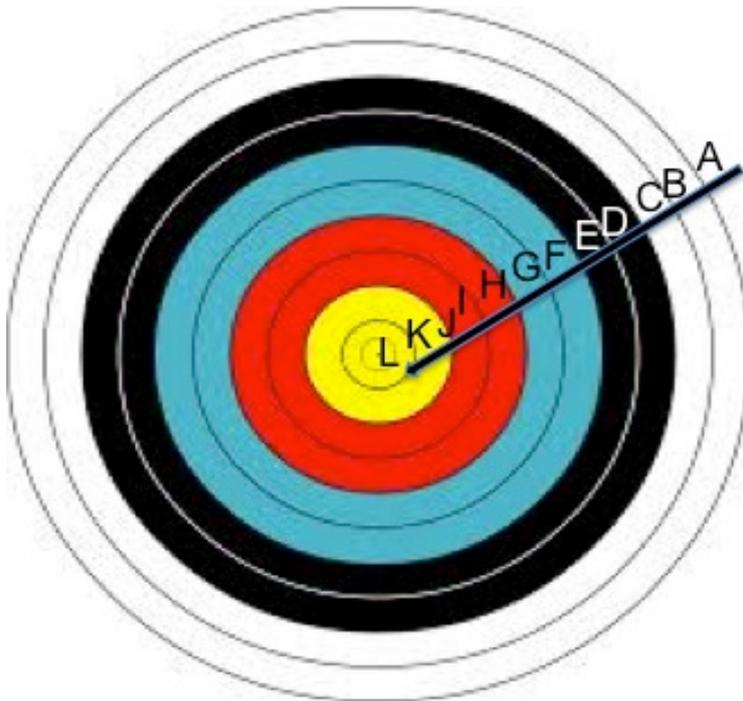
How likely is it that in the next 3 months you will:	<i>Very unlikely</i>	<i>Unlikely</i>	<i>Likely</i>	<i>Very likely</i>
a. Quit smoking completely and permanently	1	2	3	4
b. Reduce the number of cigarettes you smoke in a day	1	2	3	4
c. Talk to someone (e.g. friend/family) about quitting smoking	1	2	3	4
d. Seek professional support to help you quit smoking	1	2	3	4
e. Enroll in a smoking cessation program (if available at minimal cost)	1	2	3	4

Section 5: questions in this section help us know more about how you assess risks from smoking, and your confidence to quit

38. Please answer each question by circling which numbered response applies best to you depending how strongly you agree or disagree with the statements (*answer all questions please*) *

	Strongly Disagree	Disagree	Neither/ Not sure	Agree	Strongly Agree
1. Stopping smoking prevents serious sickness or disease (such as heart or lung disease or cancer)	1	2	3	4	5
2. I prefer not to think about the health risks of smoking	1	2	3	4	5
3. It is better if pregnant women do not smoke	1	2	3	4	5
4. It is easy to stop smoking	1	2	3	4	5
5. I believe I am seriously at risk of getting ill from smoking	1	2	3	4	5
6. I am confident I can stop smoking	1	2	3	4	5
7. The risks of smoking are exaggerated	1	2	3	4	5
8. Giving up smoking helps avoid serious sickness or disease	1	2	3	4	5
9. It is likely that I will get ill from smoking	1	2	3	4	5
10. It is better if partners of pregnant women quit smoking	1	2	3	4	5
11. Smoking can severely affect health	1	2	3	4	5
12. I am able to stop smoking	1	2	3	4	5
13. The health effects of smoking are of serious concern	1	2	3	4	5
14. It is better if adults don't smoke around children and babies	1	2	3	4	5
15. I do not personally believe that smoking is going to affect my health	1	2	3	4	5
16. If I stop smoking I am less likely to get a serious sickness or disease	1	2	3	4	5
17. The risks of smoking are untrue or manipulated	1	2	3	4	5
18. Smoking is harmful to health	1	2	3	4	5
19. It is better if Aboriginal or Torres Strait Islander people do not smoke at all	1	2	3	4	5
20. Smoking could possibly affect my health	1	2	3	4	5

39. Which **one** of the following statements is closest to your position when it comes to smoking? You can imagine this as a big target with question A on the outside ring (see picture below). As you move through the rings you get closer to the target of quitting (response A is on the outer ring and as you move further down the list you get closer to the centre. Response L is near the 'bulls-eye'). Your response to this question helps us understand the phases on the journey to quitting and where you personally may be up to. * **(Please circle the corresponding letter - only choose ONE)**



- A. I have never heard that smoking can be harmful
- B. I have heard that smoking can be harmful, but its too scary to think about
- C. I have heard that smoking can be harmful, but I think the risk is exaggerated
- D. I accept that smoking can be harmful, but I do not think it will be for me
- E. I accept that smoking could be harmful for me, but I do not care *very much*
- F. I care that I could be harmed by smoking, but I think the risk is worth it
- G. I do not think the risk of smoking is worth it, but there is no point in trying to stop because the damage has been done
- H. I do not think the risk of smoking is worth it, but I do not think I can stop
- I. I accept that smoking can be harmful, and the danger is part of the attraction
- J. I accept that smoking can be harmful, but I would feel shame if I failed at quitting
- K. I care about the risks of smoking and plan to try to stop, but it is not a priority at the moment
- L. I care about the risks of smoking, and definitely intend to try to stop soon

40. Please indicate as many of the following that relates to how you feel about smoking *(Please tick all that apply)*

- I am happy being a smoker
- It is hard to quit because everyone around me smokes
- I am uncomfortable being a smoker
- I am worried that smoking is harming my health right now
- I am worried that smoking will harm my health in the future
- Smoking is affecting my fitness
- Smoking is affecting my sense of wellbeing
- I do not think smoking is doing me any serious harm at the moment
- I would love to be a non-smoker
- I need to stop smoking
- Smoking is costing too much money
- It is getting difficult to smoke these days
- I am worried about the effect of smoking on my family and loved ones

41. Is there anything else you would like to say about smoking or quitting?

Notes section (interviewer)

Thank you for completing this survey, I would like to offer you a \$10 shopping voucher for your help. Do you have any questions?

(Offer \$10 voucher now)

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