"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

Gillian S Gould MA, MBChB [1,2,3] ; Joanne Munn PhD [2] ; Sandra Avuri [3] ; Susan Hoff BA, BMid [4] ; Yvonne Cadet-James BNurs [5] ; Andy McEwen PhD [6] ; Alan R Clough PhD [1,5]

[1] School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Cairns, Queensland, 4870, Australia

[2] Southern Cross University, Coffs Harbour, NSW, 2450, Australia

[3] North Coast Medicare Local, Coffs Harbour, NSW, 2450, Australia

[4] Aboriginal Maternal & Infant Health Service, Mid North Coast Local Health District, Coffs Harbour, NSW, 2450, Australia

[5] School of Indigenous Australian Studies, James Cook University, Townsville, Queensland, Australia

[6] Health Behaviour Research Centre, Epidemiology and Public Health, University College London, London, United Kingdom

Address for correspondence:

Dr Gillian S Gould,

PO Box 9077, Moonee Beach, NSW, 2450, Australia

Email: gillian.gould1@my.jcu.edu.au

Telephone +61 403615563

"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

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.

Keywords: Aboriginal and Torres Strait Islanders; Oceania Ancestry Group; pregnant women; tobacco smoking; passive smoking; smoking cessation; nicotine replacement therapy

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 disadvantage[2] 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, 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 needed [12] 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.

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 maternity 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 ±11.70 (17-53yrs), participated in five group interviews. Five women were pregnant with a mean gestation of 28 weeks ±11.55 (10-40wks), 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±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.

[Box 1 here]

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.

Results

Categories related to 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.

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 yarndi [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]*

[Figure 1 here]

The focus groups discussed household smoking and smoke-free zones through the felt 'storyboard' activity. Figure 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 away, 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 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" (p115) [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]*

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.

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. 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 approaches [31] 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) [50, 40]. 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.

Conclusion

This work builds on knowledge from a previous meta-ethnography of studies on smoking by Aboriginal and/or Torres Strait Islander women [9] 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.

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 Mid North Coast Local Health Network; and the University of New South Wales, Rural Clinical School as sponsors. The Mid North Coast (NSW) Division of General Practice (now North Coast Medicare Local) are 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.

Declaration of interests

Andy McEwen 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.

References

1. Li Z, Zeki R, Hilder L, Sullivan EA. Australia's mothers and babies 2010. In: National Perinatal Epidemiology and Statistics Unit, editor. Sydney: Australian Institute of Health and Welfare; 2011. Canberra: Australian Institute of Health and Welfare (AIHW) National Perinatal Epidemiology and Statistics Unit; 2012.

2. Hofhuis W, de Jongste JC, Merkus PJFM. Adverse health effects of prenatal and postnatal tobacco smoke exposure on children. *Arch Dis Child* 2003;88(12):1086-90.

3. Cornelius MD, Leech SL, Goldschmidt L, Day NL. Prenatal tobacco exposure: is it a risk factor for early tobacco experimentation? *Nicotine Tob Res*. 2000;2(1):45-52.

4. McDermott R. Campbell S, Li M, McCulloch, B. The health and nutrition of young indigenous women in north Queensland – intergenerational implications of poor food quality, obesity, diabetes, tobacco smoking and alcohol use. *Public Health Nutr.* 2009;12(2143-2149).

5. Brady M. Historical and cultural roots of tobacco use among Aboriginal and Torres Strait Island people. *Aust N Z J Public Health*. 2002;26(2):120-4.

6. Briggs VL, Lindorff KJ, Ivers RG. Aboriginal and Torres Strait Islander Australians and tobacco. *Tob Control.* 2003;12(suppl 2):ii5-ii8.

7. Wood L, France K, Hunt K, Eades S, Slack-Smith L. Indigenous women and smoking during pregnancy: Knowledge, cultural contexts and barriers to cessation. *Soc Sci Med.* 2008;66(11):2378-89.

8. Thomas DP, Briggs V, Anderson I, Cunningham J. The social determinants of being an Indigenous non-smoker. *Aust N Z J Public Health*. 2008;32(2):110-6.

9. 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.

10. Gould GS, McEwen A, Munn J. Jumping the hurdles for smoking cessation in Indigenous pregnant women in Australia. *J Smok Cessat.* 2011;6(1):33-6.

