Creating partnerships between researchers, health care providers and Indigenous Australians to improve Indigenous health: a demonstration model

Author:
Calabria, Bianca

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Creating partnerships between researchers, health care providers and Indigenous Australians to improve Indigenous health: a demonstration model

Bianca Calabria

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A thesis in fulfilment of the requirements for the degree of

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National Drug and Alcohol Research Centre

School of Public Health and Community Medicine

Faculty of Medicine

University of New South Wales

August 2013

Originality Statement

I hereby declare that this submission is my own work and to the best of my knowledge it contains no materials previously published or written by another person, or substantial proportions of material which have been accepted for the award of any other degree or diploma at UNSW or any other educational institution, except where due acknowledgement is made in the thesis. Any contribution made to the research by others, with whom I have worked at UNSW or elsewhere, is explicitly acknowledged in the thesis. I also declare that the intellectual content of this thesis is the product of my own work, except to the extent that assistance from others in the project's design and conception or in style, presentation and linguistic expression is acknowledged.

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Supervisor Statement

I hereby certify that all co-authors of the published or submitted papers agree to Bianca Calabria submitting those papers as part of her doctoral thesis.

Anthony Shakeshaft August 2013

Thesis by Publication Statement

Six papers are included in this thesis by publication. Four papers have been published in peer-reviewed journals and two papers have been submitted for editorial review to peer-reviewed journals. I attest to the publishable quality of the two papers currently under editorial review.

Anthony Shakeshaft August 2013

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Abstract

Alcohol misuse imposes a disproportionately high burden of harm on Indigenous Australians. Alcohol-related harms affect the physical, psychological, and spiritual wellbeing of Indigenous Australians. Harms extend beyond the problem drinker to their families and communities.

The primary aim of this thesis was to develop and implement a process of researchers, health care providers and Indigenous Australians working in partnership to more effectively respond to the deleterious impact of alcohol misuse on Indigenous families and communities. The process was highly interactive in that it sought to combine the methodological skills of researchers, the clinical knowledge and skills of health care providers, and the community knowledge and experience of Indigenous Australians. Specifically, research was used to identify interventions with potential to address alcohol-related harms that could be tailored to be consistent with Indigenous Australians' concepts of health and wellbeing (Papers 1 and 6), to ensure the reliability and validity of potential measures of impact (Paper 2), and to identify more precisely the nature of alcohol-related harm experienced by Indigenous Australians (Paper 5). Indigenous Australians' perceptions of the acceptability of potential interventions were obtained (Paper 4). Health care providers' views on how the potential interventions might best be tailored for routine delivery (Paper 3), and on undertaking a certification process to improve and standardise their skills in delivering the potential interventions (Paper 3), were also obtained.

This thesis is presented for examination as a series of publications, which means it presents a series of papers that were published in, or submitted for editorial review to, a peer-reviewed journal during the student's candidature, rather than the traditional model of presenting thesis chapters. Consistent with the University of New South Wales' thesis requirements, preambles

have been added to the papers to facilitate a coherent logical flow across the thesis, and appendices are included to complement the published content, but otherwise the papers are unaltered from the published or submitted versions. Papers 1, 4, 5 and 6 are published and Papers 2 and 3 are currently under editorial review. The introduction, and the implications and future directions chapter, provide a broader context for this thesis.

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List of Abbreviations

In each chapter/paper, abbreviations are used after the phrase has been written in full.

A-CRA	Adolescent Community Reinforcement Approach
ACCHS	Aboriginal Community Controlled Health Service
AH&MRC	Aboriginal Health and Medical Research Council
AQoL-6D	Assessment of Quality of Life – 6D
ARISE	A Relational Sequence for Engagement
AUROC	Areas under the receiver operating characteristic
AUDIT	Alcohol Use Disorders Identification Test
AUDIT-C	First three items of AUDIT
AUDIT-3	Third item of AUDIT
BMI	Brief motivational interviewing
CBT	Cognitive behavioural therapy
CI	Confidence interval
CRA	Community Reinforcement Approach
CRAFT	Community Reinforcement and Family Training
CRAFFT	Car Relax Alone Forget Friends Trouble
CVD	Cardiovascular disease
DALY	Disability adjusted life year
DAST	Drug Abuse Screening Test
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, Volume 4
DUI	Driving under the influence
etc.	Et cetera
e.g.	For example
Fig.	Figure

g	Grams
GEM	Growth Empowerment Measure
HIV	Human immunodeficiency virus
HREC	Human Research Ethics Committee
i.e.	That is
MBD	Multiple baseline design
MI	Motivational interviewing
N/A	Not applicable
NATSIHS	National Aboriginal and Torres Strait Islander Health Survey
NDARC	National Drug and Alcohol Research Centre
NHMRC	National Health and Medical Research Council
NHS	National health survey
NSW	New South Wales
PAF	Population attributable fraction
RCT	Randomised control trial
ROC	Receiver operating characteristic
SD	Standard deviation
UNSW	University of New South Wales
U.S.	United States
YLD	Year of life lived with disability
YLL	Years of life lost

List of Presentations

1. Bianca Calabria, Anthony Shakeshaft, Anton Clifford, Komla Tsey, Julaine Allan, Christopher Doran, Miranda Rose, Rod MacQueen. *Family-based intervention for Indigenous people who have alcohol use problems,* National Drug and Alcohol Research Centre Seminar Series, May 2010: Sydney, Australia [oral presentation].

2. Bianca Calabria, Anton Clifford, Anthony Shakeshaft, Christopher Doran. *Reducing alcohol-related harms among Indigenous Australians: A systematic review of family-based approaches,* National Drug and Alcohol Research Centre Annual Symposium, August 2010: Sydney, Australia [poster presentation].

3. Bianca Calabria, Anton Clifford, Anthony Shakeshaft, Christopher Doran, Julaine Allan, Miranda Rose, Komla Tsey. *Family-based approaches to reduce alcohol-related harms among Indigenous Australians,* Australian Professional Society on Alcohol and Other Drugs (APSAD) Conference, November 2010: Canberra, Australia [oral presentation].

4. Bianca Calabria, Anthony Shakeshaft, Anton Clifford, Komla Tsey, Julaine Allan, Christopher Doran, Miranda Rose, Rod MacQueen. *Development and evaluation of a family-based intervention to reduce alcohol-related harms among Indigenous Australians: Acceptability and study design,* National Drug and Alcohol Research Centre Seminar Series, April 2011: Sydney, Australia [oral presentation].

5. Bianca Calabria, Anton Clifford, Anthony Shakeshaft, Christopher Doran, Julaine Allan, Miranda Rose, Rod MacQueen. *The acceptability of a family-based alcohol intervention to Indigenous clients of a rural Aboriginal Community Controlled Health Service and drug and alcohol treatment agency*, 3rd Aboriginal Health Research Conference, Coalition for

Research to Improve Aboriginal Health (CRIAH), May 2011: Sydney, Australia [oral presentation].

6. Bianca Calabria, Anton Clifford, Anthony Shakeshaft, Christopher Doran, Julaine Allan, Miranda Rose, Komla Tsey, Rod MacQueen. *The acceptability of a family-based alcohol intervention to Indigenous clients of a rural Aboriginal Community Controlled Health Service and drug and alcohol treatment agency,* University of New South Wales, School of Public Health and Community Medicine Research Symposium, August 2011: Sydney, Australia [oral presentation].

7. Bianca Calabria, Anton Clifford, Anthony Shakeshaft, Christopher Doran, Julaine Allan, Miranda Rose, Komla Tsey, Rod MacQueen. *A family-based approach to reducing alcohol-related harms among Aboriginal Australians in rural New South Wales*, National Drug and Alcohol Research Centre Annual Symposium, August 2011: Sydney, Australia [oral presentation].

8. Bianca Calabria, Anton Clifford, Anthony Shakeshaft, Christopher Doran, Julaine Allan, Miranda Rose, Komla Tsey, Rod MacQueen. *The acceptability of a family-based alcohol intervention to Indigenous clients of a rural Aboriginal Community Controlled Health Service and drug and alcohol treatment agency*, National Drug and Alcohol Research Centre Annual Symposium, August 2011: Sydney, Australia [poster presentation].

9. Bianca Calabria, Anton Clifford, Anthony Shakeshaft, Katherine Conigrave, Lynette Simpson, Julaine Allan. *Identifying risky and dependent Aboriginal drinkers using AUDIT-C and AUDIT-3*, National Drug and Alcohol Research Centre Annual Symposium, August 2012: Sydney, Australia [poster presentation].

10. Bianca Calabria, Anton Clifford, Anthony Shakeshaft, Katherine Conigrave, Lynette Simpson, Donna Bliss and Julaine Allan. *AUDIT-C and AUDIT-3 cut-off scores for Aboriginal Australians,* National Drug and Alcohol Research Centre Seminar Series, November 2012: Sydney, Australia [oral presentation].

11. Bianca Calabria, Anton Clifford, Miranda Rose, Anthony Shakeshaft. *Tailoring two evidence-based interventions for delivery to Aboriginal Australians: Perception of, and suggestions by, health care providers,* National Drug and Alcohol Research Centre Annual Symposium, September 2013: Sydney, Australia [poster presentation].

12. Bianca Calabria, Anthony Shakeshaft, Anton Clifford. *Improving Indigenous intervention research by establishing partnerships between researchers, Indigenous Australians and health care providers*, University of New South Wales, School of Public Health and Community Medicine Research Symposium, October 2013: Sydney, Australia [oral presentation].

Introduction

A brief overview of Indigenous Australian history and alcohol

Indigenous Australians[1] have one of the oldest continuing cultures in the world (Rasmussen et al. 2011). They share a strong connection to their past and to their traditional lands which is communicated through varied cultural practices (Coates 2004), both traditional and contemporary. The colonisation of Australia and government policies and practices had, and continues to have, a negative and significant impact on Indigenous Australians' physical, social, emotional and mental health and wellbeing (Gracey & King 2009). The health status of Indigenous Australians is, therefore, worse than any other identifiable group in Australia (Australian Institute of Health and Welfare 2011d). The socio-economic determinants of poor health for Indigenous and non-Indigenous people include income, education, employment, living conditions, social support and access to health care services (King, Smith & Gracey 2009). Indigenous Australians have worse outcomes on each of these determinants compared to non-Indigenous Australians (Altman 2003; Australian Medical Association 2011). Additionally, Indigenous Australians' health is negatively affected by factors inextricably linked to the process of colonisation, such as racism, loss of language and connection to the land, environmental deprivation, and spiritual, emotional and mental disconnectedness from culture and community (King, Smith & Gracey 2009). The presence of these socio-economic determinants of poor health has, in turn, been shown to be significantly associated with an increased incidence of a number of health risk behaviours, including alcohol misuse, which has

[1] Australia's first peoples have two distinct cultural identities: Aboriginal and Torres Strait Islander groups. The first inhabitants of Australia are referred to in this thesis as Indigenous Australians, Aboriginal people, Aboriginal Australians, and Aboriginal and Torres Strait Islander people. Referential terms for Australia's first peoples vary across the chapters/papers of this thesis to represent the preference of Aboriginal and/or Torres Strait Islander people involved in each chapter.

been shown to further worsen Indigenous Australians' health status (Australian Institute of Health and Welfare 2011d; King, Smith & Gracey 2009; Vos et al. 2007).

The colonisation of Australia had a particularly detrimental effect on alcohol consumption patterns among Indigenous Australians. Prior to colonisation, Indigenous Australians participated in controlled consumption of mild fermented beverages made from local plants (Brady 1991) for ceremonial and trade purposes (Brady 2008). Alcohol was also introduced to Indigenous Australians by Makassans, the Dutch, the French and the Russians, before the British arrived in 1788 (Brady 2008). When the British settled in Australia, patterns of consuming large quantities of alcohol on a single occasion were introduced (Lewis 1992) and Indigenous Australians learned these patterns of drinking (Brady 2008). State Prohibition Laws denying Indigenous Australians legal access to alcohol were introduced in New South Wales in 1838, Western Australia in 1843, Victoria in 1864, South Australia and the Northern Territory in 1869, Queensland in 1885, Tasmania in 1908, and the Australian Capital Territory in 1929 (Brady 1991; Brady 2008). These laws had the effect of segregating Indigenous and non-Indigenous drinking, effectively increasing the temptation of alcohol to Indigenous Australians, and encouraging Indigenous Australians to get drunk very quickly in an uncontrolled environment (Brady 2008). When prohibition eased in the 1900s, conditional citizenship, and the legal right to drink, were restored in the legislation, but only for Indigenous Australians who had abandoned their tribal associations, served in the armed forces, or were deemed to have acquired the 'habits of civilised life' (Lewis 1992). Indigenous Australians classified as 'mixed decent' (that is those who were part Indigenous and part European) were also allowed to drink alcohol (Brady 1991). The right to drink alcohol, therefore, was equated to citizenship and assimilation with the prevailing European values and lifestyle (Lewis 1992).

Alcohol use in Australia's Indigenous and general populations

The National Drug Strategy Household Survey collects alcohol consumption data for Australians aged 14 years or older. The most comprehensive and methodologically sound data (Chikritzhs & Brady 2006) on Indigenous Australian alcohol use was collected in 1994 and is reported in the Urban Aboriginal and Torres Strait Islander Peoples Supplement (Australian Department of Human Services and Health 1995). This supplement compares 1994 Indigenous-specific data to 1993 general population data. Thirty-seven percent of Indigenous Australians reported that they did not currently drink alcohol (28% of males and 44% of females), compared to 22% of general population Australians (16% of males and 26% of females). Among the current drinkers, hazardous (two to four standard drinks per occasion for females and four to six for males) and harmful (more than four standard drinks per occasion for females and more than six for males) drinking was reported by 14% and 68% of Indigenous respondents respectively, and 17% and 11% of general population respondents respectively.

Although limited, more recent data show a similar trend. A greater proportion of Indigenous Australians abstain from drinking alcohol, compared to general population Australians: 21.3% compared to 16.4% in 2004; 23.4% compared to 17.1% in 2007; and 24.5% compared to 19.5% in 2010 (Australian Institute of Health and Welfare 2005; Australian Institute of Health and Welfare 2008a; Australian Institute of Health and Welfare 2011a). A higher proportion of Indigenous Australians, however, drink at levels that increase their risk of alcohol-related harm. The proportion of those who report short-term risky alcohol consumption for Indigenous Australians, relative to general population Australians, in 2004 (defined as the consumption of at least seven (males) or five (females) standard drinks per occasion) was 38.7% and 20.7% respectively. In 2007 the comparable proportions were 27.4% and 20.4% respectively. Results from 2010 showed a substantial reduction for both Indigenous and general population Australians (24.6% and 15.9%, respectively) (defined as the consumption of

more than four standard drinks per occasion for both males and females). The proportion of those who report long-term risky alcohol consumption for Indigenous Australians, relative to general population Australians, in 2004 (defined as the consumption of at least 29 (males) or 15 (females) standard drinks in a week) was 22.7% and 9.9% respectively. In 2007 the comparable proportions were 12.5% and 10.3% respectively. Results from 2010 showed a large increase for both Indigenous and general population Australians (31.0% and 20.1% respectively), although this most likely reflects the introduction of a more conservative definition of long-term risky drinking (the consumption of at least two standard drinks on any day for males and females) (Australian Institute of Health and Welfare 2005; Australian Institute of Health and Welfare 2008a; Australian Institute of Health and Welfare 2011a). As a consequence of these relatively higher proportions of both short-term and long-term risky drinkers, Indigenous Australians experience a disproportionately high burden of alcohol-related harm, relative to general population Australians (Begg et al. 2007; Vos et al. 2003).

Contribution of alcohol use to the burden of disease and health care costs imposed on Indigenous Australians

The health related burden of disease is commonly measured using the Disability Adjusted Life Year (DALY) which is equivalent to one lost year of 'healthy' life due to death or disability (Murray et al. 2012). Mortality and morbidity health data are incorporated into the DALYs from hospital records, vital registration, surveys and other sources (Vos et al. 2007). In the Indigenous Australian population, alcohol is estimated to contribute 5.4% to the total burden of disease (6.2% of harmful effects and -0.8% of beneficial effects) (Vos et al. 2007), compared to 2.3% of the total burden of disease (3.3% of the harmful effects and -1.0% of the beneficial effects) in the general Australian population (Begg et al. 2007). The greatest contributors to the estimated alcohol-related harm among Indigenous Australians are alcohol abuse and harmful use (40%), homicide and violence (14%), suicide (14%) and road traffic accidents (14%)

(Vos et al. 2003). Relative to other risk factors, alcohol is estimated as being responsible for the greatest proportion of the burden of disease imposed on Indigenous males aged 15-34 years and the second greatest proportion of the burden of disease imposed on Indigenous females of the same age (eclipsed only by intimate partner violence) (Vos et al. 2003). Alcohol is also the leading risk factor for injury among Indigenous Australians (Vos et al. 2007). In addition, mental health disorders is estimated as being responsible for 15.5% of the total disease burden among Indigenous Australians, 19% of which is directly associated with alcohol dependence and harmful use (Vos et al. 2003).

As well as attempting to estimate the relative contribution of different diseases and injuries to mortality and morbidity, the burden of disease data are used to quantify the health gap between Indigenous and general population Australians. The health gap is defined as the difference between the number of 'healthy' years of life lost through disability or death and the number of healthy years that would have been lost if a difference between Indigenous Australian and general Australian population disease and injury rates did not exist (Vos et al. 2009). The Indigenous health gap accounts for 59% of the total burden of disease among Indigenous Australians. Alcohol is in the top five main risk factors and contributes 4% to the Indigenous health gap. The other four main risk factors are tobacco (17%), high body mass (16%), physical inactivity (12%), and high blood cholesterol (7%) (Vos et al. 2009).

The health gap is reflected in the difference in health costs for Indigenous, compared to general population, Australians. The estimated per person expenditure on health care costs for 2008-09, for services where cost has been estimated, was $3,887.20 for Indigenous Australians and $2,509.20 for non-Indigenous Australians (Australian Institute of Health and Welfare 2011c). Hospital separations refer to an episode of admitted patient care that is completed by discharge, dying, being transferred to another hospital, or by change of type of care (Australian

Institute of Health and Welfare 2011b). Hospital separation rates (public and private) for alcohol dependence and other harmful use during 2008-09 were 3.7 times higher for Indigenous compared to non-Indigenous Australians (7.3 for Indigenous and 2.0 for non-Indigenous). These hospital separations cost an estimated $17.6 million for Indigenous and $135.9 million for non-Indigenous, translating to $32.30 for each Indigenous individual and $6.40 for each non-Indigenous individual (Australian Institute of Health and Welfare 2011c). Governments provided 69.7% of the total health care funding for 2008-09 with the remaining 30.3% paid by individuals, private health insurance and other non-government sources (Australian Institute of Health and Welfare 2010). An effective government response to reduce these harms and costs is, therefore, essential.

Closing the Gap Framework

In March 2008, the Council of Australian Governments (including the Prime Minister, State Premiers, Territory Chief Ministers and the President of the Australian Local Government Association) formally committed to the Closing the Gap Framework, aimed at achieving Indigenous health equality within 25 years (Council of Australian Governments 2012). Six specific targets were agreed: 1) closing the life expectancy gap within a generation; 2) halving the gap in mortality rates for Indigenous children under five within a decade; 3) ensuring all Indigenous four year olds in remote communities have access to early childhood education within five years; 4) halving the gap for Indigenous students in reading, writing and numeracy within a decade; 5) halving the gap for Indigenous young people attaining Year 12 qualifications or equivalent by 2020; and 6) halving the gap in employment outcomes between Indigenous and non-Indigenous Australians within a decade (Council of Australian Governments 2012; Australian Institute of Health and Welfare 2011d). Seven building blocks were also defined in the Closing the Gap Framework as underpinning the achievement of the targets: 1) early childhood; 2) schooling; 3) health; 4) healthy homes; 5) economic

participation; 6) safe communities; and 7) governance and leadership. Among other things, the 'health' and 'safe communities' building blocks are aimed at reducing alcohol-related harms among Indigenous Australians by expanding health care services for alcohol dependence and abuse, increasing the number of alcohol and drug workers, reducing Foetal Alcohol Spectrum Disorders, reducing alcohol-related road traffic accidents, reducing community violence and dysfunction, and supporting community chosen Alcohol Management Plans (Australian Government 2013). Improved efforts to identify best evidence interventions for reducing alcohol misuse among Indigenous Australians, and effective methods for tailoring them to the specific circumstances of Indigenous communities would help to achieve the alcohol-related aims of the Closing the Gap building blocks.

Improving intervention research

Systematic reviews of the published Indigenous health literature have identified a predominance of descriptive research in the Indigenous health research field, and a need for more Indigenous-specific intervention research (Sanson-Fisher et al. 2006; Gray et al. 2000). Specifically, with respect to alcohol research there is a lack of intervention and measures research, and the limited number of intervention evaluations that have been published tend to focus on primary interventions (e.g. health promotion, alcohol restrictions) with little attention to secondary interventions (e.g. brief interventions, cognitive-behavioural interventions) (Gray et al. 2000; Clifford et al. 2010; Shakeshaft, Clifford & Shakeshaft 2010). The main consequence of continuing the current trend in Indigenous alcohol research would be an ongoing lack of reliable evidence for the types of interventions that are likely to be most cost-effective for difference types of alcohol-related problems, and an increased likelihood that interventions of unknown effectiveness and cost will continue to be implemented.

To adequately determine their cost-effectiveness, Indigenous-specific interventions require careful consideration and development, comprising both meaningful consultation and collaboration with Indigenous communities and rigorous evaluation using practical and rigorous evaluation designs, and valid, reliable and acceptable measurement instruments (Gray et al. 2000; Clifford et al. 2010). Rigorous evaluations that use valid and reliable instruments to measure outcomes are required to determine the true effect of an intervention (Sanson-Fisher & Campbell 1994). Indigenous-specific measures with published validity and reliability are rare (Clifford et al. 2010; Shakeshaft, Clifford & Shakeshaft 2010) and, as such, their development should be a priority for researchers.

Tailoring evidence-based interventions with potential to reduce alcohol-related harms to the needs and preferences of Indigenous communities and health care services increases both the likelihood that they will prove to be cost-effective and that those shown to be cost-effective will be able to be integrated into routine care (Shakeshaft, Clifford & Shakeshaft 2010). Family-based approaches have been shown to be effective for reducing alcohol-related harms in non-Indigenous populations (Miller & Wilbourne 2002; Smit et al. 2008; Templeton, Velleman & Russell 2010), and they are likely to be acceptable to Indigenous Australians for four main reasons: 1) family members in close contact with problem drinkers are at risk of alcohol-related violence, conflict, sexual assault, psychological abuse and/or neglect (Kelly & Kowalyszyn 2003; Laslett et al. 2010); 2) positive family relationships are the foundation for community cohesion in Indigenous communities (McLennan & Khavarpour 2004) and can promote behavioural change (Nagel & Thompson 2010); 3) family-based approaches align with the Indigenous Australian cultural practice of including family members in health care communications (McGrath et al. 2006); and 4) family-based approaches are consistent with the Indigenous Australian concept of health that incorporates physical, social, emotional, and cultural wellbeing (Brady 2004).

Evidence-based interventions tailored for Indigenous Australians and delivered through Indigenous-specific health care services improves the likelihood that they will be accessed by Indigenous Australians, because they are more likely to seek culturally appropriate care (Henry, Houston & Mooney 2004). Aboriginal Community Controlled Health Services (ACCHSs) are primary care services aimed at providing high quality holistic and culturally appropriate care through local Indigenous community planning and management. ACCHSs often provide primary and secondary interventions aimed at addressing low and risky alcohol consumption (Hunter et al. 2005). Tertiary interventions, addressing high-risk alcohol use and high levels of alcohol dependence, are usually delivered to Indigenous Australians through drug and alcohol treatment agencies (Brady, Dawe & Richmond 1998). Although drug and alcohol treatment agencies are not always governed by Indigenous Australians, they can provide specialist care through health care providers who have experience working with Indigenous Australians. Irrespective of the specific nature of the health care service, the extent to which it is utilised by Indigenous people, and their willingness to engage in research, is fundamentally determined by the level of trust that exists between the health care service and the local Indigenous community (Allan & Campbell 2011).

Working in partnership with Indigenous Australians and health care providers

The development of Indigenous-specific interventions for delivery through routine health care services requires ongoing consultation with Indigenous people (Gray et al. 1995). This includes, but is not limited to, a steering committee that comprises Indigenous Australian representatives (Henderson et al. 2002). The process of consultation addresses Indigenous people's right to self-determination (United Nations 2008) and provides acknowledgment of, and respect for, differences in cultural beliefs and systems between Indigenous and non-Indigenous Australians, and the diversity of Indigenous peoples (Australian Institute of

Aboriginal and Torres Strait Islander Studies 2010; National Health and Medical Research Council 2003). To optimise the feasibility and likely cost-effectiveness of Indigenous-specific interventions, they must be acceptable to the needs and circumstances of Indigenous people and to the health care providers who will deliver them to Indigenous people. The support of health care providers for a proposed intervention is integral to the success with which it is likely to be delivered in the context of routine care.

Historically evidence-based research has been developed in an academic setting without consultation with health care providers or community members and presented to health care providers for implementation into routine practice (Green 2008). This method has not been successful in ensuring that evidence-based research is used in clinical practice settings, because what works in a controlled environment under strict conditions, as is the case for rigorously designed trials, is not always effective or appropriate in a real world setting (Westfall, Mold & Fagnan 2007). The participation of health care providers and community members in the development of locally targeted evidence-based interventions is more likely to result in implementation into routine practice, than if research evidence is developed and disseminated to health care services without consultation (Green 2008). The process of consultation provides an opportunity for the perceived needs of health care providers and of community members to be incorporated into research.

Translational research aims to achieve the balance between research informing practice and practice and perceived needs informing research (Marincola 2003; Havard Catalyst 2013), and has been categorised into five different types: T1) basic research into clinical effect; T2) clinical effect into clinical intervention; T3) clinical intervention into clinical practice; T4) specific public health intervention at a population level; and T5) clinical, public health and determinants-related interventions applied to the population or specific sub-population (Thompson 2012).

Since T5 research is most relevant to intervention research that is integrated into the routine delivery of health care services, its applicability to Indigenous Australians is most likely to be in the context of health care services provided by ACCHSs, or provided by health care providers who are employed by mainstream treatment agencies but have experience working with Indigenous Australians (Brady, Dawe & Richmond 1998; Hunter et al. 2005). Researchers working in consultation with health care providers who routinely interact with Indigenous Australians, and with Indigenous Australians themselves, creates the opportunity for Indigenous-specific research to inform practice and, conversely, for the requirements of clinical practice and the perceived needs of Indigenous clients and communities, to inform research. Factors that may limit the practical application of this dynamic model of integrated clinical practice and evaluation include: limited clinician access to existing research findings and evaluation expertise; no encouragement from the health care organisation for staff to continue learning; the lack of incentive for researchers to engage with health care providers; and a range of individual-level factors (e.g. personal beliefs, lack of motivation) (Barratt 2003).

One potential way to address these barriers is to develop formal partnerships between researchers, health care providers and Indigenous Australians, that allow each of them to contribute their own skills to identify best evidence interventions, tailor them to meet the needs and fit the circumstances of relevant Indigenous communities, families and health care providers, implement them in the context of routine service delivery and, ultimately, evaluate their impact and costs. Given the historical nature of the relationship between Indigenous and non-Indigenous Australians, these partnerships are most likely to be effective if they explicitly foster Indigenous control of, or at a minimum meaningful Indigenous participation in, all phases of their own health research.

This thesis aimed to demonstrate one such process of researchers working in partnership with health care providers and Indigenous Australians in the context of routine provision of health care services. The partnership identified and tailored promising interventions to reduce rates of alcohol-related harm experienced by Indigenous Australians, and devised Indigenous-specific reliable and valid measures of alcohol misuse and harm to identify at-risk individuals and provide a psychometrically tested outcome measure. It also sought to respond to concerns specifically raised by Indigenous participants about the particular negative impact of alcohol on Indigenous young people. Following from this doctoral research, participants are being recruited to take part in the tailored interventions and baseline and follow-up data is being collected to assess their cost-effectiveness. The evaluation of the tailored interventions will occur as part of the ongoing partnership that has been established by this doctoral research.

Overview of chapters

Paper 1 presents the results of a systematic review of family-based interventions aimed at reducing alcohol-related harms. The review was limited to family-based interventions because they are most consistent with the intervention approach that both the Indigenous community and the health care providers involved in the partnership thought would be most acceptable in their communities. The review identified 1,369 studies, of which 142 were classified as intervention studies. Nineteen intervention studies were family-based alcohol interventions: eleven included the family member in the treatment of the problem drinker; and eight specifically targeted family members of problem drinkers. Community Reinforcement and Family Training (CRAFT) was identified as an intervention approach that had at least some evidence for its effectiveness and had potential to be successfully tailored for delivery to Indigenous people. CRAFT is an intervention that targets family members of problem drinkers and teaches them skills to support their problem drinking relative to reduce their alcohol consumption by removing positive reinforcement for drinking behaviour. CRAFT also teaches

family members of problem drinkers how to increase their own social and emotional wellbeing.

Paper 2 identifies Indigenous-specific cut-off scores for two short versions of the Alcohol Use Disorders Identification Test (AUDIT), a measure of problematic alcohol use: AUDIT-C and AUDIT-3. Indigenous-specific AUDIT-C and AUDIT-3 cut-off scores could be used to screen Indigenous people for enrolment into interventions and to measure intervention outcomes.

Paper 3 presents health care providers' suggestions for tailoring CRAFT and the Community Reinforcement Approach (CRA) (an intervention that targets problem drinkers from which CRAFT was modelled) for Indigenous Australians, and their perceptions of the CRA and CRAFT certification process. Changes to technical language, fewer sessions and the availability of group sessions were suggested. The certification process was viewed positively.

Paper 4 presents Indigenous Australians' perceptions of, and suggestions for, tailoring CRA and CRAFT for delivery in their local community. The interventions were viewed favourably. In addition to reaffirming the communities' commitment to trialling a family-based approach, a perception that young Indigenous people were at particular risk of alcohol-related harm was highlighted; an issue explored in papers 5 and 6.

Paper 5 investigates differences in experienced alcohol-related harm for Indigenous Australians, compared to the general Australian population, by age and sex. The findings are consistent with the perceptions of the participants in Paper 4 that young Indigenous people generally experience a disproportionately high burden of alcohol-related harm, relative to the general Australian population.

Paper 6 presents the results of a systematic review of the peer-reviewed literature on intervention evaluations for young people at high risk of alcohol-related harm. The review identified 1,697 studies, of which 148 were classified as intervention studies. Nine studies evaluating interventions targeting young people at high risk of alcohol-related harm were identified. This review identified that the interventions with the most potential to help reduce alcohol-related harms among high risk young people were cognitive-behavioural therapy, family therapy and CRA.

The final section of this thesis discusses the implications of the findings of Papers 1 to 6 and presents avenues for future research, including proposed guiding principles for researchers developing partnerships with health care providers and Indigenous Australians to help improve the quality of Indigenous intervention research and, ultimately, the health of Indigenous Australians.

Paper 1

A systematic review of family-based interventions targeting alcohol misuse and their potential to reduce alcohol-related harm in Indigenous communities

Bianca Calabria[1], Anton Clifford[2], Anthony P. Shakeshaft[1], Christopher M. Doran[3,4,5]

1. National Drug and Alcohol Research Centre, University of New South Wales, Sydney, New South Wales, Australia
2. Queensland Alcohol and Drug Research and Education Centre, School of Population Health, University of Queensland, Brisbane, Queensland, Australia
3. Hunter Medical Research Centre, Newcastle, New South Wales, Australia
4. University of Newcastle, Newcastle, New South Wales, Australia
5. Hunter Valley Research Foundation, Newcastle, New South Wales, Australia

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Preamble

Paper 1 systematically reviews the peer-review literature to identify the family-based approaches for reducing alcohol-related harm that have the most potential to be tailored for delivery to Indigenous people. An initial systematic search of the peer-reviewed literature, using the same methodology described in this paper, was undertaken to identify published evaluations of family-based alcohol interventions specifically targeting Indigenous Australians; however, this search identified no relevant studies. When evidence about intervention effectiveness that has been established specifically in Indigenous health care settings is not available, it may be possible to tailor interventions that have been evaluated in non-Indigenous health care settings to Indigenous settings, provided there is little likelihood of harmful outcomes for participants (Shakeshaft, Clifford & Shakeshaft 2010). A broader systematic search of the peer-review literature was therefore undertaken to identify published evaluations of family-based alcohol interventions targeting any population group. The acceptability and feasibility to health care providers and Indigenous Australians of the most promising interventions would subsequently be explored. Although the findings of this systematic review are applicable to both Indigenous and non-Indigenous populations, the main purpose of the review is to identify which family-based interventions appear most promising to reduce alcohol-related harm in Indigenous communities.

Abstract

Objective: Alcohol misuse is a major risk factor for harm in Indigenous communities. The Indigenous family unit is often the setting for, and is most adversely affected by, alcohol-related harm. Therefore, family-based alcohol interventions offer great potential to reduce alcohol-related harm in Indigenous communities. This systematic review aims to identify peer-reviewed publications of evaluations of family-based alcohol interventions, critique the methodological quality of those studies and describe their intervention characteristics, and identify which interventions appear most promising to reduce alcohol-related harm in Indigenous communities.

Method: Eleven electronic databases were searched. The reference lists of reviews of family-based approaches focused on alcohol interventions were hand-searched for additional relevant studies not identified by the electronic database search.

Results: Initially, 1,369 studies were identified, of which 21% (n = 142) were classified as intervention studies. Nineteen intervention studies were family-based alcohol interventions. Eleven of these studies included family members in the treatment of problem drinkers, and eight studies specifically targeted family members of problem drinkers. Methodological quality of studies varied, particularly in relation to study design, including confounding variables in the analyses, and follow-up rates.

Conclusions: The evidence for the effectiveness of family-based alcohol interventions is less than optimal, although the reviewed studies did show improved outcomes. Given the important role of family in Indigenous communities, there is merit in exploring family-based approaches to reduce alcohol-related harms. Tailored family-based approaches should be developed with direct consultation with targeted Indigenous communities.

Introduction

Indigenous peoples have a historical continuity with pre-colonial traditional societies. They derive a sense of identify from, and have a strong connection to, their traditional lands. Indigenous peoples communicate their strong understanding of and connection with their past through varied and distinct lifestyle and cultural practices. Adaptations away from traditional land, lifestyle and culture do not negate Indigenous identity (Coates 2004).

In countries where alcohol use is culturally acceptable, a greater proportion of Indigenous people abstain from alcohol use compared to the general population; however, among those that do drink, Indigenous people consume alcohol at riskier levels (Australian Department of Human Services and Health 1995; First Nations/First Nationals Information Governance Committee 2007; Bramley et al. 2003). In other countries, where alcohol is only consumed by a minority of the population, Indigenous people are more likely to consume alcohol than those in the general population (Subramanian, Smith & Subramanyam 2006). As a result, Indigenous people experience a disproportionately high burden of alcohol-related harm compared with the general population (Centre for Disease Control 2008; Calabria et al. 2010). Alcohol-related mortality rates are between two (Centre for Disease Control 2008; Connor et al. 2004) and eight (Vos et al. 2003; Begg et al. 2007) times higher among Indigenous populations compared to the general population. The main contributors to alcohol-related mortality among Indigenous people are homicide and violence, injury, suicide (including self-inflicted injury), and road traffic accidents (Centre for Disease Control 2008; Vos et al. 2003; Connor et al. 2004; Calabria et al. 2010; Begg et al. 2007). Despite these extraordinarily high rates of alcohol-related harm, Indigenous peoples' access to health services and programs to reduce these harms is disproportionately low (Berry & Crowe

2009; KnowledgeAssets 2009). Mainstream services and programs are generally unacceptable and/or inappropriate for Indigenous peoples (Dodgson & Struthers 2005; Hayman, White & Spurling 2009), and Indigenous-specific alcohol services are often lacking and/or inadequately resourced (Gray et al. 2010; Allison, Rivers & Fottler 2004). As a consequence, Indigenous peoples require improved access to acceptable and appropriate alcohol intervention services and programs.

The harms resulting from alcohol misuse extend beyond drinkers to their families and communities. Family members and friends who have regular contact with a problem drinker are at increased risk of alcohol-related violence, conflict, sexual assault, psychological abuse, and/or neglect (Laslett et al. 2010; Kelly & Kowalyszyn 2003; Seale et al. 2002). These negative personal relationships can result in psychological distress (Laslett et al. 2010; Seale et al. 2002). Conversely, positive family relationships are the foundation for community cohesion among Indigenous groups (McLennan & Khavarpour 2004) and can promote behavioural change (Nagel & Thompson 2010). Given the increased risk of alcohol-related harm among relatives of problem drinkers and the central role that family relationships play in Indigenous communities, family member participation in interventions to help problem drinkers reduce their alcohol consumption is likely to result in better outcomes than interventions that target problem drinkers only.

Family-based interventions have proven to be effective in non-Indigenous populations (Templeton, Velleman & Russell 2010; Smit et al. 2008; Miller & Wilbourne 2002). Cultural adaptation of evidence-based interventions to increase their likelihood of proving acceptable and effective for Indigenous people is, however, necessary and appropriate because of differences in their cultural values, knowledge bases and levels of exposure to risk factors (Bernal, Jime´nez-

Chafey & Rodreguez 2009; Lau 2006). Despite calls for increased family support services for Indigenous communities (Gray et al. 2010; Seale et al. 2006), the effectiveness and appropriateness of family-based interventions for reducing alcohol-related harm in Indigenous communities is yet to be rigorously examined.

The aims of this paper are threefold: first, to identify peer-reviewed publications of evaluations of family-based alcohol interventions; second, to critique the methodological quality of those studies and describe their intervention characteristics; and third, to identify which interventions appear most promising to reduce alcohol-related harm in Indigenous communities.

Method

Sample

The search was limited to publications dated 2003-2010 (inclusive) to complement, rather than replicate, a previous review of family-based interventions, published in 2005 (Copello, Velleman & Templeton 2005).

Search strategy

Figure 1 summarises the databases searched, the search terms used, the exclusion criteria, and classification of included studies (see Appendix A for search strings).

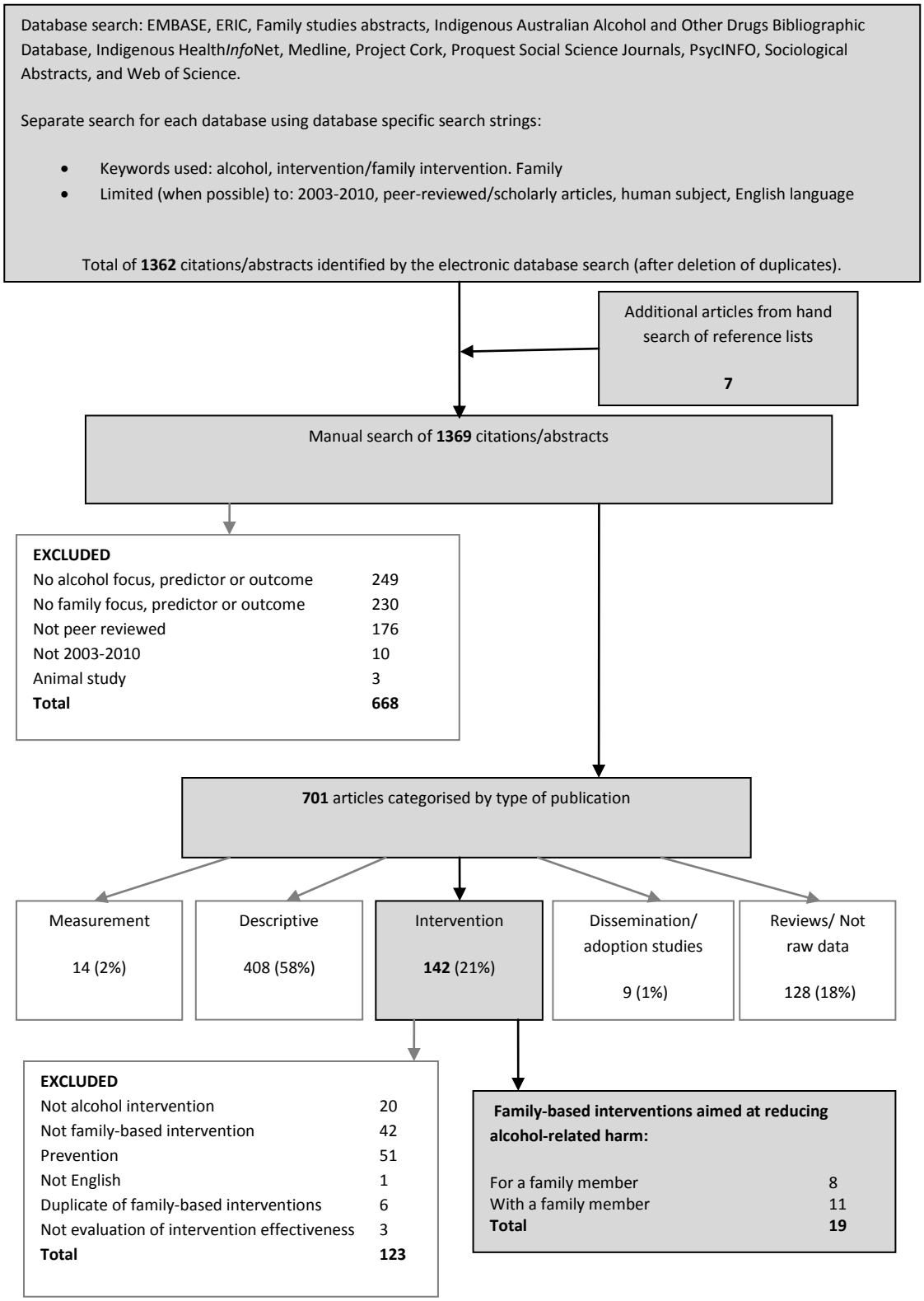

Figure 1. Flowchart indicating search strategy and classification of articles

Consistent with methods detailed in the Cochrane Collaboration's *Handbook on Systematic Reviews of Health Promotion and Public Health Interventions* (Jackson 2007) and with previous reviews (Havard, Shakeshaft & Sanson-Fisher 2008; Webb et al. 2009; Wood et al. 2006; Calabria, Shakeshaft & Havard 2011; Shakeshaft, Bowman & Sanson-Fisher 1997), the search strategy comprised two steps. First, consultation with a qualified archivist identified nine relevant electronic databases to search: Project Cork, EMBASE, ERIC, Family Studies Abstract, MEDLINE, Proquest Social Science Journals, PsycINFO, Sociological Abstracts, and Web of Science. Electronic databases were searched individually with specific search strings as this search method is more effective at identifying relevant articles than a simultaneous search using generic search terms (Jackson 2007). The search terms (modelled from a previous review (Calabria, Shakeshaft & Havard 2011)) "alcohol", "family" and "intervention" were integrated into database specific search strings. The combined searches of the nine databases located 3,032 references that were imported into Endnote. An Endnote search for "intervention" was conducted to identify a manageable number of citations for review. The Endnote search identified 1,250 articles for classification. To maximise coverage of Indigenous-specific studies, the Indigenous Australian Alcohol and Other Drugs Bibliographic Database (National Drug Research Institute) and the Indigenous Health*InfoNet* (Australian Government Department of Health and Ageing) were searched using the same search terms. A total of 112 studies were identified for classification. These were reviewed by hardcopy printouts because the databases lack the capacity to export references to Endnote.

Second, reference lists of reviews of family-based approaches targeting alcohol (n = 44), identified by Step 1, were hand-searched for relevant studies not yet identified. This process identified seven

relevant studies (Dutcher et al. 2009; Howells & Orford 2006; Latimer et al. 2003; Rychtarik & McGillicuddy 2005; Walitzer & Dermen 2004; Doyle et al. 2003; Fals-Stewart et al. 2005).

Classification of studies

The abstracts of the 1,369 identified references were classified in a three-step process.

Step 1: Identification of studies for exclusion. Articles were excluded if: (a) they did not focus on alcohol or if the outcome or predictor variables did not include alcohol (*n* = 249); (b) the subject of the research was not defined as a family member (e.g. parent, spouse, sibling, or child) or the outcome or predictor variables did not include family (e.g. family functioning or heritability) (*n* = 230); (c) they were not peer-reviewed (*n* = 176); (d) they were not conducted in 2003-2010 (*n* = 10); or (e) they were animal studies (*n* = 3). Step 1 excluded 668 articles.

