

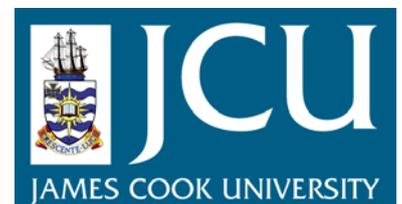
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Heavy cannabis use in three remote Aboriginal communities in Arnhem Land, Northern Territory, Australia: patterns of use, natural history, depressive symptoms and the potential for community-driven interventions

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A thesis submitted in accordance with the requirements for admission to the degree of Doctor of Philosophy

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December 2008

Abstract

For Aboriginal and Torres Strait Islander (Indigenous) Australians, tobacco, alcohol and petrol misuse have received much attention. Cannabis, by contrast, has not been viewed as a major problem. However, since the 1990s it has become apparent that cannabis use is very common in some remote Indigenous communities in northern Australia. Significant associated health and social burdens are now being recognised.

Indigenous Australians, whether living in urban or rural settings, are more likely than other Australians to report cannabis use. This appears similar to recent reports of cannabis use in Indigenous populations in New Zealand, Canada and North America. Limited data are available to describe patterns of use among Indigenous Australians.

This thesis describes patterns and natural history of cannabis use in a five year follow-up study, and their cross-sectional association with depressive symptoms, in a community sample of adolescents and adults (aged 13–36 at baseline in 2001) in remote Indigenous communities in Arnhem Land, Northern Territory (NT, Australia). It also considers the potential of three community-driven initiatives established to address cannabis and other substance use.

Data for this thesis are drawn from two research projects. A combination of quantitative and qualitative methods were adapted to suit the study setting, to meet the needs of research conducted in small and highly mobile groups, and across considerable language and cultural barriers.

Primary data collection methods include a structured survey, semi-structured interviews, review of data routinely collected by health and other agencies, and estimations of cannabis use in the communities by local Aboriginal Health Workers and key community informants (proxy respondents). Interviews were conducted wherever possible using a combination of plain English and the local Indigenous language. Interviews were typically conducted in a private location comfortable for participants. Local Indigenous research staff assisted in interviews for the longitudinal study of cannabis use.

Persistent cannabis use and dependence symptoms were found to be commonplace in this Indigenous cohort, raising concerns for the physical, social and psychiatric burden on these vulnerable communities. High prevalence of cannabis use appears to have

persisted from baseline to five year follow-up (63%–60%; use in the previous 12 months). After five years, the majority reported continuing cannabis use, with continuing users aged thirty years (median). Past petrol sniffing among baseline cannabis users is also a key predictor of heavy cannabis use (≥ 6 cones, daily) at follow-up. Regular heavy cannabis use was found in almost 90% of users, and around 90% of the Indigenous users report symptoms of cannabis dependence (DSM-IVR).

Regular and heavy patterns of cannabis use that are predominant in these study communities also occur alongside poor mental health and severe disadvantage. In a cross-sectional study, heavy cannabis users were found to be four times more likely than the remainder of the sample to report moderate–severe depressive symptoms (on a modified Patient Health Questionnaire-9) after adjusting for age, sex and other substance use.

What might be done to address the substantial health and social burdens related to cannabis misuse in these remote Indigenous communities? Broad community-wide preventive measures and programs that provide youth diversion from court and prison offer enhanced youth resilience and connectedness in remote Aboriginal communities, and alternatives to substance use.

Treatment programs for chronic cannabis users are urgently needed, along with locally-developed preventive programs to raise community awareness of the harms associated with cannabis and other substance use. Such programs would need to incorporate local Indigenous language and cultural concepts, build capacity of local Indigenous professionals, be guided by Indigenous residents, and be founded on strong partnerships between a range of Indigenous and non-Indigenous stakeholders.

A holistic approach is needed to address substance misuse instead of tackling each substance separately, and to address mental illness and the social determinants of poor health. Potential programs need to draw on community ideas and understanding of the problems being faced. Solutions imposed without reference to local context have little chance of success or longevity. The one-size-fits-all approach assumes homogeneity, but what works for one community is unlikely to be suitable for mass rollout. Ultimately tackling cannabis and other forms of substance misuse in remote settings will depend on working with communities to create opportunities for social development, and continuing education, training and employment in adolescents and young adults.

Acknowledgements

This thesis is very much a team effort. I would like to thank the study communities who have let me into their lives and changed mine forever, amungdungwa! Especially Muriel, Thomas, Betty, Ida, Helen L, Gloria, Tony, Jackie, Naomi, Helen N, Morgan, Caroline, Rhoda, Jennifer, Philip, Helen M and Barbara¹, and my many other napurras, daburras, mum-wallys, dad-wallys etc. I am so glad we could do this work together.

Jenni Langrell from the NT Health Department, Jennie Renfree from the Juvenile Diversion Unit (NT Police) and Jeanette Callaghan from NT Correctional Services provided limitless amounts of friendship along the way. Also Rick Peters and Tony Fuller have always been generous with their time and wisdom.