11. Carson KV, Brinn MP, Peters M, Veale A, Esterman AJ, Smith BJ. Interventions for smoking cessation in Indigenous populations. *Cochrane Database Syst Rev.* 2012;Art. No.: CD009046 (Issue 1).

12. Lumley J, Chamberlain C, Dowswell T, Oliver S, Oakley L, Watson L. Interventions for promoting smoking cessation during pregnancy. *Cochrane Database Syst Rev.* 2009(Issue 4 Art. No.: CD001055. doi:10.1002/14651858.CD001055.pub2.).

13. Gilligan C, Sanson-Fisher R, Eades S, D'Este C. Antenatal smoking in vulnerable population groups: an area of need. *J Obstet Gynaecol.* 2007;27(7):664-71.

14. Eades SJ, Sanson-Fisher RW, Wenitong M, Panaretto K, D'Este C, Gilligan C, Stewart J. An intensive smoking intervention for pregnant Aboriginal and Torres Strait Islander women: a randomised controlled trial. *Med J Aust.* 2012;197(1):42-6.

15. Reed J. Focus groups: issues of analysis and interpretation. *J Adv Nurs.* 1997;26:765-771.

16. Johnston V, Thomas DP. Smoking behaviours in a remote Australian Indigenous community: The influence of family and other factors. *Soc Sci Med.* 2008;67(11):1708-1

17. Prior D. Decolonising research: a shift toward reconciliation. *Nurs Inq.* 2007;14(2):162–8.

18. AMIHS. Coffs Harbour Annual report: North Coast Area Health Service. In: Aboriginal and Maternal Infant Health Strategy (AMIHS): NSW Department of Health; 2008.

19. Laycock A, Walker D, Harrison N, Brands J. Researching Indigenous Health: A Practical Guide for Researchers. Melbourne: The Lowitja Institute; 2011, chapter 10, p. 252.

20. Strauss A, Corbin J. Basics of Qualitative Research: Grounded Theory Procedures and Techniques. Newbury Park, CA: Sage Publications.: Newbury Park, CA: Sage Publications; 1990.

21. Kovach M. Indigenous Methodologies: Characteristics, Conversations, and Contexts. Toronto: University of Toronto Press; 2009.

22. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care.* 2007;19(6):349-57.

23. Phillips D, Thomas K, Cox H, Ricciardelli L, Ogle J, Love V, Steele A. Factors that influence women's disclosures of substance use during pregnancy: a qualitative study of ten midwives and ten pregnant women. *J Drug Issues.* 2007;37(2):357-76.

24. Ivers R. Indigenous Australians and tobacco : a literature review. Darwin: Menzies School of Health Research and the Cooperative Research Centre for Aboriginal and Tropical Health; 2001.

25. Johnston V, Thomas DP, McDonnell J, Andrews RM. Maternal smoking and smoking in the household during pregnancy and postpartum: findings from an Indigenous cohort in the Northern Territory. *Med J Aust.* 2011;194(10):556-9.

26. Gilligan C, Sanson-Fisher RW, D'Este C, Eades S, Wenitong M. Knowledge and attitudes regarding smoking during pregnancy among Aboriginal and Torres Strait Islander women. *Med J Aust.* 2009;190(10):557-61.

27. Passey M, D'Este CA, Stirling JM, Sanson-Fisher RW. Factors associated with antenatal smoking among Aboriginal and Torres Strait Islander women in two jurisdictions. *Drug Alcohol Rev.* 2012;31(5):608-16.

28. Mills AL, Messer K, Gilpin EA, Pierce JP. The effect of smoke-free homes on adult smoking behavior: A review. *Nicotine Tob Res.* 2009;11(10):1131-41.

29. Flemming K, Graham H, Heirs M, Fox D, Sowden A. Smoking in pregnancy: a systematic review of qualitative research of women who commence pregnancy as smokers. *J Adv Nurs.* 2013;69(5):1023-36.

30. Heath DL, Panaretto K, Manessis V, Larkins S, Malouf P, Reilly E, Elston J. Factors to consider in smoking interventions for indigenous women. *Aust J Prim Health.* 2006;12(2):131-6.