Step 2: Classification of studies. The remaining studies (*n* = 701) were classified as either intervention studies or one of four other criteria derived and adapted from previous similar reviews (Havard, Shakeshaft & Sanson-Fisher 2008; Webb et al. 2009; Wood et al. 2006; Calabria, Shakeshaft & Havard 2011): (a) *interventions*, defined as evaluations or trials of family-based intervention approaches designed to reduce alcohol-related harm, or evaluations or trials of intervention approaches that include alcohol or family as an outcome or predictor variable (*n* = 142); (b) *measurement*, defined as articles concerned primarily with developing measurement instruments and/or testing the psychometric properties of measurement instruments (*n* = 14); (c) *descriptive*, defined as data-based descriptive, analytical research on alcohol-related harm and families (*n* = 408); (d) *dissemination/adoption* and *acceptability/feasibility*, defined as studies evaluating approaches for improving the uptake and delivery of alcohol interventions by health

care practitioners, and/or the acceptability and/or feasibility of alcohol intervention delivery (*n* = 9); and (e) *reviews*, defined as literature reviews, non-data-based articles and comments (*n* = 128). Step 2 excluded 559 articles. Ten percent (*n* = 71) of classified articles were re-classified by a blinded co-author (A.C.) to crosscheck classifications performed by the first author (B.C.). The articles excluded in Step 1 were not cross-checked because they were not relevant for the review. Agreement between co-authors was approaching substantial (κ = 0.58). Discrepancies were discussed and resolved. Sufficient agreement between co-authors deemed crosschecking more than 10% of article classifications unnecessary.

Step 3: Identification of family-based alcohol intervention studies. Of the 142 intervention papers identified, 123 were excluded for the following reasons: (a) they were not an alcohol intervention (*n* = 20), (b) they were not a family-based alcohol intervention (*n* = 42), (c) they were preventive interventions (*n* = 51), (d) they were not published in English (*n* = 1), (e) they were duplicate articles based on intervention studies already included (*n* = 6), or (f) they did not report on the effectiveness of an intervention (e.g. compared outcomes of ethnic groups participating in the intervention) (*n* = 3). Step 3 excluded 123 articles and identified 19 family-based intervention studies for critical review.

Data extraction from studies

Criteria for data extraction from studies were adapted from the Cochrane Collaboration's *Handbook for Systematic Reviews of Health Promotion and Public Health Interventions* (Jackson 2007). The criteria relate to the intervention/s sample (including eligibility, size, age range, and percent male), outcomes measured, and cost calculations performed.

Methodological critique of intervention studies

Methodological quality was assessed using the Dictionary for the Effective Public Health Practice Project Quality Assessment Tool for Quantitative Studies (Jackson 2007). Sections A to F (A = selection bias; B = allocation bias; C = confounders; D = blinding; E = data collection methods; and F = withdrawal and drop-outs) were coded weak, moderate, or strong, consistent with the component rating scale of the Dictionary (Jackson 2007). For Sections G (analysis) and H (intervention integrity) descriptive information was recorded, using dictionary recommendations as a guide.

Results

Intervention type and setting

All family-based interventions identified were counselling-based interventions: 11 targeted problem drinkers and their family members, and 8 targeted family members of problem drinkers only (Table 1). The delivery mode for interventions targeting problem drinkers and their family members included individual sessions (Boyd-Ball 2003; Liddle et al. 2009; Nattala et al. 2010; O'Farrell et al. 2008; Slesnick & Prestopnik 2009; Vedel, Emmelkamp & Schippers 2008), individual sessions with concurrent group and/or family/couples sessions (Doyle et al. 2003; Esposito-Smythers et al. 2006; Fals-Stewart et al. 2005; Slesnick & Prestopnik 2009), group sessions with concurrent family/couples sessions (Doyle et al. 2003; Latimer et al. 2003), family/couples sessions (Fals-Stewart et al. 2005; Nattala et al. 2010; Slesnick & Prestopnik 2009; Vedel, Emmelkamp & Schippers 2008), or group sessions (Walitzer & Dermen 2004; Fals-Stewart et al. 2005; Latimer et al. 2003; Liddle et al. 2009). Interventions targeting problem drinkers and their family members were delivered in tertiary health care settings (Boyd-Ball 2003; Doyle et al. 2003; Esposito-

Smythers et al. 2006; Fals-Stewart et al. 2005; Latimer et al. 2003; Liddle et al. 2009; Nattala et al. 2010; O'Farrell et al. 2008; Vedel, Emmelkamp & Schippers 2008); a research centre (Walitzer & Dermen 2004); and within a home, an office or runaway shelter (Slesnick & Prestopnik 2009). The delivery mode for interventions targeting family members of problem drinkers included individual sessions (Copello et al. 2009; Dutcher et al. 2009; Hansson et al. 2006; Hansson et al. 2004; Howells & Orford 2006; Landau et al. 2004), group sessions (de los Angeles Cruz-Almanza, Gaona-Marquez & Sanchez-Sosa 2006; Hansson et al. 2004; Rychtarik & McGillicuddy 2005), or a combination of both (Rychtarik & McGillicuddy 2005). Interventions targeting family members of problem drinkers were delivered in primary health care settings (de los Angeles Cruz-Almanza, Gaona-Marquez & Sanchez-Sosa 2006; Copello et al. 2009), tertiary health care settings (Dutcher et al. 2009; Howells & Orford 2006; Landau et al. 2004), and a university (Hansson et al. 2006).

Table 1. Family-based interventions for problem drinkers and/or their family members

Reference	Intervention/s (number of sessions)	Design	Sample (*n*)	Effect	Follow-up months
Boyd-Ball (2003)	"The Shadow Project" Parenting training + relationship training (1)	Quasi-experimental	Youth entering alcohol and drug inpatient treatment and their family member (*n* = 66)	Increase in % days abstinent from alcohol, marijuana, and "other hard drugs"	11
Copello (2009)	Based on stress-strain-coping model of addition and family a) Full intervention (5) b) Brief intervention (1)	RCT	Family members of problem drinkers/problem drug users (*n* = 143)	No significant difference between the two interventions	2
de los Angeles Cruz-Almanza (2006)	Rational-emotive behavioral therapy (18)	Multiple baseline across two groups	Spouses of problem drinkers (*n* = 18)	Improvements in self-esteem, coping, and likelihood of behaving assertively for intervention group	18
Doyle (2003)	a) Residential program (6-week program) b) Community program (10-week program)	Pre and post	Problem drinkers from a residential treatment centre and the community and their family member (*n* = 67)	The residential group:Increase in number of abstinent participants, decrease in negative consequences and psychological adjustment The community group: Increase in number of moderate drinkers	6
Dutcher (2009)	Community Reinforcement and Family Training (12)	Demonstration trial	Family members of problem drinkers (*n* = 98)	55% overall engagement Decrease in family member's depression, state anger (but not trait ander), state and trait anxiety. Increase in relationship happiness	12

Reference	Intervention/s (number of sessions)	Design	Sample (*n*)	Effect	Follow-up months
Esposito-Smythers (2006)	Cognitive behavioral treatment protocol + conjoint family sessions (35)	Case study	Youth with co-occuring alcohol use disorder and suicidality and their parent/s (*n* = 6)	Decrease in suicidality, marijuana and alcohol use	12
Fals-Stewart (2005)	a) Brief relationship therapy (18) b) Shortened version of standard behavioral couples therapy (24) c) Individual-based treatment (18) d) Psychoeducational attention control treatment (18)	RCT	Entering outpatient treatment and their spouse (*n* = 100)	Shortened version of behavioral couples therapy had equivalent heavy drinking outcomes to brief relationship therapy Heavy drinking and dyadic adjustment outcomes for brief relationship therapy were superior to patients in the other individual-based treatment and psychoeducational attention control treatment	12
Hansson (2004)	a) Individual standard information session (1) b) Individual coping skills training (1) c) Group support (12)	RCT	Spouses of problem drinkers (*n* = 39)	Increase in coping behaviour, psychiatric symptoms, and hardship, but no difference between groups	24
Hansson (2006)	a) Alcohol intervention program (2) b) Coping intervention program (2) c) Combination program (2)	RCT	Children of problem drinkers (*n* = 82)	Alcohol interventions improved drinking pattern compared to the coping intervention group	12
Howells (2006)	Standardised counselling program (average of 4)	Pre and post	Partners of problem drinkers (*n* = 56)	Decrease in stress level and coping for intervention group	12

Reference	Intervention/s (number of sessions)	Design	Sample (*n*)	Effect	Follow-up months
Landau (2004)	A Relational Sequence for Engagement (ARISE) (9)	Demonstration trial	Family member/friend of problem drinker/problem drug user (*n* = 110)	83% of problem drinker/probelm drug user engaged in treatment/self-help	0
Latimer (2003)	a) Integrated family and cognitive behavioral therapy (48) b) Drugs harm psychoeducation curriculum (16)	RCT	Youth with psychocative substance use disorders and their partent/s (*n* = 43)	Family therapy group: youth decrease in alcohol use, marijuana use, and problem avoidance Increase in rational problem solving and learning strateggy skills Parents more adaptive scores on communication, involvement, control, and values/norms indicides	6
Liddle (2009)	a) Multidimensional family therapy (24-32) b) Cognitive behavioral peer group intervention (24-32)	RCT	Youth referred for a substance use problem and their parent/s (*n* = 83)	Multidimensional family therapy: decrease in substance use, delinquency, internalised distress, affiliation with deliquent peers Increase in family and school functioning	12
Nattala (2010)	a) Individual relapse prevention (8-10) b) Dyadic relapse prevention (8-10) c) Treatment as usual	RCT	Admitted to an inpatient facility and their family member (*n* = 87)	Dyadic replase prevention had better outcomes than individual relapse prevention and treatment as usual	6
O'Farrell (2008)	a) Brief family treatment (2) b) Treatment as usual	RCT	Admitted to a detox unit and their parent/s, wife, or female partner (*n* = 45)	Family treatment: patients were more likely to enter continuing care Alcohol and drug use decreased for patients who entered continuing care regardless of treatment	3
Rychtarik (2005)	a) Coping skills training (8) b) 12-step facilitation (8) c) Delayed treatment	RCT	Spouses of problem drinkers (*n* = 171)	Interventions decreased depression levels but did not differ from each other. Interventions decreased partner drinking	12

Reference	Intervention/s (number of sessions)	Design	Sample (*n*)	Effect	Follow-up months
Slesnick (2009)	a) Home-based ecological family therapy (16) b) Office-based functional family therapy (16) c) Treatment as usual	RCT	Primary alcohol problem runaway youth and their primary caretaker/s (*n* = 119)	Home-based family therapy: decreased alcohol use for adolescents Office-based family therapy: decreased alcohol use for adolescents	15
Vedel (2008)	a) Behavioral couples therapy (10) b) Cognitive behavioral therapy (10)	RCT	Patients and their spouse (*n* = 64)	Couples therapy and cognitive-behavioral therapy were both effective in changing drinking behavior Marital satisfaction of the spouse increased in the couples therapy Self-efficacy to withstand alcohol-related high-risk situations increased more in cognitive behavioral therapy than in couples therapy	6
Walitzer (2004)	a) Treatment for problem drinkers only (10) b) Couples alcohol treatment (10) c) Couples alcohol treatment and behavioral couples therapy (10)	RCT	Drinkers (≥10 drinks per week) and their female spouse (*n* = 64)	Couples treatmemt: decrease in alcohol consumption The additional of behavioral couples therapy to couples alcohol treatment did not significantly improve outcomes	12

Note. RCT = Randomised control/clinical trial.

Sample population targeted by interventions

One intervention specifically targeted an Indigenous population: Native Americans (Boyd-Ball 2003). Across interventions for problem drinkers and their family members, problem drinking youth (Boyd-Ball 2003; Esposito-Smythers et al. 2006; Latimer et al. 2003; Liddle et al. 2009; Slesnick & Prestopnik 2009) or adults (Doyle et al. 2003; Fals-Stewart et al. 2005; Nattala et al. 2010; O'Farrell et al. 2008; Vedel, Emmelkamp & Schippers 2008; Walitzer & Dermen 2004) were targeted. Types of family members targeted in the treatment of problem drinkers included parents (Esposito-Smythers et al. 2006; Latimer et al. 2003; Liddle et al. 2009) or other family members (Boyd-Ball 2003; Slesnick & Prestopnik 2009) for adolescent problem drinkers, and spouse (Fals-Stewart et al. 2005; Vedel, Emmelkamp & Schippers 2008; Walitzer & Dermen 2004) or other family members (Doyle et al. 2003; Nattala et al. 2010; O'Farrell et al. 2008) for adult problem drinkers. Interventions for family members only targeted a spouse (de los Angeles Cruz-Almanza, Gaona-Marquez & Sanchez-Sosa 2006; Hansson et al. 2004; Howells & Orford 2006; Rychtarik & McGillicuddy 2005) or other family members (Dutcher et al. 2009; Landau et al. 2004; Copello et al. 2009; Hansson et al. 2006) of a problem drinker. Samples ranged in age from 12 to 78 years. The percentage range of male participants was 17% (Esposito-Smythers et al. 2006) to 100% (Fals-Stewart et al. 2005; Nattala et al. 2010; Walitzer & Dermen 2004) for interventions targeting problem drinkers and 0% (de los Angeles Cruz-Almanza, Gaona-Marquez & Sanchez-Sosa 2006) to 31% (Landau et al. 2004) for interventions targeting family members.

Eligibility criteria

Alcohol use/dependence eligibility criteria for problem drinkers whose family members were involved in their treatment varied across studies and were treatment samples (Boyd-Ball 2003; Doyle et al. 2003; Liddle et al. 2009), alcohol dependence/abuse diagnosis (Fals-Stewart et al.

2005; Latimer et al. 2003; Vedel, Emmelkamp & Schippers 2008; Nattala et al. 2010; Esposito-Smythers et al. 2006; O'Farrell et al. 2008), or problem alcohol use (Slesnick & Prestopnik 2009; Walitzer & Dermen 2004).

Eligibility criteria for family members of problem drinkers were the family member's perception that their relative had a drinking problem defined by the family member's reports of problematic patterns of alcohol consumption (Dutcher et al. 2009; Hansson et al. 2004; Hansson et al. 2006; Howells & Orford 2006; Landau et al. 2004; Rychtarik & McGillicuddy 2005) or the family member's perceptions of the impact of the problem drinker's negative behaviour on their wellbeing (Copello et al. 2009; de los Angeles Cruz-Almanza, Gaona-Marquez & Sanchez-Sosa 2006).

Data collection methods

Self-report and non-self-report measures. All 19 studies used self-report measures. Eight studies conducted interviews (Hansson et al. 2006; Hansson et al. 2004; Rychtarik & McGillicuddy 2005; Doyle et al. 2003; Fals-Stewart et al. 2005; Latimer et al. 2003; Walitzer & Dermen 2004; Vedel, Emmelkamp & Schippers 2008), and five used corroborated reports (Rychtarik & McGillicuddy 2005; Fals-Stewart et al. 2005; Latimer et al. 2003; Nattala et al. 2010; Walitzer & Dermen 2004). In six studies, non-self-report measures were also used: Two used urine tests (Latimer et al. 2003; Slesnick & Prestopnik 2009), two used observational methods (Liddle et al. 2009; Boyd-Ball 2003), and two checked medical records (Landau et al. 2004; O'Farrell et al. 2008).

Measurement instruments for alcohol use and/or dependence. Ten of the eleven studies targeting problem drinkers and their family members measured alcohol use and/or dependence with a

validated instrument. Instruments were Timeline Follow-back Interview (O'Farrell et al. 2008; Liddle et al. 2009; Doyle et al. 2003; Esposito-Smythers et al. 2006; Fals-Stewart et al. 2005), the Alcohol Dependence Scale (Doyle et al. 2003; Walitzer & Dermen 2004), Structured Clinical Interview for DSM-IV (Vedel, Emmelkamp & Schippers 2008; Fals-Stewart et al. 2005), Diagnostic Interview of Children and Adolescents (Latimer et al. 2003), the Adolescent Diagnostic Interview-Revised (Latimer et al. 2003), the Personal Experience Inventory (Latimer et al. 2003), the Problem Oriented Screening Instrument for Teenagers (Liddle et al. 2009), Form 90 (Nattala et al. 2010; Slesnick & Prestopnik 2009), and the Alcohol Use Disorders Identification Test (AUDIT) (Vedel, Emmelkamp & Schippers 2008). Two studies also used quantity and frequency questions (Vedel, Emmelkamp & Schippers 2008; Walitzer & Dermen 2004).

Two of the eight studies targeting only family members of problem drinkers measured their alcohol consumption using the following validated instruments: the AUDIT (Hansson et al. 2004; Hansson et al. 2006) and the Estimated Blood Alcohol Concentration Method (Hansson et al. 2006).

Outcome measures. The most frequently measured outcome for problem drinkers was alcohol consumption (Boyd-Ball 2003; Doyle et al. 2003; Esposito-Smythers et al. 2006; Fals-Stewart et al. 2005; Latimer et al. 2003; Liddle et al. 2009; Nattala et al. 2010; O'Farrell et al. 2008; Slesnick & Prestopnik 2009; Vedel, Emmelkamp & Schippers 2008; Walitzer & Dermen 2004), followed by illicit drug use (Boyd-Ball 2003; Esposito-Smythers et al. 2006; Fals-Stewart et al. 2005; Latimer et al. 2003; Liddle et al. 2009; O'Farrell et al. 2008; Slesnick & Prestopnik 2009). Primary outcomes recurrently measured for family members of problems drinkers were coping (Howells & Orford 2006; Hansson et al. 2006; Hansson et al. 2004; de los Angeles Cruz-Almanza, Gaona-Marquez &

Sanchez-Sosa 2006; Copello et al. 2009), self-esteem (Howells & Orford 2006; Copello et al. 2009; de los Angeles Cruz-Almanza, Gaona-Marquez & Sanchez-Sosa 2006), and engagement in treatment service and/or help seeking (Howells & Orford 2006; Dutcher et al. 2009; Landau et al. 2004; Rychtarik & McGillicuddy 2005).

Family/marital functioning/satisfaction/cohesion was measured by eight studies (Doyle et al. 2003; Latimer et al. 2003; Liddle et al. 2009; Nattala et al. 2010; Slesnick & Prestopnik 2009; Vedel, Emmelkamp & Schippers 2008; Walitzer & Dermen 2004; Rychtarik & McGillicuddy 2005). Eleven studies were conducted in the United States (Dutcher et al. 2009; Landau et al. 2004; Rychtarik & McGillicuddy 2005; Boyd-Ball 2003; Esposito-Smythers et al. 2006; Fals-Stewart et al. 2005; Latimer et al. 2003; Liddle et al. 2009; O'Farrell et al. 2008; Slesnick & Prestopnik 2009; Walitzer & Dermen 2004), three in the United Kingdom (Copello et al. 2009; Howells & Orford 2006; Doyle et al. 2003), one in Mexico (de los Angeles Cruz-Almanza, Gaona-Marquez & Sanchez-Sosa 2006), three in Europe (Sweden and Holland) (Hansson et al. 2006; Hansson et al. 2004; Vedel, Emmelkamp & Schippers 2008), and one in India (Nattala et al. 2010).

Methodological Adequacy

Table 2 summarizes the methodological adequacy of the 19 studies. Two studies minimized selection bias by identifying a representative sample and obtaining a high consent rate (Dutcher et al. 2009; Liddle et al. 2009). Sixty-three percent of studies utilised a randomized control/clinical trial, thereby reducing the risk of allocation bias (Copello et al. 2009; Hansson et al. 2006; Hansson et al. 2004; Rychtarik & McGillicuddy 2005; Fals-Stewart et al. 2005; Latimer et al. 2003; Liddle et al. 2009; Nattala et al. 2010; O'Farrell et al. 2008; Slesnick & Prestopnik 2009; Vedel, Emmelkamp & Schippers 2008; Walitzer & Dermen 2004). Three quarters of the studies that reported

differences between groups did not control for these baseline variations, making it difficult to ascertain whether post-test differences were attributed to the intervention (Hansson et al. 2006; Hansson et al. 2004; Esposito-Smythers et al. 2006; Fals-Stewart et al. 2005; Nattala et al. 2010; Slesnick & Prestopnik 2009).

Twelve studies allocated participants evenly across groups (de los Angeles Cruz-Almanza, Gaona-Marquez & Sanchez-Sosa 2006; Hansson et al. 2006; Hansson et al. 2004; Rychtarik & McGillicuddy 2005; Fals-Stewart et al. 2005; Latimer et al. 2003; Liddle et al. 2009; Nattala et al. 2010; O'Farrell et al. 2008; Slesnick & Prestopnik 2009; Vedel, Emmelkamp & Schippers 2008; Walitzer & Dermen 2004). Outcome assessors were blinded in one third of the applicable studies (Copello et al. 2009; Hansson et al. 2006; Hansson et al. 2004; Rychtarik & McGillicuddy 2005; Vedel, Emmelkamp & Schippers 2008). Measures with established psychometric properties were used by 84% of studies (Copello et al. 2009; de los Angeles Cruz-Almanza, Gaona-Marquez & Sanchez-Sosa 2006; Dutcher et al. 2009; Hansson et al. 2006; Hansson et al. 2004; Howells & Orford 2006; Rychtarik & McGillicuddy 2005; Doyle et al. 2003; Fals-Stewart et al. 2005; Latimer et al. 2003; Liddle et al. 2009; Nattala et al. 2010; O'Farrell et al. 2008; Slesnick & Prestopnik 2009; Vedel, Emmelkamp & Schippers 2008; Walitzer & Dermen 2004). Eight studies reported follow-up rates between 80% and 100% (Copello et al. 2009; Hansson et al. 2006; Hansson et al. 2004; Boyd-Ball 2003; Esposito-Smythers et al. 2006; Latimer et al. 2003; Nattala et al. 2010; O'Farrell et al. 2008).

Table 2. Methodological adequacy

Reference	Selection bias (A)	Allocation bias (B)	Confounders (C)	Blinding (D)	Data collection methods (E)	Withdrawal & drop-outs (F)
Boyd-Ball (2003)	Moderate	Moderate	Weak	N/A	Weak	Strong
Copello (2009)	Moderate	Strong	Strong	Strong	Strong	Strong
de los Angeles Cruz-Almanza (2006)	Weak	Weak	Weak	Weak	Strong	Weak
Doyle (2003)	Weak	Weak	N/A	Weak	Strong	Weak
Dutcher (2009)	Strong	Weak	N/A	Weak	Strong	Weak
Esposito-Smythers (2006)	Weak	Weak	Weak	N/A	Weak	Strong
Fals-Stewart (2005)	Weak	Strong	Weak	Weak	Strong	Weak
Hansson (2004)	Moderate	Strong	Weak	Strong	Strong	Stong
Hansson (2006)	Moderate	Strong	Weak	Strong	Strong	Strong
Howells (2006)	Moderate	Weak	Weak	Weak	Strong	Weak
Landau (2004)	Weak	Weak	N/A	Weak	Weak	Weak
Latimer (2003)	Moderate	Strong	Moderate	Weak	Strong	Strong
Liddle (2009)	Strong	Strong	Weak	Weak	Strong	Weak
Nattala (2010)	Weak	Strong	Weak	Weak	Stong	Strong
O'Farrell (2008)	Moderate	Strong	Moderate	N/A	Strong	Strong
Rychtarik (2005)	Weak	Strong	Moderate	Strong	Strong	Moderate
Slesnick (2009)	Moderate	Strong	Weak	N/A	Strong	Weak
Vedel (2008)	Weak	Strong	Strong	Strong	Strong	Moderate
Walitzer (2004)	Weak	Strong	Weak	Weak	Strong	Moderate

Note. Measured by the Dictionary for the Effective Public Health Practice Project Quality Assessment tool for Quantitative Studies (see (Jackson 2007)). Information on Analysis (G) and Intervention Integrity (H) is contained in the text of the paper. N/A = not applicable.

Three studies justified the appropriateness of their analyses by referencing a source for their statistical approach (Copello et al. 2009; de los Angeles Cruz-Almanza, Gaona-Marquez & Sanchez-Sosa 2006; Liddle et al. 2009). Follow-up rates varied from 9% (Vedel, Emmelkamp & Schippers 2008) to 98% (Latimer et al. 2003; O'Farrell et al. 2008; Slesnick & Prestopnik 2009), and intent-to-treat analyses were reported by one third of studies (Copello et al. 2009; Rychtarik & McGillicuddy 2005; Latimer et al. 2003; Liddle et al. 2009; O'Farrell et al. 2008; Slesnick & Prestopnik 2009; Walitzer & Dermen 2004).

Methods to optimise intervention fidelity were not reported by two studies (Hansson et al. 2004; Boyd-Ball 2003). When reported, most commonly reported methods to optimise intervention fidelity were therapist training (Walitzer & Dermen 2004; Vedel, Emmelkamp & Schippers 2008; Slesnick & Prestopnik 2009; Nattala et al. 2010; Latimer et al. 2003; Doyle et al. 2003; Rychtarik & McGillicuddy 2005; Landau et al. 2004; Howells & Orford 2006; de los Angeles Cruz-Almanza, Gaona-Marquez & Sanchez-Sosa 2006; Copello et al. 2009; Dutcher et al. 2009; Hansson et al. 2006), therapist supervision (Walitzer & Dermen 2004; Vedel, Emmelkamp & Schippers 2008; Slesnick & Prestopnik 2009; O'Farrell et al. 2008; Nattala et al. 2010; Latimer et al. 2003; Rychtarik & McGillicuddy 2005; Landau et al. 2004; Howells & Orford 2006; Copello et al. 2009), and intervention manuals/protocol (Walitzer & Dermen 2004; Vedel, Emmelkamp & Schippers 2008; O'Farrell et al. 2008; Fals-Stewart et al. 2005; Esposito-Smythers et al. 2006; Rychtarik & McGillicuddy 2005; Landau et al. 2004; Hansson et al. 2006; Copello et al. 2009). Of the 14 studies with more than one group, participants were evenly recruited into groups for 12 studies (de los Angeles Cruz-Almanza, Gaona-Marquez & Sanchez-Sosa 2006; Fals-Stewart et al. 2005; Hansson et al. 2006; Hansson et al. 2004; Latimer et al. 2003; Liddle et al. 2009; Nattala et al. 2010; O'Farrell et al. 2008; Rychtarik & McGillicuddy 2005; Slesnick & Prestopnik 2009; Vedel, Emmelkamp & Schippers 2008; Walitzer & Dermen

2004). Contamination was likely for six studies (Vedel, Emmelkamp & Schippers 2008; Rychtarik & McGillicuddy 2005; Walitzer & Dermen 2004; Esposito-Smythers et al. 2006; de los Angeles Cruz-Almanza, Gaona-Marquez & Sanchez-Sosa 2006; Howells & Orford 2006).

Effects

A meta-analysis using the most commonly reported outcomes (which were alcohol use among problem drinkers and coping among their family members) was explored but judged inappropriate, given the variability between studies in the outcomes reported. The most commonly reported effect for problem drinkers was decreased alcohol consumption (Walitzer & Dermen 2004; Slesnick & Prestopnik 2009; O'Farrell et al. 2008; Nattala et al. 2010; Latimer et al. 2003; Boyd-Ball 2003; Doyle et al. 2003; Esposito-Smythers et al. 2006; Liddle et al. 2009; Fals-Stewart et al. 2005). The most commonly reported effect for family members of problem drinkers was improved coping (Howells & Orford 2006; Hansson et al. 2004; de los Angeles Cruz-Almanza, Gaona-Marquez & Sanchez-Sosa 2006). Of the eight studies measuring family functioning, four reported improvements in family functioning (Nattala et al. 2010; Vedel, Emmelkamp & Schippers 2008; Slesnick & Prestopnik 2009; Liddle et al. 2009). In addition to measures of effect, three studies measured level of participant engagement in treatment to be 55% (Dutcher et al. 2009), 83% (Landau et al. 2004), and 92% (O'Farrell et al. 2008). Two interventions investigated the cost of the evaluated interventions: one based solely on the length of sessions (Vedel, Emmelkamp & Schippers 2008) and the other calculated cost-effectiveness ratios for participants using the change in percentage of days of heavy drinking from baseline to follow-up (Fals-Stewart et al. 2005).

Discussion

Although an encouraging 18 of the 19 family-based interventions yielded a positive effect, methodological deficiencies in evaluation designs across all studies resulted in less-than-optimal evidence.

Methodological adequacy

The rating of studies across methodological review criteria was variable. For example, although 84% of studies were rated as strong for data collection methods, selection bias was rated as weak for 47% of studies. Most studies did not control for confounders, even when identified. Follow-up rates varied from 9% to 98%, and one third of studies performed an intent-to-treat analysis. Methodological quality was similar for reviewed interventions targeting problem drinkers and their family members, compared to interventions for family members of problem drinkers only, although allocation bias was rated more strongly for the former and blinding was rated more strongly for the latter. Variable reporting of an intervention evaluation makes it difficult for the intervention to be replicated or adapted for other populations and settings or for wider implementation.

Limitations of the available literature

Large variation in eligibility criteria for different studies limits their comparability. Measurement of the primary criteria of an alcohol use disorder or problem was diverse for studies that targeted problem drinkers and their family members. Comparability between studies would be improved by using a standard measure of alcohol misuse, such as the AUDIT (Saunders et al. 1993) or the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV) criteria (American Psychiatric Association 1994).

All studies (*n* = 19) used self-report measures. Non-self-report measures were used by six studies. Reliance on self-report to measure health outcomes is problematic as the method is prone to biases, even when bias is minimised by using psychometrically validated tools (Hogan 2003). A combination of objective non-self-report and self-report measures would increase confidence in the validity of outcome findings. For example, information from medical records has been shown to be both suitable and efficient for evaluating interventions targeting a range of health and social outcomes (Samet et al. 2003; Landau et al. 2004; O'Farrell et al. 2008), particularly if common challenges to its collection and use, such as limitations in data access and poor data quality (Safran 1991), can be overcome.

Intervention costs were measured by two studies, but neither completed a full economic evaluation. An economic evaluation is increasingly recognised as an integral component of any evaluation because it provides relevant information on the potential efficiency of allocating health care resources (Drummond & McGuire 2001). An integral component of any economic evaluation is a rigorous assessment of both intervention costs and consequences compared to current practice. Comparability of results between economic evaluation studies is further made possible by the adoption of a commonly used validated health outcome measure such as the quality adjusted life year or disability adjusted life year.

Interventions with potential to be tailored to Indigenous communities

This review only identified one intervention study targeting an Indigenous population (Native Americans) (Boyd-Ball and Boyd-Ball, 2003), a study that was not methodologically strong. The lack of evaluations of family-based interventions targeting Indigenous people is somewhat surprising given that Indigenous family members are typically present at health services and participate in communication about familial health problems with health practitioners (McGrath et al. 2006; McCubbin 2006; King & Turia 2002). Therefore, their involvement in

programs to reduce alcohol-related harm fits with usual care practices. This review identified family and cognitive-behavioral therapy (Latimer et al. 2003) and multidimensional family therapy (Liddle et al. 2009) as effective and robustly evaluated problem drinker targeted interventions that include a family member. Family members of problem drinkers experience negative consequences of their relative's drinking (Laslett et al. 2010; Kelly & Kowalyszyn 2003; Seale et al. 2002), and therefore programs targeting family members in their own right that also address problem drinker outcomes are likely to be acceptable and appropriate for delivery in Indigenous communities to reduce alcohol-related harms. Effective programs identified by this review, targeting family members and focusing on outcomes of the problem drinker and those of their family member are Community Reinforcement and Family Training (CRAFT) (Dutcher et al. 2009), coping skills training, and 12-step facilitation (Rychtarik & McGillicuddy 2005).

To ensure that these best evidence family-based approaches are appropriate and acceptable for delivery to Indigenous people, they should be adapted for integration into Indigenous-specific health care in collaboration with locally targeted Indigenous communities.

Potential limitations of the review

Although a rigorous and thorough search strategy was used, there is a possibility that the review did not locate all relevant studies. Relevant intervention evaluations may have been misclassified; however, a sufficient agreement between blinded coders (κ = 0.58) suggests otherwise. Last, because evaluations with statistically significant findings are more likely to be published it is possible that the published evaluations reviewed overestimate the interventions' true effectiveness (Dickersin et al. 1987; Easterbrook et al. 1991).

Conclusions

Although family-based approaches appear effective in engaging problem drinkers into treatment and reducing their risk of alcohol-related harms, the evidence-base for their cost-effectiveness would be strengthened by evaluation studies that recruit more representative samples, include confounding variables in analyses, improve consent and follow-up rates, and conduct high quality economic evaluations. Given the central role that family relationships play in reinforcing behaviour and maintaining social cohesion in Indigenous communities, family-based approaches offer considerable promise for reducing alcohol-related harms among Indigenous peoples. Family-based interventions are more likely to be acceptable, appropriate and effective for Indigenous peoples if (a) adapted with the input of Indigenous community members (Masotti et al. 2006); (b) the involvement of family members who are themselves problem drinkers is not automatically excluded, because their exclusion is not practical in the context of routine delivery of health care services due to clustering of alcohol problems within racial minority family groups (Seale et al. 2010); (c) therapists delivering the intervention are trained and supervised to optimise intervention fidelity (Miller et al. 2006); and (d) the intervention is manualized for integration into health service protocols and procedures but has sufficient flexibility to meet the needs of individual clients (Liddle 2004).

Points of clarification for Paper 1

The Journal of Studies on Alcohol and Drugs owns the copyright of this published paper. The points of clarification have been added to provide additional information about the research for this thesis without modifying the content of the published paper.

Resolution of classification discrepancies

Coders met to discuss classification discrepancies. Consensus was reached through re-examining the identified studies and agreeing on the appropriate classification.

Paper 2

Identifying Aboriginal-specific AUDIT-C and AUDIT-3 cut-off scores for at-risk, high-risk and likely dependent drinkers using measures of agreement with the 10-item Alcohol Use Disorders Identification Test

Bianca Calabria[1], Anton Clifford[2,3], Anthony P. Shakeshaft[1], Katherine M. Conigrave[1,4,5], Lynette Simpson[6], Donna Bliss[7], Julaine Allan[8]

1. National Drug and Alcohol Research Centre, University of New South Wales, Sydney, New South Wales, Australia
2. Institute for Urban Indigenous Health, University of Queensland, Bowen Hills, Queensland, Australia
3. Queensland Alcohol and Drug Research and Education Centre, University of Queensland, Brisbane, Australia
4. Drug Health Services, Royal Prince Alfred Hospital, Missenden Road, Camperdown, New South Wales, Australia
5. Sydney Medical School, University of Sydney, Sydney, New South Wales, Australia
6. Drug Health Services, South Western Sydney Local Health District, Croydon Health Centre, Croydon, New South Wales, Australia.
7. Yoorana Gunya Family Healing Centre Aboriginal Corporation, Forbes, New South Wales, Australia
8. The Lyndon Community, Orange, New South Wales, Australia

Paper 2 has been submitted to Addiction Science & Clinical Practice (Calabria et al. submitted-b).

Copyright Statement

Calabria, B, Clifford, A, Shakeshaft, A, Conigrave, K, Simpson, L, Bliss, D & Allan, J submitted, 'Identifying Aboriginal-specific AUDIT-C and AUDIT-3 cut-off scores for at-risk, high-risk and likely dependent drinkers using measures of agreement with the 10-item AUDIT', *Addiction Science & Clinical Practice*.

Bianca Calabria August 2013

Preamble

Paper 1 identified Community Reinforcement and Family Training (CRAFT) as a family-based intervention that has considerable potential to reduce alcohol-related harms among Indigenous Australians and that has some evidence for its effectiveness (Calabria et al. 2012). Although the study evaluating CRAFT identified in Paper 1 (Dutcher et al. 2009) was methodologically weak, primarily due to its non-randomised design, failure to blind outcome assessors and its low follow-up rates, CRAFT offers considerable promise for implementation in Indigenous communities for at least three main reasons. Firstly, controlled research published outside of the Paper 1 review timeframe has shown CRAFT to be superior to Alcoholics/Narcotics Anonymous and the Johnson Institute Intervention for engaging treatment resistant individuals into treatment (Miller, Meyers & Tonigan 1999; Roozen, de Waart & van der Kroft 2010; Meyers et al. 2002), and the CRAFT approach has demonstrated ability to be tailored for delivery across different drug types, family member types, and cultural groups (Meyers, Villanueva & Smith 2005; Lopez Viets 2008; Villarreal 2008). Second, CRAFT offers a flexible mode of delivery: trained therapists choose from a selection of manualised evidence-based therapeutic approaches and can apply them to individual clients (Smith & Meyers 2007) who are likely to have complex comorbidities (Kelly 2006). Third, multiple family members can be included in the program, allowing for Indigenous peoples' extended family groups and their holistic concept of health, in which the health of individuals is linked to the health of families and communities (Brady 2004).

To increase the likelihood that individuals with a particular health risk behaviour will be identified and offered an appropriate intervention, and that the effect of the intervention can be accurately assessed, reliable and valid measures should be identified and used. The Alcohol Use Disorders Identification Test (AUDIT) was designed as a cross-cultural screening instrument and has been recommended for use in Indigenous health care settings (Babor et al.

2001; Saunders et al. 1993); however the time it takes to complete all 10-items has proven to be a barrier to delivery. Although appropriate cut-off scores have been identified for other cultural groups (Cherpitel 1998; Cherpitel & Clark 1995), Indigenous-specific cut-off scores have not been published in the peer-reviewed literature. Paper 2 identifies Indigenous-specific cut-off scores for two shorter versions of AUDIT, AUDIT-C and AUDIT-3, relative to cut-off scores for the full 10-item AUDIT (Calabria et al. submitted-b). Indigenous-specific cut-off scores for AUDIT-C and AUDIT-3 could be used to more accurately and efficiently identify problem drinkers for enrolment into Aboriginal-specific family-based intervention programs aimed at reducing alcohol-related harms, and to more accurately assess changes in their levels of alcohol consumption and risk of harm before and after intervention delivery.

Abstract

Background: The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item alcohol screener that has been recommended for use in Aboriginal health care settings. The time it takes respondents to complete AUDIT, however, has proven to be a barrier to its routine delivery. Two shorter versions, AUDIT-C and AUDIT-3, have been used as screening instruments in health care settings. This paper aims to identify the AUDIT-C and AUDIT-3 cut-off scores that most closely identify individuals classified as being at-risk drinkers, high-risk drinkers or likely alcohol dependent by the 10-item AUDIT.

Methods: Two cross-sectional surveys were conducted in June 2009 to May 2010 and July 2010 to June 2011. Aboriginal Australian participants (n = 136) were recruited through an Aboriginal Community Controlled Health Service and a community-based drug and alcohol treatment agency in rural New South Wales (NSW), and through community-based Aboriginal groups in Sydney (NSW). Sensitivity, specificity, and positive and negative predictive values of each score on the AUDIT-C and AUDIT-3 were calculated, relative to standard cut-off scores on the 10-item AUDIT for at-risk, high-risk and likely dependent drinkers. Receiver operating characteristic curve analysis was conducted to measure the detection characteristics of AUDIT-C and AUDIT-3 for at-risk, high-risk and likely dependent drinkers, as classified by the 10-item AUDIT.

Results: Recommended cut-off scores for Aboriginal Australians are: at-risk drinkers AUDIT-C ≥ 5, AUDIT-3 ≥ 1; high-risk drinkers AUDIT-C ≥ 6, AUDIT-3 ≥ 2; and likely dependent drinkers AUDIT-C ≥ 9, AUDIT-3 ≥ 3. Adequate sensitivity and specificity were achieved for recommended cut-off scores for AUDIT-C and AUDIT-3, relative to the 10-item AUDIT. All areas under the receiver operating characteristic curves were above 0.90.

Conclusions: Identified cut-off scores for AUDIT-C and AUDIT-3 have potential to detect Aboriginal Australians as being problem drinkers in Aboriginal-specific health care settings.

Background

Problem drinkers are at high risk of causing physical and psychological harm to themselves, their family and their community (Laslett et al. 2010). Although Aboriginal Australians are more likely to abstain from drinking alcohol than other Australians, a greater proportion of Aboriginal Australians who drink alcohol do so to levels that increase their risk of alcohol-related harm (Australian Department of Human Services and Health 1995; Calabria et al. 2010). Screening Aboriginal people to assess their level of alcohol consumption is recognised as an important initial step for determining their risk of alcohol-related harm and need for alcohol intervention (Australian Government Department of Health and Ageing 2004; Australian Government Department of Health and Ageing 2007; NACCHO and the Chronic Disease Alliance of NGOs 2008). Alcohol screening can also be effective for engaging Aboriginal patients in discussions about their drinking (Clifford & Shakeshaft 2011) and can result in reduced alcohol consumption independent of intervention (Conigliaro, Lofgren & Hanusa 1998; Jenkins, McAlaney & McCambridge 2009).

The Alcohol Use Disorders Identification Test (AUDIT) was developed by the World Health Organization as a cross cultural screening instrument for problematic alcohol use (Saunders et al. 1993; Babor et al. 2001). AUDIT has ten items comprising three domains: recent alcohol use; alcohol dependence symptoms; and alcohol-related problems (Babor et al. 2001). Cut-off scores aim to identify non-drinkers, low-risk drinkers, at-risk drinkers, high-risk drinkers and likely dependent drinkers (Babor et al. 2001; Conigrave, Hall & Saunders 1995; Tsai et al. 2005). AUDIT has high internal consistency across diverse samples and settings (median alpha = 0.83) and demonstrated validity for the English language version (Reinert & Allen 2007).

The Alcohol Treatment Guidelines for Indigenous Australians recommend using AUDIT to screen for alcohol use problems among Aboriginal Australians (Australian Government

Department of Health and Ageing 2007). The Guideline's recommended classification scores are 0-7 for non-drinkers or low-risk drinkers, 8-12 for at-risk drinkers, and 13+ for high-risk drinkers. A key limitation of AUDIT for routine screening in Aboriginal-specific (Brady et al. 2002; Clifford & Shakeshaft 2011) and mainstream (Hearne, Connolly & Sheehan 2002) health care settings has been the time it takes respondents to complete all 10 items. Two shorter versions of AUDIT, AUDIT-C (comprising the first three questions of AUDIT) and AUDIT-3 (the third question of AUDIT), have been shown to perform well to identify risky drinking when compared with a 'gold standard' measure of problematic alcohol consumption, for example *Diagnostic and Statistical Manual of Mental Disorders* alcohol dependence criteria (American Psychiatric Association 1994), in non-Indigenous-specific health care settings (Reinert & Allen 2007),.

Despite evidence from qualitative studies that shorter versions of AUDIT are more feasible to deliver in Aboriginal-specific primary health care settings (Brady et al. 2002; Clifford & Shakeshaft 2011; Brit et al. 2009), and the shorter versions of AUDIT being used to measure Aboriginal Australians' drinking in general practice settings (Brit et al. 2009), no published studies have identified cut-off scores specifically for Aboriginal Australians. This paper aims to identify AUDIT-C and AUDIT-3 cut-off scores for detecting problematic alcohol use, as defined by the 10-item AUDIT, among Aboriginal clients in health care settings.

Methods

Ethics

Ethics approval for the study was granted by: the Human Research Ethics Committee (HREC), University of New South Wales (NSW), Sydney; South West Area Health Service HRECs, Sydney; and the Aboriginal Health and Medical Research Council (AH&MRC) Ethics Committee, NSW.

The study was also either formally approved by the board of the participating Aboriginal Community Controlled Health Services (ACCHSs) or had a representative of the ACCHS on its steering committee. All participants were provided with study and consent information.

Setting and participants

A convenience sample of Australian Aboriginal participants was recruited through a NSW rural ACCHS and a rural community-based drug and alcohol treatment agency from July 2010 to June 2011, as part of a study investigating the acceptability of an evidence-based cognitive behavioural alcohol intervention to Aboriginal people (Calabria et al. 2013). Participants were also recruited through existing Aboriginal community-based groups in metropolitan Sydney from June 2009 to May 2010, as part of a pilot study of community education and brief intervention (Conigrave et al. 2012). Participants recruited in rural NSW were reimbursed $A40 to cover their out-of-pocket expenses for involvement in the study. Reimbursement was not available for participants in the Sydney based sample.

Questionnaires

A version of the 10-item AUDIT which has been modified for, and is acceptable to, Aboriginal Australians (Table 1) (Conigrave et al. 2012), was self-completed by participants, with literacy support available. Total scores range from zero to forty, with higher scores indicating more problematic alcohol use. Cut-off scores recommended by the Alcohol Treatment Guidelines for Indigenous Australians (Australian Government Department of Health and Ageing 2007) were used to classify drinker status. Given Indigenous Australians who drink alcohol are more likely to do so at levels that places them at increased risk of alcohol-related harm than the general Australian population (Australian Department of Human Services and Health 1995), the Guideline's high-risk drinker classification was divided into high-risk drinkers and likely dependent drinkers (Babor et al. 2001) to more clearly investigate this group. Therefore

participants were classified as: non-drinkers (score = 0); low-risk drinkers (score = 1-7); at-risk drinkers (score = 8-12); high-risk drinkers (score = 13-19); or likely dependent drinkers (score ≥ 20).