A/Prof Alan Clough (James Cook University) has shown so much interest in my career since we met in the study communities years ago, and is incredibly generous with his insights, and with inviting me to participate in this very special work. A/Prof Kate Conigrave (Royal Prince Alfred Hospital and University of Sydney) has supported and helped me, guided and steadied me – she reads anything of mine and writes on everything of mine, for which I shall always be indebted.

Prof George Patton from the Centre for Adolescent Health (Melbourne) has showed unswerving support for this research. Dr Timothy Dobbins from the School of Public Health (University of Sydney) is able to demystify numbers like no one else and is enthusiastic about numbers like no one else, except maybe Alan and George.

Mira Branezac from NSW Health's Drug and Alcohol Services Library helped with countless literature searches and is always willing to partake in sushi with salmon. Rachel Smith from the Centre for Adolescent Health is always on hand with data management advice and to provide perspective on green lawns in Parkville.

Finally to my family – Mum, Dad, Maude, Pie, Pea, Pineapple Crumpet, Yuj, Cousins, Boy, Juzzy, and the Upstairs people. Also Pen, Linda, Lex, Kristina, Sheila, Sib, Deb, Fiona, Eileen, Sarah, Kirsty, Stef and many others. To Dave who nearly always beats me in backgammon, this work makes so much sense with you in my life, crows and all.

¹ Surnames have been omitted to preserve the anonymity of the study communities.

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List of publications included as part of this thesis

* Publication that has been submitted

1. Lee KSK, Conigrave KM, Patton GC, Clough AR. Cannabis: endemic yet neglected in remote Indigenous Australia (editorial) *Med J Aust*, 2008;190:228-9.
2. Lee KSK, Clough AR, Conigrave KM. High levels of cannabis use persist in Aboriginal communities in Arnhem Land, Northern Territory (letter). *Med J Aust*, 2007;187:594-5.
3. Lee KSK, Conigrave KM, Clough AR, Dobbins TA, Jaragba MJ, Patton GC. Five year longitudinal study of cannabis users in three remote Aboriginal communities in Arnhem Land, Northern Territory, Australia. *Drug Alcohol Rev*, 2009 (in press).
4. Lee KSK, Conigrave KM, Patton GC, Clough AR. Does cannabis use contribute to depression in Indigenous Australians? *Transcult Psychiatry*, 2008 (submitted, revision requested).*
5. Lee KSK, Clough AR, Jaragba MJ, Conigrave KM, Patton GC. Heavy cannabis use and depressive symptoms in three Aboriginal communities in Arnhem Land, Northern Territory, Australia. *Med J Aust*, 2008;188:605-8.
6. Lee KSK, Conigrave KM, Clough AR, Wallace C, Silins E, Rawles J. Evaluation of a community-driven preventive youth initiative in Arnhem Land, Northern Territory, Australia. *Drug Alcohol Rev*, 2008;27:75-82.
7. Clough AR, Lee KSK, Conigrave KM. Promising performance of a juvenile justice diversion program in remote Aboriginal communities, Northern Territory, Australia. *Drug Alcohol Rev*, 2008;27:433-8.
8. Lee KSK, Jaragba MJ, Clough AR, Conigrave KM. *Wa! Ningeningma arakba akina da!*: (Oh! Now I know, that's it!) Providing feedback to communities about studies of cannabis use, Arnhem Land, Northern Territory. *Med J Aust*, 2008;188:113-6.

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Statement of contributions by student

Kim San Kylie Lee was the primary person responsible for the following thesis components:

- study coordination for the longitudinal study of cannabis use (2005–2006), including data collection, recruitment and support of Indigenous research staff, liaison with key local stakeholders, financial management and progress updates to ethics committees, funding agencies and study communities
- led the development of the community feedback model with the Indigenous research staff described in Publication # 8, including key liaison role, and production of feedback resources
- study coordination of the youth program evaluation, including collection of routine data from health, education and police departments, liaison with key local stakeholders (preventive and diversion components), financial management, and progress updates to ethics committees, funding agencies and study communities
- write-up including literature searches for Publications # 1–6 and # 8
- analysis of study results for Publications # 1–6 and # 8
- submission of publications and corresponding author responsible for liaison with journals for Publications # 1–6 and # 8
- contributed to survey design for the longitudinal study of cannabis use (2005–2006)
- contributed to conceptual planning and manuscript drafts, and designed Figure 1 for Publication # 7.

Conflict of interest

Kim San Kylie Lee was employed by the Youth Development Unit which was the subject of the study described in Chapter 5, Publication # 6. However, she was not involved in collection or analysis of qualitative data or review of identifiable material.

Funding support for this thesis

NHMRC Training Scholarship for Indigenous Health Research and the Alcohol Education and Rehabilitation Foundation.

Supervisors for this thesis

A/Prof Alan R Clough (James Cook University) and A/Prof Katherine M Conigrave (University of Sydney).