31. Passey M, Sanson-Fisher R, Gale J, Stirling J. Tobacco, alcohol and cannabis use during pregnancy: views of pregnant Aboriginal women in NSW and ACT. Lismore: University Centre for Rural Health - North Coast, University of Sydney; 2011.

32. 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. *Tob Control.* 2013;22(4):e7.

33. Patten CA, Windsor RA, Renner CC, Enoch C, Hochreiter A, Nevak C, Smith CA, Decker PA, Bonnema S, Hughes CA, Brockman T. Feasibility of a tobacco cessation intervention for pregnant Alaska Native women. *Nicotine Tob Res.* 2010;12(2):79-87.

34. Naughton F, Eborall H, Sutton S. Dissonance and disengagement in pregnant smokers: a qualitative study. *J Smok Cessat.* 2013; 8, 24-32. doi:10.1017/jsc.2013.4.

35. Bond C, Brough M, Spurling G, Hayman N. 'It had to be my choice' Indigenous smoking cessation and negotiations of risk, resistance and resilience. *Health Risk Soc.* 2012;14(6):565-81.

36. McBride CM, Emmons KM, Lipkus IM. Understanding the potential of teachable moments: the case of smoking cessation. *Health Educ Res.* 2003;18(2):156-70.

37. Johnson KA, Stewart S, Rosenfield D, Steeves D, Zvolensky MJ. Prospective evaluation of the effects of anxiety sensitivity and state anxiety in predicting acute nicotine withdrawal symptoms during smoking cessation. *Psychol Addict Behav.* 2012;26(2):289-97.

38. Hajek P, Taylor T, McRobbie H. The effect of stopping smoking on perceived stress levels. *Addiction.* 2010;105(8):1466-71.

39. Parrott AC, Murphy RS. Explaining the stress-inducing effects of nicotine to cigarette smokers. *Hum Psychopharmacol.* 2012;27(2):150-5.

40. Zwar N, Richmond R, Borland R, Peters M, Litt J, Bell J, Caldwell B, Ferretter I. Supporting smoking cessation: a guide for health professionals. Melbourne: The Royal Australian College of General Practitioners; 2011.

41. Glover M, Kira A. Pregnant Maori Smokers' Perception of Cessation Support and How It Can Be More Helpful. *J Smok Cessat.* 2012;7(2):65-71.

42. Australian Government. Indigenous Anti-Smoking Campaign: Break the Chain - Quantitative Campaign Effectiveness: Research - Executive Summary. October 2011 [updated 30 May 2012; cited 2012 14 October]; Available from: http://www.quitnow.gov.au/internet/quitnow/publishing.nsf/Content/ntc-break-the-chain.

43. Australian Government. National Tobacco Campaign: More Targeted Approach - 2012 - 2013. [updated 21/02/2013]; Available from: http://quitnow.gov.au/internet/quitnow/publishing.nsf/Content/mta-2012-13.

44. Witte K, Meyer G, Martell D. Effective health risk messages: a step-by-step guide. Thousand Oaks, CA: Sage Publications; 2001.

45. Trudgen R. Why Warriors Lie Down and Die. Parap, Northern Territory: Aboriginal Resource and Development Services; 2003.

46. Nursing and Midwifery Board of Australia. National competency standards for the midwife. Melbourne: Australian College of Midwives; 2006.

47. Passey M, D'Este CA, Sanson-Fisher R. Knowledge, attitudes and other factors associated with assessment of tobacco smoking among pregnant Aboriginal women by health care providers: a cross-sectional survey. *BMC Public Health.* 2012;12(165).

48. Rosen LJ, Noach MB, Winickoff JP, Hovell MF. Parental Smoking Cessation to Protect Young Children:A Systematic Review and Meta-analysis. *Pediatrics.* 2012;129(1):141-52.

49. Ivers RG. An evidence based approach to planning tobacco interventions for Aboriginal people. *Drug Alcohol Rev.* 2004;23(1):5-9.

50. Australian Health Ministers' Advisory Council. Clinical Practice Guidelines: Antenatal Care – Module 1. Canberra: Australian Government Department of Health and Ageing. 2012.

51. Brose LS, McEwen A, West R. Association between nicotine replacement therapy use in pregnancy and smoking cessation. *Drug Alcohol Depend.* 2013;http://dx.doi.org/10.1016/j.drugalcdep.2013.04.017.