Table 1. Alcohol Use Disorders Identification Test (AUDIT) adapted wording for Aboriginal Australians

	Adapted Aboriginal-specific AUDIT items (Conigrave et al. 2012)	Original AUDIT item	Response	Score
1.	How often do you drink?	How often do you have a drink containing alcohol?	Never	0
			Monthly or less	1
			2-4 times a month	2
			2-3 times a week	3
			4 or more times a week	4
2.	When you have a drink, how many do you usually have in one day?	How many standard drinks containing alcohol do you have on a typical day when drinking?	1 or 2	0
			3 or 4	1
			5 or 6	2
			7-9	3
			10 or more	4
3.	How often do you have six or more drinks on one day?	How often do you have six or more drinks on one occasion?	Never	0
			Monthly or less	1
			Monthly	2
			Weekly	3
			Daily or almost daily	4
4.	In the last year, how often have you found you weren't able to stop drinking once you started?	During the past year, how often have you found that you were not able to stop drinking once you had started?	Never	0
			Monthly or less	1
			Monthly	2
			Weekly	3
			Daily or almost daily	4
5.	In the last year, how often has drinking got in the way of doing what you need to do?	During the past year, how often have you failed to do what was normally expected of you because of drinking?	Never	0
			Monthly or less	1
			Monthly	2
			Weekly	3
			Daily or almost daily	4
6.	In the last year, how often have you needed a drink in the morning to get yourself going?	During the past year, how often have you needed a drink in the morning to get yourself going after a heavy drinking session?	Never	0
			Monthly or less	1
			Monthly	2
			Weekly	3
			Daily or almost daily	4
7.	In the last year, how often have you felt bad about your drinking?	During the past year, how often have you had a feeling of guilt or remorse after drinking?	Never	0
			Monthly or less	1
			Monthly	2
			Weekly	3
			Daily or almost daily	4

	Adapted Aboriginal-specific AUDIT items (Conigrave et al. 2012)	Original AUDIT item	Response	Score
8.	In the last year, how often have you had a memory lapse or blackout because of your drinking?	During the past year, have you been unable to remember what happened the night before because you had been drinking?	Never Monthly or less Monthly Weekly Daily or almost daily	0 1 2 3 4
9.	Have you injured yourself or anyone else because of your drinking?	Have you or someone else been injured as a result of your drinking?	No Yes, but not in the past year Yes, during the past year	0 2 4
10.	Has anyone (family, friend, doctor) been worried about your drinking or asked you to cut down?	Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested you cut down?	No Yes, but not in the past year Yes, during the past year	0 2 4

AUDIT-C assesses frequency and quantity of alcohol use, and frequency of heavy drinking (six or more drinks on one day) (Table 1, items 1-3). Total scores range from zero to twelve. As with the 10-item AUDIT, higher scores indicate more problematic alcohol use. AUDIT-3 (the third item of the 10-item AUDIT) measures frequency of heavy drinking (Table 1, item 3). Total scores range from zero to four: greater consumption of alcohol is reflected in a higher score.

Exclusion criterion

Participants who did not complete all 10 AUDIT items were excluded, except for those who appropriately did not answer item two because they indicated being a non-drinker on item one. In that circumstance, item two was scored zero, reflecting the participant's status as a non-drinker.

Data analysis

Sensitivity, specificity, and positive and negative predictive values (Lemeshow et al. 1990) of each score on the AUDIT-C and AUDIT-3 were calculated, relative to cut-off scores on the 10-

item AUDIT: at-risk drinkers (score ≥ 8); high-risk drinkers (score ≥ 13); and likely dependent drinkers (score ≥ 20) (Australian Government Department of Health and Ageing 2007; Babor et al. 2001; Conigliaro, Lofgren & Hanusa 1998) (see Appendix B for formulae used in analysis). For this study, sensitivity is the proportion of respondents identified as risky drinkers on the 10-item AUDIT who are also identified as risky drinkers on AUDIT-C and/or AUDIT-3. Specificity is the proportion of respondents identified as non-risky drinkers on the 10-item AUDIT who are also identified as non-risky drinkers on AUDIT-C and/or AUDIT-3. The positive predictive value is the proportion of respondents identified as risky drinkers on AUDIT-C and/or AUDIT-3 who are also identified as risky drinkers on the 10-item AUDIT. The negative predictive value is the proportion of respondents identified as non-risky drinkers on AUDIT-C and/or AUDIT-3 who are also identified as non-risky drinkers on the 10-item AUDIT (Lemeshow et al. 1990).

Factors specific to Aboriginal health care settings were used to guide decisions about optimal cut-off scores. Since Aboriginal drinkers are more likely to drink at risky levels than non-Aboriginal drinkers (Australian Department of Human Services and Health 1995) there is a higher probability that Aboriginal drinkers will require an alcohol-specific intervention (Australian Government Department of Health and Ageing 2007). Consequently, higher sensitivity (to detect true positive cases) took preference over higher specificity (to detect true negative cases). For dependent drinkers, minimising the number of people who receive referral unnecessarily is important given their treatment is relatively expensive and typically involves multiple health care providers and inpatient care (Australian Government Department of Health and Ageing 2007). Consequently, higher specificity (to detect true negative cases) was favoured over higher sensitivity (to detect true positive cases) for optimal cut-off scores in relation to likely alcohol dependence.

Receiver operating characteristic (ROC) curve analysis was conducted to measure the detection characteristics of AUDIT-C and AUDIT-3 for at-risk, high-risk and likely dependent drinkers identified by the 10-item AUDIT (Metz 1978). A value of one for the area under the ROC (AUROC) curve represents a test with 100% accuracy. Ninety five percent confidence intervals were calculated.

Data analysis used IBM® SPSS® Statistics 19 (IBM 2010), and Microsoft® Excel 2007 (Microsoft 2007).

Results

Sample characteristics

One hundred and fifty seven Aboriginal Australian participants took part in the surveys, 21 of whom did not answer all 10 items of AUDIT. Of the 136 participants in the final sample (71% from rural NSW and 29% from Sydney), 11% were aged 18 to 24 years, 24% were aged 25 to 34 years, 27% were aged 35 to 44 years, 25% were aged 45 to 55 years, 10% were 55 years or older (3% did not indicate their age), 49% were male.

Alcohol use

AUDIT scores of participants ranged from zero to forty (median = 8.0; standard deviation = 11.0). Applying standard cut-off scores for the 10-item version of AUDIT resulted in the following distribution of participants across risk categories: 15% were non-drinkers (score = 0); 31% were low-risk drinkers (score = 1-7); 15% were at-risk drinkers (score = 8-12); 16% were high-risk drinkers (score = 13-19); and 22% were likely dependent drinkers (score ≥ 20). There were more at-risk drinkers in Sydney (30%) than rural NSW (9%), and more likely dependent drinkers in rural NSW (30%), compared to Sydney (3%). Of the total sample, 73 (54%) were

classified as being at least at-risk drinkers (AUDIT score ≥ 8) and 38% (*n* = 52) were classified as being at least high-risk drinkers (AUDIT score ≥ 13).

The distribution of participants across risk categories varied for males (and females): 10% (21%) were non-drinkers; 18% (44%) were low-risk drinkers; 21% (10%) were at-risk drinkers; 16% (15%) were high-risk drinkers; and 34% (10%) were likely dependent drinkers.

At-risk drinkers

The AUROC for AUDIT-C was high for drinkers classified as being at increased risk by the 10-item AUDIT (0.93, 95%CI = 0.89 – 0.97) (Figure 1). The optimal combination of sensitivity and specificity for at-risk drinkers was reached using a cut-off score of ≥ 5 for AUDIT-C. This cut-off score identified 85% of at-risk drinkers, as classified by the 10-item AUDIT, and 81% of those identified as not being at increased risk. The positive and negative predictive values were both greater than 0.80 (Table 2).

The AUROC for AUDIT-3 was also high for drinkers classified as being at increased risk by the 10-item AUDIT (0.91, 95%CI = 0.85 – 0.96) (Figure 1). The optimal combination of sensitivity and specificity for at-risk drinkers was reached using a cut-off score of ≥ 1 for AUDIT-3. This cut-off score identified 95% of at-risk drinkers, as classified by the 10-item AUDIT, and 65% of those identified as not being at increased risk drinkers. A lower positive predictive value (0.76) than for AUDIT-C, however, indicated a number of false positive cases would be identified relative to the 10-item AUDIT. A cut-off score of ≥ 2 reduces the number of false positive cases (positive predictive value = 0.91), but decreases the number of true positive cases (sensitivity = 0.81) (Table 2).

Table 2. Measures of agreement for AUDIT-C and AUDIT-3 cut-off scores

	Sensitivity	Specificity	Positive predictive value	Negative predictive value	Sensitivity	Specificity	Positive predictive value	Negative predictive value	Sensitivity	Specificity	Positive predictive value	Negative predictive value
Score	***At-risk drinker (10-item AUDIT score ≥ 8)***				***High-risk drinker (10-item AUDIT score ≥ 13)***				***Likely dependent drinker (10-item AUDIT score ≥ 20)***			
AUDIT-C												
≥ 1	0.99	0.43	0.67	0.96	0.98	0.32	0.47	0.96	1.00	0.26	0.28	1.00
≥ 2	0.97	0.56	0.72	0.95	0.98	0.43	0.52	0.97	1.00	0.35	0.30	1.00
≥ 3	0.97	0.63	0.76	0.95	0.98	0.49	0.54	0.98	1.00	0.40	0.32	1.00
≥ 4	0.92	0.70	0.78	0.88	0.96	0.57	0.58	0.96	1.00	0.47	0.35	1.00
≥ 5	**0.85**	**0.81**	**0.84**	**0.82**	0.92	0.69	0.65	0.94	0.97	0.58	0.39	0.98
≥ 6	0.79	0.86	0.87	0.78	**0.88**	**0.75**	**0.69**	**0.91**	0.97	0.64	0.43	0.99
≥ 7	0.67	0.98	0.98	0.72	0.81	0.90	0.84	0.88	0.93	0.79	0.56	0.98
≥ 8	0.51	1.00	1.00	0.64	0.63	0.95	0.89	0.81	0.87	0.90	0.70	0.96
≥ 9	0.44	1.00	1.00	0.61	0.58	0.98	0.94	0.79	**0.87**	**0.94**	**0.81**	**0.96**
≥ 10	0.32	1.00	1.00	0.56	0.42	0.99	0.96	0.73	0.63	0.96	0.83	0.90
≥ 11	0.19	1.00	1.00	0.52	0.27	1.00	1.00	0.69	0.47	1.00	1.00	0.87
≥ 12	0.10	1.00	1.00	0.49	0.13	1.00	1.00	0.65	0.23	1.00	1.00	0.82
AUDIT-3												
≥ 1	**0.95**	**0.65**	**0.76**	**0.91**	0.98	0.52	0.56	0.98	1.00	0.42	0.33	1.00
≥ 2	0.81	0.90	0.91	0.80	**0.92**	**0.80**	**0.74**	**0.94**	0.97	0.66	0.45	0.99
≥ 3	0.47	0.97	0.94	0.61	0.62	0.95	0.89	0.80	**0.93**	**0.92**	**0.78**	**0.98**
≥ 4	0.16	1.00	1.00	0.51	0.23	1.00	1.00	0.68	0.40	1.00	1.00	0.85

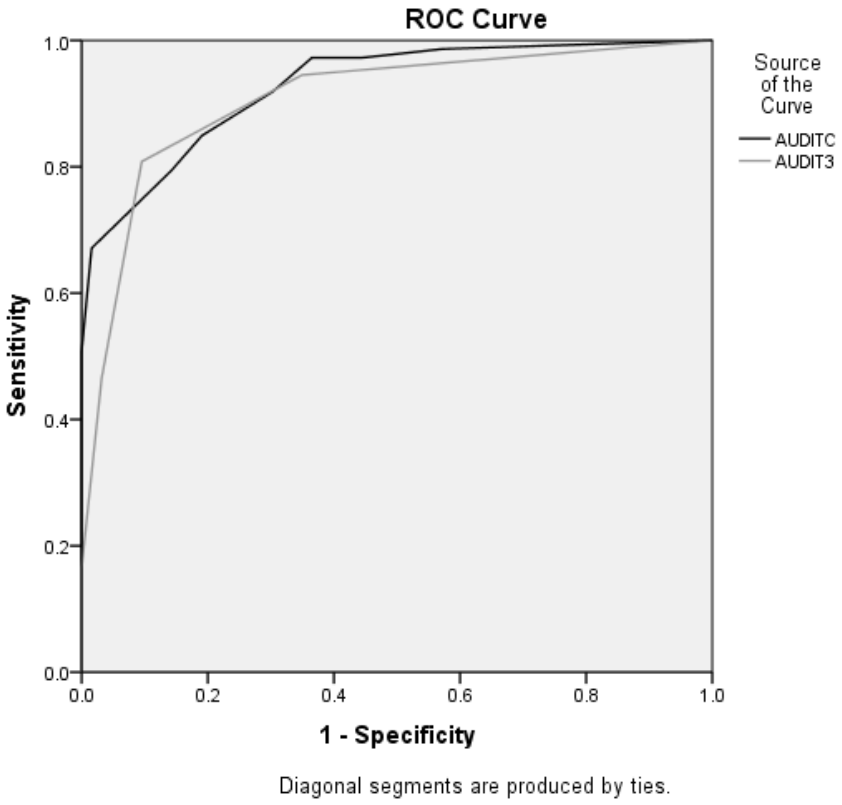

Figure 1. ROC curve for at-risk drinker (AUDIT score ≥ 8)

High-risk drinkers

The AUROC for AUDIT-C was high for drinkers classified as being at high risk by the 10-item AUDIT (0.92, 95%CI = 0.87 – 0.97) (Figure 2). The optimal combination of sensitivity and specificity for high-risk drinkers was reached using a cut-off score of ≥ 6 for AUDIT-C. This cut-off score identified 88% of high-risk drinkers, as classified by the 10-item AUDIT, and 75% of those identified as not being at high risk. The positive predictive value (0.69) indicated a number of false positive cases, relative to the 10-item AUDIT. If the cut-off score was increased to ≥ 7 the number of false positive cases would be reduced (positive predictive value = 0.84), but the number of true positive cases would be reduced (sensitivity = 0.88 using a cut-off score of ≥ 6 for AUDIT-C and 0.81 using a cut-off score of ≥ 7 for AUDIT-C) (Table 2).

The AUROC for AUDIT-3 was also high for drinkers classified as being high risk by the 10-item AUDIT (0.92, 95%CI = 0.87 – 0.96) (Figure 2). The optimal combination of sensitivity and specificity for high-risk drinkers was reached using a cut-off score of ≥ 2 for AUDIT-3. This cut-off score identified 92% of high-risk drinkers, as classified by the 10-item AUDIT, and 80% of those identified as not being at high-risk. The positive and negative predictive values were 0.74 and 0.94, respectively (Table 2).

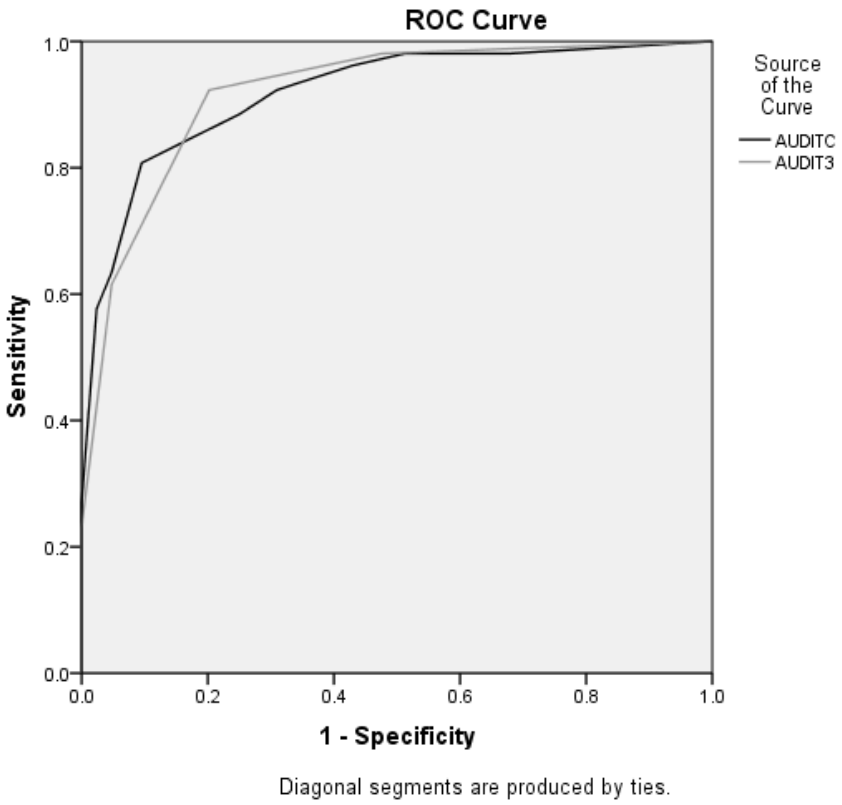

Figure 2. ROC curve for high-risk drinker (AUDIT score ≥ 13)

Likely dependent drinkers

The AUROC for AUDIT-C was high for respondents classified as being likely dependent drinkers by the 10-item AUDIT (0.95, 95%CI = 0.91 – 0.99) (Figure 3). The optimal combination of sensitivity and specificity for likely dependent drinkers was reached using a cut-off score of ≥ 9 for AUDIT-C. This cut-off score identified 87% of likely dependent drinkers, as classified by the

10-item AUDIT, and 94% of those identified as unlikely to be dependent drinkers. Positive and negative predictive values were both above 0.80 (Table 2).

The AUROC for AUDIT-3 was also high for respondents classified as being likely dependent drinkers by the 10-item AUDIT (0.96, 95%CI = 0.92 – 0.99) (Figure 3). The optimal combination of sensitivity and specificity for likely dependent drinkers was reached using a cut-off score of ≥ 3 for AUDIT-3. This cut-off score identified 93% of likely dependent drinkers, as classified by the 10-item AUDIT, and 92% of those identified as unlikely to be dependent drinkers. Positive and negative predictive values were 0.78 and 0.98, respectively (Table 2).

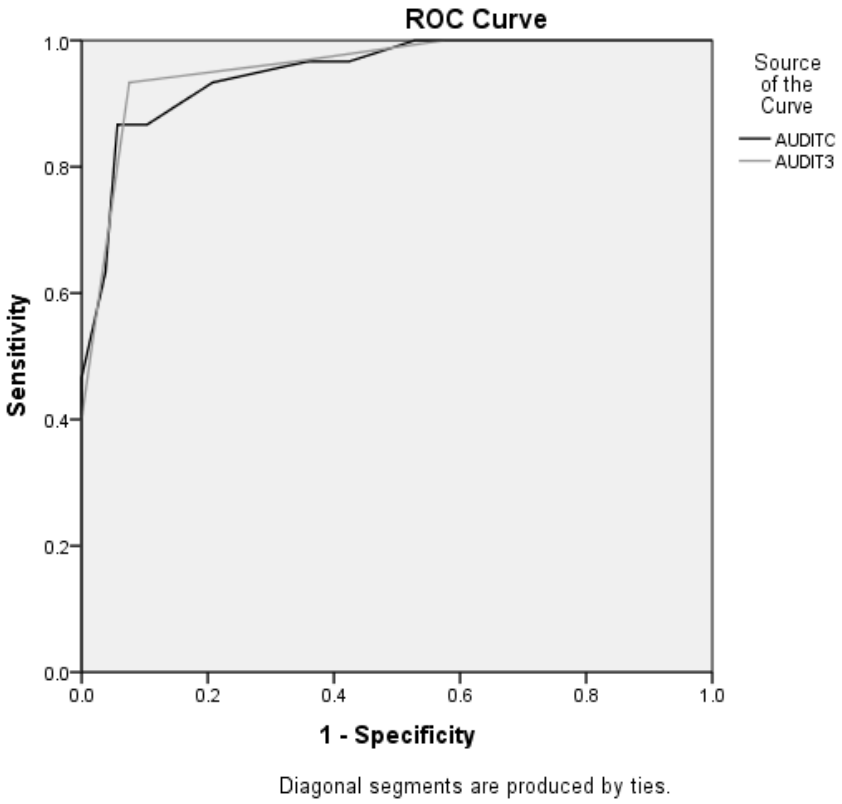

Figure 3. ROC curve for likely dependent drinker (AUDIT score ≥ 20)

Discussion

Summary of results

This is the first study to identify the sensitivity and specificity, and positive and negative predictive values, of shorter forms of the 10-item AUDIT questionnaire for urban and rural Aboriginal Australians. When using AUDIT-C to identify at-risk, high-risk and likely dependent drinkers, as classified by the 10-item AUDIT, recommended cut-off scores are ≥ 5, ≥ 6 and ≥ 9, respectively. When using AUDIT-3 to identify at-risk, high-risk and likely dependent drinkers, as classified by the 10-item AUDIT, recommended cut-off scores are≥ 1, ≥ 2 and ≥ 3, respectively. All AUROC were above 0.90 indicating good performance of both AUDIT-C and AUDIT-3 in identifying the at-risk, high-risk and likely dependent drinkers that were classified as such by the 10-item AUDIT.

Implications

These recommended AUDIT-C and AUDIT-3 cut-off scores for detecting at-risk, high-risk or likely dependent Aboriginal Australian drinkers are generally higher than those identified for non-Aboriginal Australian populations (Reinert & Allen 2007), although one study found comparable cut-off scores for at-risk drinkers in a primary care sample (Seale et al. 2006). These differences in cut-off scores potentially reveal a unique response pattern by Aboriginal Australians which may reflect the fact that participants in this study were asked questions about drinks. Participants in this study were asked questions about drinks, rather than standard drinks, to cut down the need for mental arithmetic in a population that has often been educationally disadvantaged. The Australian standard drink is 10 g of ethanol whereas a can of beer, for example, is approximately 1.3 standard drinks, and most people drink wine in at least 1.8 standard drink serves (National Health and Medical Research Council 2009). It is

unclear how the participants' calculation of the number of drinks they consume compares to these standard drink definitions (Lee, Dawson & Conigrave in press).

The two results for which recommended cut-off scores are most difficult to determine are AUDIT-3 cut-off scores for at-risk drinkers and AUDIT-C cut-off scores for high-risk drinkers. The recommended cut-off scores prioritise higher sensitivity over higher specificity; however, this creates an issue of false positives which may result in additional work following up cases to distinguish false positives from true positives. If brief intervention is done appropriately and respectfully, however, then this checking process can be done as part of a reminder of current recommended drinking guidelines. A larger study may be able to more definitively determine appropriate cut-off scores in these cases.

From a clinical services perspective, a decision about which screening instrument is most appropriate for Aboriginal clients would be required in consultation with Aboriginal health professionals and/or Aboriginal communities. For at-risk drinkers, AUDIT-C has a greater specificity, albeit a slightly lower sensitivity than AUDIT-3 (sensitivity: 0.85 and 0.95, respectively; specificity: 0.81 and 0.65, respectively) indicating a slight preference for using AUDIT-C to identify at-risk Aboriginal drinkers. For high-risk and likely dependent Aboriginal drinkers using either AUDIT-C or AUDIT-3 would be appropriate, based on similar sensitivities and specificities for the two measures. The decision may be made on practical grounds: whether saving time during the screening process or in following-up on positive results is more important. If screening is automated, with touch-screen computers for example, then the three item AUDIT-C (or indeed the 10-item AUDIT) may be desirable given its greater specificity. If screening is manual, however, or screening is also required for a number of other health risk factors (e.g. smoking, nutrition and obesity), asking only a single alcohol question (AUDIT-3) may be preferred, with a later discussion about drinking and other health risk

factors during the clinical interview. Community consultation could help to determine which of AUDIT-C or AUDIT-3 is more acceptable to Aboriginal people in different circumstances.

Limitations

A convenience sample was used. This method of recruitment which resulted in a sample of Aboriginal Australians likely to access the participating health services or community groups, probably resulted in low recruitment of treatment resistant individuals with alcohol problems. Self-report data are prone to bias, even when this is minimised by using psychometrically validated tools (Hogan 2003). Self-reports of alcohol consumption are more likely to be accurate under optimal conditions: when participants are alcohol free; when assured confidentiality; when questions are clear; and in situations not likely to promote under-reporting (e.g., clinical compared to legal) (National Institute on Alcohol Abuse and Alcoholism 1995). These conditions were likely to be met by our study.

Although it has been recommended that measures to detect alcohol misuse be tested separately for men and women (Reinert & Allen 2007), this study did not attempt to do so due to the small number of men and women in each group. Given lower cut-off scores have been recommended for women, compared to men, in other populations (Reinert & Allen 2007), these analyses would be worthwhile undertaking for studies with larger sample sizes.

The method used in this study of comparing results on AUDIT-C and AUDIT-3 to the 10-item AUDIT differs from other validation studies that compare the short versions of AUDIT with a 'gold standard' measure (Reinert & Allen 2007). The method for this study, however, was required because a 'gold standard' measure for Aboriginal Australians is not available. The 10-item AUDIT questionnaire was used because it has been recommended for use in Aboriginal health care settings (Australian Government Department of Health and Ageing 2007), despite

not having been formally validated itself with Aboriginal Australian populations. Although comparison with other validation studies should be made with caution, because different results may have been found if AUDIT-C and AUDIT-3 were evaluated against some other 'gold standard measure', any such differences are likely to be minor.

The AUDIT scoring was developed at a time when international and Australian drinking guidelines were more liberal. Further study is required to see if the current recommended AUDIT cut-off scores (and hence AUDIT-C and AUDIT-3 cut-off scores) should be revised downward, to allow detection of anyone drinking over current recommended limits (e.g. 20 g daily or 40 g on any one occasion in Australia) (National Health and Medical Research Council 2009), and whether the use of open ended responses to questions one and two result in more accurate drink risk identification.

Finally, the diagnostic error of the 10-item AUDIT questionnaire is expected to be highly correlated with the error of AUDIT-C and AUDIT-3 and, therefore, the AUROC analyses are likely to be biased upwards. AUROCs in this study ranged from 0.91 to 0.96, and therefore if the results were revised downwards to account for bias they are likely to still be comparable to other validation studies (Reinert & Allen 2007).

Conclusions

The optimal performance of AUDIT-C and AUDIT-3 in detecting at-risk, high-risk and likely dependent Aboriginal Australian drinkers, as classified by the 10-item AUDIT, was achieved using cut-off scores of AUDIT-C ≥ 5 and AUDIT-3 ≥ 1, AUDIT-C ≥ 6 and AUDIT-3 ≥ 2, and AUDIT-C ≥ 9 and AUDIT-3 ≥ 3, respectively. These findings provide an empirical basis for defining cut-off scores, which complements existing evidence that both short form versions of AUDIT are

suitable for routinely screening Aboriginal Australian clients for alcohol problems in Aboriginal specific health care settings.

Acknowledgements

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Paper 3

Tailoring a family-based alcohol intervention for Aboriginal Australians, and the experiences and perceptions of health care providers trained in its delivery

Bianca Calabria[1], Anton Clifford[2,3], Miranda Rose[4], Anthony Shakeshaft[1]

1. National Drug and Alcohol Research Centre, University of New South Wales, Sydney, New South Wales, Australia

2. Institute for Urban Indigenous Health, University of Queensland, Bowen Hills, Queensland, Australia

3. Queensland Alcohol and Drug Research and Education Centre, University of Queensland, Brisbane, Australia

3. University of Technology, Sydney, New South Wales, Australia

Paper 3 has been submitted to Health Service Research (Calabria et al. submitted-a) .

Copyright Statement

Calabria, B, Clifford, A, Rose, M & Shakeshaft, A submitted, 'Tailoring a family-based alcohol intervention for Aboriginal Australians, and the experiences and perceptions of healthcare practitioners trained in its delivery', *Health Services Research*.

Bianca Calabria August 2013

Preamble

The identification of Indigenous-specific AUDIT-C and AUDIT-3 cut-off scores in Paper 2 gives some certainly that alcohol consumption risk levels can be accurately assigned to Indigenous clients who present at health care services which, in turn, increases the likelihood that their health care needs can be more precisely met. Providing Indigenous-specific interventions aimed at reducing alcohol-related harms to Indigenous Australians, who are screened using Indigenous-specific cut-off scores for AUDIT-C and AUDIT-3, will help address Indigenous-specific needs more cost-effectively.

Paper 1 identified CRAFT as a family-based alcohol intervention with potential to be tailored for Indigenous people, when modified in consultation with targeted community members (Calabria et al. 2012). CRAFT targets family members of problem drinkers and teaches them how to support their problem drinking relative to reduce their alcohol consumption, increase participation in rewarding non-drinking behaviours, and to engage in appropriate treatment. CRAFT also has a focus on the family member's personal safety and increasing their own wellbeing (Smith & Meyers 2007). Although CRAFT has been successfully adapted for use among Native Americans (Miller, Meyers & Hiller-Sturmhofel 1999), it has not been evaluated with Indigenous people in other countries. The modified CRAFT program used with Native Americans was consistent with Indigenous holistic concepts of health and wellbeing by emphasising the connectedness with family, community and spirituality in the treatment approach. The suitability of this approach for Native Americans reflects that it is highly likely to be acceptable and feasible if adapted for Indigenous communities elsewhere.

CRAFT uses cognitive-behavioural principles and procedures modelled from the Community Reinforcement Approach (CRA). CRA is an evidence-based cognitive-behavioural intervention aimed at working with problem drinkers to reduce their alcohol consumption and has a focus

on changing behavioural patterns to spend more time in enjoyable non-drinking situations (Meyers & Smith 1995; Miller & Wilbourne 2002). Given the parallels between CRAFT and CRA, CRA would be a highly relevant treatment for relatives of individuals participating in CRAFT. For CRA and CRAFT to be feasible for delivery to Indigenous Australians, both interventions need to be acceptable to the Indigenous people who are likely to access the interventions and to the health care providers who will deliver the programs.

Paper 3 presents health care providers perceptions of the applicability of CRA and CRAFT for Indigenous Australians and suggestions for suitable modifications to the interventions to increase their appropriateness. Paper 3 also presents the experiences of health care providers participating in an internationally recognised counsellor certification program for CRA and CRAFT (Calabria et al. submitted-a).

Abstract

Objective. To describe the process of tailoring the Community Reinforcement Approach (CRA) and Community Reinforcement and Family Training (CRAFT) for delivery to Aboriginal Australians, explore the perceptions of health care providers participating in the tailoring process, and their experiences of participating in CRA and CRAFT counselor certification.

Data Sources/Study Setting. Notes recorded from eight working group meetings with 22 health care providers of a drug and alcohol treatment agency and Aboriginal Community Controlled Health Service (November 2009-February 2013), and transcripts of semi-structured interviews with seven health care providers participating in CRA and CRAFT counselor certification (May 2012).

Study Design. Qualitative content analysis was used.

Data Collection/Extraction Methods. Data from working group meeting notes and interview transcripts were categorized into key themes.

Principle Findings. Health care providers perceived counselor certification it to be beneficial for developing their skills and confidence in delivering CRA and CRAFT, but reported the challenges of time constraints and competing tasks. Modification to the technical language, a reduction in the number of sessions, and inclusion of group delivery, were suggested to make to interventions more applicable for Aboriginal Australians.

Conclusions. Tailoring CRA and CRAFT was an iterative process involving ongoing consultations and feedback from health care providers.

Introduction

Aboriginal Australians experience a disproportionately high burden of alcohol-related harm, compared to the general Australian population (Calabria et al. 2010; Vos et al. 2003). Approaches that simultaneously target individuals and families at risk of alcohol-related harm are likely to be acceptable to, and feasible for, delivery to Aboriginal Australians (Calabria et al. 2012), given that positive interaction with family members influences behavioral change in Aboriginal Australians (Nagel & Thompson 2010), and family relationships are fundamental to the cohesion and wellbeing of Indigenous communities (McLennan & Khavarpour 2004; Nagel & Thompson 2010).

The Community Reinforcement Approach (CRA) (Meyers & Smith 1995) is an evidence-based cognitive-behavioral intervention for problem drinkers (Miller & Wilbourne 2002). CRA aims to reduce alcohol consumption by using social, recreational, family and vocational reinforcers to motivate people towards making their non-drinking lifestyle more rewarding than drinking alcohol. Community Reinforcement and Family Training (CRAFT) (Smith & Meyers 2007) is a family-based intervention modelled on CRA and has been identified as an effective cognitive-behavioral intervention with potential to be tailored, in collaboration with locally targeted Aboriginal communities, for delivery in Aboriginal-specific health care settings (Calabria et al. 2012). CRAFT provides structured, personalised training and support to a family member of a problem drinker. The aims of CRAFT are to teach family members how to effectively and safely remove positive reinforcement for the problem drinker's drinking behavior, increase positive reinforcement for non-drinking behavior, and help to engage the problem drinker into treatment. In addition, CRAFT aims to improve family members' own social and emotional wellbeing. CRA and CRAFT were both developed in the United States and include a structured certification program for counselors. CRA and CRAFT have been found to be acceptable to Aboriginal Australians in rural New South Wales (NSW) for delivery in their local community,

when tailored to optimise their cultural appropriateness (Calabria et al. 2013). Although both interventions have been successfully modified for other minority groups (Lopez Viets 2008; Villarreal 2008; Meyers, Villanueva & Smith 2005; Miller, Meyers & Hiller-Sturmhofel 1999), they have not been tailored for Aboriginal Australians.

This paper reports on a project that involved researchers working with health care services and Aboriginal community members to tailor CRA and CRAFT for Aboriginal Australians in rural NSW, Australia. The paper has three aims. Firstly, to describe the process of tailoring CRA and CRAFT for delivery to Aboriginal Australians in rural New South Wales (NSW). Second, to explore the perceptions of health care providers participating in the tailoring process. Third, to explore the experiences of health care providers participating in CRA and CRAFT counselor certification.

Methods

Ethics

Ethical approval for this study was provided by the Human Research Ethics Committee, University of NSW, and the Aboriginal Health and Medical Research Council, Ethics Committee of NSW. All interview participants provided informed consent (see Appendix C for consent form).

Tailoring CRA and CRAFT

The process of tailoring CRA and CRAFT for Aboriginal Australians was an iterative process comprising four key phases, as summarised in Figure 1. Each phase yielded data that informed the tailoring process.

1. Working group meetings with health care providers to adapt CRA and CRAFT for routine delivery to Aboriginal Australians at risk of alcohol-related harm;
2. Survey of Aboriginal clients from participating health care services to examine their perceptions of the acceptability of, and suggestions for tailoring, CRA and CRAFT for delivery in their community (Calabria et al. 2013);
3. Certification of health care providers in CRA and CRAFT to develop their knowledge and skills to deliver CRA and CRAFT in practice; and
4. Interviews with health care providers participating in CRA and CRAFT counselor certification to explore their experiences of undertaking the counselor certification programs and perceptions of the feasibility of CRA and CRAFT procedures for delivery to Aboriginal Australians.

This paper presents results from Steps 1, 3 and 4. Results from Step 2 are reported elsewhere (Calabria et al. 2013). This method of working in consultation with Aboriginal Australians and health care providers to tailor CRA and CRAFT to be more acceptable to Aboriginal Australians has been previously demonstrated to be feasible in other family-based research with different Aboriginal Australians groups (Turner & Sanders 2007).

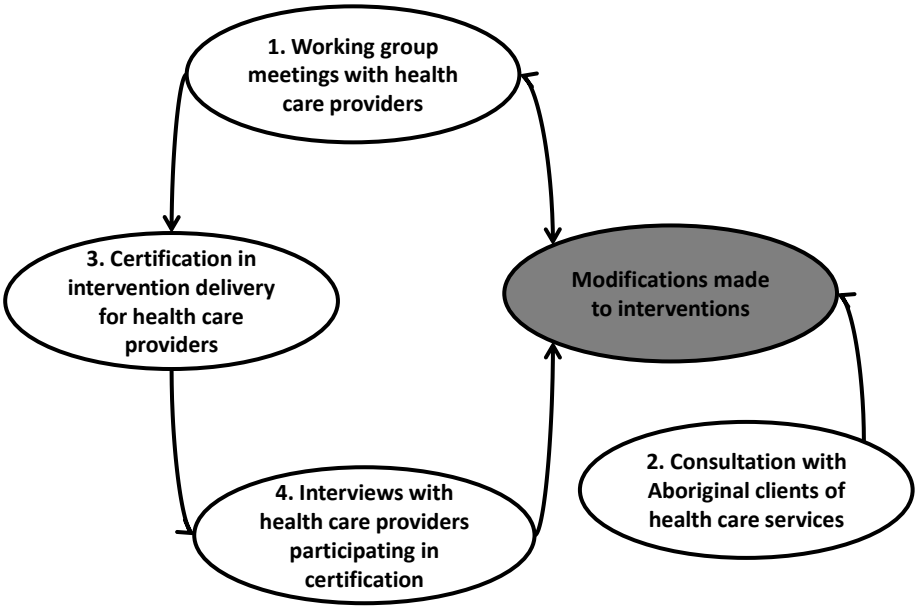

Figure 1. Process of tailoring the CRA and CRAFT interventions

The CRA and CRAFT counselor certification programs were delivered to health care providers by Robert J. Meyers and Associates, internationally recognised trainers in CRA and CRAFT. To complete CRA counselor certification, participants were required to attend a two day training workshop, demonstrate competence in the 12 core CRA procedures through audio-taped mock therapeutic sessions assessed by a certified CRA supervisor, and participate in a minimum of four supervision meetings facilitated by a certified CRA supervisor. To complete CRAFT counselor certification, participants were required to attend a two and a half day training workshop, demonstrate competence in the 10 core CRAFT procedures through audio-taped mock therapeutic sessions assessed by a certified CRAFT supervisor, and participate in a minimum of four supervision meetings facilitated by a certified CRAFT supervisor. When certification in one intervention approach (CRA or CRAFT) was achieved, certification in the other approach only required attending the relevant training days and demonstrating competence in four core procedures that differ between CRA and CRAFT. To be certified as a

CRA or CRAFT supervisor participants were required to complete the relevant counselor certification, facilitate five relevant supervision sessions, and assess five relevant audio-taped therapeutic sessions.

The tailoring process involved input and feedback from health care providers on: CRA and CRAFT core procedures; printed resource materials used to work through core procedures with clients (including worksheets for goals of counselling, Happiness Scale, Relationship Happiness Scale, perfect relationship, problem solving, session checklist, and functional analysis); their delivery of CRA and CRAFT; and Aboriginal-specific CRA and CRAFT manuals. Aboriginal-specific CRA and CRAFT manuals were developed from CRA and CRAFT clinical practice manuals (Meyers & Smith 1995; Smith & Meyers 2007). The tailored manuals summarized and simplified the content of the original manuals and included scenarios relevant to Aboriginal Australians, in order to better contextualize each intervention's content and procedures. The manuals were designed to be used for training health care providers in CRA and CRAFT and as a resource to support them to deliver both interventions. Both manuals were written by a researcher with more than 20 years of experience working in Aboriginal primary health care.

Input and feedback was also sought from health care providers regarding the most appropriate and feasible research methods for examining the implementation of CRA and CRAFT in their setting and evaluating its effectiveness among their client population using valid outcome measures.

Setting and participants

Study participants were 19 health care providers from a drug and alcohol treatment agency and three health care providers from an Aboriginal Community Controlled Health Service (ACCHS) in rural NSW, Australia (n = 22). All participants attended at least one working group

meeting and interviews were conducted with working group meeting participants who had completed CRAFT counselor certification and CRA training days at the time of the interviews. Table 1 summarises the professional role of participants, their level of participation in working group meetings, and the current level of CRA and CRAFT qualifications they had attained.

Table 1. Health care providers' role and qualifications

ID	Health care service role	Meetings attended	CRAFT qualification level	CRA qualification level
101	Alcohol and drug counselor	B, C, D, E	Certified counselor	Completed training days
102	Family drug and alcohol worker	E, G, H	Certified counselor	Completed training days
103	Acting director of strategy and planning	A, B, C, D, E, F, G, H	Certified counselor and supervisor	Certified CRA counselor and supervisor
104	Alcohol and drug counselor	E, G, H	Certified counselor	Completed training days
105	Drug and alcohol mental health nurse	E	Certified counselor	Completed training days
106	Family drug and alcohol worker	D, E, G, H	Certified counselor	Completed training days
107	Program manager	A, B, C, D, E, G, H	Certified counselor and supervisor	Certified counselor and supervisor
108	Tobacco cessation worker	B	None	None
109	Family worker	B, E	Completed training days	None
110	Chief executive officer	B	Completed training days	None
111	Alcohol and drug counselor	B, C, D	Completed training days	None
112	Alcohol and drug counselor	C, H	Completed training days	None
113	Alcohol and drug counselor	C, E, G, H	Certified counselor	Completed training days
114	Alcohol and drug counselor	E	Certified counselor	Completed training days
115	Administration worker	E	None	None
116	Family worker	E	Completed training days	None
117	Alcohol and drug counselor	G	Certified counselor	Certified counselor
118	Mental health outreach worker	G	None	None
119	Mental health trainee	H	None	None
120	Addiction specialist	A, D, H	None	None
121	Business manager	B	None	None
122	Chief executive officer	B	None	None

Note. A = project development; B = research methodology; C = manual modification 1; D = manual modification 2; E = intervention resources and outcome survey modifications; F = CRA and CRAFT training; G = recruitment 1; H = recruitment 2.

Data collection

Working group meetings. Table 2 presents the overall focus of the eight working group meetings. Working group meetings were an average of four and a half hours each (total of approximately 37 hours), were held at the participating rural drug and alcohol treatment agency or ACCHS, and were chaired by researchers. The aims and content of each meeting was guided by a pre-planned agenda. All working group members were given the opportunity to have input into the meeting agenda. Detailed notes were recorded at each meeting and distributed to working group members for their comment and validation. Notes were revised in response to working group members' comments, and then examined for themes relating to health care providers perceptions of the suitability of CRA and CRAFT and the type and level of tailoring required to enhance their suitability for delivery to Aboriginal Australians. Themes identified from notes recorded at group meetings A-F (see Table 2) informed the development of a semi-structured interview schedule to be conducted with those participating in the CRA and CRAFT counselor certification program.

Table 2. Focus of working group meetings

	Working group meeting Focus	Date
A	Project development	November 2009
B	Research methodology	January 2010
C	Manual modification 1	November 2010
D	Manual modification 2	February 2011
E	Intervention resources and outcome survey modifications	November 2011
F	CRA and CRAFT training	May 2011
G	Recruitment 1	September 2012
H	Recruitment 2	February 2013

Semi structured individual interviews. Semi structured interviews were conducted with seven health care providers who were recently certified in CRAFT and had completed the CRA training days at the time of interviewing. All interview participants were from the drug and alcohol

treatment agency. Interviews were conducted over two days in May 2012 in a private room at the drug and alcohol treatment agency. The interview schedule included questions relating to health care providers' experiences of participating in CRA counselor training days and CRAFT counselor certification, perceptions of the certification process, and perceptions of the suitability of CRA and CRAFT for the treatment and management of Aboriginal people at risk of alcohol-related harm. Interviews were conducted by a qualitative researcher with more than 20 years experience working in Aboriginal primary health care and were an average of 39 minutes duration (range = 29 – 50 minutes). Interviews were audio-taped and recordings were transcribed verbatim for analysis.

Data analysis

Qualitative content analysis was used to systematically categorize text data into categories derived inductively, and to summarize the data qualitatively (Forman & Damschroder 2008). Inductively deriving the coding categories was appropriate given interviews were conducted with health care providers about CRA and CRAFT used in an Aboriginal Australians health care setting for the first time. The unit of analysis for the group meetings was the group and the unit of analysis for semi-structured interview data was the individual. The qualitative content analysis followed three steps: 1) *immersion* resulted in listing memos (nine for working group meeting data and 23 for interview data); 2) *reduction* summarized the memos into codes (five for working group meeting data: CRAFT counselor certification, therapeutic issues, adaptability of CRA and CRAFT for Aboriginal Australians, modifications to outcome measures, and possible referral pathways; and six for the interview data: CRAFT counselor certification, CRA training, therapeutic issues, organisational support, qualifications of therapists, and adaptability of CRA and CRAFT for Aboriginal Australians); and 3) *interpretation* identified examples from specific working group meeting notes or from individual health care provider interview transcripts relating to each code (Forman & Damschroder

2008). Data pertaining to common codes across working group meeting notes and interview transcripts were combined for interpretation (see Appendix D for qualitative data analysis).

Results

CRAFT counsellor certification

Health care providers initially perceived the CRAFT counselor certification process as daunting, but having commenced the process perceived training days, audio-taped sessions for review and feedback, and supervision sessions, as valuable for developing their skills and confidence in delivering CRAFT.