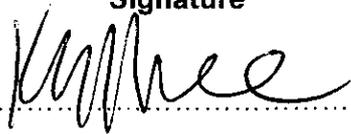
Statement of contributions by co-authors

- Kim San Kylie Lee: Refer to main statement of contributions.
- Alan R Clough: Chief Investigator for the longitudinal study of cannabis use, responsible for study design, funding applications, ethical approvals and data collection (2001, 2004). Contributed to survey design for the longitudinal study of cannabis use (2005–2006), and assisted in community feedback workshops. Write-up and data analysis for Publication # 7, including review of literature, and was corresponding author responsible for liaison with the journal. Editing assistance and final approval of Publications # 1–6 and # 8. Provided statistical support for Publication # 5. Provided support to Kim San Kylie Lee during data collection for the longitudinal study of cannabis use. Conducted interviews for the youth program evaluation (preventive and diversion components).
- Katherine M Conigrave: Chief Investigator for the funding proposal for the 2005–2006 follow-up study of cannabis use. Chief Investigator for the youth program evaluation (preventive and diversion components), responsible for study design, funding applications, ethical approvals and data collection. Conducted interviews for the youth program evaluation (preventive and diversion components). Contributed to survey design for the longitudinal study of cannabis use (2005–2006). Editing assistance and final approval of Publications # 1–6. Provided statistical support for Publications # 3 and # 5. Provided support to Kim San Kylie Lee during data collection for the longitudinal study of cannabis use.
- George C Patton: Contributed to survey design for the longitudinal study of cannabis use (2005–2006). Provided statistical support

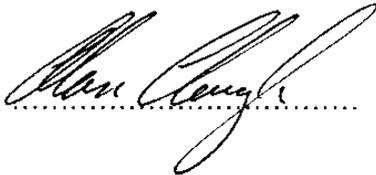
for Publications # 3 and # 5. Editing assistance and final approval of Publications # 1 and # 3–5.

- Muriel J Jaragba: Contributed to survey design, data collection, liaison with study communities and key local stakeholders, and participated in conference presentations in relation to the longitudinal study of cannabis use (2001 and 2005–2006). Contributed to conceptual planning and interpretation of results for Publications # 3, # 5 and # 8.
- Timothy A Dobbins: Provided statistical support, editing assistance and final approval for Publication # 3.
- Cate Wallace: Study coordination, data analysis and collection of routine data from health, police and education departments for the youth program evaluation (preventive and diversion components).
- Edmund Silins: Study coordination and collection of routine data from health, police and education departments for the youth program evaluation (preventive and diversion components).
- Jackie Rawles: Conducted interviews for the youth program evaluation (preventive and diversion components) and contributed to data analysis for Publication # 6.

I agree that the above is a true statement of my contributions and that of the candidate **Kim San Kylie Lee** to the publications presented in this thesis:

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Glossary

* Word from the Indigenous language spoken in the study communities

Term	Definition
amarda*, ganja or gunja ²	cannabis
amungdungwa*	true
angbilyuwa amarda-langwa*	cannabis sickness
anija*	alcohol
awerrikbarrngwarrnga*	describes a feeling or emotion and comes from the words <i>awerrik</i> (inside the chest) and <i>barrngwarrnga</i> (a very heavy and deep intense sadness)
bucket bong	water pipe often made from plastic soft drink containers used to create a vacuum in which to smoke cannabis, giving the user a rapid and intense dose with little smoke lost
dambakwa*	tobacco
heads	dried flowering top of the cannabis sativa plant
joint	cannabis usually blended with tobacco and rolled into a cigarette
kava	beverage produced from the roots of the kava plant (<i>piper methysticum</i>); originally from the western Pacific region
oil	made by extracting the primary psychoactive constituent of the cannabis sativa plant using an organic solvent [4]
resin	made primarily from the glandular trichomes collected from the cannabis sativa plant
skunk	potent strain of cannabis usually grown through selective breeding and hydroponics
Top End	northern region of the Northern Territory (Australia) that extends south to include the Roper and Daly regions
warnumamalya*	Aboriginal people

² These spellings (*ganja* and *gunja*) are used interchangeably in the literature and in different publications presented in this thesis.

warningkwarba*

wurradidiyara*

wurranjarrngalyilya*

wurridarringka*

men

female teenagers

male teenagers

women

Abbreviations

Aboriginal	Aboriginal people in Australia; or Indigenous people in the study communities
AC	Alan R Clough
CDEP	Community Development Employment Projects, an Australian Government funded initiative for unemployed Aboriginal and Torres Strait Islander Australians
CI	confidence interval
CW	Cate Wallace
DSM-IVR	Diagnostic and Statistical Manual of Mental Disorders, 4 th Ed. Text revision
Indigenous	Aboriginal and Torres Strait Islander; or Indigenous people in the study communities
IQ	intelligence quotient
KC	Katherine M Conigrave
KL	K S Kylie Lee
km	kilometre
KSKL	K S Kylie Lee
JDU	Juvenile Diversion Unit
JR	Jackie Rawles
MJJ	Muriel J Jaragba
ND	data not available
NSW	New South Wales
NT	Northern Territory
OR	odds ratio
PHQ-9, modified	Patient Health Questionnaire-9, depression module, modified using local Indigenous language and concepts
SD	standard deviation
UC	unable to compute
VSM	volatile substance misuse
WA	Western Australia
VOC	Victim Offender Conference
YDU	Youth Development Unit