Tables/Figures

Box 1: Focus Group Topics

Focus group topics included:

- Experiences of smoking in pregnancy
- Knowledge of smoking harms and sources of information
- Social influences on smoking
- Perception of risks and susceptibility
- Drivers and cues for smoking and cessation
- Experiences of smoking in car and home, and management of smoke-free environments
- Motivators for cessation, benefits of quitting
- Facilitators and barriers to quitting
- Knowledge, attitudes and beliefs about cessation methods including NRT
- Experiences of smoking cessation and risk reduction
- Suggestions for programs and support

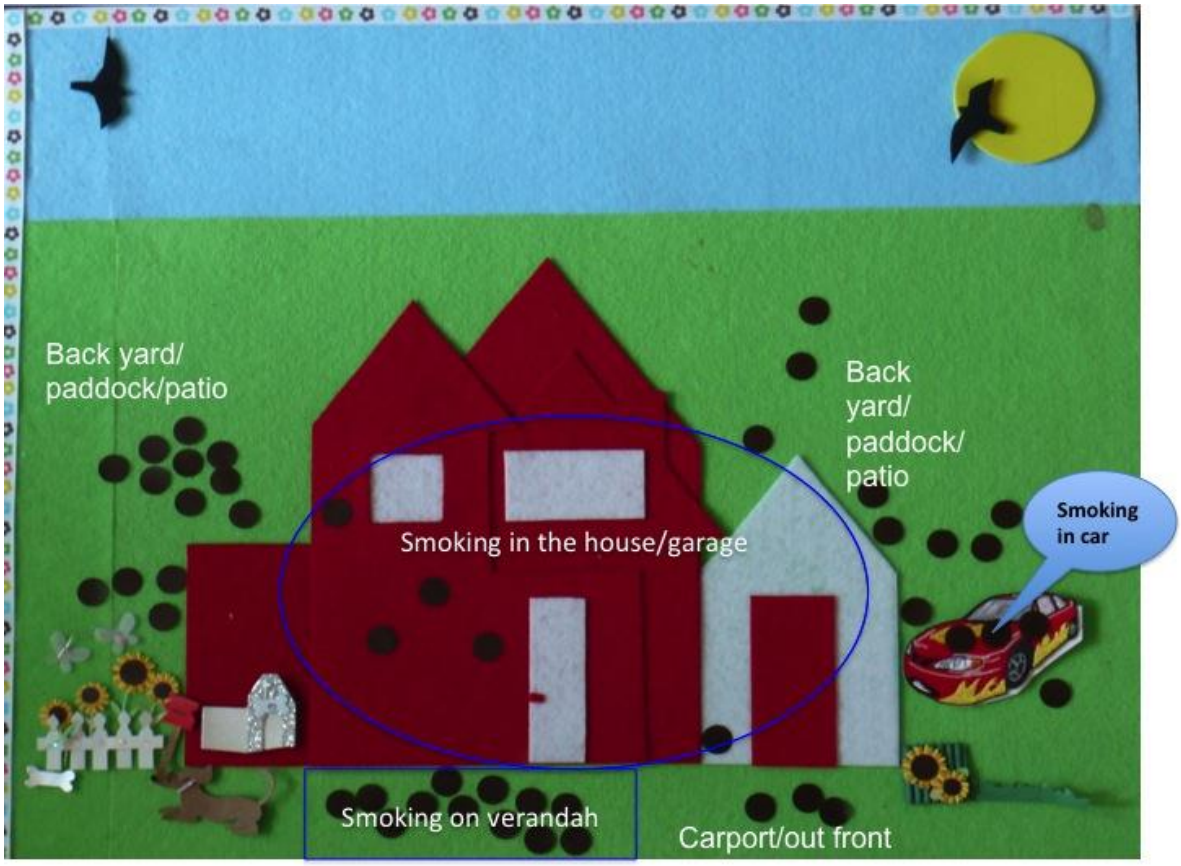

Figure 1: Compilation on the felt board activity. The photograph depicts all the locations where the participants indicated household smoking was occurring (indicated by brown spots). Most of the smoking was outside of the home, on the veranda, in front of the house, in the carport, back yard, patio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