> (I) enjoyed the CRAFT training, I thought it was really good...(the CRAFT counselor certification process has) been really, really valuable (health care provider 103).

As a component of CRAFT counselor certification, fortnightly supervision sessions were delivered to health care providers via videoconferencing using Skype (Microsoft 2013) or ooVoo (LLC 2013). These sessions were delivered regularly to enable the United States based CRA and CRAFT certified supervisors to meet with health care providers undertaking CRAFT counselor certification in Australia. The purpose of these meetings was for supervisors to redemonstrate CRAFT procedures to health care providers and provide them with group level feedback on their performance to date. Health care providers reported that supervision sessions were important for developing their confidence and skills to deliver CRAFT procedures to the standard required to complete the certification process, and for addressing their questions or concerns relating to delivering CRAFT in practice.

> I think the Skype concept was definitely a recommendation that I would put in (health care provider 102).

> I thought that (supervision on Skype) was a very useful tool, rather than reading. I think it was good because you could then ask questions directly (health care provider 103).

Although feedback about the supervision sessions was positive, health care providers reported experiencing some technical difficulties when using the Internet-based programs for video conferencing. Two health care providers are now certified CRAFT supervisors so ongoing CRAFT supervision can be delivered face-to-face and will resolve these technical issues.

CRA training days

The two day CRA training was delivered after the two and a half day CRAFT training. Given that some core CRA and CRAFT procedures are identical, there was some repetition. Nonetheless, the CRA training days were well received by health care providers.

> For those of us who had done CRAFT, we found the first day (of CRA training) a little boring...but the second day, we did quite a few more exercises and...some group stuff (health care provider 103).

> ...the CRA training...was fantastic... (health care provider 104).

Therapeutic issues

There were three main challenges to health care providers completing CRAFT counselor certification. First, staying motivated to complete all the audio-taped sessions in addition to their usual workload was difficult for health care providers, all of whom identified this as a challenge.

> ...the negatives was the time and the pressure that (counselor certification) put on you (health care provider 104).

> ...(the CRAFT counselor certification process) was challenging...fitting it in with work (health care provider 105).

This challenge was resolved by nominating an individual to co-ordinate the CRA and CRAFT counselor certification process and by scheduling specific days for health care providers to complete the required audio-taped sessions, without the distraction of competing work tasks.

> The worst part was trying to get everyone motivated to do (the audio-taped sessions), and actually co-ordinating them all to actually do them. So we set aside days...and that worked well because everybody could just concentrate on that (health care provider 107).

The second challenge of the CRAFT counselor certification process was initial reluctance by health care providers to role play therapeutic procedures; however, the benefits of role plays for consolidating and applying knowledge acquired from training days became apparent to health care providers once they participated in role plays, and their reluctance appeared to diminish.

> ...it was kind of hard to do (role plays) and feel natural about it...the more we did it, the more you got used to that (health care provider 104).

> ...I am a lot more confident with using (CRAFT) now than I would have been if we hadn't have done the role plays before and just getting the feedback was good to know this bit you did really well, this bit you probably need to work on (health care provider 106).

The third challenge was the incongruence of some core procedures with health care providers' previous counseling training. Concern was raised, in interviews and working group meetings, about a process included in CRAFT that asks the family member of the drinker how they think their relative feels about his/her own drinking and what they believe their relative is thinking when he/she drinks. Health care providers generally perceived this question to be inappropriate.

> I'd always learnt in counseling that you don't get people to theorise or hypothesise about how someone else feels (health care provider 103).

> ...trying to get an understanding of what does your loved one think right before he drinks?, or what does he feel right before he drinks? I think that's going to be pretty hard for people and I guess how accurate that's going to be is a bit of a concern I think (health care provider 106).

The role of organizational support

Health care providers felt well supported by their organization and identified this support as important. Support and encouragement from managers and other team members increased their motivation to continue with CRA and CRAFT counselor certification.

> It was really good to sort of work in a team that was doing it together... we sort of kept pushing each other along and we needed to keep going with it, because we were all doing it together (health care provider 104).

Qualifications of counselors

Although CRA and CRAFT have previously been delivered, in different settings, by individuals who hold a university degree and have completed CRA and CRAFT counselor certification, health care providers generally held the view that individuals with different levels of qualifications could effectively deliver the interventions once certified in the approaches.

> ...so long as you had those people skills and sort of the willingness to sort of learn something different, and then to apply it. Sometimes I think there's some resistance to apply it, maybe from some lack of confidence. But that's - I think that's more down to an individual, rather than their level of knowledge and experience...sometimes probably experience is a more useful thing than having the university education (health care provider 104).

One health care provider suggested that the manner in which certified counselors will deliver intervention procedures is likely to be dependent upon their existing skills.

> I think that there's quite a lot of high level practice required to implement CRAFT in the way that it's intended...I think people will vary in the way they implement the procedures (health care provider 103).

Adaptability of CRA and CRAFT for Aboriginal Australians

Health care providers were generally of the view that CRA and CRAFT could successfully be delivered to Aboriginal Australians if it tailored to their needs, preferences and literacy levels.

> So I find using this kind of model, an American model, for an Indigenous population, it doesn't quite fit with me at the moment...there's components within this training...I think will work for indigenous people (health care provider 103).

In particular, changing the language used to suit the Aboriginal Australian population was mentioned in both the interviews and the working group meetings. History, low literacy and Aboriginal-specific use of the English language were commonly identified as reasons for changing the language to make it more appropriate to Aboriginal people.

> We're going to have to modify (CRA and CRAFT) a bit for...Australia, for the clients...just the wording and that sort of stuff...maybe use some pictures (health care provider 107).

> ...you're working with people who live in these worlds of chaos, you've really got to look at the language so that everyday people in that country can relate to it. So I think it really needs to be - an Australian version of it really needs to be looked at. The

> concepts are still the same but again, you need to look at it in a different way (health care provider 102).

> ...(with Aboriginal people) you really need to look at what's happened to them in the past, how would you present this...I think it's all doable with the Aboriginal community, it's just that the language might just need to be adapted a little bit to suit them a bit better (health care provider 101).

Working group meetings and interviews were used to assess health care providers' perceptions of the CRA and CRAFT resources used to deliver the core procedures to clients. Overall the recourses were believed to be useful, in particular, the Happiness Scale, that asks clients to rate health, social, emotional and economic aspects of their life on a ten-point scale (1= completely unhappy, 10 = completely happy).

To maximize the likelihood of Aboriginal clients attending and completing the CRA and CRAFT interventions it was suggested at working group meetings that less than eight sessions comprise the Aboriginal-specific CRA and CRAFT interventions (the original United States based CRA and CRAFT interventions are twelve sessions each), and that the interventions be available in a group setting as well as to individuals, consistent with the usual model of care used by the health care services.

Working group meetings with health care providers were used to gain feedback on early drafts of the CRA and CRAFT manuals. Health care providers said that they wanted "...something to take and something to refer to...not too detailed...more of a guideline" (working group meeting C).

When the final versions of the manuals were made available to health care providers for comment and review their feedback was generally positive.

> ...(the manual) made it a lot easier to understand what each component was (health care provider 106).

> ...the scenarios out of the manual...were good (health care provider 107).

Outcome measures

In tailoring CRA and CRAFT for delivery to Aboriginal Australians, the research team proposed reliable and valid clinical alcohol measures that could be used to identify Aboriginal people likely to benefit from CRA and CRAFT and assess the effectiveness of CRA and CRAFT for reducing alcohol-related harms among those identified to be at risk. These outcome measures not only had to be valid and reliable for the identification and assessment of Aboriginal people at risk, but also acceptable to those health care providers who were responsible for administering them to Aboriginal people, and feasible for them to do so in the context of routine practice. Health care providers deemed the package of outcome measures originally proposed by researchers as too lengthy and time consuming to complete. The package of outcome measures originally proposed aimed to measure drug and alcohol consumption, and social, emotional and physical wellbeing. The package of outcome measures comprised demographic questions, the Emotional Empowerment Scale (EES14) (Haswell et al. 2010), K-5 (Cunningham & Paradies 2012), Growth Empowerment Measure (GEM) scenarios (Haswell et al. 2010), Alcohol Use Disorders Identification Test (AUDIT) (Saunders et al. 1993), frequency of illicit drug use, Assessment of Quality of Life - 6D (AQoL-6D) (Allen et al. 2013), time spent caring for a problem drinking relative

(in CRAFT outcomes only), and health care service use questions. In response to health care providers' feedback, the package of outcome measures was revised to include demographics questions, the Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) (Humeniuk, Ali & WHO ASSIST Phase II Study Group 2006), K-5 (Cunningham & Paradies 2012), GEM scenarios (Haswell et al. 2010), and health care service use questions. The aims of the intervention evaluation were not compromised by changes to the main outcome measures.

Recruitment options

Working group meetings G and H were used to identify and discuss recruitment options that would have the potential to develop into ongoing referral pathways into CRA and CRAFT once implemented into routine practice. Health care providers suggested a number of options including through probation and parole, and other local health care services that do not currently provide alcohol treatment services for Aboriginal Australians.

Discussion

CRA and CRAFT counselor certification involved a lengthy process that was positively reviewed by health care providers at participating health care services. Initial challenges of time constraints and reluctance to perform role plays were resolved by organising specific days to complete certification measures and by ongoing organizational and peer support. Underfunding of Aboriginal health care services (Allison, Rivers & Fottler 2004; Gray et al. 2010) often means that employed health care providers have a large workload, and reiterates the importance of organizations assigning a co-ordinator to ensure health care providers are motivated and given time to participate in activities designed to improve their knowledge and skills to undertake their

professional role. Underfunding also affects continuity of staff employment (Adams et al. 2005). In this study, high staff turnover prompted the establishment of a locally based training and certification program run by the two certified CRA and CRAFT supervisors. In addition to training days and reviewing audio-taped sessions, these supervisors have developed a system whereby a certified CRAFT counselor delivering CRA or CRAFT group sessions is assisted by a counselor in training, rather than another certified counselor. This process ensures new staff have exposure to the delivery of CRA and CRAFT in practice while they are undertaking the certification process, and increases the number of staff available to deliver the interventions.

CRA and CRAFT counselor certification were completed in the original United States versions of CRA and CRAFT. The CRA and CRAFT concepts and resources were thought to be applicable to Aboriginal Australians, when tailored specifically for this population group. In particular, technical language needed to be changed to words more regularly used by Aboriginal Australians. In response, CRA and CRAFT resources have been modified to include more appropriate language, and clear formatting in large font. For example, “Who is your loved one usually with when drinking?” was changed to “Who is your relative usually with when drinking?” (see Appendix E for tailored CRA and CRAFT intervention resources). Aboriginal-specific CRA and CRAFT manuals were developed in consultation with group meeting attendees and identified as important resources for health care providers to refer to. The modified examples of how to deliver the interventions, included in the manuals, presented CRA and CRAFT in the Australian context which helped health care providers to translate the United States CRA and CRAFT interventions into an Aboriginal Australian based model of care. Changing the contextual focus has been the aim of other research projects tailoring CRA or CRAFT for minority groups (Villarreal 2008; Miller, Meyers & Hiller-Sturmhofel 1999). For example, alcohol dependent Native Americans were reconnected with their

cultural spirituality through cultural practices, such as the talking circle, while participating in CRA (Miller, Meyers & Hiller-Sturmhofel 1999). Other Aboriginal-specific interventions have also focused on changing the context of an intervention, such as using story telling with parents and children to improve behavioral problems and decrease parental psychological distress (Robinson et al. 2012; Stock, Mares & Robinson 2012).

To ensure that CRA and CRAFT can be delivered in routine practice, Aboriginal-specific group programs for CRA and CRAFT have been developed by CRAFT certified health care providers. These group programs include the same content as the individual programs; however, the individual programs are designed to use the core procedures in an order that is appropriate for each client and the group programs presents the core procedures in a standardized order using a PowerPoint presentation. Client workbook exercises are also included in the group programs. Clients attend six group sessions and are given the opportunity to attend additional individual sessions if required. Group delivery of intervention programs is appropriate for Aboriginal Australians and has been successfully demonstrated by an Aboriginal-specific family-based intervention targeting parents and children aimed at reducing Aboriginal disadvantage (Robinson et al. 2012; Stock, Mares & Robinson 2012), and a healthy behaviours program promoted through an Aboriginal men's group (Bindon et al. 2009).

The variation in qualifications held by health care providers involved in CRA and CRAFT counselor certification was not perceived to be a barrier for delivery but was believed to impact on how the interventions would be delivered. This finding is consistent with studies exploring the optimum mix of qualifications, experience and commitment required to effectively deliver CRAFT (Smith &

Meyers 2007). Two individuals have completed CRAFT supervisor certification, providing the opportunity for ongoing local supervision of certified counselors to assist in intervention fidelity.

Limitations

The purpose of the interviews with health care providers was to explore their experiences of participating in the process of tailoring CRA and CRAFT for Aboriginal Australians and undertaking CRA and CRAFT counselor certification. Interviews were conducted with a small number of health care providers from one drug and alcohol agency in NSW; however the sample represents 77% (7/9) of all health care providers who had completed CRAFT certification and CRA training days at the time of interviewing. Aboriginal Australian individuals were involved in the working group meetings but none participated in the interviews, predominantly because they were no longer working at the health care service, they were unable to participate in the certification process due to competing priorities, or they appeared unwilling to participate due to fears and concerns they would not be able to successfully complete to certification process. When health care services who work with Aboriginal Australians become involved in research, changes are often required within that service to accommodate the research process. Researchers must also make changes to accommodate the delivery of interventions in a real world setting, as long as the changes do not compromise the integrity and aims of the research.

The self-report nature of the data mean they are prone to bias, in particular social desirable responding is likely. Social desirable responding is likely to have been minimized by anonymity being assured to all participants, and interviews conducted in a private room (Hogan 2003). Responses in working group meetings may have been biased by group think, but such data are important for the modification of the CRA and CRAFT interventions.

Conclusion

CRA and CRAFT were tailored through an iterative process of which consultation between health researchers and health care providers was a main component. The CRA and CRAFT counselor certification process was perceived to be useful and informative to learn skills and build confidence to deliver the interventions. The content of CRA and CRAFT were believed to be appropriate for Aboriginal Australians; however core intervention procedures and methods for their delivery required tailoring.

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Paper 4

The acceptability to Aboriginal Australians of a family-based intervention to reduce alcohol-related harms

Bianca Calabria[1], Anton Clifford[2,3], Anthony Shakeshaft[1], Julaine Allan[4,5], Donna Bliss[6], Christopher Dorn[7,8]

1. National Drug and Alcohol Research Centre, University of New South Wales, Sydney, New South Wales, Australia
2. Institute of Urban Indigenous Health, Brisbane, Queensland, Australia
3. University of Queensland, Brisbane, Queensland, Australia
4. Lyndon Community, Orange, New South Wales, Australia
5. Centre for Inland Health, Charles Sturt University, Orange, New South Wales, Australia
6. Yoorana Gunya Family Violence Healing Centre Aboriginal Corporation, Forbes, New South Wales, Australia
7. Hunter Medical Research Centre, University of Newcastle, Newcastle, New South Wales, Australia
8. Hunter Valley Research Foundation, Newcastle, New South Wales, Australia

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Bianca Calabria August 2013

Preamble

Paper 3 presented the experiences of health care providers participating in CRA and CRAFT counsellor certification, and their suggestions for tailoring the interventions to be more applicable for Indigenous Australians (Calabria et al. submitted-a). This consultation process resulted in modifications made to intervention resources and method of delivery. Health care providers were self-declared advocates for the delivery of CRA and CRAFT to Indigenous Australians after completing CRAFT counsellor certification and, although all had experience working with Indigenous Australians, none were of Indigenous origin. Consequently, their perceptions of the appropriateness of CRA and CRAFT for Indigenous Australians needed to be complemented with the views and preferences of Indigenous Australian people themselves. Paper 4 presents the perceptions of the Indigenous clients of participating health care services of the acceptability of CRA and CRAFT for delivery in their local community, and their suggestions for tailoring both interventions (Calabria et al. 2013).

Abstract

Introduction: Cognitive-behavioural interventions that utilise familial and community reinforcers in an individual's environment are effective for reducing alcohol-related harms. Such interventions have considerable potential to reduce the disproportionately high burden of alcohol-related harm among Aboriginal Australians if they can be successfully tailored to their specific needs and circumstances.

Aim: The overall aim of this paper is to describe the perceived acceptability of two cognitive-behavioural interventions, the Community Reinforcement Approach (CRA) and Community Reinforcement and Family Training (CRAFT), to a sample of Aboriginal people.

Design and Methods: Descriptive survey administered to 116 Aboriginal people recruited through an Aboriginal Community Controlled Health Service and a community-based drug and alcohol treatment agency in rural New South Wales, Australia.

Results: Participants perceived CRA and CRAFT to be highly acceptable for delivery in their local Aboriginal community. Women were more likely than men to perceive CRAFT as highly acceptable. Participants expressed a preference for counsellors to be someone they knew and trusted, and who has experience working in their local community. CRA was deemed most acceptable for delivery to individuals after alcohol withdrawal and CRAFT for people who want to help a relative/friend start alcohol treatment. There was a preference for five or more detailed sessions.

Discussion and Conclusions: Findings of this study suggest that CRA and CRAFT are likely to be acceptable for delivery to some rural Aboriginal Australians, and that there is potential to tailor these interventions to specific communities.

Introduction

Aboriginal Australians experience a disproportionately high burden of alcohol-related harm relative to the general Australian population (Calabria et al. 2010). Cognitive-behavioural interventions that utilise positive familial and community reinforcers for low-risk drinking have proven to be effective for reducing alcohol-related harms and improving the social and emotional wellbeing of at-risk drinkers (Calabria et al. 2012; Miller & Wilbourne 2002). The influential role of family and community factors in modifying health risk behaviours among Aboriginal people is widely acknowledged (Australian Government Department of Health and Ageing 2007; Nagel & Thompson 2010), and suggests that integrating these factors into cognitive-behavioural interventions is likely to be effective for reducing alcohol-related harms among Aboriginal Australians.

The Community Reinforcement Approach (CRA) uses social, familial and recreational positive reinforcers to modify the behaviour of problem drinkers and is ranked among the most effective cognitive-behavioural interventions (Meyers & Smith 1995; Miller & Wilbourne 2002). A family-focused version of CRA, Community Reinforcement and Family Training (CRAFT) (Smith & Meyers 2007), is likely to be highly relevant to Aboriginal communities because it teaches practical skills to family members of treatment resistant problem drinkers. Specifically, it aims to improve their own health and well-being and assist them to encourage their problem drinking relative into treatment. This study identifies the extent to which CRA and CRAFT are acceptable to Aboriginal Australians, their preferences for how CRA and CRAFT ought to be delivered and a process of tailoring these interventions for Aboriginal people.

Methods

Ethics

Ethics approval for the study was granted by the Human Research Ethics Committee, University of New South Wales (NSW), the Ethics Committee of the Aboriginal Health and Medical Research Council, NSW, and the board of the participating Aboriginal Community Controlled Health Service (ACCHS). A steering committee, including Aboriginal health workers and researchers who live in the participating communities, oversaw the over-arching project of which this study is a part.

Setting and participants

Aboriginal participants who were over 18 years of age were recruited through existing groups organised by one ACCHS and new clients of a community-based drug and alcohol treatment agency in rural NSW, from July 2010 to June 2011, by researchers or Aboriginal health workers. Participants were reimbursed $A40 to cover out-of-pocket travel expenses.

The survey

Survey development. The survey was adapted from the Treatment Acceptability Questionnaire (Hunsley 1992) in consultation with health service staff, non-Aboriginal and Aboriginal researchers, and Aboriginal clients of the participating drug and alcohol agency. The survey was initially administered to four Aboriginal people, who were either receiving treatment or who had recently completed treatment for alcohol use problems, to assess its appropriateness and comprehensibility.

Overall acceptability of CRA and CRAFT was assessed using a 5-point Likert scale (1 = very bad, 5 = very good) by asking 'what do you think about CRA/CRAFT being delivered in your community?' The acceptability of intervention delivery in rural settings was assessed as 'okay' or 'not okay'. Participants' drinking risk status was measured, using the Alcohol Use Disorders Identification Test (AUDIT) (Conigrave et al. 2012; Saunders et al. 1993; Saunders & Aasland 1987), to determine the extent to which their drinking status was associated with their preferences for CRA and CRAFT delivery.

Survey administration. Key information on CRA and CRAFT interventions was initially presented to participants by a researcher or Aboriginal health worker, including the target client population, the overall purpose, the therapeutic approach and the mode of delivery. Participants then self-completed the survey (with literacy support available). Space was provided for participants to write down additional comments. Survey completion was voluntary and responses confidential (see Appendix F for survey advertising poster, Appendix G for participant study information sheet, Appendix H for the survey, Appendix I for slides used by researchers or Aboriginal Health Workers to standardise the presentation of intervention and survey information, and Appendix J for group attendance record sheet).

Data analysis

Given few participants rated the acceptability of CRA and CRAFT as 1, 2 or 3, multinomial logistic regression analyses were not appropriate. Consequently, ratings of the acceptability of CRA and CRAFT were dichotomously coded as 'bad' (1 to 3) or 'good' (4 and 5). Predictors of 'good' [gender, drinking status (not/at risk or high risk drinker), family member drinking problem (no/family member with a drinking problem), and health service (ACCHS/drug and alcohol

treatment agency)] were identified for CRA and for CRAFT, using separate binary logistic regressions (Hosmer & Lemeshow 2000). Additional comments were examined for themes.

Results

The sample consisted of 116 Aboriginal Australians (*n* = 110) or non-Aboriginal Australians who have an Aboriginal spouse and/or child (*n* = 6). Eleven individuals who completed the survey were excluded because they were non-Aboriginal without an Aboriginal spouse or child. The response rate was 94% (116/124). Table 1 shows the demographic characteristics of participants, 95% of whom rated CRA as acceptable and 90% of whom rated CRAFT as acceptable. Women were more likely than men to rate CRAFT as 'good' (odds ratio = 0.07, 95%CI = 0.01 – 0.56). Table 2 shows that CRA was more acceptable as a post-withdrawal, rehabilitation or incarceration option and CRAFT was more acceptable for people who want to help a problem-drinking relative/friend start alcohol treatment. Preference was for a counsellor who was known and trusted, with experience working in the local community.

Increased access to follow-up support (listed six times) and more interventions for young people (listed seven times) were the most common additional comment by participants (see Appendix K for additional methods and results not included in the published paper).

Table 1. Demographic characteristics of the sample (*n* = 116)

Characteristic		*n* (%)
Gender	Male	56 (48)
	Female	59 (51)
	Do not wish to answer	1 (1)
Age	Range	18-72 years
	Mean (SD)	39 (13) years
Health service attended	Aboriginal Community Controlled Health Service	70 (61)
	Community-based drug and alcohol treatment agency	19 (17)
	Other services	25 (22)
Education	No formal education	11 (10)
	Primary school	17 (15)
	High school (Year 10)	47 (42)
	School certificate (Year 12)	8 (7)
	Tertiary	21 (19)
	Do not wish to answer	7 (6)
Work	Do not work	57 (51)
	Full time	23 (21)
	Part time	16 (14)
	Casual	8 (7)
	Do not wish to answer	7 (6)
Drinking status	Non-drinker	14 (13)
	Low-risk drinker	32 (31)
	At-risk drinker	11 (11)
	High-risk drinker	47 (45)
Problem drinking relative/friend	Yes	84 (76)
	No	27 (24)
Worried about problem drinking relative/friend	1 (not worried at all)	1 (1)
	2	2 (2)
	3	17 (21)
	4	18 (22)
	5 (very worried)	44 (54)

Table 2. Preference for intervention delivery

	n (%)	
	CRA	**CRAFT**
Mode of delivery		
Problem drinkers		
After withdrawal	101 (90)	--
Needing alcohol rehabilitation but not wanting it	80 (73)	--
Waiting for alcohol rehabilitation	75 (68)	--
After alcohol rehabilitation	88 (79)	--
Referred from probation and parole	89 (80)	--
People with a problem drinking relative/friend		
In the alcohol withdrawal unit	--	101 (91)
Waiting for alcohol rehabilitation	--	98 (88)
Just finished alcohol rehabilitation	--	98 (89)
Referred from probation and parole	--	87 (79)
People who want to help a problem drinking relative/friend to start alcohol treatment	--	104 (94)
Qualities thought most important in a counsellor delivering the interventions		
Trust and familiarity		
Someone I know and trust	76 (65)	67 (58)
Someone I know	2 (2)	6 (5)
Someone I trust	25 (22)	23 (20)
Does not matter	13 (11)	19 (17)
Experience working in the local community		
Yes	80 (70)	76 (66)
No	3 (3)	4 (3)
Doesn't matter	31 (27)	35 (30)
Aboriginality		
An Aboriginal person	60 (53)	59 (52)
A non-Aboriginal person	1 (1)	1 (1)
Does not matter	52 (46)	53 (47)
Gender		
A woman	17 (15)	18 (16)
A man	25 (23)	24 (21)
Does not matter	69 (62)	72 (63)
Number of sessions preferred for the interventions		
1 to 2 sessions for very basic information	22 (20)	21 (18)
2 to 3 sessions for basic information	24 (21)	22 (19)
3 to 4 sessions for detailed information	16 (14)	18 (16)
5 or more sessions for very detailed information	50 (45)	54 (47)

CRA, Community Reinforcement Approach; CRAFT, Community Reinforcement Approach and Family Training

Discussion

Both CRA and CRAFT were highly acceptable to Aboriginal people. Counsellors who were known and trusted, and delivery of five or more sessions, were preferred. CRA was deemed most acceptable for individuals post alcohol withdrawal, and CRAFT for those wanting to help a relative/friend start alcohol treatment. Improved follow-up support and more interventions for young people were identified most frequently as important.

Recommended tailoring of each intervention

First, health workers who are known and trusted by the community should be available to deliver CRA and CRAFT interventions. Health workers building trusting relationships with Aboriginal community members has been shown to increase access to drug and alcohol services (Allan & Campbell 2011) and, as a minimum, provides an alternative for those Aboriginal Australians whose preference for a known counsellor outweighs their confidentiality concerns (Vicary & Westerman 2004). Second, five or more detailed sessions should be offered, which is consistent with findings that the median number of CRAFT sessions attended is 4.7 (Miller, Meyers & Tonigan 1999). Third, the tailored interventions should include follow-up support for participants, a need that has been recognised through government consultations with Indigenous communities (Kurti et al. 2009). Fourth, there is a need for the interventions to be available for young people, which reflects the findings of a recent review that found no methodologically rigorous evaluations of interventions targeting young people at high risk of alcohol-related harm that have a broader focus than the individual (Calabria, Shakeshaft & Havard 2011). Given a CRA intervention designed specifically for adolescents has been found to improve outcomes in non-Aboriginal groups (Dennis et al. 2004; Slesnick et al. 2007), its acceptability to Aboriginal adolescents should be examined.

Limitations

A convenience sample was recruited, resulting in a sample of Aboriginal people likely to access interventions through the participating health services and a high response rate (94%), as well as under-representation of high-risk individuals resistant to treatment. Although 5% of the sample perceived CRA as unacceptable and 10% perceived CRAFT as unacceptable, these relatively small proportions suggest alternative interventions ought to be made available for them, rather than further adaptation of CRA or CRAFT. Self-report data are prone to biases, even when bias is minimised by using psychometrically validated tools (Hogan 2003). Repeating the survey after trialling the intervention would provide further evidence about the acceptability of CRA and CRAFT in practice.

Conclusion

The CRA and CRAFT interventions were acceptable to the majority of Aboriginal people recruited through a rural ACCHS and a community-based drug and alcohol treatment agency, which has both reinforced that a trial of their cost-effectiveness is warranted and helped tailor the specific versions of the interventions to local Aboriginal communities.

Acknowledgements

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Points of clarification for Paper 4

Drug and Alcohol Review owns the copyright of this published paper. The points of clarification have been added to provide additional information about the research for this thesis without modifying the content of the published paper.

Table 1

The number of responses in Table 1 varies depending on missing data, with the exception of the 'worried about problem drinking relative/friend' which was only applicable to participants who indicated that they had a problem drinking relative/friend.

Predictors of acceptability

Predictors of the acceptability of CRA and CRAFT were investigated using separate binary logistic regressions (gender, drinking status, family member drinking problem, health service). The analysis using gender had the only significant result. Non-significant results were not reported in the paper.

Paper 5

Epidemiology of alcohol-related burden of disease among Indigenous Australians

Bianca Calabria[1], Christopher M Doran[1], Theo Vos[2], Anthony P Shakeshaft[1,3] Wayne Hall[4]

1. National Drug and Alcohol Research Centre, University of New South Wales, Sydney, Australia
2. School of Population Health, University of Queensland, Brisbane, Queensland, Australia
3. Sax Institute, University of Technology, Sydney, New South Wales, Australia
4. University of Queensland Centre for Clinical Research, Brisbane, Queensland, Australia

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Bianca Calabria August 2013

Preamble

Paper 4 demonstrated the high level of perceived acceptability of CRA and CRAFT by Indigenous clients of an Aboriginal Community Controlled Health Service and a rural drug and alcohol treatment agency in New South Wales, for delivery in their community (Calabria et al. 2013). Additionally, Paper 4 identified a perceived need among a sample of rural Indigenous Australians for interventions to reduce alcohol-related harms among Indigenous young people. As a result, Paper 5 examines alcohol-related harms experienced by Indigenous people by age and sex, compared to the general population of Australia, in order to determine differences in the magnitude and type of alcohol-related harms experienced by young Indigenous people versus other age groups (Calabria et al. 2010).

Abstract

Objective: To compare the burden of alcohol-related harm and underlying factors of this harm, by age and sex, for Indigenous and general population Australians.

Methods: Population attributable fractions are used to estimate the disability adjusted life years (DALYs) for alcohol-related disease and injury. The DALYs were converted to rates per 1,000 by age and sex for the Indigenous and general populations.

Results: Homicide and violence rates were much higher for Indigenous males: greatest population difference was for 30-44 years, Indigenous rate 8.9 times higher. Rates of suicide were also greater: the largest population difference was for 15-29 years, Indigenous rate 3.9 times higher. Similarly for Indigenous females, homicide and violence rates were much higher: greatest population difference was for 30-44 years, Indigenous rate 18.1 times higher. Rates of suicide were also greater: the largest population difference was for 15-29 years, Indigenous rate 5.0 times higher.

Conclusions: Alcohol consumption and associated harms are of great concern for Indigenous Australians across all ages. Violent alcohol-related harms have been highlighted as a major concern.

Implications: To reduce the disproportionate burden of alcohol-related harm experienced by Indigenous Australians, targeted interventions should include the impact on families and communities and not just the individual.

Introduction

Although the deleterious impact of alcohol on Indigenous Australians and their communities has been extensively documented (Australian Bureau of Statistics & Australian Institute of Health and Welfare 2005; Australian Bureau of Statistics & Australian Institute of Health and Welfare 2008; Australian Department of Human Services and Health 1995; Australian Government Department of Health and Ageing 2007; Chikritzhs, Fillmore & Stockwell 2009; Gray et al. 1997), obtaining accurate estimates of the extent of harm across a range of health indicators (including death, hospitalisations, quality of life and social costs) has been challenging. One approach to this task has been to use Disability Adjusted Life Years (DALYs), a summary measure of health that combines years of life lost (YLL) and years lived with disability (YLD) as a consequence of a disease or injury.

Two reports using DALYs to describe the drug and alcohol-related burden of disease and injury in Australia have recently been published: one for Australia generally (Begg et al. 2007); and one specific to Indigenous Australians (Vos et al. 2003). In the general Australian population, alcohol is responsible for 3.3%, and prevents 1% of the total disease burden, a net effect of 2.3%, equivalent to 61,091 DALYs and 0.8% (1,084) of all deaths (Begg et al. 2007). For Indigenous Australians, alcohol harm causes 6.2%, and prevents 0.8% of the total burden, a net effect of 5.4% (5,171) of DALYs and 6.7% (192) of all deaths (Vos et al. 2003). The disproportionate burden of alcohol-related harm experienced by Indigenous people results in an estimated life expectancy of 15 years less, on average, than in the general population (Vos et al. 2003).

Using DALY estimates as the basis for developing, implementing and evaluating policies and interventions will be critical given the clear lack of Indigenous alcohol intervention research to

date (Sanson-Fisher et al. 2006). Such policies and interventions, however, are likely to be more effective if they are tailored to specific sub-populations and disease types (Sackett et al. 1996; Ockene et al. 2007), rather than remaining restricted to broad-based, population-level comparisons between general population and Indigenous Australians. This paper aims to compare alcohol consumption DALYs for Indigenous and general population Australians by age and sex and by disease or injury related to use.

Method

The methodology has been described in detail elsewhere (Begg et al. 2007; Vos et al. 2003; 2008); a summary follows. The population attributable fraction (PAF), representing the expected proportional reduction in mortality if alcohol exposure were reduced to an alternative (counterfactual) distribution, was calculated before determining the number of attributed deaths. The PAF uses the exposure level, actual population distribution of the exposure; counterfactual (alternative) population distribution of the exposure, relative risk of mortality at exposure level and maximum exposure level (see equations 1A for continuous exposures and 1B for categorical exposures).

Equation 1A

$$PAF = \frac{\int_{x=0}^{m} RR(x)P(x)dx - \int_{x=0}^{m} RR(x)P'(x)dx}{\int_{x=0}^{m} RR(x)P(x)dx}$$

x = exposure level

P(*x*) = actual population distribution of exposure

P'(*x*) = counterfactual (alternative) population distribution of exposure

RR(*x*) = relative risk of mortality at exposure level *x*

m = maximum exposure level

Equation 1B

$$PAF = \frac{\sum_{i=1}^{n} P_i\ RR_i - \sum_{i=1}^{n} P'_i\ RR_i}{\sum_{i=1}^{n} P_i\ RR_i}$$

n = number of exposure categories

P_i = proportion of population currently in the ith exposure category

P'_i = proportion of population in the ith exposure category in the counterfactual (alternative) scenario

RR_i = relative risk of disease-specific mortality for the ith exposure category

In order to estimate the number of alcohol-attributable person deaths in the population, in part (e.g. accidents) or whole (e.g. alcoholic liver cirrhosis), the population distributions of alcohol exposure were based on individual-level consumption data (Ridolfo & Stevenson 2001; Begg et al. 2007; English et al. 1995). Alcohol consumption data, for the general Australian population, were taken from the National Health Survey (NHS 2001) (Australian Bureau of Statistics 2001). For the Indigenous population the prevalence of alcohol consumption was derived from the Australian

Bureau of Statistics National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) 2004-05 (Australian Bureau of Statistics 2006). Prevalence of alcohol consumption was categorised into the four levels used in English and colleagues' analysis of the risks of alcohol consumption (English et al. 1995), in accordance with the NHMRC's recommendations on alcohol consumption (National Health and Medical Research Council 1992). The population distributions of alcohol exposure for each level of alcohol intake were estimated by age and sex for both Indigenous and general population Australians.

Relative risks and PAFs from Ridolfo and Stevenson (Ridolfo & Stevenson 2001) were used for conditions for which there is evidence of causation by alcohol consumption. Included in these estimates are harms, i.e., injury or diseases, that are causally related and completely attributed to alcohol exposure as well as related harms that are causally but not solely attributed to alcohol exposure (contributing factors) (Rehm et al. 2004).

The following diseases and injuries were included: ischemic heart disease; other cardiovascular disease (CVD) (including stroke, hypertensive heart disease and inflammatory heart disease); cancer; road traffic accidents; homicide and violence; suicide (including self-inflicted injuries); alcohol use disorders (including dependence, harmful use, alcoholic cirrhosis); and other (including fire, burns and scalds, gallbladder and bile duct disease, surgical and medical misadventure, striking and crushing accidents, poisoning, cutting and piercing accidents, sports injuries, other transport accidents, natural and environmental factors, machinery accidents, suffocation and foreign bodies, drowning, pancreatitis, and falls).

Age standardisation was applied to DALYs to account for the variation in age structure between Indigenous and the general population, resulting in comparable age specific estimates. The DALYs for alcohol-related harm and contributing factors were converted to rates per 1,000 by age and sex for the Indigenous and general populations.

Results

Alcohol-related burden of harm

Rates of alcohol-related harm among Indigenous males are three times higher than in the general Australian population: rates were more than twice as high for Indigenous males aged 0-29 years and more than three times higher thereafter. Rates for Indigenous females were seven times higher than general population females, consistently more than five times higher from age 15-59 years (see Table 1).

Contributing factors to alcohol injury and disease

Males. In terms of underlying alcohol-related disease and injury, rates of DALYs for Indigenous males were higher than general population males across all age groups (see Figure 1, Table 1). Road traffic accidents were the main contributing factor for alcohol-related harm in Indigenous males aged 0-14 years (2.3 times higher). Homicide and violence rates were much higher for Indigenous males: 6.1 times higher for 15-29 year olds; 8.9 times higher for 30-44 year olds; 7.5 times higher for 45-59 year olds; and 5.0 times higher for 60 years or more. Rates of suicide were also greater for Indigenous males: the largest difference between populations was for 15-29 year olds with the Indigenous rate 3.9 times higher. Alcohol use disorders made a larger contribution in later years of life with rates 5.8 times higher for 45-59 year olds and 4.8 times higher for

Indigenous males aged 60 years or more. On the positive side, the protective effects of ischemic heart disease were higher in Indigenous males compared to the general population: 6.6 times higher for 15-29 year olds; 8.3 times higher for 30-44 year olds; 4.0 times higher for 45-59 year olds; and 2.0 times higher for 60 years or more (see Table 1).

Females. Among Indigenous females, rates of DALYs were higher than general population females (with the exception of similar rates for both groups for cancer) across all age groups (see Figure 2, Table 1). Similarly to Indigenous males, road traffic accidents were the main contributor to alcohol-related harm for Indigenous females aged 0-14 years (2.4 times higher). Homicide and violence rates were much higher for Indigenous females: 13.9 times higher for 15-29 year olds; 18.1 times higher for 30-44 year olds; 6.0 times higher for 45-59 year olds; and 20.7 times higher for 60 years of more. Rates of suicide were also greater for Indigenous females: the largest difference between populations was for 15-29 year olds with the Indigenous rate 5.0 times higher. Alcohol use disorders made a larger contribution later in life with rates 10.9 times higher for 45-59 year olds and 9.9 times higher for Indigenous females aged 60 years or more.

Table 1. Rates (DALYs per 1,000) of alcohol-related disease and injury, Australia

	Age (years)						Age (years)					
	0-14	15-29	30-44	45-59	60+	Total	0-14	15-29	30-44	45-59	60+	Total
	Indigenous population						General population					
Males												
Ischemic heart disease	0.00	-0.33	-4.05	-8.57	-12.24	-2.26	0.00	-0.05	-0.49	-2.14	-6.13	-1.52
Other CVD	0.00	0.38	1.42	2.84	7.64	0.98	0.00	0.19	0.20	0.42	1.29	0.37
Cancer	0.00	0.03	1.41	6.79	12.11	1.48	0.00	0.04	0.33	1.77	3.02	0.91
Road traffic accidents	0.71	4.98	4.87	2.22	0.43	2.81	0.31	2.41	1.42	0.45	0.13	1.00
Homicide and violence	0.00	3.70	4.28	1.42	0.30	1.98	0.00	0.61	0.48	0.19	0.06	0.29
Suicide	0.00	5.51	6.68	1.56	1.17	2.98	0.00	1.42	1.90	1.17	0.46	1.03
Alcohol use disorders	0.00	3.99	12.11	24.86	15.09	6.59	0.00	3.36	3.10	4.32	3.13	2.76
Other	0.16	1.16	1.81	1.61	1.51	0.95	0.05	0.53	0.50	0.44	0.69	0.43
Total males	0.88	19.41	28.53	32.74	26.01	15.52	0.36	8.54	7.44	6.63	2.65	5.29
Females												
Ischemic heart disease	0.00	-0.14	-1.09	-2.82	-5.26	-0.83	0.00	-0.01	-0.09	-0.42	-2.52	-0.57
Other CVD	0.00	0.18	0.05	-0.85	-2.44	-0.16	0.02	-0.06	-0.12	-0.55	-2.13	-0.53
Cancer	0.00	0.06	0.64	1.97	4.95	0.61	0.00	0.02	0.39	1.30	1.59	0.63
Road traffic accidents	0.17	0.84	1.40	0.39	0.00	0.62	0.07	0.27	0.18	0.06	0.00	0.12
Homicide and violence	0.00	3.20	3.07	0.36	0.62	1.56	0.00	0.23	0.17	0.06	0.03	0.10
Suicide	0.00	0.99	1.30	0.29	0.00	0.57	0.00	0.20	0.40	0.29	0.09	0.20
Alcohol use disorders	0.00	2.00	8.04	10.04	6.16	3.60	0.00	0.70	1.13	0.92	0.62	0.69
Other	0.09	0.19	0.52	0.66	1.40	0.33	0.03	0.11	0.14	0.14	0.86	0.24
Total females	0.25	7.32	13.92	10.03	5.43	6.31	0.12	1.46	2.20	1.79	-1.49	0.89

Notes: Other CVD = stroke, hypertensive heart disease, inflammatory heart disease; suicide = including self-inflicted injuries; alcohol use disorders = including dependence, harmful use, alcoholic cirrhosis; other = fire, burns and scalds, gallbladder and bile duct disease, surgical and medical misadventure, striking and crushing accidents, poisoning, cutting and piercing accidents, sports injuries, other transport accidents, natural and environmental factors, machinery accidents, suffocation and foreign bodies, drowning, pancreatitis, falls.

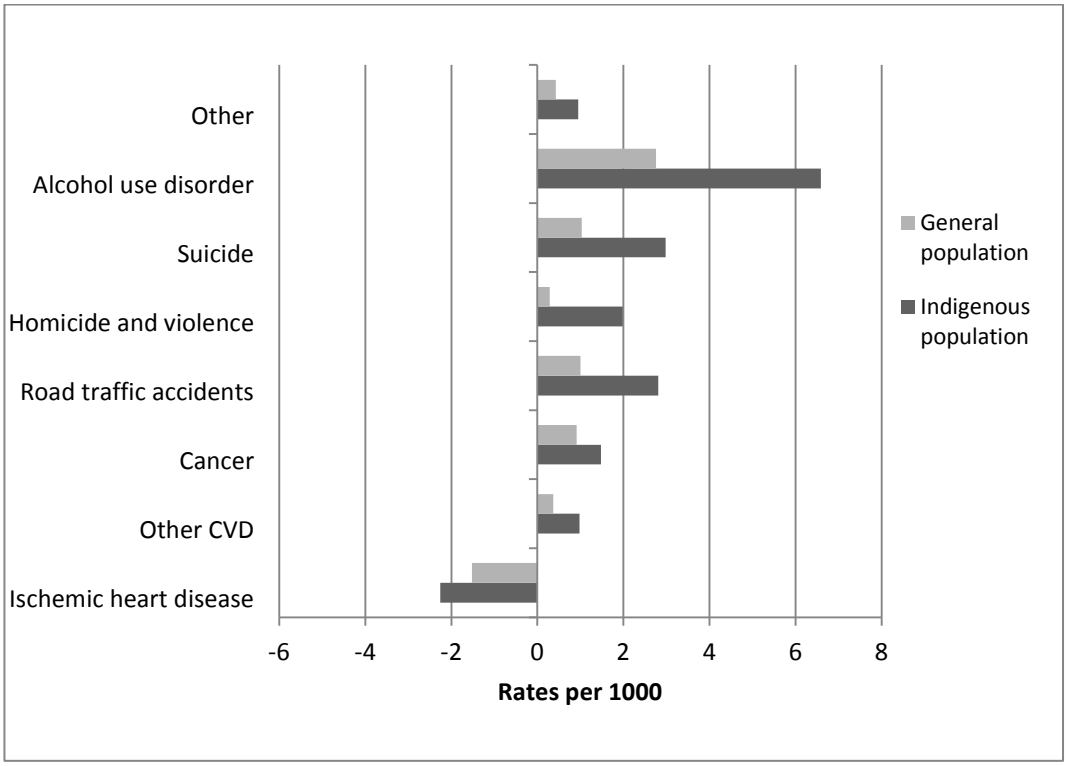

Figure 1: Alcohol-related disease and injury by sex: males

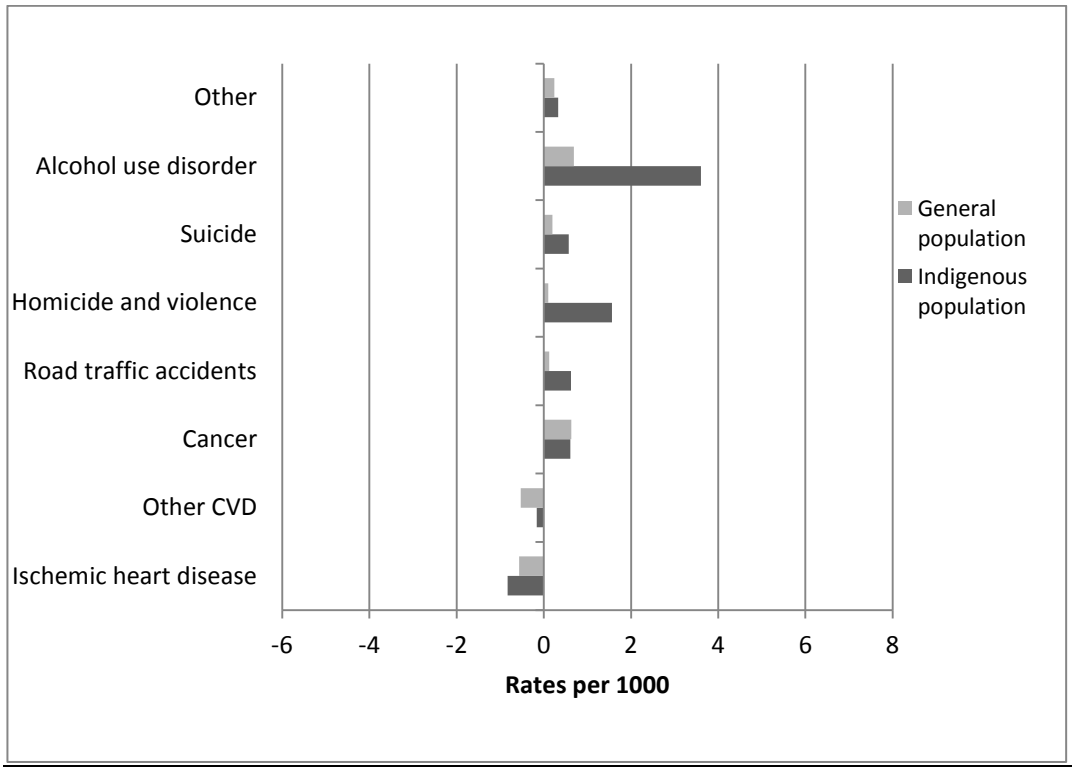

Figure 2: : Alcohol-related disease and injury by sex: females

Discussion

Previous analyses have shown alcohol DALYs are much higher in Indigenous, compared to general population Australians (Begg et al. 2007; Vos et al. 2003). This study shows that rates of alcohol disease burden are consistently higher for Indigenous people across all age groups. It also shows the specific disease or conditions that cause the most alcohol harm, common to both males and females, are homicide and violence, suicide, alcohol use disorders, and road traffic accidents.

The elevated contribution of alcohol to male and female homicide and violence confirms findings from a recent Australian Government report that highlights alcohol as an important factor for violence in Indigenous communities (Wundersitz 2010). Homicide and violence affect not only drinkers but may cause harm to people who do not drink alcohol and since these cases are not easily identified by data systems, our results are likely to be underestimates. The extent of underestimation is likely to be greater for females, relative to males, given females are more often victims of violence and homicide (People 2005).

Other alcohol-related harms were also consistently higher for Indigenous than general population Australians: rates of suicide were especially elevated among Indigenous males and females under the age of 44 years. The most commonly reported method of suicide for Indigenous males was hanging, followed by death by firearms (Hunter et al. 1999). Violent methods of suicide used by Indigenous males are similar to those reported by males in the Australian general population (Denning et al. 2000). Indigenous female methods of suicide are also notably violent, with hanging most commonly reported (Hunter et al. 1999), rather than drug overdose in general population females (Denning et al. 2000).

Limitations

There is an urgent need to improve the evidence base for alcohol policy in Australia (Shakeshaft, Doran & Byrnes 2009). Although this research is based on epidemiological studies that apply an accepted methodology, the underlying data used to calculate alcohol-related harm are drawn from a range of sources from varying quality including: specific Indigenous and general population alcohol prevalence data; relative risks from international literature for chronic diseases; Australian general population data on alcohol-related injuries; and variety of other sources that were predominantly Australian. Self-reported consumption data used are prone to biases (Hogan 2003): however, this method of estimating alcohol-attributed deaths has been commonly used (Ridolfo & Stevenson 2001; English et al. 1995). Although estimates of alcohol disease and injury include a wide range of conditions, they are likely to be an underestimate of the true proportion of alcohol-related harm because: 1) they exclude alcohol-related injuries experienced by individuals who have not consumed alcohol, primarily because there are no valid and reliable estimates of the extent of alcohol harm experienced by non-drinking victims; and 2) it is likely that not all perpetrators who have consumed alcohol are identified. Few direct data sources for Indigenous estimates were found so relativities found in proxy measurements were largely used (Begg et al. 2007; Vos et al. 2003). Further, the data from the Australia Burden of Disease and Injury study (Begg et al. 2007) did not explicitly separate Indigenous from non-Indigenous populations. The substantial alcohol-related harm reported in these studies reinforces the need for improved data collection.

Policy implications

Information is available on potential strategies to reduce alcohol harm, although most of the recent studies tend to focus on strategies to curb alcohol-misuse in the general population, such as changes to the taxation of alcoholic beverages (Cobiac et al. 2009; Byrnes et al. 2010). The cost-effective population-wide approaches to reducing alcohol harm would be improved

by implementing complementary interventions tailored specifically to high-risk sub-populations or diseases and conditions (Doran et al. 2010). The analyses in this paper suggest interventions that focus on reducing homicide and violence in Indigenous males and females, and with specific attention to lowering rates of suicide for Indigenous males and decreasing the number of Indigenous females who have an alcohol use disorder, are most likely to have the biggest impact in reducing alcohol-related harm for Indigenous Australians and their communities (Wundersitz 2010).

Indigenous Australians have a unique pattern of alcohol-related disease and harm that justifies implementation of specific interventions for this population. Implementing more than one intervention strategy would increase the likelihood of significantly reducing alcohol-related problems (Cobiac et al. 2009; Doran & Shakeshaft 2008). Given the disproportionately high rates of alcohol use disorders, homicide and violence, and suicide, it may be that interventions specific to factors critical to the functioning of Indigenous communities and individuals would be highly cost-effective. Positive interaction with family, for example, has been identified by Indigenous Australians as the most important characteristic to facilitate behaviour change generally (Nagel & Thompson 2010) and the major reason for reducing or ceasing alcohol use specifically (Hunter, Hall & Spargo 1991; Nagel & Thompson 2010). This highlights the potential importance of developing intervention strategies that include families, as well as communities and individuals. It is critical, however, that any intervention is developed and implemented in consultation with Indigenous community members, families and individuals, to ensure they are culturally acceptable, reflecting the knowledge base and world view of Indigenous Australians (Dixon et al. 2007; Vos et al. 2003).

In addition to social harms, there is clearly a need for more effective interventions to reduce deaths and injuries associated with traffic accidents, especially among young people. Despite

the effectiveness of random breath testing (Cobiac et al. 2009) road traffic accidents are a substantial problem for Indigenous and general population Australians, except females 60 years or more. A recent analysis relevant to the Australian population generally, indicated that the most cost-effective strategies for reducing alcohol-related road deaths among young Australians are likely to be a zero-tolerance policy for alcohol and driving until the age of 22 years (Hall et al. 2010).

Conclusions

Indigenous males had a higher alcohol-related burden of disease than general population males attributable to all contributing factors. Indigenous males also had a higher protective effect of ischemic heart disease. Key problem areas for alcohol-related harm among Indigenous Australian males were: homicide and violence, suicide and road traffic accidents. Indigenous females had a higher alcohol-related burden of disease than general population females with the exception of similar rates for cancer across groups. Although Indigenous females had a higher protective effect of ischemic heart disease, general population females had a higher protective effect for other CVD. Key problem areas for alcohol-related harm among Indigenous females were: homicide and violence, alcohol use disorders and road traffic accidents.

An informed policy response first requires a detailed characterisation of the contributions that alcohol use makes to disease burden by age, sex and Indigenous status as we present in this paper. It also requires methodologically rigorous evaluation of culturally sensitive interventions to reduce Indigenous alcohol-related harm and should, in the Indigenous context, include the impact on families and communities and not just the individual.

Paper 6

A systematic and methodological review of interventions for young people experiencing alcohol-related harm

Bianca Calabria[1], Anthony P. Shakeshaft[1], Alys Havard[1]

1. National Drug and Alcohol Research Centre, University of New South Wales, Sydney, Australia

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Copyright Statement

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Bianca Calabria August 2013

Preamble

Paper 5 demonstrated that Indigenous people have a unique pattern of alcohol-related disease and harm and young Indigenous people experience alcohol-related harms differently to older Indigenous people. Most notably, road traffic accidents and violent alcohol-related harms were of concern for young Indigenous Australians, compared to alcohol use disorders and violent alcohol-related harms among older Indigenous Australians. Paper 6 investigates which interventions are available for, and offer the greatest potential to reduce harms among, young people at high risk of alcohol-related harm. The systematic and methodological review focuses on interventions delivered outside of educational settings because school-based interventions are usually prevention focused and are, therefore, unlikely to impact on high-risk young people, predominately because they attend school infrequently (Best et al. 2006). As with Paper 1 (Calabria et al. 2012), Paper 6 (Calabria, Shakeshaft & Havard 2011) does not focus specifically on Indigenous people, because of the lack of published evaluations of interventions specifically targeting Indigenous young people at high risk of alcohol-related harm (Gray et al. 2010). The identified mainstream interventions could be tailored for young Indigenous Australians, if they are found to be acceptable to this group.

Abstract

Aims: This review identified published studies evaluating interventions delivered outside of educational settings, designed for young people with existing alcohol use problems, or who participate in behaviour that places them at high risk of alcohol-related harm, critiqued their methodology and identified future opportunities for new interventions.

Methods: A systematic search of the peer-reviewed literature interrogated ten electronic databases using specific search strings, limited to 2005-09. No additional studies were found by a librarian searching other collections and clearing-houses, or by hand-searching review paper reference lists. The 1697 articles identified were reviewed against criteria from the *Dictionary for the Effective Public Health Practice Project Quality Assessment Tool for Quantitative Studies*.

Results: The methodological quality of existing studies is variable, and needs to be both more rigorous and more consistent. Particular problems include the lack of blinding outcome assessors, a reliance solely on self-report measures, highly variable consent and follow-up rates, infrequent use of intention-to-treat analyses and the absence of any economic or cost analyses. The range of interventions evaluated is currently limited to individually focused approaches, almost exclusively implemented in the United States.

Conclusions: There is a great need for more intervention trials for young people at high risk of experiencing alcohol-related harm that are both methodologically rigorous and have a broader community focus, to complement the psychological interventions that currently dominate the relevant literature. Such trials would improve outcomes for high-risk young people themselves and would improve the evidence base, both in their own right and by facilitating future meta-analyses.

Introduction

Alcohol consumption guidelines recommend that healthy females and males limit their alcohol consumption to minimise their risk of alcohol-related harm (National Health and Medical Research Council 2009; U.S. Department of Health and Human Services & U.S. Department of Agriculture 2005). Current Australian guidelines, for example, recommend that both males and females drink no more than two standard drinks per day (a standard drink is defined as 10 g of alcohol) to minimise the likelihood of experiencing harms associated with risky drinking over the longer term, including dependence, depression and cancer (Fergusson, Boden & Horwood 2009; Seitz & Cho 2009; Calabria et al. 2010; National Health and Medical Research Council 2009), and limiting consumption on one occasion to no more than four standard drinks (both males and females), to minimize the risk of short-term alcohol-related harms (National Health and Medical Research Council 2009), such as driving under the influence of alcohol (DUI), accidents, injuries, violence and crime (Begg & Gulliver 2008; Cherpitel & Ye 2008; Calabria et al. 2010). These deleterious outcomes (both short- and long-term) impose substantial costs on both the individuals experiencing the harm (Collins & Lapsley 2008; Petrie et al. 2008) and their communities (Rehm et al. 2009; Petrie et al. 2008; Czech et al. 2010; Breen et al. 2011b).

A greater proportion of young people, relative to other age groups, consume alcohol at a level that places them at increased risk of harm in the short and long term (Australian Institute of Health and Welfare 2008b). In the United States, for example, consuming five or more standard alcoholic drinks (a standard drink is defined as 14 g of alcohol) on the same occasion is reported by over 40% of young people aged 21-29 years (21 is the minimum legal drinking age in the United States), compared to fewer than 30% for older age groups, a proportion that decreases with increasing age. A substantial proportion of young people under the United States' minimum legal drinking age also report alcohol use at this level: over 30% of 18-20-

year-olds; almost 20% of 16-17-year-olds; approximately 5% of 14-15-year-olds; and about 1% of 12-13-year-olds (Substance Abuse and Mental Health Services Administration 2009).

Attempts to reduce alcohol harm experienced by young people have largely focused on school-based education and prevention interventions for students and/or parents (Wood et al. 2006; Foxcroft et al. 2002). It is likely school-based interventions are routinely implemented because schools provide access to a large number of young people across a broad geographic area and interventions can be easily incorporated into diverse curricula. The evidence for their effectiveness in modifying drinking behaviour (as opposed to increasing awareness or knowledge) is limited (Vogl et al. 2009; McBride et al. 2004; Wood et al. 2006). Harm minimization approaches have been found to be effective in increasing knowledge and attitudes related to safe drinking choices (Vogl et al. 2009; McBride et al. 2004) and decreasing alcohol-related harms experienced by the drinking individual, but not harms from other peoples' alcohol use (McBride et al. 2004). Despite this, broad-based educational strategies may be justified on the basis that they are relatively inexpensive to implement and could achieve small benefits for individuals across large population groups (Newton et al. 2010). These broad-based educational interventions, however, generally aim to prevent alcohol use or misuse among the general student population and are unlikely to impact significantly on the minority of young people who currently experience substantial alcohol-related harm, primarily because they do not regularly attend school (Best et al. 2006).

Interventions delivered outside of educational settings that are designed for young people who are experiencing alcohol-related harm or are participating in high-risk drinking behaviour, are likely to be highly cost-beneficial even if they are expensive to implement, if they can achieve relatively modest improvements in personal and employment trajectories over a life-time (Cohen 1998; Pacileo & Fattore 2009; McGorry et al. 2007) Despite reviews of alcohol

interventions for young people being previously published (Tripodi et al. 2010; Fletcher, Bonell & Hargreaves 2008; Gates et al. 2006; Smit et al. 2008; Spoth, Greenberg & Turrisi 2008; Toumbourou et al. 2007; Velleman, Templeton & Copello 2005; Coombes et al. 2008; Williams & Chang 2000), none have recently focused on youth who are experiencing alcohol-related harm or participating in behaviour that increases their risk of harm.

This systematic review aims to: (1) identify published studies evaluating interventions delivered outside formal educational settings, designed for young people with existing alcohol use problems or who participate in behaviour that places them at high risk of alcohol-related harm; (2) describe and critique their methodology; and (3) identify future opportunities for methodologically adequate intervention studies.

Methods

Sample

Rather than specify an arbitrary age range a priori, which may have resulted in good-quality intervention studies failing to be detected, the search strategy used the more general search term 'youth'. Studies were included for review if the young people met any of four alcohol-related criteria. First, a diagnosis of alcohol dependence or abuse according to the *Diagnostic and Statistical Manual of Mental Disorders*, 4th Edition (DSM-IV) (American Psychiatric Association 1994); secondly, at-risk alcohol use as assessed by a formal screening instrument, such as the Alcohol Use Disorders Identification Test (AUDIT) (Saunders et al. 1993); thirdly, referral for treatment for an alcohol use problem; fourthly, engagement in high-risk alcohol-related behaviour, such as drinking above recommended guidelines or DUI.

Search strategy

Figure 1 summarizes the databases searched, the search terms used, the exclusion criteria and classification of included studies (see Appendix L for search strings).

Consistent with methods detailed in the Cochrane Collaboration *Handbook on Systematic Reviews of Health Promotion and Public Health Interventions* (Jackson 2007), and with previous reviews (Shakeshaft, Bowman & Sanson-Fisher 1997; Havard, Shakeshaft & Sanson-Fisher 2008; Webb et al. 2009; Wood et al. 2006), the search strategy comprised three steps. First, 10 electronic databases were searched: ACP Journal Club; CCTR; CDSR; Project Cork; DARE; EMBASE; ERIC; MEDLINE; PsycINFO; and Web of Science. Electronic databases were searched individually so that database-specific search strings could be used to identify relevant articles more effectively, compared to using generic search terms for searching all databases simultaneously. CDSR, ACP Journal Club and DARE were the exception; they were searched simultaneously so that CDSR could be accessed via the OvidSP platform. The search terms 'youth' ('basic' and 'advanced terms'), 'alcohol', 'alcohol abuse/dependence', 'intervention' ('basic' and 'advanced terms'), 'risk' and 'disruptive' were integrated into database-specific search strings (including subheadings, MESH terms, EMTREE terms and explode terms). Combinations of these search strings were tested and resultant data coverage was reviewed. The most parsimonious combination used the search terms 'youth' ('basic terms'), 'alcohol', 'intervention' ('basic terms') and 'risk'. To be as inclusive as possible, no specific age range was defined by the search terms. The combined searches of all databases (CDSR, ACP Journal Club, DARE, CCTR, EMBASE, Medline, PSYCInfo, ERIC, Project Cork and Web of Science) located 2243 references. Duplicates were electronically deleted leaving 1697 references for classification.

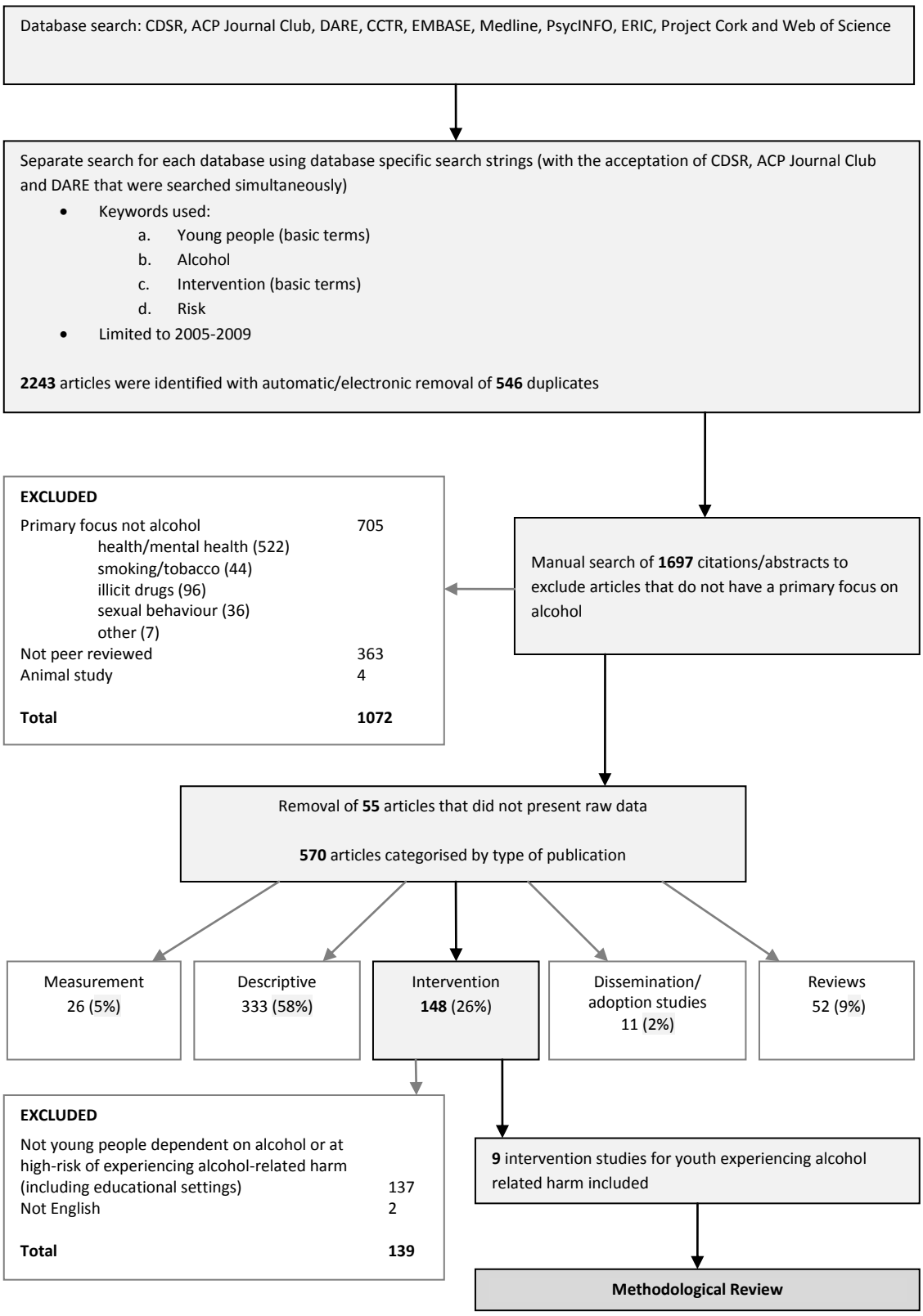

Figure 1. Flowchart indicating search strategy and classification of articles

Secondly, an experienced librarian conducted searches to identify additional studies that the original search may have missed. DRUG, APAIS, Health, DrugInfo Clearinghouse, SafetyLit and the National Drug and Alcohol Research Centre library collection were searched using search terms 'young people' or 'youth', 'alcohol' and 'intervention'. This additional search did not locate any relevant articles that had not already been identified.

Finally, the reference lists of all review articles, identified by the electronic database search and focused on alcohol interventions for youth, were hand-searched for any relevant studies that had not been identified. No relevant studies were identified during this process.

All searches were limited to 2005-09 for two reasons. First, since broad search terms were used to maximize the range of intervention types identified, the number of years searched was limited to 5 to ensure a realistic number of studies could be categorized and to ensure that a realistic number of intervention studies could be critiqued; and secondly, to optimize the likelihood that the most recent intervention studies would be included, on the assumption that the interventions being evaluated would represent current best-evidence practice.

Classification of studies

The titles and abstracts (if the title did not contain enough descriptive information to classify the article) of the 1697 identified references were classified in a three-step process.

Step 1: applying exclusion criteria. Papers were excluded if: (i) they did not focus on alcohol use, alcohol abuse, alcohol dependence or alcohol problems (n = 705); (ii) they were not peer-reviewed (n = 363), including a number of books identified by Project Cork; or (iii) they were an animal study (n = 4). A total of 1072 papers were excluded.

Step 2: study type. Fifty-five papers were removed because they did not present raw data (non-data based papers and comments). The 570 remaining papers were classified using categories derived and adapted from previous, similar reviews (Havard, Shakeshaft & Sanson-Fisher 2008; Webb et al. 2009; Wood et al. 2006): (i) measurement, defined as papers concerned primarily with developing measurement instruments and/or the psychometric properties of measurement instruments ($n = 26$); (ii) descriptive, defined as data-based descriptive, analytical research on alcohol-related harm ($n = 333$); (iii) interventions, defined as evaluation or intervention trials aimed at reducing alcohol-related harm ($n = 148$); (iv) dissemination/adoption, defined as studies evaluating methods of ensuring effective interventions to reduce alcohol-related harm are adopted into routine practice ($n = 11$); and (v) reviews, defined as literature reviews ($n = 52$).

Step 3: exclusion criteria for interventions. Of the 148 intervention papers, 139 were excluded because: (i) they did not meet the alcohol-related criteria, they did not specifically target young people or they were delivered in an educational setting (i.e. school, college, or university) ($n = 137$); or (ii) they were not published in English ($n = 2$). The nine remaining intervention studies were included in the review.

Twenty percent of the articles focused on alcohol (not excluded in Step 1, $n = 625$) were classified a second time by a blinded co-author (A.H.) to cross-check the classifications conducted originally by the first author (B.C.). The articles excluded in Step 1 were not cross-checked because they were not relevant for the review. Agreement between co-authors was 86%. Discrepancies were discussed and resolved. Due to high agreement between co-authors and the failure of the hand-searched reference lists to identify additional intervention studies that met the inclusion criteria, cross-checking more than 20% of article classifications was deemed unnecessary.

Information extraction and summary

Review criteria for data extraction were adapted from the Cochrane Collaboration *Handbook for Systematic Reviews of Health Promotion and Public Health Interventions* (Jackson 2007). The criteria, shown in Table 1, summarize the intervention/s, the sample (including eligibility, size, age range and percent male), the outcomes measured and the cost calculations performed.

Methodological critique of intervention studies

Methodological quality was assessed using the *Dictionary for the Effective Public Health Practice Project Quality Assessment Tool for Quantitative Studies* (see (Jackson 2007)). Sections A-F (A, selection bias; B, allocation bias; C, confounders; D, blinding; E, data collection methods; and F, withdrawal and drop-outs) were coded weak, moderate or strong as advised by the component rating scale of the Dictionary. For example, a strong rating for section B (allocation bias) indicates a randomized control trial; a moderate rating for section B indicates a two-group quasi-experimental design; and a weak rating indicates a case control, before/after study or no control group (Jackson 2007). Sections G (analysis) and H (intervention integrity) included descriptive information guided by the Dictionary.

Results

Interventions

Nine intervention studies were included: eight counselling-based interventions and one medically-based intervention. Of the counselling interventions, seven had individual session/s for the young person (D'Amico et al. 2008; Esposito-Smythers et al. 2006; Peterson et al. 2006;

Slesnick et al. 2007; Stein et al. 2006; Kemp et al. 2007), three included family-based therapy (Esposito-Smythers et al. 2006; Liddle et al. 2009; Slesnick et al. 2006) and one included group-based therapy (Liddle et al. 2009). Counselling interventions were based on motivational interviewing (MI) (D'Amico et al. 2008; Peterson et al. 2006; Stein et al. 2006; Kemp et al. 2007), cognitive-behavioural therapy (CBT) (Esposito-Smythers et al. 2006; Liddle et al. 2009; Kemp et al. 2007), family therapy (Esposito-Smythers et al. 2006; Liddle et al. 2009; Slesnick et al. 2006) and/or an operant perspective community-reinforcement approach (Slesnick et al. 2007; Slesnick et al. 2006). The number of reported counselling sessions ranged from one (D'Amico et al. 2008; Peterson et al. 2006; Stein et al. 2006) to 32 (Liddle et al. 2009). The medically-based intervention investigated the efficacy of medicating alcohol-dependent adolescents with a serotonin-3 antagonsit (ondansetron) (Dawes et al. 2005).

Table 1. Interventions for young people experiencing alcohol -related harm

First author and year of publication (reference)	Intervention/s (number of sessions)	Sample	Eligibility	Age range, years (% male)	Data collection methods	Outcomes	Cost calculation?
D'Amico, 2008 (D'Amico et al. 2008)	BMI: Project CHAT (1)	Underserved population[a] (*n* = 64)	Scoring 1 or more on the CRAFFT (screening instrument for drug and alcohol use)	12-18 (48%)	Self-report only (self-complete)	Alcohol and marijuanna: • Intentions • Percieved prevalence • Number of friends who consume • How often teens consume • Consequences • Past month prevalence • How many drinks consumed in past month • Number of days consumed 3+ drinks in the past month	×
Dawes, 2006 (Dawes et al. 2005)	Medication	Treatment-seeking patients (*n* = 12)	DSM-IV diagnosis of alcohol dependence	14-20 (58%)	Self-report only (self-complete)	Number of days drinking Number of drinks each day Percentage of days abstinent Side effects of medication	×
Esposito-Smythers, 2006 (Esposito-Smythers et al. 2006)	CBT & family therapy sessions (12-15)	Co-occuring alcohol use disorder and suicidality (*n* = 6)	Alcohol use disorder	Mean=15 (17%)	Self-report only (self-complete)	Number of days drinking Number of heavy drinking days Number of days of cannabis use Suicidal ideation Suicide attempts	×

First author and year of publication (reference)	Intervention/s (number of sessions)	Sample	Eligibility	Age range, years (% male)	Data collection methods	Outcomes	Cost calculation?
Kemp, 2007 (Kemp et al. 2007)	'Stop Using Stuff' - MI and CBT (4-6)	Primary diagnosis of a DSM-IV psychotic illness and substance abuse	Substance abuse diagnosis by the DAST-10 ≥ 3; AUDIT ≥ 6	17-25 (81%)	Self-report only (self-complete + clinical interview)	Alcohol use Drug use Positive and negative affect Self-efficacy Quality of life	
Liddle, 2009 (Liddle et al. 2009)	Multi-dimensional family therapy (25-32) CBT-based peer group intervention (25-32)	Youth and their parent/s (*n* = 83)	Youth refered for treatment for a substance abuse problem	11-15 (74%)	Self-report only (self-complete + parent and adolescent interviews)	Past-month alcohol, marijuana and other drug use Delinquency Internalized distress Family interactions Peer delinquency School achivement and behaviour	×
Peterson, 2006 (Peterson et al. 2006)	BMI (1)	Homeless (*n* = 285)	At least 1 episode of drinking 4+ drinks for females or 5+ drinks for males or used illicit 'street' drugs at least four times in the past 30 days	13-19 (56%)	Self-report (self-complete + interview) and urine testing for drugs (not including alcohol)	Past-month alcohol use Illicit drug use	×

First author and year of publication (reference)	Intervention/s (number of sessions)	Sample	Eligibility	Age range, years (% male)	Data collection methods	Outcomes	Cost calculation?
Slesnick, 2006 (Slesnick et al. 2006)	Ecologically based family therapy (10)	Runaways (*n* = 202)	DSM-IV criteria for drug or alcohol use disorder	12-17 (44%)	Self-report only (self-complete)	Substance use Conflict resolution Youth's perceived attitudes of parental bonding and over protection Social-enviromental characteristics of families Delinquency	×
Slesnick, 2007 (Slesnick et al. 2007)	Community Reinforcement Approach (12)	Homeless (*n* = 180)	DSM-IV alcohol or other psychoactive substance use disorder	14-22 (66%)	Self-report only (self-complete + interview)	Substance use in recent weeks Delinquency Coping Depression HIV knowledge and attitudes	×
Stein, 2006 (Stein et al. 2006)	MI (1)	Incarcerated (*n* = 125)	Marijuana and alcohol use (abuse/dependence) in the month prior to incarceration as well as driving under the influence or passenger with driver under the influence	14-19 (90%)	Self-report (self-complete + structured clinical interveiw) and driving record review	Driving under the influence Passenger with driver under the influence Depression	×

AUDIT: Alcohol Use Disorders Identification Test; BMI: brief motivational interviewing; CBT: cognitive behavioural therapy; CRAFFT: Car Relax Alone Forget Friends Trouble; DAST: Drug Abuse Screening Test; MI: motivational interviewing. [a]Described as: the uninsured; the working poor; homeless; runaway; and high-risk youth who reported alcohol consumption and drug use and some consquences due to use.

Samples and eligibility

The sampled youth population varied across studies, including: the underserved, described as the uninsured, working poor, homeless, runaway and high-risk youth (D'Amico et al. 2008); treatment seeking individuals (Dawes et al. 2005); those with comorbid suicidality (Esposito-Smythers et al. 2006); those with a primary diagnosis of a psychotic illness and substance abuse (Kemp et al. 2007); young people and their parents (Liddle et al. 2009); runaways (Slesnick et al. 2006); the homeless (Peterson et al. 2006; Slesnick et al. 2007); and incarcerated youth (Stein et al. 2006). The young people ranged in age from 11 to 25 years and the percent of male participants from 17% to 90%. Although participants were screened appropriately for an alcohol/substance use disorder (Esposito-Smythers et al. 2006; Liddle et al. 2009; Slesnick et al. 2007; Dawes et al. 2005; Slesnick et al. 2006; Kemp et al. 2007) or problematic alcohol use (D'Amico et al. 2008; Peterson et al. 2006; Stein et al. 2006), two studies gave no clear definition of the cut-off score for eligibility for inclusion (Esposito-Smythers et al. 2006; Liddle et al. 2009) and all except one (Stein et al. 2006) used self-report eligibility criteria.

Data collection methods and outcomes

All studies used self-report measures. Table 1 shows seven studies used self-report measures only; three of these used both self-complete and interview techniques (Liddle et al. 2009; Slesnick et al. 2007; Kemp et al. 2007) and four used self-complete only (D'Amico et al. 2008; Dawes et al. 2005; Esposito-Smythers et al. 2006; Slesnick et al. 2006). Of the two studies that used non-self-report measures, one used urine tests for drugs (not including alcohol) (Peterson et al. 2006) and one used driving record checks for reports of driving under the influence of alcohol (only amongst participants who where old enough to obtain a driving permit) (Stein et al. 2006).

Alcohol use outcomes were measured across all studies but varied: recent alcohol use (D'Amico et al. 2008; Liddle et al. 2009; Peterson et al. 2006; Slesnick et al. 2007; Kemp et al. 2007); frequency/quantity of alcohol use (D'Amico et al. 2008; Esposito-Smythers et al. 2006; Dawes et al. 2005; Slesnick et al. 2006; Kemp et al. 2007); heavy alcohol use or alcohol use disorders (D'Amico et al. 2008; Esposito-Smythers et al. 2006); and driving under the influence of alcohol (Stein et al. 2006). Other outcome measures included: other drug use/abuse (D'Amico et al. 2008; Peterson et al. 2006; Slesnick et al. 2007; Slesnick et al. 2006; Kemp et al. 2007; Esposito-Smythers et al. 2006); alcohol and/or drug perceptions and intentions to use (D'Amico et al. 2008); suicide ideation and attempts (Esposito-Smythers et al. 2006); family interactions (Liddle et al. 2009); conflict resolution (Slesnick et al. 2006); social-environmental characteristics of families (Slesnick et al. 2006); youth's perceived attitudes of parental bonding and overprotection (Slesnick et al. 2006); delinquency (Liddle et al. 2009; Slesnick et al. 2007; Slesnick et al. 2006); school achievement and behaviour (Liddle et al. 2009); experienced affect or affective disorders (Stein et al. 2006; Liddle et al. 2009; Slesnick et al. 2007; Kemp et al. 2007); coping (Slesnick et al. 2007); human immunodeficiecy virus (HIV) knowledge and attitudes (Slesnick et al. 2007); self-efficacy (Kemp et al. 2007); quality of life (Kemp et al. 2007); and medication side effects (Dawes et al. 2005).

Eight studies were conducted in the United States (D'Amico et al. 2008; Esposito-Smythers et al. 2006; Liddle et al. 2009; Peterson et al. 2006; Slesnick et al. 2007; Stein et al. 2006; Dawes et al. 2005; Slesnick et al. 2006) and one study was from Australia (Kemp et al. 2007).

Methodological adequacy

Table 2 summarises the methodological adequacy of the nine studies. Two studies obtained a 100% consent rate, obviating the possibility of selection bias (Liddle et al. 2009; Stein et al. 2006). A randomized control trial was employed by seven of the nine studies (D'Amico et al.

2008; Liddle et al. 2009; Peterson et al. 2006; Slesnick et al. 2007; Stein et al. 2006; Kemp et al. 2007; Slesnick et al. 2006), minimizing the risk of allocation bias. Baseline differences in comparison groups were not controlled in the analyses, so it is difficult to know the extent to which reported post-test differences are attributable to the intervention. More than half the studies used outcome assessors that were not blinded (Liddle et al. 2009; Peterson et al. 2006; Slesnick et al. 2007; Stein et al. 2006; Kemp et al. 2007). Six studies used measures with demonstrated validity and reliability (Liddle et al. 2009; Peterson et al. 2006; Slesnick et al. 2007; Stein et al. 2006; Slesnick et al. 2006; Kemp et al. 2007), one used measures of known validity but unknown reliability (D'Amico et al. 2008) and two studies used measures that were not tested psychometrically (Esposito-Smythers et al. 2006; Dawes et al. 2005). Five studies had follow-up rates between 80% and 100% (Esposito-Smythers et al. 2006; Slesnick et al. 2007; Stein et al. 2006; Slesnick et al. 2006; Kemp et al. 2007), one study had a follow-up rate between 60% and 79% (Peterson et al. 2006), and three studies had follow-up rates less than 60%: 50% (Dawes et al. 2005; Liddle et al. 2009) and 34% (D'Amico et al. 2008).

Table 2. Methodological adequacy of reviewed studies

First author and year of publication (reference)	Selection bias (A)	Allocation bias (B)	Confounders (C)	Blinding (D)	Data collection methods (E)	Withdrawal & drop-outs (F)	Analysis (G)	Intervention integrity (H)
D'Amico, 2008[a] (D'Amico et al. 2008)	Weak	Strong	Weak	N/A	Moderate	Weak	No citation for formula used in the analysis Cannot tell if intent-to-treat analysis was conducted	9% consent rate, 34% follow-up rate 59% of participants revieved the intervention Therapists were trained in MI by a clinical psychologist who is certifed by the Motivational Interviewing Network or Trainers
Dawes, 2005 (Dawes et al. 2005)	Weak	Weak	Weak	N/A	Weak	Weak	No citation for formula used in the analysis Intent-to-treat analysis included	Consent rate not reported, 50% follow-up rate All participants received the intervention CBT was given in addition to prescribed medication and this may have influenced the results
Esposito-Smythers, 2006 (Esposito-Smythers et al. 2006)	Weak	Weak	Weak	N/A	Weak	Strong	No citation for formula used in the analysis Cannot tell if intent-to-treat analysis was conducted	Consent rate not reported, 83% follow-up rate All participants received the intervention CBT manual was developed

First author and year of publication (reference)	Selection bias (A)	Allocation bias (B)	Confounders (C)	Blinding (D)	Data collection methods (E)	Withdrawal & drop-outs (F)	Analysis (G)	Intervention integrity (H)
Kemp, 2007[a] (Kemp et al. 2007)	Weak	Strong	Weak	Weak	Strong	Strong	No citation for formula used in the analysis Cannot tell if intent-to-treat analysis was conducted	Consent rate not reported, 84% follow-up rate 63% of participants received the intervention Battery of measures used but no comment about how they were delivered
Liddle, 2009[a] (Liddle et al. 2009)	Strong	Strong	Weak	Weak	Strong	Weak	Citation for analysis included Intent-to-treat analysis included	100% consent rate, 50% follow-up rate 52% of participants received the intervetion Self-report and observation methods indicated that groups were conducted in line with treatment content and guidelines
Peterson, 2006[a] (Peterson et al. 2006)	Weak	Strong	Weak	Weak	Strong	Moderate	No citation for formula used in the analysis Cannot tell if intent-to-treat analysis was conducted	Consent rate not reported, 74% follow-up rate Number of participants receiving the intervention not stated Therapists were trained in motivational interviewing and supervised including reviews of taped sessions

First author and year of publication (reference)	Selection bias (A)	Allocation bias (B)	Confounders (C)	Blinding (D)	Data collection methods (E)	Withdrawal & drop-outs (F)	Analysis (G)	Intervention integrity (H)
Slesnick, 2006 [a] (Slesnick et al. 2006)	Weak	Strong	Weak	N/A	Strong	Strong	No citation for formula used in the analysis Cannot tell if intent-to-treat analysis was conducted	Consent rate not reported, 83% follow-up rate 50% of participants recieved the intervetnion Therapists were trained, sessions were audiotaped for treatment adherence checks
Slesnick, 2007 [a] (Slesnick et al. 2007)	Weak	Strong	Weak	Weak	Strong	Strong	No citation for formula used in the analysis All analyses were intent-to-treat	Consent rate not reported, 86% follow-up rate 53% of participants received the intervention Therapists were trained, details of session focus were reported
Stein, 2006 [a] (Stein et al. 2006)	Strong	Strong	Weak	Weak	Strong	Strong	No citation for formula used in the analysis No intent-to-treat analysis reported	100% consent rate, 84% follow-up rate Number of participants receiving the intervention not stated Therapists were trained in motivational interveiwing and supervised including review of case files Control group received relaxation training that may have impacted on measured outcomes

Measured by the Dictionary for the effective public health practice project quality assessment tool for quantitative studies (see (Jackson 2007)). CBT: cognitive behavioural therapy; MI: motivational interviewing; N/A: not applicable. [a]Randomized control trial.

One study provided support for the appropriateness of its analysis by referencing a book about their general statistical approach (Liddle et al. 2009). Participation consent rates varied from 9% (D'Amico et al. 2008) to 100% (Liddle et al. 2009; Stein et al. 2006) and intent-to-treat analyses were reported by three studies (Slesnick et al. 2007; Dawes et al. 2005; Liddle et al. 2009). In two studies, all participants received the intervention (Dawes et al. 2005; Esposito-Smythers et al. 2006). Of the seven studies with a control group, five reported that more than half the participants were in the intervention group (Slesnick et al. 2007; D'Amico et al. 2008; Liddle et al. 2009; Slesnick et al. 2006; Kemp et al. 2007). Methods to optimize consistency in the delivery of interventions were not described in two studies (Dawes et al. 2005; Kemp et al. 2007). When they were described, methods included training therapists (D'Amico et al. 2008; Peterson et al. 2006; Slesnick et al. 2007; Stein et al. 2006; Slesnick et al. 2006), developing manuals (Esposito-Smythers et al. 2006), audio-taping for adherence to treatment protocols (Peterson et al. 2006; Slesnick et al. 2006) and self-report or observation (Liddle et al. 2009). Contamination was likely for Dawes *et al.* because CBT was provided in addition to the medical intervention that was the focus of the study (Dawes et al. 2005).

Effects

Due to the generally weak methodological quality of the included studies, especially their susceptability to intervention confounding and lack of blinding, the effect sizes are likely to be biased and, therefore, were not summarized. A meta-analysis using the most commonly reported outcomes was explored but judged inappropriate, given the variability between studies in the outcomes reported. No interventions included a cost or economic analysis.

Discussion

This systematic review of available peer-reviewed studies evaluating interventions delivered outside educational settings, designed for young people with existing alcohol use problems or who participate in behaviour that places them at high-risk of alcohol-related harm, identified eight counselling-based interventions (Kemp et al. 2007; D'Amico et al. 2008; Esposito-Smythers et al. 2006; Liddle et al. 2009; Peterson et al. 2006; Slesnick et al. 2007; Stein et al. 2006; Slesnick et al. 2006) and one medically-based intervention (Dawes et al. 2005). Six counselling studies had an individual focus (D'Amico et al. 2008; Esposito-Smythers et al. 2006; Peterson et al. 2006; Slesnick et al. 2007; Stein et al. 2006; Kemp et al. 2007) and three included family and peers (Liddle et al. 2009; Esposito-Smythers et al. 2006; Slesnick et al. 2006). Counselling types varied across the eight studies: family-based, MI, CBT and community reinforcement. Length of the interventions were also diverse: three used brief interventions (one session) (D'Amico et al. 2008; Peterson et al. 2006; Stein et al. 2006), four had between two and fifteen sessions (Esposito-Smythers et al. 2006; Kemp et al. 2007; Slesnick et al. 2006; Slesnick et al. 2007), and one had 25-32 sessions (Liddle et al. 2009).

Methodological adequacy

None of the included intervention studies had consistently strong methodology. Weak ratings were commonly recorded for selection bias and confounding, while allocation bias was mainly rated strongly across studies. Blinding was rated weakly when applicable. Data collection methods were generally appropriate, with seven studies using measures with some published evidence of their reliability and validity. Withdrawal and dropout ratings also varied across studies, ranging from 22% to 86%. Statistical analyses used were rarely supported by a citation of source and intent-to-treat analyses were conducted for only a third of studies. Consent rates varied from 9% to 100% and follow-up rates ranged from 34% to 86%, when reported. Therapists were trained and supervised.

Limitations of the available literature

In addition to methodological adequacy, the substantial variation in the eligibility criteria across studies limits the validity of comparisons between them. Although a primary eligibility criterion was either an alcohol use disorder or problem, no studies screened participants in the same way. Screening using standardized measures of alcohol dependence or misuse, such as the AUDIT (Saunders et al. 1993) or DSM-IV criteria (American Psychiatric Association 1994), would improve comparability between studies.

Another limitation of the available literature relates to measurement. First, one study grouped alcohol and drug use outcomes together, increasing the difficulty of determining the impact of their intervention specifically on alcohol-related harm (Slesnick et al. 2007). Secondly, since self-report data are prone to bias, even when bias is minimized by using psychometrically validated tools (Hogan 2003), complementary objective measures would increase the rigour of intervention outcome measures. Despite this, seven studies in this review only used self-report measures (D'Amico et al. 2008; Esposito-Smythers et al. 2006; Liddle et al. 2009; Slesnick et al. 2007; Dawes et al. 2005; Slesnick et al. 2006; Kemp et al. 2007). Of the two that used objective measures, one used urine tests for drug use but did not test for alcohol use (Peterson et al. 2006), and the other reviewed driving records (Stein et al. 2006). A number of more objective measures suitable for evaluating alcohol harm interventions are emerging, including measures of alcohol-related crime, traffic accidents and emergency department presentations (Breen et al. 2011a; Czech et al. 2010; Shakeshaft, Doran & Byrnes 2009).

Eight of the nine identified studies were conducted in the United States which limits generalizability to other countries. Although outcomes of interventions evaluated in the United States may be applicable to other high-income countries in so far as they share similar

socio-economic factors and infrastructure for young people, between-country differences in drinking prevalence and patterns (World Health Organization 2004), as well as different legal drinking ages, might lead to different intervention effects in different countries. Rigorous evaluation trials, conducted in countries other than the United States, would be valuable additions to the evidence base.

Finally, there was no consideration of costs in any of the included studies. Economic analysis provides an important contribution by costing and valuing reductions in alcohol-related harm, as well as providing a benchmark to evaluate potential savings associated with interventions. Although the economic cost of alcohol misuse among young people has not been measured (Doyle, Delaney & Tobin 1994), the associated rates of alcohol-related health service utilization and crime are high. Accumulated over a life-time, these harms are likely to result in a substantial cost to society with minimal off-set of those costs through tax contributions (McGorry et al. 2007; Pacileo & Fattore 2009; Cohen 1998).

Intervention effects

Despite their methodological limitations, the studies identified by this systematic review represent best evidence for the effectiveness of interventions for young people with existing alcohol use problems or who participate in behaviour that places them at high risk of harm. The most promising approaches to reduce such harms are CBT (Esposito-Smythers et al. 2006; Kemp et al. 2007), family therapy (Liddle et al. 2009; Slesnick et al. 2006) and community reinforcement (Slesnick et al. 2007). Evaluations using more rigorous methodologies are required before clear conclusions can be reached about the most effective interventions to reduce alcohol-related harms among youth who have existing alcohol use problems, or who participate in behaviour that places them at high risk of harm.

Limitations of the review

The possibility that this systematic review did not locate all relevant studies is unlikely: 10 electronic databases were searched by researchers, seven collections checked by a senior librarian and reference lists of review articles examined. Relevant identified studies may have been excluded or misclassified, but this is also unlikely given high agreement between blinded coders (86%).

Because this review is limited to intervention studies published in 2005-09, effective interventions published prior to 2005 are excluded. A comprehensive review of relevant interventions published prior to 2000, however, identified only family therapy and community reinforcement as interventions with evidence for their effectiveness (Williams & Chang 2000). For the period 2000-04, the 52 reviews identified in this review (Fig. 1) were examined and 14 reviews of intervention studies were identified. Hand-searching their reference lists located four individual treatment outcome studies (Kaminer, Burleson & Goldberger 2002; Liddle et al. 2001; Wells-Parker & Williams 2002; Kypri et al. 2004), only two of which showed significant effects: one for CBT (Kaminer, Burleson & Goldberger 2002) and the other for family therapy (Liddle et al. 2001). In total, therefore, prior to 2005 three intervention types have been identified with evidence for their effectiveness, all of which were included in this review. This suggests effective interventions are unlikely to have been omitted. As might be expected, it also indicates that the number of intervention studies is increasing over time: four between 2000 and 2004 and nine between 2005 and 2009. It is likely, however, that these published evaluations overestimate the true intervention effectiveness, as evaluations with statistically significant findings are more likely to be published (Dickersin et al. 1987; Easterbrook et al. 1991).

Although this review focused on interventions to reduce alcohol-related harm, multi-modal interventions that address alcohol and other common comorbid issues are likely to increase benefits for young people and their communities (Bauman & Phongsavan 1999), because alcohol misuse is associated commonly with other harms, particularly illicit drug use (Regier et al. 1990; Teesson et al. 2010). All but one study in this review included illicit drug use in the sample characteristics and/or as an outcome (D'Amico et al. 2008; Esposito-Smythers et al. 2006; Kemp et al. 2007; Liddle et al. 2009; Peterson et al. 2006; Slesnick et al. 2006; Slesnick et al. 2007; Stein et al. 2006).

Future opportunities for methodologically adequate intervention studies

The published intervention studies delivered outside of educational settings, designed for young people with existing alcohol use problems or who participate in behaviour that places them at high risk of alcohol-related harm, have substantial methodological limitations that make it difficult to interpret their results. Future intervention trials need to be more rigorous, particularly in terms of their study designs, sample recruitment and follow-up and statistical analyses. It is also clear that individualistic approaches have been the focus of interventions evaluated to date. Given the complex, multi-dimensional nature of problems experienced by highly disadvantaged young people, it is likely that programs that engage with the broader social context and community resources, as well as individual factors, will be more cost-effective (Mortimer & Segal 2005). As a minimum, replication of these interventions in studies outside the United States would increase the generalizability of their results.

Conclusions

Given the extent of costs and harms associated with risky alcohol use by young people, there is a clear need for a greater number of methodologically rigorous evaluations of interventions

targeting high-risk young people and those experiencing alcohol-related harm, particularly with a focus broader than the individual.

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Points of clarification for Paper 6

Addiction owns the copyright of this published paper. The points of clarification have been added to provide additional information about the research for this thesis without modifying the content of the published paper.

Resolution of classification discrepancies

Coders met to discuss classification discrepancies. Consensus was reached through re-examining the identified studies and agreeing on the appropriate classification.

Implications and future directions

The feasibility and benefits of creating partnerships between researchers, health care providers and Indigenous Australians

The work contained in this thesis demonstrates a process of researchers working in partnership with health care providers and Indigenous Australians to improve the development of Indigenous-specific interventions for implementation into routine health care. The systematic review of the peer-reviewed literature completed in Paper 1 (Calabria et al. 2012) identified family-based interventions as having some evidence for their effectiveness and having the most potential to be tailored to Indigenous people to reduce their experience of alcohol-related harm, specifically Community Reinforcement and Family Training (CRAFT). CRAFT and the Community Reinforcement Approach (CRA) (an evidence-based intervention for problem drinkers on which the development of CRAFT was based) were then tailored to the requirements of the health care providers who would be likely to deliver them (Paper 3 (Calabria et al. submitted-a)) and their level of acceptability to potential Indigenous clients of health care services was examined (Paper 4 (Calabria et al. 2013)).

This consultation process determined that CRA and CRAFT could be modified to optimise their acceptability to Indigenous people in the local community and local health care providers. The major modifications to CRA and CRAFT were to convert the technical language in the intervention resources and CRA and CRAFT manuals to a more local dialect, and to introduce the possibility of group sessions to complement individual counselling sessions. Health care providers at a rural drug and alcohol treatment agency have now been trained and certified in the delivery of both interventions, and a local supervision and training program has been established to provide ongoing support for certified health care providers delivering CRA and CRAFT. Furthermore, sufficient capacity has now been built to enable the training and certification of new health care providers in other local communities. Ongoing referral pathways into CRA and CRAFT have been newly established, or existing pathways improved,

through a range of different agencies including, for example, probation and parole, and local Aboriginal Medical Services. Finally, a package of outcome measures has been developed that is acceptable for use by health care providers, and could be used by researchers or health care providers to assess the outcomes of clients participating in the tailored CRA and CRAFT interventions.

The consultation process also identified a perceived need for interventions targeting young Indigenous people at high risk of alcohol-related harm. Research evidence was found to support this perceived need in two separate ways: an epidemiological analysis which confirmed the disproportionately high negative impact on young Indigenous people (Paper 5 (Calabria et al. 2010); and a systematic review of the literature that identified the potential effectiveness of CRA with adolescents (Paper 6 (Calabria, Shakeshaft & Havard 2011)). An adolescent version of CRA (A-CRA) has been recently developed, that includes parents in the therapeutic approach (Garner, Barnes & Godley 2009; Garner et al. 2009; Godley et al. 2007; Godley, Hedges & Hunter 2011; Godley et al. 2001; Godley et al. 2009; Smith et al. 2011). Although A-CRA is also a United States based intervention, it derives from the same principles as CRA and CRAFT and the evidence presented in this thesis strongly suggests that it could also be tailored to optimise its acceptability to both health care providers (Paper 3 (Calabria et al. submitted-a)) and Indigenous adolescents (Paper 4 (Calabria et al. 2013)).

This demonstrated process of tailoring interventions, through evidence informing practice and practice and perceived needs informing research, is highly consistent with the definition of translational research (Marincola 2003; Havard Catalyst 2013). This process is not linear; what matters is the maintenance of the complementary relationship between research and practice. This optimises the likelihood that current best evidence will be used to inform the development of Indigenous-specific interventions aimed to meet the identified and perceived

needs of Indigenous Australians in an acceptable and feasible manner. Evidence-based medicine is defined as integrating clinical experience with clinical research evidence (Sackett et al. 1996), which is clearly consistent with the principle of translation research. The next step after an intervention has been identified and tailored for health care providers and Indigenous Australians is to evaluate both its effectiveness and costs. Intervention evaluation that demonstrates cost-effectiveness has the potential to contribute to improvements in Indigenous health (Paul et al. 2010). The evaluation itself will require effective and consultative partnerships (Gray et al. 2000), primarily to provide ongoing feedback to health care providers and Indigenous communities on outcomes and to facilitate ongoing modification of intervention programs to improve their effectiveness, or the economic efficiency with which they can be delivered. Although cost-effectiveness analyses are important in determining the relative efficiency with which different interventions are provided, they are limited by the assumptions that underpin the models used and the quality of the data available to populate them (Drummond et al. 2005). Furthermore, interventions that are not cost-effective, but do have evidence for their effectiveness, can still provide health benefits.

Developing guiding principles for researchers working in partnership with Indigenous Australians and health care providers to improve intervention research

Through the process of working in partnership with health care providers and Indigenous Australians to improve intervention research, three guiding principles began to emerge that could be useful for other groups aiming to tailor, implement and evaluate Indigenous-specific interventions: 1) consultation between researchers, health care providers and Indigenous Australians is required from intervention identification and modification, through to implementation and evaluation; 2) finding a balance between methodologically rigorous research and intervention implementation in a real world setting; 3) building capacity to

ensure the delivery of effective interventions is sustained beyond the timeframe of any research project.

Guiding principles have been previously published for implementing community interventions among Indigenous people in Canada (Potvin et al. 2003). The authors of those guiding principles state that similar principles date back to the 1950s, but highlight the importance of demonstrating the principles in their current research context. Therefore, although the Canadian guiding principles are similar to those proposed by this thesis, there is merit in attempting to demonstrate the applicability of these types of principles to the Australian Indigenous context.

Principle 1: consultation between researchers, health care providers and Indigenous Australians is required from intervention identification and modification, through to implementation and evaluation

Consultation between researchers and Indigenous Australians about Indigenous-specific research acknowledges and respects Indigenous people's right to self-determination, their differences in cultural beliefs and systems, and the diversity of Indigenous people (United Nations 2008; Australian Institute of Aboriginal and Torres Strait Islander Studies 2010; National Health and Medical Research Council 2003). For these reasons consultation is an ethical requirement for Indigenous research (National Health and Medical Research Council 2003). Consultation with health care providers that are likely to deliver Indigenous-specific interventions increases the likelihood of the interventions being feasible to implement and being sustained beyond the life of a defined research project. Indigenous Australians and health care providers who work with Indigenous people should be actively involved in Indigenous-specific research from conception to evaluation. This thesis has demonstrated that

it is feasible to establish a process whereby evidence informs practice, and practice and perceived needs informs research. Although this is a lengthy process, it has the potential to improve the quality of Indigenous-specific research, which to date has been shown to be less than adequate (Sanson-Fisher et al. 2006; Clifford et al. 2010; Shakeshaft, Clifford & Shakeshaft 2010). Researcher consultation with health care providers and Indigenous Australians should continue after the specific intervention has been developed, to improve both the implementation and evaluation phase.

Ensuring the acceptability of rigorous research design and measures to health care providers who delivered the interventions, and to Indigenous Australians, was a key requirement identified in this thesis. This did not mean that the methodological quality of the research had to be diluted to ensure its acceptability to health care providers and Indigenous Australians. Rather, it meant that the type of, and need for, various research methods needed to be clearly communicated to health care providers involved in the evaluation, specifically highlighting the stages of intervention development through to evaluation: 1) tailor the intervention; 2) implement tailored intervention; 3) measure its effectiveness (ensuring that the agreed intervention is delivered consistently); and 4) analyse the outcome data. For this doctoral project the needs and suggestions of health care providers and Indigenous Australians were incorporated into the research, even when they led to modification to the original research plan, providing the modifications did not excessively dilute the reliability and validity of the outcomes. Finding this balance was difficult and required ongoing communication and negotiations between all those engaged in the partnership.

Principle 2: finding a balance between methodologically rigorous research and intervention implementation in a real world setting

A balance between rigorous research design and methods, and real world service delivery must be reached. Research methods need to be sufficiently flexible to fit into the routine care of clients and health care providers need to be open to incorporate some evaluation components into their usual work. Establishing a trusting and co-operative relationship between researchers and health care providers aimed at benefiting the local Indigenous community is essential to finding the research-real-world-balance (Clapham 2011; Potvin et al. 2003).

Rigorous evaluation gives the best chance of determining the true effects of an intervention. The absence of a controlled design can limit the findings of an evaluation because any observed differences between pre- and post-intervention outcomes cannot confidently be attributed to the intervention being evaluated, independently of other co-occurring factors that may have influenced the outcome over time (Jackson 2007; Chambless & Hollon 1998). Despite being the 'gold standard' for efficacy research (Sibbald & Roland 1998), randomised controlled trials (RCTs) are not always appropriate when interventions are delivered in naturalistic settings (Seligman 1995).

Randomised controlled trials randomly allocate recruited participants or groups into the intervention or control condition (Sibbald & Roland 1998). When individuals are the unit of analysis, eligible individuals are randomised to receive either the intervention or the control condition, which could be treatment as usual or no treatment. Individual outcome measures are used to evaluate the effectiveness of the intervention and can include self-reported survey data or routinely collected individual data (e.g. Medicare data). Group randomisation is appropriate for evaluating interventions that are implemented across whole communities, or within schools, or health care services, such as Indigenous primary care practices. The two most rigorous evaluation designs appropriate to group randomisation have been identified as:

1) a cluster RCT where the groups are randomly assigned to the intervention or control condition (Campbell et al. 2000); and 2) a stepped wedge or multiple baseline design (MBD) where groups are randomised to start intervention delivery at staggered intervals (e.g. 6 months, 12 months and 18 months) (Hawkins et al. 2007). Both these design options allow active engagement of a range of health and other community services. Self-reported and routinely collected community-level, or service-level, data (e.g. community surveys, police counts of alcohol-related assaults, or audits of client medical records) are outcome measures that are highly appropriate to cluster RCT or MBD evaluation designs.

Randomised controlled trials that randomise individuals are not feasible to implement in Indigenous communities and Indigenous-specific health care services where there are many familial connections and strong community cohesion (Stewart et al. 2010). Randomising whole communities or services would minimise the potential for contamination between intervention and control groups, but cluster RCTs are an expensive and time consuming evaluation design (Biglan, Ary & Wagenaar 2000). For example, a recent community-level cluster RCT conducted with rural communities in New South Wales (NSW) to reduce alcohol harm cost approximately $A2.3 million and took six years to complete (Shakeshaft et al. 2012). These practical reasons could help explain the lack of rigorous evaluation research focused on Indigenous health (Paul et al. 2010; Sanson-Fisher et al. 2006; Clapham 2011). The MBD, as an alternative to a cluster RCT, is less expensive to implement because each community effectively acts as its own control, meaning this evaluation could be done with as few as two communities or health care services. Although the level of evidence it generates is less rigorous than in a cluster RCT, it is sufficiently rigorous to be used as the basis for policy and health service delivery decisions (Hawkins et al. 2007). Nevertheless, MBD evaluations are still expensive compared to simpler designs, such as a pre- and post-evaluation design with one group, because they typically evaluate complex interventions that involve multiple key stakeholders and are logistically

difficult, time consuming and require high level research skills to implement (Hawkins et al. 2007).

The relatively high cost and complexity of both cluster RCTs and MBDs potentially highlights the particular value of a more staged approach to real world intervention research. These stages could involve a process of defining and tailoring an intervention and outcome measures, as has been the focus of this thesis. The next stage could be a relatively simple evaluation of the agreed intervention using a pre- and post-evaluation design. Although a pre- and post-evaluation design does not provide the strength of evidence of an RCT or MBD, it does provide sufficient evidence to justify the expense and time commitment required for a large-scale trial, the conduct of which could be the final stage in this stepped approach to real world Indigenous intervention research. It is probable that a key criticism of this approach would be the time that is required to go through these stages in order to produce rigorous evidence, but existing reviews have clearly shown that very little high quality Indigenous evaluation research has been published over the last 20 years in Australia or internationally (Sanson-Fisher et al. 2006; Clifford et al. 2010; Shakeshaft, Clifford & Shakeshaft 2010), which suggests implementing this staged approach over a period of approximately 5-6 years would produce more high quality outcomes than has been achieved to date.

Reliable and valid measures are necessary to accurately assess the outcomes of an intervention, regardless of the evaluation design (Streiner & Norman 2008). Specifically, measures designed, or validated, for Indigenous people should be used when conducting research with this group. Paper 2 (Calabria et al. submitted-b) identified Indigenous-specific cut-off scores on two shorter versions of the Alcohol Use Disorders Identification Test (AUDIT): AUDIT-C and AUDIT-3. These measures can be used to classify the drinking risk status of new clients, to determine the most appropriate intervention for them, or to measure participant

outcomes before and after intervention delivery. AUDIT was designed as a cross cultural screening instrument (Babor et al. 1989; Saunders et al. 1993) but Indigenous-specific cut-off scores for two shorter versions (AUDIT-C and AUDIT-3) have not previously been published. As well as identifying Indigenous drinking risk status using AUDIT-C and AUDIT-3, the Indigenous-specific cut-off scores on these shorter versions of the AUDIT can be used to reduce the time it takes to complete the AUDIT, an issue that has previously been identified as a barrier to its routine use (Brady et al. 2002; Clifford & Shakeshaft 2011).

Another measure, that was designed for Indigenous Australians and has been validated among this population, is the Growth Empowerment Measure (GEM) (Haswell et al. 2010). The GEM measures Indigenous people's social and emotional wellbeing. The measure consists of the Emotion Empowerment Scale (EES14) and twelve scenarios (12S). This Indigenous-specific measure shows great potential to be used in intervention evaluations.

An issue identified in this research was the problem of researchers imposing an additional data collection burden on both health care providers and clients, as a consequence of requiring evaluation-specific outcomes to be assessed pre- and post- intervention. A solution that was identified in this project was to ensure that, as far as possible, the outcome measures were brief (e.g. testing shorter forms of AUDIT) and aligned with the routine reporting requirements of health care providers and the health care services. Anecdotally, this project showed acceptable compromises about which questions needed to be asked, and the required data collection time points were able to be successfully negotiated. Indeed, the counsellors valued the additional information the measures provided (e.g. a specific indicator of each individual client's level of risk regarding their alcohol use, smoking status and other drug use), as evidenced by their updating their intake assessment forms to allow them to easily continue to collect these additional data routinely.

In addition to the use of valid and reliable measures, the method of delivery of measures is also important to consider for an evaluation. Computerised survey delivery has potential to improve the efficiency of data collection and processing, for example by tailoring questions for participants based on previous responses, providing instant feedback, and automatically extracting data into computerised statistical computer programs for analysis (Bonevski et al. 1997). Further, computer programs can include verbal versions of survey questions to assist participants with low literacy (Newell et al. 1997), which is applicable for Indigenous Australians who have lower literacy levels than non-Indigenous Australians (Australian Government 2013). The use of computerised surveys minimises missing data and achieves at least comparable reliability and validity to pen and paper surveys or interviews (Bonevski et al. 1997; Newell et al. 1997). The use of computers to present surveys has also been shown to be acceptable to clients in health care settings (Shakeshaft, Bowman & Sanson-Fisher 1998; Bonevski et al. 1997; Newell et al. 1997). With new Tablet technology (e.g. Apple iPads), using computers to present surveys is easy because of the convenient travel size and the novelty of Tablet use with participants. Tablet use to deliver surveys could provide benefits to researchers and participants, and when appropriate, could be considered for evaluating interventions, although the acceptability of their use to health care providers and Indigenous Australians should be assessed prior to their routine use.

Principle 3: building capacity to ensure the delivery of effective interventions is sustained beyond the timeframe of the research project

Building capacity in health care services involved in the development, implementation and evaluation of Indigenous-specific interventions can help ensure that the delivery of effective interventions to Indigenous Australians is sustained beyond the timeframe of the research project. This doctoral project, for example, demonstrated that it is feasible in the context of

routine health care service delivery, to provide benefit beyond the life of the research project (Paper 3 (Calabria et al. submitted-a)). Key factors to facilitate this were that: 1) a local training program was established to build the intervention skills of health care providers; 2) intervention components and standardised delivery was documented (e.g. an intervention manual written for the intervention context in consultation with health care providers); 3) regular local supervisory meetings were organised to provide support for health care providers; and 4) referral pathways into the intervention were established and transparent.

Nevertheless, a key challenge to sustaining interventions in routine health care service delivery is that Indigenous health care has historically been under-funded (Allison, Rivers & Fottler 2004; Gray et al. 2010), resulting in low numbers of health care providers and a high turnover of staff. Under staffing creates additional challenges when health care providers are asked to incorporate research methods into their usual practice. Health care providers, who are already busy, have previously identified that they perceive that they do not have the time to add to their workload, nor the skills to address additional health issues that might be identified (Shakeshaft & Frankish 2003; Solberg, Maciosek & Edwards 2008).

One way to address these challenges could be for supervisors and managers to discuss with health care providers how they can best deliver health care services and incorporate research methods into their routine workload. High staff turnover means that training health care providers to deliver the tailored interventions needs to be ongoing to ensure that new staff have the opportunity to deliver the intervention. It is therefore important to establish local training programs that are sustainable over time: organising specific training days can provide time free from competing tasks that is dedicated to intervention training. To facilitate this process, this doctoral research found that the appointment of a nominated individual based at the health care service who was specifically responsible for managing the intervention within

that service was instrumental to its successful implementation (see Paper 3 (Calabria et al. submitted-a)). This finding reflects earlier health care service research which shows that advantages of engaging a respected and influential study champion to promote new interventions and problem solve issues as they arise (Fiore, Keller & Curry 2007; Ziedonis et al. 2007). The nominated individual can motivate health care providers to co-ordinate additional intervention procedures into their routine practice. The nominated individual can also discuss with health care providers their client outcomes, in a simple, comprehensible format at regular intervals, which has been shown to improve the frequency and quality of their delivery of clinical care (Barker 2000).

Another potential solution to the problem of integrating research into routine delivery of health care services that has emerged from this research is to apply the same intervention to multiple issues, where appropriate, to avoid health care providers having to learn multiple intervention approaches. The CRA and CRAFT interventions, for example, have been used with other population groups to address problem drug use (Roozen, de Waart & van der Kroft 2010) and so, if the need is identified, it is likely that these programs could also be used to address Indigenous drug use.

Conclusions

This thesis demonstrates a process of researchers working in partnership with health care providers and with Indigenous Australians to tailor interventions for delivery to Indigenous Australians through routine health care. It shows how the specific skills and expertise of different groups can be combined: research skills in reviewing evidence and designing evaluations and outcome measures; health care provider experience of working with Indigenous Australians and skills in implementing interventions; and the knowledge and expertise of Indigenous Australians in determining the type and format of interventions, as

well as highlighting new areas of concern. Three guiding principles are proposed for tailoring, implementing and evaluating Indigenous-specific interventions: 1) consultation between researchers, health care providers and Indigenous Australians is required from intervention identification and modification, through to implementation and evaluation; 2) finding a balance between methodologically rigorous research and intervention implementation in a real world setting; 3) building capacity to ensure the delivery of effective interventions is sustained beyond the timeframe of the research project. Specifically, health care providers and Indigenous Australians should be actively involved in research projects aimed at tailoring, implementing and evaluating Indigenous-specific interventions, and should work with researchers to incorporate Indigenous Australian values and needs into routine service delivery, using rigorous research methodology. This process requires compromise and negotiation among researchers, health care providers and Indigenous Australians, as well as confidence and trust that all those involved have improving the health and wellbeing of Indigenous Australians at the forefront of decisions made. Local training and supervisory programs should be overseen by a nominated individual, with the goal of maintaining motivation among health care providers for training in intervention delivery, implementing the intervention, collecting outcome data, and driving the intervention. Although these guiding principles are the result of research into family-based intervention aimed at reducing alcohol-related harm among Indigenous Australians, they are likely to be applicable to the evaluation of a wide-range of Indigenous-specific interventions.

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Appendices

Appendix A

Search strings for systematic search for family-based alcohol interventions

Database	Search group	Search terms
EMBASE#	Alcohol	Alcohol or ethanol **exp alcohol OR exp alcohol consumption OR exp alcohol intoxication**
	Intervention	Intervention **or** therapy or psychotherapy or treatment **exp intervention study exp family therapy or exp psychotherapy or treatment outcome**
	Family	Family and parent **exp family or exp family counselling or exp family interaction or exp family study or exp parent**
ERIC	Alcohol	Alcohol or ethanol
	Intervention	Intervention or family intervention
	Family	Family or parent or family relations
Family studies abstracts**	Alcohol	Alcohol or ethanol
	Intervention*	Intervention or family intervention
	Family*	Family or parent
Indigenous Australian Alcohol and Other Drugs Bibliographic Database	Alcohol	Alcohol
	Intervention	Interventions
	Family	
Australian Indigenous Health*InfoNet*	Alcohol	Alcohol
	Intervention	Intervention
	Family	Family
Medline	Alcohol	Alcohol or ethanol **exp alcohols or exp ethanol**
	Intervention	Family intervention or intervention **exp family therapy or exp intervention studies**
	Family	Family or parent **exp family or exp family relations or exp parents or exp parent**

Project CORK	Alcohol	Alcohol
	Intervention	Intervention or family intervention
	Family	Family
Proquest Social Science Journals (search "citation and abstract") Searched "subject"	Alcohol	Alcohol or ethanol
	Intervention	Intervention or family intervention
	Family	Family or parent
PsycINFO	Alcohol	Alcohol OR ethanol **exp alcohols OR exp ethanol**
	Intervention	Intervention OR family intervention **exp intervention or exp family intervention**
	Family	Family or parent **exp family relations or exp family therapy or exp parents**
Sociological abstracts (search "keywords")	Alcohol	Alcohol or ethanol
	Intervention	Intervention or family intervention
	Family	Family or parent
Web of Science	Alcohol	alcohol or ethanol
	Intervention	intervention or family intervention or family-based intervention or family-focused intervention
	Family	family or parent

Appendix B

Formulae for analysis

Formulae		
Sensitivity	a / a + c	True positive / Condition present
Specificity	d / b + d	True negative / Condition absent
Positive predictive value	a / a + b	True positive / Positive test
Negative predictive value	d / c + d	True negative / Negative test

Explanation of Symbols

	Condition present	*Condition absent*
Positive test	True positive [a]	False positive [b]
Negative test	False negative [c]	True negative [d]

Note. Adapted from (Lemeshow et al. 1990).

Appendix C

Health care provider consent form

Yoorana Gunya Family Violence Healing Centre Aboriginal Corporation

Condobolin Aboriginal Health Service

NATIONAL DRUG AND ALCOHOL RESEARCH CENTRE

THE UNIVERSITY OF NEW SOUTH WALES

SYDNEY · AUSTRALIA

Information for Participants: Health Worker

Name of research project

The cost benefit of a Community Reinforcement and Family Training (CRAFT) alcohol intervention for Indigenous Australians.

What is the project?

We are trialling two alcohol programs for Aboriginal people. Program One, The Community Reinforcement Approach (CRA), is a program of counselling and support to help Aboriginal people who drink too much alcohol to cut down or stop drinking. Program Two, Community Reinforcement and Family Training (CRAFT), is a program of training and support for family members and/or friends of Aboriginal people who drink too much alcohol. Both programs will be delivered by workers from Yoorana Gunya Family Violence Healing Centre Aboriginal Corporation (Forbes) and the Lyndon Community (Orange). The National Drug and Alcohol Research Centre (NDARC) at the University of New South Wales (UNSW) will work with Yoorana Gunya and Lyndon Community to assess how well both programs work.

What it means to be a part of the Community Reinforcement and Family Training (CRAFT) alcohol intervention project?

If you agree to be part of the project you will be asked to participate in professional development training to provide you with the knowledge and skills you need to deliver the Community Reinforcement Approach (CRA) or Community Reinforcement and Family Training (CRAFT). If you are trained and/or certified in CRA you will be asked to deliver the program to clients who have alcohol problems and have agreed to participate in the project. If you are trained and/or certified in CRAFT you will be asked to deliver the program to clients who have

a relative/s with alcohol problems and have agreed to participate in the project. You will also be asked to participate in interviews after you have completed training and/or certification. Interviews will be held at Yoorana Gunya Family Violence Healing Centre Aboriginal Corporation and/or at the Lyndon Community, and will take up to one hour. The interviews will be conducted by a researcher involved in the project. The researcher will ask you questions about your experiences completing the training and certification programs. All interviews will be audio taped. You may also be asked by researchers to provide access to your outreach diary so researchers can gain information about how much time is required to provide outreach services. Brief access to your diary will only be required at a time that is mutually suitable for the researcher and the worker.

Name, address and telephone number of principal researcher, for the purposes of this document, unless otherwise stated, also called the Data Custodian

A/Prof Anthony Shakeshaft
National Drug and Alcohol Research Centre
University of New South Wales
Sydney NSW 2052 Australia
Phone: 02 9385 0285, or Email: a.shakeshaft@unsw.edu.au

Name, address and telephone number of institution, for the purposes of this document, unless otherwise stated, also called the Data Repository.

National Drug and Alcohol Research Centre
Faculty of Medicine
University of New South Wales
Sydney NSW 2052 Australia
Phone: 02 9385 0333, Fax: 02 9385 0222

Right to withdrawal

Participation is voluntary. At any time you can choose not to be a part project and may ask for the information that you have given not to be used. Withdrawing from the project will not result in any personal or financial penalty to you. Taking part in the CRAFT Project is not a condition of your employment.

Confidentiality and privacy

Any information you give will be private and confidential and will not be used in any way that will identify you. All data will be stored in secure facilities, and accessed only by authorised personnel for up to seven years, after which it will be destroyed. Specific information about you will not be published in a manner that could identify you as an individual, during or after

the conclusion of this project. Published information may identify Yoorana Gunya Family Violence Healing Centre Aboriginal Corporation and the Lyndon Community.

Potential risks and discomforts

As part of the CRA and CRAFT programs you will need to ask sensitive questions that may result in psychological distress experienced by your client or by yourself. You will be provided with training on how to ask sensitive questions and respond accordingly. If you experience psychological distress specialist counsellors, mental health workers and medical addiction specialists will be available to provide additional advice and support.

Community consultation

The Aboriginal community, through the representative members of the board of Yoorana Gunya Family Violence Healing Centre Aboriginal Corporation, Orange Aboriginal Medical Service and Lyndon Community has been consulted and agreed to be a part of the CRAFT project.

Ethical provision

The CRAFT project abides by ethical conduct relating to health research in Aboriginal communities as stated in National Aboriginal Community Controlled Health Organisation (NACCHO), Aboriginal Health & Medical Research Council (AH&MRC), National Health & Medical Research Council (NHMRC), UNSW ethics publications, and the Human Research Ethics Committee (HREC) of the Greater Western Area Health Service and that, where required, ethics approval has been granted by these organisations.

Questions and concerns

If you have any questions about the CRAFT project you can contact the principal researcher listed on page 2. If you have any complaints you should contact the three ethics committees listed below:

The Chairperson
AHMRC Ethics Committee
PO Box 1565
Strawberry Hills NSW 2012
Phone: 02 9212 4777
Fax: 02 9212 7211
Email: ahmrc@ahmrc.org.au

UNSW Ethics Secretariat
University of New South Wales
Sydney 2052 AUSTRALIA
Phone: 02 9385 4234
Fax: 02 9385 6648
Email: ethics.sec@unsw.edu.au

The Executive Officer
Greater Western AHS HREC
PO Box 143
Bathurst NSW 2795
Phone: 02 6339 5601

Health Worker Consent for the CRAFT project

I, ... [print full name], have read and understood the *Information for Participants: Health Worker*.

I have been made aware of the procedures involved in the study, including any known or expected inconvenience, risk, discomfort or potential side effect and of their implications as far as they are currently known by the researchers. I understand that I can withdraw my participation from the study at any time.

I hereby agree to participate in this research study.

Signature of participant: Date:

Witnessed by [print name]:

Signature of Witness: Date:

Appendix D

Qualitative data analysis

Memos: Working group meeting notes data

1. Literacy issues working with Aboriginal clients so keep language simple.
2. 4-6 sessions max
3. Certification helpful, in addition to training day (good supervision, designated days for CRAFT have been good)
4. Problems with asking family member why a drinker is behaving in a certain way
5. Problem with fit of US training (where their language must be used) and real world delivery to Aboriginal clients (language needs to be changed).
6. Resources good but language needs to be simplified
7. Delivery of CRAFT and CRA in groups (rather than individual)
8. Shorter package of outcome measures
9. Recruitment options: probation and parole and other health care services

Code Book: Working group meeting notes data

Code	Description
CRAFT certification (CERT)	Usefulness of the CRAFT certification process
Therapeutic issues (THERA)	Problems with aspects of the therapeutic approach
Adapt CRA and CRAFT (ADAPT)	Information about adapting CRA and CRAFT to be` appropriate for Aboriginal Australians
Measures (MES)	Information about modification to outcome measure
Recruitment (RECRUIT)	Information about possible referral pathways

Data Display Matrix: Working group meeting notes data

ID	Working group meeting A	Working group meeting B	Working group meeting C	Working group meeting D	Working group meeting E	Working group meeting F	Working group meeting G
CERT						"Workers agree that(certification) has been helpful in addition to the training days" (p.1) "Good to be recorded and have feedback...supervision has been great...role plays are good even though stressful because you can see how others work as well...no problems with procedures...designated days for CRAFT have been good" (p.1)	
THERA				There is a problem with asking a family member		"asking family members to make concessions to the	

ID	Working group meeting A	Working group meeting B	Working group meeting C	Working group meeting D	Working group meeting E	Working group meeting F	Working group meeting G
				what their relative is thinking or feeling...don't want the family member to feel responsible for the drinker's behaviour" (p.3)		drinker (is a challenge) and asking the family member to talk about whey they thing the drinker is behaving in that way" (p.1)	
ADAPT			"In practice, it needs to be basic" (p.12) "...the manual will have a basic outline of what can be included in the sessions...then the worker tailors it to the client" (p,16) "...something to take and something to refer to...not too detailed...more of a guideline" (p.23)	"eight sessions is too many..." (p.2) "...change language..." (p.3)		"...will have to change the language...to be more appropriate when working with clients" (p.1) "Workers would like a checklist that follows the US trainer's structure but change to more appropriate language for Aboriginal health care" (p.2) Happy with tailored resources that reflect the	"resources may be changed for low literacy..." (p.2) CRA and CRAFT will be delivered in a group setting, as well as offered individually (p.2)

ID	Working group meeting A	Working group meeting B	Working group meeting C	Working group meeting D	Working group meeting E	Working group meeting F	Working group meeting G
						original CRAFT resources but have language changed (p.3) "As the project progresses case studies from real clients should be added to the manual to be used for future training" (p.2)	
MES					"Overall (outcome measures package) needs to be shorter, not repetitive, and remove parts that don't appear to be relevant" (p.2)		
RECRUIT						Possible referral pathways were identified: probation and parole, other health services, other Aboriginal-	

ID	Working group meeting A	Working group meeting B	Working group meeting C	Working group meeting D	Working group meeting E	Working group meeting F	Working group meeting G
						specific services	

Memos: Interview data

1. Language changes required
2. Good structured program but prescribed sessions not practical
3. Role plays critical/useful to cement training even though uncomfortable at first
4. Ease of Skype and ooVoo use
5. Resources good
6. Manual - Not used - Use – scenarios were good
7. Training intense but useful
8. Time constraints and other commitments for audio taping sessions, no time constraints for supervision
9. Supervision positive and needed for motivation
10. Team member support important
11. CRAFT is adaptable to Aboriginal Australians
12. Function analysis – not right to ask someone what they think someone else is feeling
13. Training in Indigenous specific
14. Need experience working with Aboriginal Australians to give comment on changes to CRAFT
15. Don't need a degree to be a therapist but do need experience
16. Complex clients don't fit with original CRAFT
17. Training fostered personal growth
18. Happiness scale and positive communication skills both useful
19. Positive reinforcement for drinker hard for family member to do
20. Similar to what done/doing before/now
21. Role plays for certification – didn't always work with the same partner
22. Obstacle – role plays and recordings but people got use to it
23. Training pitched fine but need a level of counselling experience

Code Book: Interview data

Code	Description
CRAFT Certification (CERT)	Usefulness of CRAFT training days and CRAFT certification INCLUDE information about experiences during role plays
CRA Training (TRAIN)	Usefulness of CRA training day
Therapeutic issues (ISSUES)	Issues raised with the training and delivery of CRA and CRAFT
Organisational support (SUPPORT)	Therapist supervision, team member support, supervision sessions with the U.S. supervisor
Qualifications of therapists (QUALS)	Information on the pitch of training and what qualifications would be appropriate for health workers interested in doing CRAFT certification
Adaptability of CRA and CRAFT for Aboriginal Australians (ADAPT)	Adaptability of CRAFT for Aboriginal Australians INCLUDE information about changes required to language to be appropriate for Aboriginal Australians INCLUDE statements about the manual and intervention resources (e.g. Functional Analysis, Happiness Scale, Positive Communication, etc.)

Data Display Matrix: Interview data

ID	Health care provider 101	Health care provider 102	Health care provider 103	Health care provider 104	Health care provider 105	Health care provider 106	Health care provider 107
CERT	"I'm actually quite an advocate for it now and particularly with the tools like with the happiness scales and with things like that, that's something that really people can look at and they can see where they've changed and made progress and things that they really want to look at and things like that." (p.17) "I think it was all really good, I wouldn't change anything, I don't think.(p.19) "Doing the role-plays and talking to (the supervisor) there a couple of weeks ago was really good" (p.17) "I tried not to do the role plays...but it was	"...at first it was a bit overwhelming" (p. 8) "...I liked the fact that it had...some group work...gave the opportunity to...getting the concept of (CRAFT)" (p. 9). "...having an open discussion with the other people who were in training for the supervision (was useful)" (p.10) "...doing some role playing during the workshops, I think, was valuable for people to understand the concept rather than being talked at" (p. 8) "...we had a few	"...enjoyed the CRAFT training, I thought it was really good" (p.3) "(the workshop format) was a little bit dated" (p. 4) "...(the accreditation process has) been really, really valuable for the people who have gone through it to get feedback about their skills in counselling, regardless of doing the procedures which are part of the program" (p.11) "I thought that	"It was really good to have - see the role play and do a reverse role play and that sort of thing..." (during Skype supervision sessions) (p.7) I think (the audio-taped sessions) was a kind of a tough process to start with... I was not quite sure if I was doing things right... I found...it really good to get back the feedback" (p.11) "To start with, it was tricky 'cause ... co-ordinating time and getting	Oh, (the workshop with the US trainer) was good...I really enjoyed it" (p4) "...(Skyping with the US supervisor) was excellent...really, really good..." (p.5) "...I just found it really, really good, and just the support that the US supervisor's given us, fantastic. Difficult in getting my old head to think in a different way with some of the procedures, so I did send off a few tapes where I just didn't get it, but then I've got it, if you know what I mean? " (p.4) "I've learnt more from talking to the US supervisor	"I thought the workshop was good... that made it sort of sink in a little bit better than if we had of just gone through the information but yeah, I thought it was good training" (p.4) "We just found it really draining to be – because it was so structured" (p.7) "I actually found (Skyping) pretty useful" (p.4) "Like I guess ideally it would probably be better to be able to do (supervision) in person but there	"...the actual content was good (of the workshop)...nothing really that I hadn't done before, but it was just packaged differently" (p.4) "the whole process has been good for everybody, I think" (p.17) "I can't really think of anything negative about the training. It's good for people to get that feedback on the counselling, too" (p.24) "...(Skyping) was very good, I thought... he gave us a lot of good feedback... he'd demonstrate...the difference ways of asking people and that sort of stuff" (p.5)

ID	Health care provider 101	Health care provider 102	Health care provider 103	Health care provider 104	Health care provider 105	Health care provider 106	Health care provider 107
	good watching how he (the supervisor) ...approached stuff" (p.5) "I think the Skype concept was definitely a recommendation that I would put in to support people who are doing this training" (p. 9) "think it was fantastic that we had the Skype" (p.16)	technical issues (with Skype)...but on the whole it worked really well and I was quite surprised actually how well it did work" (p.4)	(supervision on Skype) was a very useful tool, rather than reading. I think it was good because you could then ask questions directly" (p.9) "I thought (recording sessions and getting feedback) was excellent because you're actually getting a feedback from each time you do a tape...it's helping you...to make sure you are on the right track" (p.14) "(the supervisor is) a very good supervisor" (p.5) So we had a few	online. And we work out of a car. And so it's kind of - yeah, it was a bit tricky. But when I was in the office and able to sort of connect and participate in those sessions, they were really, really good" (p.7)	Skyping, and then for him to analyse our tapes (compared to reading the books)" (p.7) Skyping wasn't (difficult)...the technology I found (difficult) was loading (audio-recordings) on the computer and sending it to the US supervisor" (p.5)	wasn't ever a time that I thought, this is really hard because he's on the other side of the computer" (p.5) "To start with, (the technology) was a little (bit of an issue) but once we changed to Oovoo it seemed to have sorted out a bit better" (p.5)	"People generally don't like (role plays), but it's a good way of doing the training, to involve people more" (p.5) "I think we only had glitches a couple of times (with Skype)" (p.6)

ID	Health care provider 101	Health care provider 102	Health care provider 103	Health care provider 104	Health care provider 105	Health care provider 106	Health care provider 107
			technical issues (with Skype)... but on the whole it worked really well and I was quite surprised actually how well it did work" (p.5) "... we would not have had so many people accredited and we would not have been able to do it so quickly (without doing role plays for the accreditation sessions)" (p.7)				
TRAIN	--	--	"For those of us who had done CRAFT, we found the first day (of CRA training) a little boring because	"...recently done the CRA training, which was fantastic..." (p.23)	--	"(CRA training) was good....a lot of it was stuff I found very useful and have started using little bits and	

ID	Health care provider 101	Health care provider 102	Health care provider 103	Health care provider 104	Health care provider 105	Health care provider 106	Health care provider 107
			it was talking about functional analysis and that sort of stuff...but the second day, we did quite a few more exercises and ...some group stuff (p.15)			pieces with clients already when I've been talking to them, so that's good" (p.17)	
ISSUES	"I only did a few (supervision sessions) because they were on Thursday..." (p.5) "what was good for" me personally, is when we had identified CRAFT days because sometimes fitting it in was difficult...and that really motivated all of us, I think, to just get stuck in" p.8) "...(role playing) was excruciating but it was really good. It was good putting it in	Didn't look at manual "mainly due to time restraints" (p.10) "sometimes you didn't want to do the sessions, mainly because of overload from other areas of your work" (p.15) "Some sessions I missed because I was committed to other things" (p.19)	"...it really was a significant time and effort commitment for the last 10 months" (p.5) "I'd always learnt in counselling that you don't get people to theorise or hypothesise about how someone else feels...it was a different spin when...you ask a	"I mean the negatives was the time and the pressure that it put on you" (p.15) "...it was kind of hard to do (role plays) and feel natural about it...the more we did it, the more you got used to that (p.11)	"(the certification process) was challenging...fitting it in with work" (p.8) "....(role plays with other therapists was) a bit confrontational in that you're seeing another therapist see your style and then you wonder if that's okay, if you've done okay, am I doing it okay" (p.8)	"The hardest part of it was finding the time to get (the role plays) done" (p.7) "I am a lot more confident with using it now than I would have been if we hadn't have done the role plays before and just getting the feedback was good to know this bit you did	"The worst part was trying to get everyone motivated to do (the audio-taped sessions), and actually co-ordinating them all to actually do them. So we set aside days – specific days – to get a couple done each of those days. And that worked well because everybody could just concentrate on that. So I thought it was good, especially because I was listening to other

ID	Health care provider 101	Health care provider 102	Health care provider 103	Health care provider 104	Health care provider 105	Health care provider 106	Health care provider 107
	practice." (p.8)		woman ...when you are doing a functional analysis...how do you think he feels?" (p.11)			really well, this bit you probably need to work on" (p.8) "...so I think trying to get people to really look at their family member's behaviours and trying to reward them and things like that, might be a bit tough... And I think the difference between trying to get people to understand between positive reinforcement and enabling that is going to be pretty tricky as well... (time out for positive reinforcement) has the potential	people, so I could see where their skill level was at, and that sort of thing. So it was a good learning curve for, yeah, everybody." (p.8)

ID	Health care provider 101	Health care provider 102	Health care provider 103	Health care provider 104	Health care provider 105	Health care provider 106	Health care provider 107
						to be pretty tricky as well" (p.13)	
SUPPORT	"...prompting from health care provider 107, like – you can do this, and you can do this and all that sort of stuff, yeah. Just her support was really good and the supervision and everything, yeah" (p.20)	"(organisational support) did (make a difference) because we were all doing it together..." (p.15) "getting the feedback within a short period of time, I think, is really important because that's making you take ownership as a practitioner of this program and also making sure that you're rolling it out within the context of how it should be presented" (p16)	"Well health provider 107's been great. So as the manager of the Outreach team, if she hadn't encouraged and sometimes insisted that her staff participate then we wouldn't have had such a good group – a good result with the accreditation" (p.8)	"It was really good to sort of work in a team that was doing it together (p.12)... we sort of kept pushing each other along and we needed to keep going with it, because we were all doing it together" (p.13)	"...(organisational support has) been great" (p.10)	"Health care provider 107 was really, really good with it. I don't think we would have got it done if she didn't actually push us to do it" (p.8)	"...having everybody sorted together and just keeping (CRAFT certification) as a topic of conversation in the office, and keeping it live, if you like, was good" (p.10) "...it was good having health care provider 103 involved, too...having someone external to the team...that's still part of it, to help drive it a bit" (p.11)
QUALS	"(pitched right)...yes" (p.5)		"I think that there's quite a lot of high level	"...so long as you had those people skills and			

ID	Health care provider 101	Health care provider 102	Health care provider 103	Health care provider 104	Health care provider 105	Health care provider 106	Health care provider 107
			practice required to implement CRAFT in the way that it's intended...I think people will vary in the way they implement the procedures" (p.12)	sort of the willingness to sort of learn something different, and then to apply it. Sometimes I think there's some resistance to apply it, maybe from some lack of confidence. But that's - I think that's more down to an individual, rather than their level of knowledge and experience... sometimes probably experience is a more useful thing than having the university education"			

ID	Health care provider 101	Health care provider 102	Health care provider 103	Health care provider 104	Health care provider 105	Health care provider 106	Health care provider 107
				(p.25)			
ADAPT	"... I think we all had a bit of avoidance there initially but once it was set in concrete we were fine." (p.9) "...it's very broad, it can be used for lots of different... in day to day stuff for people to learn to communicate and things like that's been really good... And getting them to think about things a bit differently, think outside of the square." (p.10) "I think the wording of (the functional analysis) might be difficult... (p.13) it's just a big 'jawbreaker' Aboriginal people would call that" (p.14) "...giving (the client) something they can relate to" (p.14)	"...because this is a project for the Indigenous, I think it may be too structured but we won't really know until we actually start that" (p.8) "some of the language, I think, needs to be sort of maybe looked at" (p16) "maybe use some pictures" (p.17) "...you're working with people who live in these worlds of chaos, you've really got to look at the language so that everyday people in that country can relate to it. So I think it really needs to be - an	"With (the US trainer's) style of presentation was even less appropriate for aboriginal people with maybe minimal experience maybe" (p. 4) "My biggest concern...is whether people (clients) keep coming back" (p13). "The happiness scale just seems a bit '70s to me" (p.14)	"when I started doing a functional analysis...using that to ask what another person thought that the other person might be feeling, I found that quite strange. I found that quite a difficult thing to be asking of somebody. And it just - yeah, it didn't seem right therapeutically for me to be asking" (p.16) "So I find using this kind of model, an American model, for an indigenous	"some of the wording needed to change" (p.15) "...(CRAFT procedures) can be adapted (for the Indigenous context) (p.17)... you might need to tweak it a little bit" (p.19) "The Functional Analysis, took a little bit of time to get my head around that" (p.14)	"...if I was actually doing it with a family I wouldn't use those terms" (p.9) "language that is used I think I probably just wouldn't use it" (p.16) "...(the manual) made it a lot easier to understand what each component was" (p.6) "I think the happiness scale's really good; I think that's definitely something that we could use quite easily with people. I think	"...we're going to have to modify (CRAFT) a bit for...Australia, for the clients...just the wording and that sort of stuff" (p.14) "Yeah, overall, it's a good idea. Particularly the positive communication skills, which help the counsellors as well. Yeah, I think it's all pretty good. But it's just adapting it, is the main thing" (p.16) "I think the number of sessions would be limited. You'd probably get up to four to six. Six at a push." (p.16) "...the scenarios out of the manual... were good" (p.7)

ID	Health care provider 101	Health care provider 102	Health care provider 103	Health care provider 104	Health care provider 105	Health care provider 106	Health care provider 107
	"The language...as it is written, might need to be broken...maybe just simplified" (p.15) "I think it's all doable with the Aboriginal community, it's just that the language might just need to be adapted a little bit to suit them a bit better" (p.15)...tweak then here and there for the individuals" (p.17) "The language used definitely needs to be different and just a little bit simplified or it needs to be put in Aboriginal language and I don't mean a dialect I mean in the way Aboriginal people speak English" (p.17) "I'm sure it can be adapted. In its present probably form, it might be a bit daunting for	Australian version of it really needs to be looked at. The concepts are still the same but again, you need to look at it in a different way" (p.23) "(with Indigenous people)... you really need to look at what's happened to them in the past, how would you present this, because if anything looks government-like, word-like, they shut down, which you can understand" (p. 23) "So you've really got to do what we call a soft entry approach" (p. 24) "...it was good to		population, it doesn't quite fit with me at the moment" (p.17) "...so yes, there's components within this training, and certainly that I think will work for Indigenous people" (p.21) "We're going to get the opportunity to now go out and look at what will and won't work about that. And I think that's a great thing. Yeah" (p.24) "if we could sort of take away some of the sort of more American based language" (p.26)		some of the things like with the functional analysis, trying to get an understanding of: what does your loved one think right before he drinks, or what does he feel right before he drinks? I think that's going to be pretty hard for people and I guess how accurate that's going to be is a bit of a concern I think." (p.11)	"I think they're all (resources)pretty good" (p.14)

ID	Health care provider 101	Health care provider 102	Health care provider 103	Health care provider 104	Health care provider 105	Health care provider 106	Health care provider 107
	Aboriginal people but if it can be adapted and a bit more user friendly for their community I think it will be a really good program" (p.19) "That was all really good...the copies of the happiness scale...the worksheets...all that stuff..." (p.6) "Yeah, they were good, they were very good because they were concise and they told you exactly what you needed to do and that was how I identified my little gaps, things that I might have missed." (p.7) "I like those pieces of paper, they were good. When we were doing recordings I'd have them near me –	read (the PowerPoint presentation handouts)...to get your head around it" (p. 10) "I really liked the Happiness Scale, I liked ...functional analysis" (p.13) "Happiness Scale...maybe have it sort of different (terms)... (p. 18) "The Domestic Violence Precautions, I thought that was a good warning sign because the whole idea is not to make the situation worse for the family." (p. 20)		"that to me is how I feel comfortable using CRAFT is having an Aboriginal worker. Yeah, yeah, yeah, come along and walk alongside." (p.27) "...(the manual) was great" (p.9) "The manual's great" (p.10) "I think the functional analysis is a fantastic tool to use say in the CRA which I've just done the training on. And I think that's a fantastic tool to use directly with somebody who is using. But I just - and I still			

ID	Health care provider 101	Health care provider 102	Health care provider 103	Health care provider 104	Health care provider 105	Health care provider 106	Health care provider 107
	okay, I need to do this now" (p.12) "...it was hard doing the rewarding the positive behaviour...and then practicing the withdrawing of rewards...that was tricky. The communications stuff was really...good. But the consequences was a bit tricky to get them to understand" (p.12)			have my doubts about that with CRAFT" (p.17)			

Appendix E

CRA and CRAFT intervention resources

CRA Checklist

Once you have completed a procedure with a client tick the appropriate box and write the date the procedure was completed. The checklist should be added to after each CRA session.

Overview of CRA

		Procedure completed	***Date/s procedure completed (dd/mm/yy)***
1.	Describe the basic purpose of CRA (e.g. help find healthy, reinforcing lifestyle…)	☐	
2.	Provide a brief overview of CRA procedures	☐	
3.	Present positive expectations (describe scientific base)	☐	
4.	Describe expected length of the CRA program	☐	
5.	Ask drinker to identify their reinforcers	☐	

Functional Analysis of Drinking Behaviour

6a.	Give drinker a reason for Functional Analysis (wealth of info; behaviour worth examining)	☐	
7a.	Ask drinker to describe a drinking episode	☐	
8a.	Ask drinker to identify internal and external triggers	☐	
9a.	Ask drinker to specify drinking behaviour during drinking episode (drinks what, how much, over what time)	☐	
10a.	Ask drinker to describe short term positive and negative consequences of drinking	☐	
11a.	Give drinker examples of how Functional Analysis of Drinking Behaviour information will be used	☐	

Functional Analysis of Non-drinking Behaviour

6b.	Give drinker a reason for Functional Analysis (wealth of info; behaviour worth examining)	☐
7b.	Ask drinker to give general description relative's enjoyable, healthy non-drinking behaviour	☐
8b.	Ask drinker to identify internal and external triggers for enjoyable, healthy non-drinking behaviour	☐
9b.	Ask drinker to specify relative's enjoyable, healthy non-drinking behaviour (what)	☐
10b.	Ask drinker to describe short term positive and negative consequences of enjoyable, healthy non-drinking behaviour	☐
11b.	Give relative examples of how Functional Analysis of Non-drinking Behaviour information will be used	

Functional Analysis for Relapse

6c.	Give drinker a reason for Functional Analysis (wealth of info; behaviour worth examining)	☐
7c.	Ask relative to describe a relapse episode	☐
8c.	Ask drinker to identify internal and external triggers	☐
9c.	Ask drinker to specify behaviour during relapse episode (what)	☐
10c.	Ask drinker to describe short term positive and negative consequences of relapse behaviour	☐
11c.	Give drinker examples of how Functional Analysis of Relapse Behaviour information will be used	☐

Sobriety Sampling

12.	Explained what sobriety sampling is	☐
13.	Give drinker a reason for sampling sobriety (e.g., forces use of other coping strategies)	☐
14.	Decide on a time period for being sober	☐
15.	Develop a plan for staying sober at least until next session	☐
16.	Develop a back-up plan for staying sober at least until the next session	☐
17.	Remind drinker of positive reinforcers for being sober	☐

Happiness Scale

18.	Give drinker a reason for the Happiness Scale	☐
19.	Explain how to complete the Happiness Scale	☐
20.	Discuss drinker's responses to the Happiness Scale	☐

Treatment Plan/Goals of Counselling

21.	Use Happiness Scale to choose a goal category	☐
22.	Develop a goal (e.g. brief, positive, specific, reasonable, under control, based on skills)	☐
23.	Check on progress of previous goals	☐

Communication Skills

24.	Discuss reasons why communication skills are important	☐
25.	Describe the 7 components of positive communication	☐
26.	Give examples of good and inadequate communication styles	☐
27.	Conduct a role play and provide feedback; repeated	☐
28.	Conduct a reverse role play	☐

Drink Refusal Skills

29.	Enlisted social support	☐
30.	Discuss high-risk situations	☐
31.	Discuss options for drink refusal (e.g. changed subject)	☐
32.	Conduct a role play and provide feedback; repeated	☐

Problem Solving Skills

33.	Describe problem solving steps	☐
34.	Conduct CRA problem solving procedure (e.g. define the problem, brainstorm)	☐

Social/Recreational Counselling

35.	Discuss how important it is to have a satisfying social life	☐
36.	Decide on an area of social life to improve (e.g. through problem solving)	☐
37.	Discuss and plan how to include a new enjoyable behaviour/activity in the drinker's life	☐

Systematic Encouragement

38.	Identified need for systematic encouragement and took first step in session (e.g. make a call)	☐
39.	Discussed systematic encouragement in following session	☐

Relapse Prevention

40.	Complete Functional Analysis for Relapse	☐
41.	Discuss relapse behaviour as a chain of events	☐
42.	Describe and set up early warning system	☐

Miscellaneous

43.	Discussed reinforcers	☐
44.	Monitor triggers	☐
45.	Check for use of skills across situations	☐
46.	Assigned homework	☐
47.	Reviewed homework	☐
48.	Conduct a role play and provide feedback; repeated	☐
49.	Used only the CRA objectives and procedures	☐
50.	Introduced CRA procedures at appropriate times	☐

Adapted from (Meyers & Smith 1995)

CRA Functional Analysis of Drinking Behaviour

External Triggers	Internal Triggers	AUDIT-C	Short-term positive consequences	Long-term negative consequences
When you drink who are you usually with?	What are you usually thinking about right before you drink?	How often do you drink?	What do you like about drinking with … (whom)?	What are the negative results of your drinking in each of these areas? • Interpersonal
Where do you usually drink?	What are you usually feeling physically right before you drink?	When you drink, how many do you usually have in one day?	What do you like about drinking at … (where)?	• Physical • Emotional • Legal
When do you usually drink?	What are you usually feeling emotionally right before you drink?	How often do you have six or more drinks on one day?	What do you like about drinking … (when)?	• Work/study • Financial • Other

Adapted from (Meyers & Smith 1995)

CRA Functional Analysis of Non-drinking Behaviour

External Triggers	Internal Triggers	Behaviour	Short term negative consequences	Long term positive consequences
Who are you usually with when …(behaviour/activity)? Where does you usually…(behaviour/activity)? When does you usually …(behaviour/activity)?	What are you usually thinking about right before …(behaviour/activity)? What are you usually feeling about right before …(behaviour/activity)?	What is the non-drinking behaviour/activity? How often do you usually do it? How long a period does it last?	What do you dislike about ... (behaviour) [with whom]? What do you dislike about ...(behaviour) [where]? What do you dislike about ...(behaviour) [when]? What are some of the unpleasant thoughts you usually have while ...(behaviour)? What are some of the unpleasant physical feelings you usually have while ...(behaviour)? What are some of the unpleasant emotional feelings you usually have while you are ...(behaviour)?	What are the positive results of ...(behaviour) in each of these areas? • Interpersonal • Physical • Emotional • Legal • Job/study • Financial • Other

Adapted from (Meyers & Smith 1995)

CRA Functional Analysis of Relapse Drinking Behaviour

External Triggers	Internal Triggers	Behaviour	Short-term positive consequences	Long-term negative consequences
Who were you with when you drank? Where were you when you drank? When did you drink?	What were you thinking right before you drank? What were you feeling physically right before you drank? What were you feeling emotionally right before you drank?	What were you drinking? How much did you drink? Over how long a period of time did you drink?	What did you like about drinking with … (whom)? What did you like about drinking at … (where)? What did you like about drinking … (when)? What are some of the pleasant thoughts you had while you were drinking? What were some of the pleasant physical feelings you had while you were drinking? What were some of the pleasant emotional feelings you had while you were drinking?	What were the negative results of your drinking in each of these areas? • Interpersonal • Physical • Emotional • Legal • Work/study • Financial • Other

Adapted from (Meyers & Smith 1995)

CRAFT Checklist

Once you have completed a procedure with a client tick the appropriate box and write the date the procedure was completed. The checklist should be added to after each CRA session.

		Procedure completed	***Date/s procedure completed (dd/mm/yy)***
Initial Meeting Motivation Strategies			
1.	Enable family member to express feelings and thoughts	☐	
2.	Ask family member to describe their relatives alcohol use and its effects	☐	
3.	Demonstrated an understanding of the problem	☐	
4.	Discuss family member's motivation to help relative	☐	
5.	Begin to identify problem areas	☐	
6.	Provide a brief overview of CRAFT principles (problem-focused; skills based; role-plays; assignments)	☐	
7.	Present positive expectations (7/10 family members; variety of relationship and drugs; client feels better)	☐	
8.	Describe the CRAFT goals	☐	
9.	Provide a brief overview of CRAFT procedures	☐	
10.	Briefly explain reason for involving family members in CRAFT & positive expectations	☐	
11.	Outline family member responsibilities	☐	
12.	Outline issues of confidentiality	☐	
13.	Review baseline measures	☐	
14.	Ask family member to identify their reinforcers	☐	

Domestic Violence Precautions

15.	Use non judgmental approach to ask family member about family violence	☐
16.	Ask family member about & assesses level of violence	☐
17.	Discuss available support	☐
18.	Assess need for additional support	☐
19.	Decided if more support is needed	☐
20.	Enable family member to express feelings and thoughts	☐
21.	Discuss triggers or “red flags” for their relative’s violent behaviour	☐
22.	Discuss family member’s personal safety	☐
23.	Discussed how the family member can protect themselves at their home (have a bag packed?)	☐
24.	Discuss safe responses to possible family violence e.g. women’s refuge, extended family/friends	☐
25.	Discuss legal options e.g. AVO	☐

Functional Analysis of Drinking Behaviour

26a.	Give family member reason for Functional Analysis (wealth of info; family member behaviour worth examining)	☐
27a.	Ask family member to describe a drinking episode	☐
28a.	Ask family member to identify internal and external triggers	☐
29a.	Ask family member to specify drinking behaviour during drinking episode (drinks what, how much, over what time)	☐
30a.	Ask family member to describe short term positive and negative consequences of relative's drinking	☐
31a.	Give family member examples of how Functional Analysis of Drinking Behaviour information will be used	☐

Functional Analysis of Non-drinking Behaviour

26b.	Give family member reason for Functional Analysis (wealth of info; family member behaviour worth examining)	☐
27b.	Ask family member to give general description relative's enjoyable, healthy non-drinking behaviour	☐
28b.	Ask family member to identify internal and external triggers for enjoyable, healthy non-drinking behaviour	☐
29b.	Ask family member to specify relative's enjoyable, healthy non-drinking behaviour (what)	☐
30b.	Ask family member to describe short term positive and negative consequences of relative's enjoyable, healthy non-drinking behaviour	☐
31b.	Give family member examples of how Functional Analysis of Non-drinking Behaviour information will be used	

Functional Analysis of Violent Behaviour

26c.	Give family member reason for Functional Analysis (wealth of info; family member behaviour worth examining)	☐
27c.	Ask family member to describe a violent episode	☐
28c.	Ask family member to identify internal and external triggers	☐
29c.	Ask family member to specify behaviour during violent episode (what)	☐
30c.	Ask family member to describe short term positive and negative consequences of relative's violent behaviour	☐
31c.	Give family member examples of how Functional Analysis of Violent Behaviour information will be used	☐

Positive Communication Skills

32.	Discuss reasons why communication skills are important	☐
33.	Describe the 7 components of positive communication	☐
34.	Give examples of good and inadequate communication styles	☐
35.	Conduct a role play and provides feedback; repeated	☐
36.	Conduct a reverse role play	☐
37.	Discuss positive communication skills at an appropriate time	☐

Use of Positive Reinforcement (Rewards)

38.	Describe positive reinforcement and its role in CRAFT	☐
39.	Describe the difference between enabling and positive reinforcement	☐
40.	Discuss family member's concerns about positive reinforcement	☐
41.	Discuss and supports family member to identify possible reinforcers available to use	☐
42.	Describe positive reinforcers as enjoyable, inexpensive, available to give, easy to offer	☐
43.	Check that family member can recognise when their relative has been drinking	☐
44.	Assist family member to identify their relative's healthy enjoyable non drinking behaviour to reinforce	☐
45.	Demonstrate linking a reinforcer to healthy behaviour using 7 steps of positive communication	☐
46.	Check possible complications resulting from reinforcer delivery	☐

Time Out from Positive Reinforcement

47.	Give family member reason for withdrawing reinforcers, rewards	☐
48.	Ask family member to name reinforcers for withdrawal using selection guidelines, e.g. safe, easy, valued etc.	☐
49.	Ask family member to demonstrate use of positive communication to explain the removal of a reinforcer and linking it to their relative's behaviour	☐

Allowing the Relative to Experience the Natural Consequences of Substance Use

50.	Explore family member's unconscious support for their relative's drinking	☐
51.	Give family member examples of unconscious support	☐
52.	Give family member reasons for allowing natural consequences	☐
53.	Assist family member to choose one situation to use for allowing natural consequences	☐
54.	Ask family member family member to demonstrate verbally linking natural consequences with their relative's behaviour	☐
55.	Discuss possible difficulties that may result from family member allowing the natural consequences	☐

Helping Family Member Enrich Their Own Lives

56.	Discuss with family member that all areas of their life are important and reason for focus on family member's wellbeing	☐
57.	Assess family member's feelings and thoughts about different areas of their life that are unrelated to their relative who drinks (Happiness Scale)	☐
58.	Identify which areas of the family member's life needs attention (from Happiness Scale) that family member want to concentrate on	☐
59.	Describe goals briefly and simply, in positive words, with specific measurable behaviours, that are reasonable and achievable	☐
60.	Describe goals that they can control, based on their current or planned skills and knowledge	☐
61.	Describe goals that are independent of their relative	☐
62.	Provide examples of new activities that can be trialled	☐

Inviting the Relative to Enter Treatment

63.	Identify appropriate motivational hooks for their relative	☐
64.	Role play inviting their relative using the selected motivational hook and using positive communication	☐
65.	Consider possible opportunities for extending the invitation into treatment	☐
66.	Discuss possible treatment provider options	☐
67.	Participating in organizing 'rapid intake'	☐
68.	Consider their relatives possible refusal or drop out from treatment	☐
69.	Demonstrate the use of other methods of inviting their relative into treatment e.g. phone call during the session	☐

General

70.	Use problem solving	☐
71.	Give an assignment to do during the week	☐
72.	Review an assignment from previous session	☐

Adapted from (Smith & Meyers 2004)

CRAFT Functional Analysis of a Relative's (or Friend's) Drinking Behaviour

External Triggers	Internal Triggers	Behaviour	Short-term positive consequences	Long-term negative consequences
Who is your relative usually with when drinking? Where does he/she usually drink? When does he/she usually drink?	What do you think your relative might be thinking about right before drinking? What do you think he/she might be feeling right before drinking?	What does your relative usually drink? How much does he/she usually drink? Over how long a period of time does he/she usually drink?	What do you think your relative likes about drinking with … (whom)? What do you think your relative likes about drinking at … (where)? What do you think your relative likes about drinking … (when)? What pleasant thoughts do you think he/she might have while drinking? What pleasant feelings do you think he/she might have while drinking?	What do you think are the negative results of your relative's drinking in each of these areas (* the ones he/she would agree with)? • Interpersonal • Physical • Emotional • Legal • Work/study • Financial • Other

Adapted from (Smith & Meyers 2004)

CRAFT Functional Analysis of a Relative's (or Friend's) Non-drinking Behaviour

External Triggers	Internal Triggers	Enjoyable, health behaviour	Short term negative consequences	Long term positive consequences
Who is your relative usually with when …(behaviour)? Where does he/she usually…(behaviour)? When does he/she usually …(behaviour)?	What do you think your relative might be thinking about right before …(behaviour)? What do you think your relative might be feeling about right before …(behaviour)?	What is your relative's enjoyable healthy behaviour How does he/she engage in it? How long a period does it last?	What do you think your relative might dislikes about ...(behaviour) [with whom]? What do you think he/she might dislike about ...(behaviour) [where]? What do you think she might dislike about ...(behaviour) [when]? What unpleasant thoughts do you think he/she might have while ...(behaviour)? What unpleasant feelings do you think he/she might have while ...(behaviour)?	What do you think are the positive results of your relative's …(behaviour)? In each of these areas? • Interpersonal • Physical • Emotional • Legal • Work/study • Financial • Other

Adapted from (Smith & Meyers 2004)

CRAFT Functional Analysis of a Relative's (or Friend's) Violent Behaviour

External Triggers	**Internal Triggers**	**Violent Behaviour**	**Short term positive consequence**	**Long term negative consequences**
Who else is present besides you when your relative gets violent? Where does the violence usually occur? When does the violence usually occur? What is the last thing you say/do right before your relative gets violent?	What do you think your relative might be thinking about right before getting violent? What do you think your relative might be feeling about right before getting violent? Other 'red flags' What is the last thing your relative says/does before getting violent?	What does your relative's violent behaviour usually consist of?	What do you think your relative might like about getting violent? What pleasant thoughts do you think your relative might have during or right after the violence? What pleasant feelings do you think your relative might have during or right after the violence?	What do you think are the negative results of your relative's violence in each of these areas (* are the ones she/he would agree with)? • Interpersonal • Physical • Emotional • Legal • Work/study • Financial • Other

Adapted from (Smith & Meyers 2004)

Goals of Counselling

Problem Areas/Goals	Strategies	Time Frame
1. In the area of drinking I would like:		
2. In the area of job/educational progress I would like:		
3. In the area of money management I would like:		
4. In the area of social life I would like:		
5. In the area of personal habits I would like:		
6. In the area of intimate relationships I would like:		
7. In the area of legal issues I would like:		
8. In the area of emotional life I would like:		
9. In the area of communication I would like:		
10. In the area of happiness I would like:		

Adapted from (Smith & Meyers 2004)

Happiness Scale

The scale is intended to estimate your **current** happiness with your life in each of the ten areas listed below. Ask yourself the following question as you rate each area:

How happy am I with this area of my life?

Then circle one of the numbers (1-10) beside each area.

Numbers toward the left (lower numbers) indicate different levels of unhappiness, and numbers toward the right (higher numbers) reflect different levels of happiness.

In other words, mark on the scale (1-10) exactly how you feel **today**. Also, try not to allow one area to influence the results of the other areas.

	Completely unhappy									Completely happy
Drinking	1	2	3	4	5	6	7	8	9	10
job/education	1	2	3	4	5	6	7	8	9	10
Money	1	2	3	4	5	6	7	8	9	10
social life	1	2	3	4	5	6	7	8	9	10
personal habits	1	2	3	4	5	6	7	8	9	10
marriage/relations hips	1	2	3	4	5	6	7	8	9	10
legal issues	1	2	3	4	5	6	7	8	9	10
emotional life	1	2	3	4	5	6	7	8	9	10
communication	1	2	3	4	5	6	7	8	9	10
general happiness	1	2	3	4	5	6	7	8	9	10

Adapted from (Smith & Meyers 2004)

Relationship Happiness Scale

The scale is intended to estimate your **current** happiness with your relationship in each of the ten areas listed below. Ask yourself the following question as you rate each area:

How happy am I today with my partner in this area?

Then circle one of the numbers (1-10) beside each area.

Numbers toward the left (lower numbers) indicate different levels of unhappiness, and numbers toward the right (higher numbers) reflect different levels of happiness.

In other words, mark on the scale (1-10) exactly how you feel **today**. Also, try not to allow one area to influence the results of the other areas.

	Completely unhappy									Completely happy
household responsibilities	1	2	3	4	5	6	7	8	9	10
raising the children	1	2	3	4	5	6	7	8	9	10
social activities	1	2	3	4	5	6	7	8	9	10
money management	1	2	3	4	5	6	7	8	9	10
Communication	1	2	3	4	5	6	7	8	9	10
sex & affection	1	2	3	4	5	6	7	8	9	10
job or school	1	2	3	4	5	6	7	8	9	10
emotional support	1	2	3	4	5	6	7	8	9	10
partner's independence	1	2	3	4	5	6	7	8	9	10
general happiness	1	2	3	4	5	6	7	8	9	10

Adapted from (Smith & Meyers 2004)

Positive Communication

1. Be *brief*
2. Be *positive*
3. Refer to specific *behaviours*
4. Label your *feelings*
5. Offer an *understanding* statement
6. Accept *partial responsibility*
7. Offer to *help*

Adapted from (Smith & Meyers 2004)

Problem Solving

Problem solving steps	Relative/friend response
Define the problem narrowly	
Brainstorm possible solutions	
Get rid of unwanted suggestions	
Select one possible solution	
Identify possible obstacles/problems	
Address each obstacle/problem	
Decide on the action plan and do it	
Review and evaluate the outcome	

Adapted from (Smith & Meyers 2004)

Appendix F

Advertising poster for recruitment for the acceptability study

What do you think?

We are developing two programs to support Aboriginal and Torres Strait Islander people who drink too much alcohol to cut down or stop drinking:

Individual Counselling & Family Training.

We want to know what Aboriginal and Torres Strait Islander community members of Orange, Forbes, Condobolin and surrounding areas think about the two programs.

[DATE]
[TIME]
[ADDRESS]

You will be given $40 for your time

For more information call [PARTICIPATING SERVICE DETAILS].

NDARC
NATIONAL DRUG AND ALCOHOL RESEARCH CENTRE

THE UNIVERSITY OF NEW SOUTH WALES
SYDNEY · AUSTRALIA

The Lyndon Community

Appendix G

Acceptability survey information for particiapnts

Please note that the the names of the programs were changed from the Community Reinforcement Approach (CRA) to the Personalised Alcohol Treatment (PAT) program, and from Community Reinforcement and Family Training (CRAFT) to Family Training (FT), to avoid confusion about the local community playing a role in each individually focused treatment program. All other aspects of the CRA and CRAFT programs were maintained.

NDARC
NATIONAL DRUG AND ALCOHOL RESEARCH CENTRE

THE UNIVERSITY OF NEW SOUTH WALES
SYDNEY · AUSTRALIA

Drinking too much alcohol causes physical and mental health problems as well as social problems, not just for people who drink, but also for their families and community. Health workers can help people who need to cut down or stop drinking alcohol to improve their physical and mental wellbeing. Health workers can also help families and communities by teaching them how to better support family members and friends, who need to cut down or stop drinking alcohol.

What we would like to do

We would like to deliver two programs to see if they work to help Aboriginal (including Torres Strait Islander) people who need to cut down or stop drinking alcohol.

Program One	Program Two
Personalised Alcohol Treatment (PAT) program for Aboriginal people who need to cut down or stop drinking alcohol.	*Family Training (FT) program for family members/friends of Aboriginal people who need to cut down or stop drinking alcohol.*

Who will be delivering these programs?

The programs will be delivered through Yoorana Gunya Family Violence Healing Centre Aboriginal Corporation and the Lyndon Community to Aboriginal people in Forbes, Orange and surrounding areas.

Who else will be involved?

The National Drug and Alcohol Research Centre at the University of New South Wales will work closely with the services delivering the programs to see if they work to help Aboriginal people who need to cut down or stop drinking alcohol.

Why are we inviting you to answer these questions?

You are being invited to answer the questions in this survey because you are a new or existing client of Yoorana Gunya Family Violence Healing Centre Aboriginal Corporation or the Lyndon Community.

What we would like to know from you

Before we start delivering the two programs, we would like to find out what Aboriginal clients of Yoorana Gunya and the Lyndon Community think of each one. We are also interested in any suggestions you have to improve each program (there is a section in the survey where you can write down your suggestions).

How confidential are you answers?

All your answers are confidential. Researchers from the University of New South Wales and the Lyndon Community will be able to look at your answers. The answers to the survey will be stored on a computer file at the University of New South Wales. If you provide us with your name and address, these details will not be linked to your survey answers.

If you are not sure about any of these questions, or would like more information about the study, please call Anton Clifford on (02) 9385 0386 at the Faculty of Medicine, University of New South Wales.

If you have any concerns as a result of completing this survey please contact the closest health service:

Lyndon Community	Julaine Allan	(02) 6361 1521
Yoorana Gunya	Donna Bliss	(02) 6851 5111

If you have any complaints you should contact the AHMRC Ethics Committee and the UNSW Ethics Committee as follows:

The Chairperson, AHMRC Ethics Committee
PO Box 1565, Strawberry Hills NSW 2012
Ph (02) 9212 4777, Fax (02) 9212 7211
Email ahmrc@ahmrc.org.au

UNSW Ethics Secretariat, The University of New South Wales, SYDNEY 2052 AUSTRALIA
Ph (02) 9385 4234, Fax (02) 9385 6648
Email ethics.sec@unsw.edu.au

How to answer the questions

The questions require you to choose an answer that best describes what you think. Please ask a group leader if you do not understand a question. Please be as honest and accurate as you can be. Remember all your answers are confidential and we will not give your name and address to anyone who is not a health practitioner in this service. Be aware that you may withdraw your participation at any time without needing a reason.

THANK YOU.

Appendix H

Intervention information and acceptability survey

Please note that the the names of the programs were changed from the Community Reinforcement Approach (CRA) to the Personalised Alcohol Treatment (PAT) program, and from Community Reinforcement and Family Training (CRAFT) to Family Training (FT), to avoid confusion about the local community playing a role in each individually focused treatment program. All other aspects of the CRA and CRAFT programs were maintained.

Personalised Alcohol Treatment (PAT)

- **<u>Who</u> is PAT for?**
  - Aboriginal and Torres Strait Islander people from Orange, Forbes and surrounding areas *who need help to cut down or stop drinking alcohol*.

- **<u>What</u> is PAT?**
  - One-on-one counselling with a drug and alcohol counsellor who has been trained to deliver the program.
  - To reduce alcohol-related harms experienced by the drinker, their family and their community.
  - Assessment of risk of harms from alcohol.
  - Personalised treatment plan.
  - Support to cut down or stop drinking alcohol.

- **<u>When</u> can PAT be delivered?**
  - After withdrawal.
  - If needing rehab but not wanting to go.
  - Waiting for rehab.
  - After rehab.

ID:

PART A: Personalised Alcohol Treatment (PAT)

Please circle ONE number for question 1.

1. What do you think about PAT being delivered in your community?

1	2	3	4	5
very bad				very good

Please tick (✓) ONE box for each part of question 2.

2. Do you think it is okay for PAT to be available for Aboriginal people:

2a. After withdrawal?

☐ not okay
☐ okay

2b. Needing rehab but not wanting to go?

☐ not okay
☐ okay

2c. Waiting for rehab?

☐ not okay
☐ okay

2d. After rehab?

☐ not okay
☐ okay

2e. Referred from probation and parole?

☐ not okay
☐ okay

Imagine you drink too much alcohol and want help to cut down or stop.
Please tick (✓) ONE box for each part of questions 3 to 8.

3. What are the qualities that you think are most important in a counsellor:

3a. Trust and familiarity?

- ☐ someone I know and trust
- ☐ someone I know
- ☐ someone I trust
- ☐ doesn't matter

3b. Experience working in *your* local community?

- ☐ no
- ☐ yes
- ☐ doesn't matter

3c. Aboriginality?

- ☐ a non-Aboriginal person
- ☐ an Aboriginal person
- ☐ doesn't matter

3d. Gender?

- ☐ a woman
- ☐ a man
- ☐ doesn't matter

4. Would you feel okay to talk one-on-one with a counsellor, who has the qualities you have described above, about:

4a. How much alcohol you usually drink?

- ☐ okay
- ☐ not okay

4b. How you feel about your drinking?

- ☐ okay
- ☐ not okay

4c. What you do when you are drinking?

- ☐ okay
- ☐ not okay

4d. If you cause harm to yourself and/or others when you drink (including any violent behaviour)?

☐ okay
☐ not okay

4e. Setting goals to cut down or stop drinking?

☐ okay
☐ not okay

4f. Things (people, places, and situations) that might be making you want to drink?

☐ okay
☐ not okay

4g. Ways to resolve problems that might be making you want to drink?

☐ okay
☐ not okay

4h. How to use support from a trusted family member/friend to cut down or stop drinking?

☐ okay
☐ not okay

5. Would it be okay for one or more of your *most trusted* family members/friends to:

5a. Help you to start alcohol treatment?

☐ not okay
☐ okay

5b. Help you to stay in alcohol treatment?

☐ not okay
☐ okay

5c. Help you to continue to drink less or stop drinking?

☐ not okay
☐ okay

6. Would it be okay for one or more of your *concerned* family members/friends to:

6a. Help you to start alcohol treatment?

- ☐ okay
- ☐ not okay

6b. Help you to stay in alcohol treatment?

- ☐ okay
- ☐ not okay

6c. Help you to continue to drink less or stop drinking?

- ☐ okay
- ☐ not okay

7. If you were attending PAT to get help to cut down or stop drinking, what would you prefer as part of the one-on-one sessions:

7a. Number of sessions?

- ☐ 1 to 2 sessions for very basic information
- ☐ 2 to 3 sessions for basic information
- ☐ 3 to 4 sessions for detailed information
- ☐ 5 or more sessions for very detailed information

8. If group sessions were made available on top of one-on-one counselling, would it be okay (in a group setting) for you to:

8a. Confidentially talk to Aboriginal people with similar experiences about alcohol and its effects on yourself and/or your family?

- ☐ not okay
- ☐ okay

8b. Practice and reinforce skills learnt in one-on-one counselling?

- ☐ not okay
- ☐ okay

8c. Participate in healthy social and recreational activities?

- ☐ not okay
- ☐ okay

Imagine you are having a one-on-one counselling session as part of the Personalised Alcohol Treatment (PAT) program.
<u>Please write numbers 1, 2, 3, and 4</u> in the boxes below to show how important you think each part of the session is (use each number once).

9. Please rank the session parts below from 1 (most important) to 4 (least important).

<u>Talking</u> about your drinking behaviours	<u>Setting goals</u> to reduce alcohol-related harms	<u>Learning how to resolve</u> alcohol-related problems	<u>Practising how to resolve</u> alcohol-related problems.

Please write your suggestions for the PAT program in the box below.

10. Is there anything we haven't asked you about that you think we should include in the Personalised Alcohol Treatment (PAT) program?

END OF PART A

Family Training (FT)

- **<u>Who</u> is FT for?**
  - Aboriginal and Torres Strait Islander people from Orange, Forbes and surrounding areas who *have a family member/friend* who drinks too much alcohol.

- **<u>What</u> is FT?**
  - One-on-one counselling with a drug and alcohol worker who has been trained to deliver the program.
  - To talk about affects of family member's/friend's drinking.
  - Training and support for people who want to help a family member/friend who needs to cut down or stop drinking alcohol.
  - To increase the wellbeing of people with a family member/friend who drinks too much alcohol.

- **<u>When</u> can FT be delivered?**
  - For people who have a family member/friend in the withdrawal unit.
  - For people who want to help a family member/friend to start alcohol treatment.
  - For people who have a family member/friend who is waiting for rehab.
  - For people who have a family member/friend who has finished rehab.

ID:

PART B: Family Training (FT)

Please circle ONE number for question 1.

1. What do you think about FT being delivered in your community?

1	2	3	4	5
very bad				very good

Please tick (✓) ONE box for each part of question 2.

2. Do you think it is okay for FT to be available for Aboriginal people:

2a. With a family member/friend in the withdrawal unit?

☐ okay
☐ not okay

2b. Who want to help a family member/friend who drinks too much alcohol to start treatment?

☐ okay
☐ not okay

2c. With a family member/friend who is waiting for rehab?

☐ okay
☐ not okay

2d. With a family member/friend who has just finished rehab?

☐ okay
☐ not okay

2e. With a family member/friend who has been referred from probation and parole?

☐ okay
☐ not okay

Imagine you want to help a family member/friend who drinks too much alcohol.

3. Would you be comfortable asking your family member/friend who drinks too much alcohol:

3a. How much alcohol he/she drinks?

- ☐ not comfortable
- ☐ comfortable

3b. How he/she feels about his/her own drinking?

- ☐ not comfortable
- ☐ comfortable

3c. What he/she does when drinking alcohol?

- ☐ not comfortable
- ☐ comfortable

Please tick (✓) ONE box for each part of questions 3 to 7.

4. What are the qualities you think are most important in a drug and alcohol worker:

4a. Trust and familiarity?

- ☐ someone I know and trust
- ☐ someone I know
- ☐ someone I trust
- ☐ doesn't matter

4b. Experience working in *your* local community?

- ☐ yes
- ☐ no
- ☐ doesn't matter

4c. Aboriginality?

- ☐ an Aboriginal person
- ☐ a non-Aboriginal person
- ☐ doesn't matter

4d. Gender?

- ☐ a man
- ☐ a woman
- ☐ doesn't matter

5. Would you feel okay to talk one-on-one with a drug and alcohol worker, who has the qualities you have described, about:

5a. How much alcohol your family member/friend drinks?

☐ okay
☐ not okay

5b. What your family member/friend does when he/she drinks alcohol?

☐ okay
☐ not okay

5c. If your family member/friend harms themselves or others when he/she drinks alcohol (including any violent behaviour)?

☐ okay
☐ not okay

6. Would you feel okay about using FT to work on:

6a. How to talk to your family member/friend about his/her drinking?

☐ not okay
☐ okay

6b. Ways to talk to your family member/friend about how alcohol is causing difficulty in your community?

☐ not okay
☐ okay

6c. Ways you can support your family member/friend to *start treatment*?

☐ not okay
☐ okay

6d. Ways you can support your family member/friend to *stay in treatment*?

☐ not okay
☐ okay

6e. Ways to support your family member/friend to continue to drink less?

☐ not okay
☐ okay

6f. Ways to set boundaries when alcohol causes difficulty in your community?

☐ not okay
☐ okay

6g. Ways you can stay strong living in a community where alcohol causes difficulty?

- ☐ not okay
- ☐ okay

6h. Ways to you can help your community stay strong when alcohol causes difficulty?

- ☐ not okay
- ☐ okay

7. If you were attending FT so that you could help a family member/friend who drinks too much alcohol, what would you prefer as part of the one-on-one sessions:

7a. Number of sessions?

- ☐ 1 to 2 sessions for very basic information
- ☐ 2 to 3 sessions for basic information
- ☐ 3 to 4 sessions for detailed information
- ☐ 5 or more sessions for very detailed information

8. If group sessions were made available on top of one-on-one counselling, would it be okay (in a group setting) for you to:

8a. Confidentially talk to Aboriginal people with similar experiences about alcohol and its effects on yourself and/or your family?

- ☐ okay
- ☐ not okay

8b. Practise and reinforce skills learnt in one-on-one counselling?

- ☐ okay
- ☐ not okay

8c. Participate in healthy social and recreational activities?

- ☐ okay
- ☐ not okay

Imagine you are having one-on-one sessions as part FT.
<u>Please write numbers 1, 2, 3, & 4</u> in the boxes below to show how important you think each part of the session is (use each number once).

9. Please rank the session parts below from 1 (most important) to 4 (least important).

<u>Talking</u> about your family member's/friend's drinking behaviour	<u>Learning how to communicate</u> with your family member/friend about his/her drinking	<u>Learning how to support</u> your family member/friend to cut down or stop drinking	<u>Practicing how to support</u> your family member/friend to cut down or stop drinking

Please WRITE your suggestions for the FT program in the box.

10. Is there anything we haven't asked you about that you think we should include in the Family Training (FT) program?

END OF PART B

ID:

PART C: Information about you

The questions in this section provide us with some information about you. Remember that this information is confidential and so will only be used for the research project and will not forwarded on to any authorities or other organisations.

Please tick (✓) ONE box for each part of questions 1 to 12 and WRITE answers where shown.

1. Health service attended

☐ Lyndon Community

☐ Yoorana Gunya

☐ other _____**(please write)**

2. Gender

☐ female

☐ male

3. Date of birth

_____(day)_____(month)_____(year) **(please write)**

4. Did you guess any part of your birth date?

☐ no

☐ yes, I estimated _____**(please write)**

5. Are you of Aboriginal or Torres Strait Islander origin?

☐ no **(if no, go to question 7)**

☐ yes, Aboriginal

☐ yes, Torres Strait Islander

☐ yes, Aboriginal and Torres Strait Islander

6. What clan, tribal or language group do you identify with?

I identify with_____**(please write)**

7. Do you have a spouse (husband/wife) or child who is of Aboriginal or Torres Strait Islander origin?

☐ no

☐ yes, spouse and child

☐ yes, spouse only

☐ yes, child only

8. Were you born in Australia?

☐ yes

☐ no, I was born in _____**(please write)**

9. What language do you prefer to speak at home?

☐ English

☐ other, I prefer to speak _____**(please write)**

10. Have you completed any formal education?

☐ no formal education

☐ primary school (year 6)

☐ high school (year 10)

☐ school certificate (year 12)

☐ tertiary education (university or TAFE)

☐ I do not want to answer

11. Do you work?

☐ don't work **(if you don't work, go to question 13)**

☐ full-time work

☐ part-time work

☐ casual work

☐ I do not want to answer

12. What do you do for work?

_____**(please write)**

☐ I do not want to answer

13. How many other people (not including yourself) live where you usually do?

_____**(please write)**

Please circle ONE number for question 13.

14. Does the place you usually live meet your needs?

1	2	3	4	5
does not meet my needs at all				meets all my needs

Please tick (✓) ONE option for question 14.

15. Do you have a family member/friend who needs to cut down or stop drinking ɔl?

☐ no **(If no, you have completed Part C)**

☐ yes

Please circle ONE number for question 15.

16. *How worried* are you are about your family member/friend who needs to cut down or stop drinking alcohol?

1	2	3	4	5
not worried at all				very worried

END OF PART C

ID:

PART D: Substance use

These questions ask about your alcohol and other drug use. Remember you can withdraw your participation at any time, so you don't have to answer these questions if you don't want to.

Please tick (✓) ONE box next to the answer that is right for you for each part of questions 1 to 10.

1. How often do you drink?

never	monthly or less	2-4 times a month	2-3 times a week	4 or more times a week
☐	☐	☐	☐	☐

2. When you have a drink, how many do you usually have in one day?

1 or 2	3 or 4	5 or 6	7-9	10 or more
☐	☐	☐	☐	☐

3. How often do you have six or more drinks on one day?

never	less than monthly	monthly	weekly	daily or almost daily
☐	☐	☐	☐	☐

4. In the last year, how often have you found you weren't able to stop drinking once you started?

never	less than monthly	monthly	weekly	daily or almost daily
☐	☐	☐	☐	☐

5. In the last year, how often has drinking got in the way of doing what you need to do?

never	less than monthly	monthly	weekly	daily or almost daily
☐	☐	☐	☐	☐

6. In the last year, how often have you needed a drink in the morning to get yourself going?

never	less than monthly	monthly	weekly	daily or almost daily
☐	☐	☐	☐	☐

7. In the last year, how often have you felt bad about your drinking?

never	less than monthly	monthly	weekly	daily or almost daily
☐	☐	☐	☐	☐

8. In the last year, how often have you had a memory lapse or blackout because of your drinking?

never	less than monthly	monthly	weekly	daily or almost daily
☐	☐	☐	☐	☐

9. Have you injured yourself or anyone else because of your drinking?

No	yes, but not in the past year	Yes, during the past year
☐	☐	☐

10. Has anyone (family, friend, doctor) been worried about your drinking or asked you to cut down?

No	yes, but not in the past year	yes, during the past year
☐	☐	☐

11. Are you an ex-drinker?

no	yes
☐	☐

Please WRITE ANWERS where shown for question 12.

12. How many days in the last month (30 days) did you use the following drugs:

12a. Tobacco_____days

12b. Cannabis_____days **(yarndi, marijuana, pot, weed)**

12c. Amphetamines_____days **(speed, ecstacy uppers, goey, crystal meth, ice)**

12d. Cocaine_____days

12e. Heroin_____days

12f. Illegally obtained opioid drug_____days **(morphine, pethidine, codeine, *not heroin*)**

12g. Over the counter medication_____days **(NoDoz, pain killers, anti-inflammatory)**

12h. Tranquilisers _____days **(benzos, valium, rohypnol)**

12i. Other drug not listed above_____days

Please specify which drug_____

END OF PART D

Thank you for completing the survey!

Appendix I

Slides used to present the acceptability survey in a standardised manner

What do you think?

Programs to help Aboriginal and Torres Strait Islander people who drink too much alcohol and their family members/friends

1

Information sheets are handed out by the group leader

2

Overview

- Drinking too much alcohol causes:
  - Health problems (physical & mental)
  - Social problems
- Problems are experienced by the people who drink as well as their families & community
- Health workers can help
  - Teaching families & communities how to better support people who need to cut down or stop drinking

3

What we would like to do

Program 1	Program 2
Personalised Alcohol Treatment (PAT) program For Aboriginal and Torres Strait Islander people who need to cut down or stop drinking alcohol	**Family Training (FT) program** For family members/friends of Aboriginal and Torres Strait Islander people who need to cut down or stop drinking alcohol

4

Who will be delivering these programs?

The Lyndon Community

The Lyndon Community is recognised as an organisation of excellence for the provision of alcohol and other drug services to Western New South Wales.

Yoorana Gunya Family Violence Healing Centre Aboriginal Corporation

5

Who else will be involved?

NDARC

NATIONAL DRUG AND ALCOHOL RESEARCH CENTRE

THE UNIVERSITY OF NEW SOUTH WALES

SCIENTIA

MANU ET MENTE

SYDNEY · AUSTRALIA

6

Why are we inviting you to answer these questions?

- New or existing clients of to health services:
  - Lyndon Community
  - Yoorana Guyna

7

What we would like to know from you

- What you think of the two programs
  - Personalised Alcohol Treatment (PAT) program
  - Family Training (FT) program
- Suggestions you have to improve the programs

8

How confidential are your answers?

- All answers are confidential.
- Researchers from UNSW and the Lyndon Community will have access to your survey answers.
- If you provide us with your name and address, these details will not be linked to your survey answers.

9

Questions & Concerns

Questions

- Anton Clifford, UNSW, (02) 93850386

Concerns

- Julaine Allan, Lyndon Community, (02) 63611521
- Donna Bliss, Yoorana Guyna, (02) 68515111

10

Complaints

The Chairperson
AHMRC Ethics Committee
PO Box 1565, Strawberry Hills NSW 2012
Ph: (02) 9212 4777, Fax: (02) 9212 7211
Email: ahmrc@ahmrc.org.au

UNSW Ethics Secretariat
UNSW, SYDNEY 2052 AUSTRALIA
Ph: (02) 9385 4234, Fax: (02) 9385 6648
Email: ethics.sec@unsw.edu.au

11

How to answer the questions?

- Follow instructions carefully. We cannot use your answers if you do not follow the instructions.
- Choose an answer that best describes what you think.
- Ask if you do not understand.
- Be honest & accurate.
- You may withdraw your participation at any time without needing a reason.

12

Any questions?

13

Your ID code

- Survey will be given out in parts.
- Your ID code will only be used to link different parts of your survey together.

14

Create your ID code

- Create your ID code (e.g. 16DIA)
  - The date you were born (e.g. 16)

    AND
  - First three letters of your mother's name (e.g. DIA)

Please write your ID CODE on the top of your information sheet

15

PAT information sheets are handed out by the group leader

16

Personalised Alcohol Treatment (PAT)

- Who is PAT for?
  - Aboriginal and Torres Strait Islander people from Orange, Forbes and surrounding areas *who need help to cut down or stop drinking alcohol.*
- What is PAT?
  - One-on-one counselling with a drug and alcohol counsellor who has been trained to deliver the program.
  - To reduce alcohol-related harms experienced by the drinker, their family and their community.
  - Assessment of risk of harms from alcohol.
  - Personalised treatment plan.
  - Support to cut down or stop drinking alcohol.
- When can PAT be delivered?
  - After withdrawal.
  - If needing rehab but not wanting to go.
  - Waiting for rehab.
  - After rehab.

17

Part A: PAT program

Part A is handed out by the group leader

Please write your ID CODE at the top of Part A

18

Part A: PAT program

1. What do you think about PAT being delivered in your community? [page 1]

1	2	3	4	5
very bad				very good

Please circle one number

19

Part A: PAT program

2. Do you think it is okay for PAT to be available for Aboriginal people: [page 1]

2a. After withdrawal?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

20

Part A: PAT program

2. Do you think it is okay for PAT to be available for Aboriginal people: [page 1]

2b. Needing rehab but not wanting to go?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

21

Part A: PAT program

2. Do you think it is okay for PAT to be available for Aboriginal people: [page 1]

2c. Waiting for rehab?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

22

Part A: PAT program

2. Do you think it is okay for PAT to be available for Aboriginal people: [page 1]

2d. After rehab?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

23

Part A: PAT program

2. Do you think it is okay for PAT to be available for Aboriginal people: [page 1]

2e. Referred from probation and parole?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

24

Imagine you drink too much alcohol
and want help to cut down or stop

25

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

3. What are the qualities that you think are most important in a counsellor? [page 2]

3a. Trust & familiarity:

- ❑ someone I know and trust
- ❑ someone I know
- ❑ someone I trust
- ❑ doesn't matter

Please tick (✓) one box

26

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

3. What are the qualities that you think are most important in a counsellor? [page 2]

3b. Experience working in *your* local community:

- ❑ no
- ❑ yes
- ❑ doesn't matter

Please tick (✓) one box

27

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

3. What are the qualities that you think are most important in a counsellor? [page 2]

3c. Aboriginality:

- ❑ a non-aboriginal person
- ❑ an Aboriginal person
- ❑ doesn't matter

Please tick (✓) one box

28

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

3. What are the qualities that you think are most important in a counsellor? [page 2]

3d. Gender:

- ❑ a woman
- ❑ a man
- ❑ doesn't matter

Please tick (✓) one box

29

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

4. Would you feel okay to talk one-on-one with a counsellor, who has the qualities you have described above, about: [page 2]

4a. How much alcohol you usually drink?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

30

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

4. Would you feel okay to talk one-on-one with a counsellor, who has the qualities you have described above, about: [page 2]

4b. How you feel about your drinking?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

31

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

4. Would you feel okay to talk one-on-one with a counsellor, who has the qualities you have described above, about: [page 2]

4c. What you do when you are drinking?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

32

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

4. Would you feel okay to talk one-on-one with a counsellor, who has the qualities you have described above, about: *[page 3]*

4d. If you cause harm to yourself and/or others when you drink (including any violent behaviour)?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

33

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

4. Would you feel okay to talk one-on-one with a counsellor, who has the qualities you have described above, about: *[page 3]*

4e. Setting goals to cut down or stop drinking?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

34

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

4. Would you feel okay to talk one-on-one with a counsellor, who has the qualities you have described above, about: [page 3]

4f. Things (people, places, and situations) that might be making you want to drink?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

35

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

4. Would you feel okay to talk one-on-one with a counsellor, who has the qualities you have described above, about: [page 3]

4g. Ways to resolve problems that might be making you want to drink?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

36

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

4. Would you feel okay to talk one-on-one with a counsellor, who has the qualities you have described above, about: *[page 3]*

4h. How to use support from a trusted family member/friend to cut down or stop drinking?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

37

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

5. Would it be okay for one of your most trusted family members/friends to: *[page 3]*

5a. Help you to start alcohol treatment?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

38

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

5. Would it be okay for one of your most trusted family members/friends to: [page 3]

5b. Help you to stay in treatment?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

39

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

5. Would it be okay for one of your most trusted family members/friends to: [page 3]

5c. Help you to continue to drink less or stop drinking?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

40

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

6. Would it be okay for one of your concerned family members/friends to: [page 4]

6a. Help you to start alcohol treatment?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

41

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

6. Would it be okay for one of your concerned family members/friends to: [page 4]

6b. Help you to stay in treatment?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

42

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

6. Would it be okay for one of your concerned family members/friends to: [page 4]

6c. Help you to continue to drink less or stop drinking?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

43

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

7. If you were attending PAT to get help to cut down or stop drinking, what would you prefer as part of the one-on-one sessions? [page 7]

7a. Number of sessions?

- ❑ 1 to 2 sessions for very basic information
- ❑ 2 to 3 sessions for basic information
- ❑ 2 to 4 sessions for detailed information
- ❑ 5 or more sessions for very detailed information

Please tick (✓) one box

44

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

8. If group session were made available on top of one-on-one counselling, would it be okay (in a group setting) for you to: [page 4]

8a. Confidentially talk to Aboriginal people with similar experiences about alcohol and its effects on yourself and/or your family?

- ❑ not okay
- ❑ okay

45

Please tick (✓) one box

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

8. If group session were made available on top of one-on-one counselling, would it be okay (in a group setting) for you to: [page 4]

8b. Practice and reinforce skills learnt in one-on-one counselling?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

46

Part A

Imagine you drink too much alcohol
and want help to cut down or stop

8. If group session were made available on top of one-on-one counselling, would it be okay (in a group setting) for you to: [page 4]

8c. Participate in healthy social and recreational activities?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

47

Part A

Remember you can withdraw your participation at any time without needing a reason

48

Imagine you are having a one-on-one counselling session as part of PAT

49

Part A

Imagine you are having a one-on-one counselling session as part of PAT

9. Please rank the session parts below from 1 (most important) to 4 (least important) [page 5]

Talking about your drinking behaviours	Setting goals to reduce alcohol-related harms	Learning how to resolve alcohol-related problems	Practicing how to resolve alcohol-related problems

Please write numbers 1, 2, 3 or 4 in the boxes (use each number once)

50

Part A

10. Is there anything we haven't asked you about that you think we should include in the Personalised Alcohol Treatment (PAT) program? [page 6]

I think that

Please write your suggestions in the box

51

Part A

END OF PART A

The group leader will collect Part A when you have finished

52

FT information sheets are handed out by the group leader

53

Family Training (FT)

- Who is FT for?
  - Aboriginal and Torres Strait Islander people from Orange, Forbes and surrounding areas who *have a family member/friend* who drinks too much alcohol.
- What is FT?
  - One-on-one counselling with a drug and alcohol worker who has been trained tp deliver the program.
  - To talk about affects of family member's/friend's drinking.
  - Training and support for people who want to help a family member/friend who needs to cut down or stop drinking alcohol.
  - To increase the wellbeing of people with a family member/friend who drinks too much alcohol.
- When can FT be delivered?
  - For people who have a family member/friend in the withdrawal unit.
  - For people who want to help a family member/friend to start alcohol treatment.
  - For people who have a family member/friend who is waiting for rehab.
  - For people who have a family member/friend who has finished rehab.

54

Part B: FT program

Part B is handed out by the group leader

Please write your ID CODE at the top of Part B

55

Part B: FT program

1. What do you think about FT being delivered in your community? [page 1]

1	2	3	4	5
very bad				very good

Please circle one number

56

Part B: FT program

2. Do you think it is okay for FT to be available for Aboriginal people: [page 1]

2a. With a family member/friend in the withdrawal unit?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

57

Part B: FT program

2. Do you think it is okay for FT to be available for Aboriginal people: [page 1]

2b. Who want to help a family member/friend who drinks too much alcohol to start treatment?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

58

Part B: FT program

2. Do you think it is okay for FT to be available for Aboriginal people: [page 1]

2c. With a family member/friend who is waiting for rehab?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

59

Part B: FT program

2. Do you think it is okay for FT to be available for Aboriginal people: [page 1]

2d. With a family member/friend who has just finished rehab?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

60

Part B: FT program

2. Do you think it is okay for FT to be available for Aboriginal people: [page 1]

2e. With a family member/friend who has been referred from probation and parole?

- ❑ okay
- ❑ <u>not</u> okay

Please tick (✓) one box

61

62

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

3. Would you be comfortable asking your family member/friend who drinks too much alcohol: [page 2]

3a. How much alcohol he/she drinks?

- ❑ not comfortable
- ❑ comfortable

Please tick (✓) one box

63

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

3. Would you be comfortable asking your family member/friend who drinks too much alcohol: [page 2]

3b. How he/she feels about his/her own drinking?

- ❑ not comfortable
- ❑ comfortable

Please tick (✓) one box

64

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

3. Would you be comfortable asking your family member/friend who drinks too much alcohol: [page 2]

3c. What he/she does when drinking alcohol?

- ❑ not comfortable
- ❑ comfortable

Please tick (✓) one box

65

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

4. What are the qualities that you think are most important in a drug and alcohol worker: [page 2]

4a. Trust & familiarity?

- ❑ someone I know and trust
- ❑ someone I know
- ❑ someone I trust
- ❑ doesn't matter

Please tick (✓) one box

66

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

4. What are the qualities that you think are most important in a drug and alcohol worker? [page 2]

4b. Experience working in *your* local community:

- ❑ yes
- ❑ no
- ❑ doesn't matter

Please tick (✓) one box

67

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

4. What are the qualities that you think are most important in a drug and alcohol worker? [page 2]

4c. Aboriginality:

- ❑ an Aboriginal person
- ❑ a non-Aboriginal person
- ❑ doesn't matter

Please tick (✓) one box

68

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

4. What are the qualities that you think are most important in a drug and alcohol worker? [page 3]

4d. Gender:

- ❑ a man
- ❑ a woman
- ❑ doesn't matter

Please tick (✓) one box

69

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

5. Would you feel okay to talk one-on-one with a drug and alcohol worker, who has the qualities you have described above, about: [page 3]

5a. How much alcohol your family member/friend drinks?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

70

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

5. Would you feel okay to talk one-on-one with a drug and alcohol worker, who has the qualities you have described above, about: [page 3]

5b. What your family member/friend does when he/she drinks alcohol?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

71

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

5. Would you feel okay to talk one-on-one with a drug and alcohol worker, who has the qualities you have described above, about: [page 3]

5c. If your family member/friend harm themselves or others when he/she drinks alcohol (including any violent behaviour)?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

72

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

6. Would you feel okay about using FT to work on: [page 3]

6a. How to talk to your family member/friend about his/her drinking?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

73

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

6. Would you feel okay about using FT to work on: [page 3]

6b. Ways to talk to your family member/friend about how alcohol is causing difficulty in your community?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

74

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

6. Would you feel okay about using FT to work on: [page 3]

6c. Ways you can support your family member/friend to *start treatment*?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

75

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

6. Would you feel okay about using FT to work on: [page 3]

6d. Ways you can support your family member/friend to *stay in treatment*?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

76

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

6. Would you feel okay about using FT to work on: [page 4]

6e. Ways to support your family member/friend to continue to drink?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

77

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

6. Would you feel okay about using FT to work on: [page 4]

6f. Ways to set boundaries when alcohol causes difficulty in your community?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

78

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

6. Would you feel okay about using FT to work on: [page 4]

6g. Ways you can stay strong living in a community where alcohol causes difficulty?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

79

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

6. Would you feel okay about using FT to work on: [page 4]

6h. Ways to you can help your community stay strong when alcohol causes difficulty?

- ❑ not okay
- ❑ okay

Please tick (✓) one box

80

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

7. If you were attending FT so that you could help a family member/friend who drinks too much alcohol, what would you prefer as part of the one-on-one sessions: [page 4]

7a. Number of sessions?

- ❑ 1 to 2 sessions for very basic information
- ❑ 2 to 3 sessions for basic information
- ❑ 2 to 4 sessions for detailed information
- ❑ 5 or more sessions for very detailed information

Please tick (✓) one box

81

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

8. If group session were made available on top of one-on-one counselling, would it be okay (in a group setting) for you to: [page 4]

8a. Confidentially talk to Aboriginal people with similar experiences about alcohol and its effects on yourself and/or your family?

- ❑ okay
- ❑ not okay

Please tick (✓) one box

82

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

8. If group session were made available on top of one-on-one counselling, would it be okay (in a group setting) for you to: [page 4]

8b. Practice and reinforce skills learnt in one-on-one counselling?

- ❑ okay
- ❑ <u>not</u> okay

Please tick (✓) one box

83

Part B

Imagine you want to help a family member/friend who drinks too much alcohol

8. If group session were made available on top of one-on-one counselling, would it be okay (in a group setting) for you to: [page 4]

8c. Participate in healthy social and recreational activities?

- ❑ okay
- ❑ <u>not</u> okay

Please tick (✓) one box

84

Imagine you are having a one-on-one counselling session as part of FT

85

Part B

Imagine you are having one-on-one sessions as part of FT

9. Please rank the session parts below from 1 (most important) to 4 (least important) [page 5]

Talking about your family member's/friend's drinking behaviour	Learning how to communicate with your family member/friend about his/her drinking	Learning how to support your family member/friend to cut down or stop drinking	Practicing how to support your family member/friend to cut down or stop drinking

Please write numbers 1, 2, 3, & 4 in the boxes (use each number once)

86

Part B: FT program

10. *Is there anything we haven't asked you about that you think we should include in the Family Training (FT) program?* [page 6]

The FT program would be better if

Please write your suggestions in the box

87

Part B: FT program

END OF PART B

The group leader will collect Part B when you have finished

88

Part C: Information about you

Part C is handed out by the group leader

Please write your ID CODE at the top of Part C

89

Part C: Information about you

Remember that this information will be used for the research project and <u>not</u> forwarded on to any authorities

90

Part C: Information about you

1. Health service attended *[page 1]*

- ❑ Lyndon Community
- ❑ Yoorana Gunya
- ❑ other _____(please write)

Please tick (✓) one box and write answer where shown

91

Part C: Information about you

2. Gender *[page 1]*

- ❑ female
- ❑ male
- ❑ I do not want to answer

Please tick (✓) one box

92

Part C: Information about you

3. Date of birth *[page 1]*

_____(day)_____(month)_____(year)

Please write answer where shown

93

Part C: Information about you

4. Did you guess any part of your birth date? *[page 1]*

- ❑ no
- ❑ yes, I estimated _____(please write)

Please tick (✓) one box and write answer where shown

94

Part C: Information about you

5. Are you of Aboriginal or Torres Strait Islander origin?
[page 2]

- ❑ no (if no, go to question 22)
- ❑ yes, Aboriginal
- ❑ yes, Torres Strait Islander
- ❑ yes, Aboriginal and Torres Strait Islander

Please tick (✓) one box

95

Part C: Information about you

6. What clan, tribal or language group do you identify with?
[page 2]

I identify with _____(please write)

Please write answer where shown

96

Part C: Information about you

7. Were you born in Australia? *[page 2]*

- ❑ yes
- ❑ no, I was born in_____(please write)

Please tick (✓) one box and write answer where shown

97

Part C: Information about you

8. What language do you prefer to speak at home? *[page 2]*

- ❑ English
- ❑ other, I prefer to speak_____(please write)

Please tick (✓) one box and write answer where shown

98

Part C: Information about you

9. Have you completed any formal education? *[page 2]*

- ❑ no formal education
- ❑ primary school (year 6)
- ❑ high school (year 10)
- ❑ school certification (year 12)
- ❑ tertiary education (university or TAFE)
- ❑ I do not want to answer

Please tick (✓) one box

99

Part C: Information about you

10. Do you work? *[page 3]*

- ❑ don't work (if you don't work, go to question 12)
- ❑ full-time work
- ❑ part-time work
- ❑ casual work
- ❑ other
- ❑ I do not want to answer

Please tick (✓) one box

100

Part C: Information about you

11. What do you do for work? *[page 3]*

_____(please write)

❑ I do not want to answer

Please tick (✓) one box or write answer where shown

101

Part C: Information about you

12. How many other people (not including yourself) live where you usually do? *[page 3]*

_____(please write)

Please write answer where shown

102

Part C: Information about you

13. Does the place where you usually live meet your needs? *[page 3]*

1	2	3	4	5
does not meet my needs at all				meets all my needs

Please circle one number

103

Part C: Information about you

14. Do you have a family member who needs to cut down or stop drinking? *[page 4]*

- ❑ no (if no, you have completed Part C)
- ❑ yes

Please tick (✓) one box

104

Part C: Information about you

15. How *worried* are you about your family member/friend who needs to cut down or stop drinking alcohol? *[page 4]*

1	2	3	4	5
not worried at all				very worried

Please circle one number

105

Part C: Information about you

END OF PART C

The group leader will collect Part C when you have finished

106

Expression of interest sheet is handed out by the group leader

107

Interested in being involved?

- If you are *interested in being involved* in the PAT or FT programs please fill in your contact details.
- These details will be used by Yoorana Gunya and Lyndon Community staff to contact you about your participation in the program/s.
- Providing your contact details is voluntary.
- Your contact details will not be linked to your survey answers.

108

Interested in being involved?

Name:_____(please write)
Address:_____(please write)
Home phone:_____(please write)
Mobile phone:_____(please write)

- ❑ I am a person who needs to cut down or stop drinking alcohol AND/OR
- ❑ I have a family member/friend who needs to cut down or stop drinking alcohol

Please tick (✓) one or both boxes that apply to you

109

The group leader will collect
your expression of interest sheet
when you are finished

110

Part D: Alcohol use

Part D

- Questions in Part D ask about your drinking.
- Examples of questions that could be used in the programs.
- **Remember you can withdraw your participation at any time, so you do not have to answer these questions**
- **if you do not want to.**
- You will be able to get feedback on your answers if you complete Part D.

111

Part D: Alcohol use

Part D is handed out by the group leader

Please write your ID CODE at the top of Part D

112

Part D: Alcohol use

1. How often do you drink? *[page 1]*

- ❑ never
- ❑ monthly or less
- ❑ 2-4 times a month
- ❑ 2-3 times a week
- ❑ 4 or more times a week

Please tick (✓) one box

113

Part D: Alcohol use

2. When you drink, how many do you usually have in one day? *[page 1]*

- ❑ 1 or 2
- ❑ 3 or 4
- ❑ 5 or 6
- ❑ 7-9
- ❑ 10 or more

Please tick (✓) one box

114

Part D: Alcohol use

3. How often do you have six or more drinks on one day? *[page 1]*

- ❑ never
- ❑ less than monthly
- ❑ monthly
- ❑ weekly
- ❑ daily or almost daily

Please tick (✓) one box

115

Part D: Alcohol use

4. In the last year, how often have you found you weren't able to stop drinking once you started? *[page 1]*

- ❑ never
- ❑ less than monthly
- ❑ monthly
- ❑ weekly
- ❑ daily or almost daily

Please tick (✓) one box

116

Part D: Alcohol use

5. In the last year, how often has drinking got in the way of doing what you need to do? *[page 1]*

- ❑ never
- ❑ less than monthly
- ❑ monthly
- ❑ weekly
- ❑ daily or almost daily

Please tick (✓) one box

117

Part D: Alcohol use

6. In the last year, how often have you needed a drink in the morning to get yourself going? *[page 2]*

- ❑ never
- ❑ less than monthly
- ❑ monthly
- ❑ weekly
- ❑ daily or almost daily

Please tick (✓) one box

118

Part D: Alcohol use

7. In the last year how often have you felt bad about your drinking? *[page 2]*

- ❑ never
- ❑ less than monthly
- ❑ monthly
- ❑ weekly
- ❑ daily or almost daily

Please tick (✓) one box

119

Part D: Alcohol use

8. In the last year, how often have you has a memory lapse or blackout because of your drinking? *[page 2]*

- ❑ never
- ❑ less than monthly
- ❑ monthly
- ❑ weekly
- ❑ daily or almost daily

Please tick (✓) one box

120

Part D: Alcohol use

9. Have you injured yourself or anyone else because of your drinking? *[page 2]*

- ❑ no
- ❑ yes, but not in the last year
- ❑ yes, during the last year

Please tick (✓) one box

121

Part D: Alcohol use

10. Has anyone (family, friend, doctor) been worried about your drinking or asked you to cut down? *[page 2]*

- ❑ no
- ❑ yes, but not in the last year
- ❑ yes, during the last year

Please tick (✓) one box

122

END OF PART D

Appendix J

Group record sheet for acceptability survey

Acceptability study: group record sheet

Please fill in this form for each group that is involved in the acceptability study.

Date: _____

Service: _____

Start time: _____

End time: _____

Group leaders name: _____

Number of clients invited to participate: _____

Number of clients consented to participate: _____

Number of clients completed the survey: _____

Comments: _____

Appendix K

Additional methods and results not included in the published paper (Calabria et al. 2013)

Additional acceptability survey content

In addition to asking about the overall acceptability of the program, parts A and B of the survey asked whether particular content and delivery options were acceptable. The Community Reinforcement Approach (CRA) program survey (part A) asked about the acceptability of program setting and delivery, counsellor characteristics, session discussion topics, and family member's involvement in treatment. The Community Reinforcement and Family Training (CRAFT) program survey (part B) asked about the acceptability of setting and delivery, communication with the drinker, counsellor characteristics, and session discussion topics. Participants were also asked to rank in order of importance four session components. The CRA program components to be ranked were: talking about your drinking behaviour, setting goals to reduce alcohol-related harms, learning how to resolve alcohol-related problems, and practicing how to resolve alcohol-related problems. The CRAFT program components to be ranked were: talking about your family member's/friend's drinking behaviour, learning how to communicate with your family member/friend about his/her drinking, learning how to support your family member/friend to cut down or stop drinking, and practicing how to support your family member/friend to cut down or stop drinking.

In addition to demographic information (part C) presented in the published paper participants were asked which health service he/she attended, clan/tribal/language group, country of birth, preferred language, how many people usually lived with, whether residence meets needs (rated on a five-point scale, 1=does not meet my needs at all, 5=meets all my needs).

Alcohol use (part D) was measured using the Alcohol Use Disorders Identification Test (AUDIT) (Saunders et al. 1993; Saunders & Aasland 1987). The AUDIT measures hazardous and harmful alcohol consumption in the past 12 months and covers the domains of alcohol consumption, drinking behaviour, and alcohol-related problems. The AUDIT is a ten item scale: items one to eight are scored on a 5-point Likert scale and items nine and ten are scored on a 3-point Likert scale. Total scores range from zero to forty and a high score indicates problematic alcohol misuse. Universally used cut-off scores determine participants' drinking behaviour: non-drinker (score of 0); drinks within recommended limits (score of 1-7); at-risk drinking (score of 8-12); or high-risk drinking (score of 13 or more) (Conigrave, Hall & Saunders 1995; Tsai et al. 2005; Babor et al. 2001). Although the measure has not been validated for Aboriginal Australians, it has been designed as a cross-cultural instrument (Saunders et al. 1993) and is recommended by the Alcohol Treatment Guidelines for Indigenous Australians (Australian Government Department of Health and Ageing 2007). The AUDIT has high internal consistency across diverse samples and settings (median alpha = 0.83) and the English language version has demonstrated validity (Reinert & Allen 2007). The wording used for the AUDIT in the current study was taken from an Aboriginal-specific adaptation developed by researchers at the University of Sydney and Sydney South West Area Health Service: the content is the same but phasing slightly altered to be more appropriate for Aboriginal Australians. For example, instead of "how many standard drinks do you have on a typical day?" the Aboriginal-specific version asks "when you drink, how many do you usually have?". Participants were also asked if they had a family member/friend who needed to cut down or stop drinking and how worried they were about that family member/friend (rated on a 5-point Likert scale, 1=not worried at all, 5=very worried). Tobacco and illicit drug consumption was measured using frequency questions. Formal and slang names of drugs were listed to maximise comprehension.

Additional procedure information

Participants were lead through the survey process and sections of the survey were handed out separately. The process was guided by a researcher or Aboriginal Health Worker who followed steps outlined in a PowerPoint presentation designed to standardise the process of survey delivery (see Appendix I for PowerPoint slides). First, the study aims were explained and an information sheet was given to participants including information on consent. Consenting participants were asked to generate an identification number for themselves, which they wrote on the information sheet for future reference, and were then asked to write on each section of their survey, later used to link their sections of the survey. The identification number consisted of the date the participant was born and the first three letters of their mother's name (e.g. 16DIA). Second, general information was presented on the CRA program, including who the program was for, what the program involved (e.g. individual one-on-one counselling with a trained counsellor to reduce alcohol-related harms experienced by the drinker, their family and their community), and when the program could be delivered. After program information was presented participants were given part A of the survey and asked to imagine that they had a drinking problem and needed help to cut down or stop, before recording their opinions on the content of the CRA program. Third, general information was presented on the CRAFT program including who the program was for, what the program involved (e.g. individual one-on-one counselling with a trained counsellor to talk about the affects of their relative's drinking, learn how to support non-drinking behaviour, and increase their own social and emotional wellbeing), and when the program could be delivered. Participants were then given part B of the survey and asked to imagine that they had a relative/friend who drank too much who they wanted to help, before recording their opinions on the content of the CRAFT program. Fourth, the demographic section of the survey (part C) was handed out to participants for completion. Finally, the alcohol and drug use section of the survey (part D) was given to participants for completion.

Researchers and/or Aboriginal Health Workers were present throughout the process and were available to answer any questions from participants. The surveys were self completed; however, assistance was provided for participants who were illiterate or had difficulty with reading. Participation was voluntary and responses were confidential.

When the survey was administered in a group setting discussion time, facilitated by a researcher, was given after each program survey (parts A and B). A section was provided on the survey for participants to write down any comments they wanted to make about the programs, serving the purpose of gaining the opinions of those who participated individually and those who did not wish to speak in a group discussion.

Additional analysis

The proportion of participants who endorsed each response option for the survey items were calculated. Predictors of overall acceptability of CRA and CRAFT were investigated using logistic regression (Hosmer & Lemeshow 2000). Multinomial logistic regression (Hosmer & Lemeshow 2000) was performed to investigate predictors of the ranked session components. Predictors included: gender; drinking status (not/at risk or high risk drinker); family member drinking problem (no/family member with a drinking problem); and health service (Aboriginal Community Controlled Health Service/drug and alcohol treatment agency). A difference was statistically significant at 0.05.

Additional Results

Eight percent of participants lived alone and the others lived with up to eight other people. When rating whether their place of usual residence met their needs, 69% endorsed a four or five on a 5-point Likert scale (1=does not meet my needs at all, 5=meets all my needs).

Alcohol use. AUDIT scores ranged the capacity of the measure from zero to forty. Thirteen percent were non-drinkers, 31% drank within recommended limits, 11% were at-risk drinkers, and 45% were high-risk drinkers (44% not risky drinkers and 56% risky drinkers). Seventy six percent had a family member or friend that they believed needed to cut down or stop drinking alcohol and of those, 74% endorsed a four or five on a 5-point Likert scale to indicate that they were worried about their family member or friend (1=not worried at all, 5=very worried). Among at-risk and high-risk drinkers 81% could identify a family member or friend who drank too much, this proportion was reduced to 70% for non-drinkers and those who drank within recommended limits. Seventy percent had used tobacco in the past month. Illicit drug use was less prevalent in the last 30 days: cannabis (29%); amphetamines (5%); cocaine (1%); heroin (2%); and illegally obtained opioid drug (2%). The use of over the counter medications in the past month was reported by 20% and tranquilizer use by 5%.

Community Reinforcement Approach. All presented topics of discussion for a CRA session were endorsed as acceptable by a proportion of the sample, which varied: how much alcohol you usually drink (86%); how you feel about your drinking (73%); what you do when you are drinking (72%); if you cause harm to yourself and/or others when you drink (61%); setting goals to cut down or stop drinking (93%); things (people, places, and situations) that might be making you want to drink (64%); ways to resolve problems that might be making you want to drink (83%); and how to use support from a trusted family member/friend to cut down or stop drinking (88%). The role of a trusted family member/friend in a problem drinker's treatment was more acceptable (help you start alcohol treatment (82%), stay in alcohol treatment (89%), and continue to drink less or stop drinking (85%)) than the role of a concerned family member/friend (help you start alcohol treatment (80%), stay in alcohol treatment (87%), and continue to drink less or stop drinking (84%)).

Using group sessions, in addition to the individual sessions, was believed to be okay by 83% to confidentially talk to Aboriginal people with similar experiences about alcohol and its effects on themselves and/or their family, by 92% to practice and reinforce skills learnt in one-on-one counselling, and by 91% to participate in healthy social and recreational activities.

When participants ranked session components (1=most important, 4=least important), talking about family member/friend drinking behaviour was the standout as most important, while practicing how to resolve alcohol-related problem was less important (Figure 1).

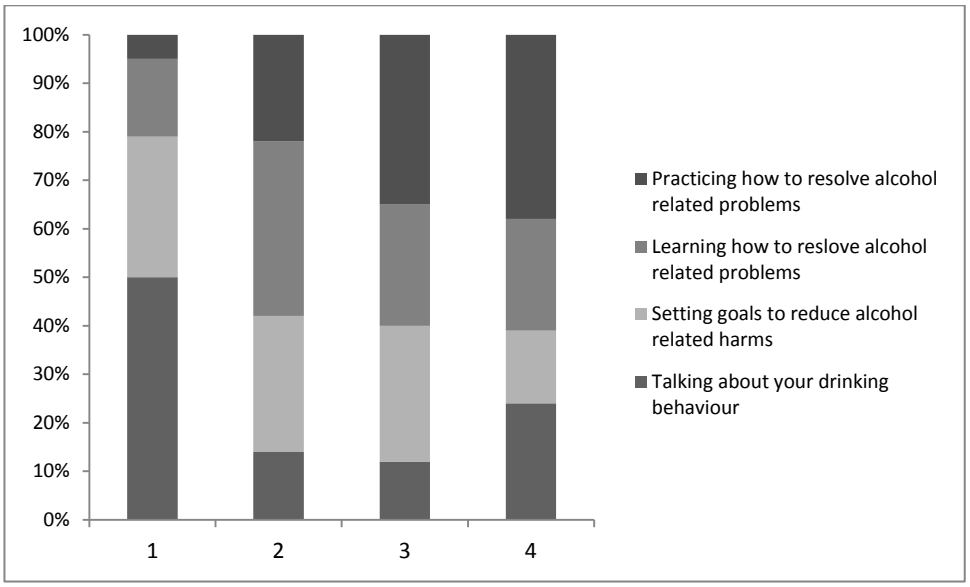

Figure 1. CRA ranked session components (1=most important, 4=least important)

Community Reinforcement and Family Training. There was variation in participants' acceptability of what they would feel okay talking to a counsellor about: how much alcohol their relative drinks (79%); what their relative does when he/she drinks alcohol (71%); and if their relative harms themselves or others when he/she drinks alcohol (75%).

All presented topics areas for a CRAFT session were endorsed as acceptable by a proportion of the sample, which varied: how to talk to their relative about his/her drinking (88%); ways to talk to their relative about how alcohol is causing difficulty in their community (84%); ways to support their relative to start treatment (89%); ways to support their relative to stay in treatment (90%); ways to support their relative to continue to drink less (93%); ways to set boundaries when alcohol causes difficulty in your community (91%); ways to stay strong living in a community where alcohol causes difficulty (89%); and ways to help their community stay strong when alcohol causes difficulty (91%).

Group sessions, in addition to one-on-one counselling, were acceptable to a proportion of the sample in varied situations: to confidentially talk to Aboriginal people with similar experiences about alcohol and its effects on themselves and/or their family by 85%; to practice and reinforce skills learnt in one-on-one counselling by 89%; and to participate in health social and recreational activities by 89%.

When participants ranked session components (1=most important, 4=least important), practicing how to a support family member/friend to cut down or stop drinking was less important than other session components (Figure 2).

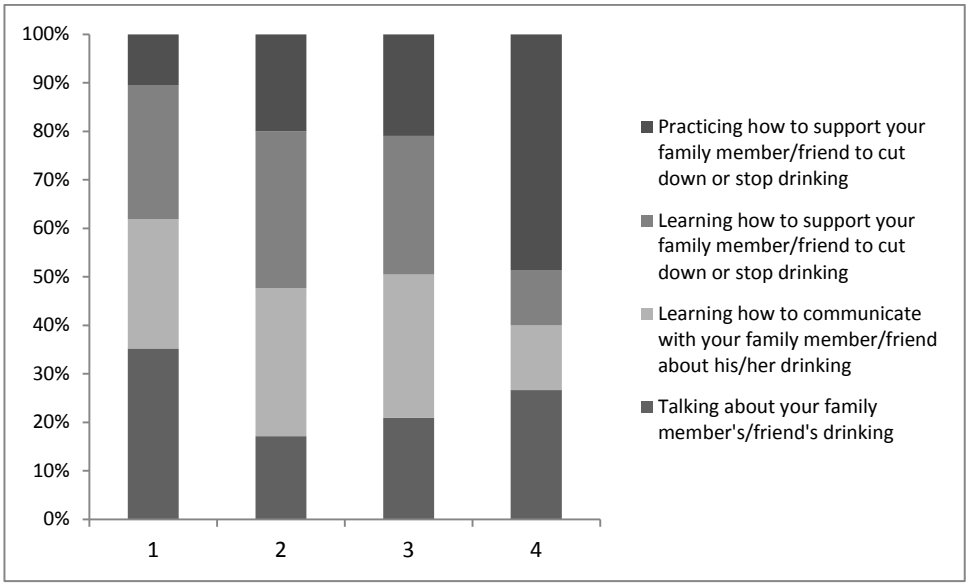

Figure 2. CRAFT ranked session components (1=most important, 4=least important)

Appendix L

Search strings for systematic search for interventions addressing problematic alcohol use among young people

Database	Search group	Search terms
CDSR ACP Journal Club DARE	Young people (basic terms)	Young people OR youth OR adolesce$ OR young OR juvenile OR child OR young adult
CCTR Web of Science	Young people	--
	Risk	Risk OR high risk behaviour OR high risk population OR risk factor OR reckless activity OR high risk OR risk factors OR risk assessment
	Alcohol	Alcohol OR ethanol OR alcohol consumption OR alcohol intoxication OR alcohol drinking OR alcohols
	Alcohol abuse	Alcohol abuse OR ethanol abuse OR alcohol dependence OR alcoholism
	Intervention (basic terms)	Intervention OR intervention studies
	Intervention	--
	Disruptive	--
EMBASE#	Young people (basic terms)	Young people OR youth OR adolesce$ OR young **exp juvenile**
	Young people	--
	Risk	Risk **exp high risk behaviour OR exp risk OR high risk population OR exp risk factor OR exp attributable risk**
	Alcohol	Alcohol or ethanol **exp alcohol OR exp alcohol consumption OR exp alcohol intoxication**
	Alcohol abuse	Alcohol abuse OR alcohol dependence **exp alcohol abuse OR alcoholism**
	Intervention (basic terms)	Intervention **exp intervention study**
	Intervention	Intervention **exp intervention study OR exp crisis intervention OR exp early intervention OR exp early childhood intervention**
	Disruptive	--

ERIC	Young people (basic terms)	Young people OR youth OR adolesce* OR young OR juvenile OR child OR young adult
	Young people	--
	Risk	Risk OR high risk behaviour OR high risk population OR risk factor OR reckless activity OR high risk OR risk factors OR risk assessment
	Alcohol	Alcohol OR ethanol OR alcohol consumption OR alcohol intoxication OR alcohol drinking OR alcohols
	Alcohol abuse	Alcohol abuse OR ethanol abuse OR alcohol dependence OR alcoholism
	Intervention (basic terms)	Intervention OR intervention studies
	Intervention	--
	Disruptive	--
ETOH	Young people (basic terms)	Adolescent
	Young people	--
	Risk	Risk / risk-taking behaviour / risk factors / prevention effort directed at people at risk / attributable risk / high-risk group and special population / high- risk group / high-risk youth
	Alcohol	Alcohol-seeking behaviour / alcohol consumption / alcohol in any form / ethanol / alcohol intoxication
	Alcohol abuse	Heavy drinking OR alcohol dependence OR alcohol use disorder OR alcohol abuse OR pathological alcohol intoxication OR alcohol dependence
	Intervention (basic terms)	Intervention OR
	Intervention	Intervention OR selective prevention OR recipient of preventive intervention OR early intervention (young children) OR early intervention (early in disease) OR crisis intervention OR family intervention OR peer intervention OR brief intervention
	Disruptive	--

Medline*	Young people (basic terms)	Young people OR youth OR adolesc$ OR young **exp adolescent OR exp child OR exp young adult**
	Young people	Young people OR youth OR adolesc$ OR young **exp adolescent OR exp child OR juvenile delinquency OR adolescent behaviour OR exp young adult OR alcohol drinking**
	Risk	Risk$ OR reckless activity OR risk taking behaviour OR risk estimation OR high risk **exp risk OR exp risk-taking OR risk factors**
	Alcohol	Alcohol OR ethanol **exp alcohols OR exp ethanol**
	Alcohol abuse	Alcohol abuse OR ethanol abuse **exp alcohols OR exp alcoholism OR exp ethanol OR alcohol drinking**
	Intervention (basic terms)	Intervention **exp intervention studies**
	Intervention	Intervention OR brief intervention OR minimal intervention OR secondary intervention OR prevention OR evaluation OR preven$ OR outcomes **exp intervention studies OR exp tertiary prevention OR exp secondary prevention OR exp evaluation studies as Topic OR outcome$**
	Disruptive	Disruptive
Project CORK	Young people (basic terms)	Young adult OR adolescents
	Young people	--
	Risk	Risk OR high risk group
	Alcohol	Alcohol
	Alcohol abuse	--
	Intervention (basic terms)	Intervention
	Intervention	
	Disruptive	--

PsycINFO^	Young people (basic terms)	Young people OR youth OR adolesc$ OR young **exp adolescent development OR exp juvenile delinquency**
	Young people	--
	Risk	Risk **exp at risk populations OR exp risk factors OR exp risk taking OR exp risk assessment**
	Alcohol	Alcohol OR ethanol **exp alcohols OR exp ethanol**
	Alcohol abuse	Alcohol abuse OR ethanol abuse OR alcohol dependence OR alcohol drinking **exp alcohols OR exp alcoholism OR exp ethanol OR drug abuse OR alcohol abuse**
	Intervention (basic terms)	Intervention OR intervention studies **exp intervention**
	Intervention	Intervention OR intervention studies **exp intervention OR exp crisis intervention OR exp crisis intervention services OR exp family intervention OR exp group intervention OR exp early intervention**
	Disruptive	--

* 'key-words' in lowercase, 'MeSH' terms in **bold**
^ 'key words' in lowercase, explode terms in **bold**
# 'key-words' in lowercase, 'EMTREE' terms in **bold**