

Evaluation of Aboriginal and Torres Strait Islander smoking cessation interventions with pregnant women in Australia: utilising a culturally appropriate tool

Moana Tane^A, Leah C. Stevenson^B, Liz Cameron^C and Gillian S. Gould^{B,*}

For full list of author affiliations and declarations see end of paper

***Correspondence to:**

Gillian S. Gould

Faculty of Health, Southern Cross
University, Hogbin Drive, Coffs Harbour,
NSW 2450, Australia

Email: gillian.gould@scu.edu.au

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ABSTRACT

The purpose of this article was to review and evaluate three Australian projects with a focus on smoking cessation and Aboriginal and Torres Strait Islander pregnant women, funded under the Tackling Indigenous Smoking Innovation Grants Scheme, Australian Department of Health. The aim was to determine the impacts of culturally appropriate smoking cessation support for pregnant Aboriginal and Torres Strait Islander women. To provide an equity-focused lens to the review, our team of Indigenous and non-Indigenous researchers utilised an Australian-developed assessment tool: the 'Cultural Identity Interventions Systematic Review Proforma'. The tool was used to measure cultural approaches across a range of domains, and these were independently assessed by two reviewers, along with an assessment of the projects' smoking cessation outcomes. The results were compared to the evidence base in relation to aims, methods, results and conclusions, and consensus for scoring was reached. The review found that these Tackling Indigenous Smoking projects about pregnancy intentionally and effectively incorporated culturally based approaches that sought to work with the participants in culturally informed ways. Each project utilised existing social networks and partnerships to provide their participants with access to a range of community resources, adding value to existing programs.

Keywords: Aboriginal and Torres Strait Islander health, culturally competent care, health service research, Indigenous health, pregnancy, smoking, tobacco use, women's health.

Introduction

Maternal tobacco smoking during pregnancy results in poorer outcomes for babies, impacting on their health throughout their lives. There is an increased risk of low birthweight (smaller-sized babies compared to gestational age), pre-term, wheezing and asthma in childhood, congenital health issues and death ([Australian Institute of Health and Welfare 2017](#); [Gould *et al.* 2020](#)). Evidence is clear on the harms of smoking, and it is critical to support pregnant women to quit smoking ([Gould *et al.* 2020](#)). Among Aboriginal and Torres Strait Islander Australians, there is a lack of evidence on how best to encourage the population to access available quit supports ([Gould *et al.* 2017](#)). The purpose of this article was to determine the impacts of culturally appropriate smoking cessation support for pregnant Aboriginal and Torres Strait Islander women by evaluating a study of three Australian projects with a focus on smoking cessation with Aboriginal and Torres Strait Islander pregnant women, funded under the Tackling Indigenous Smoking (TIS) Innovation Grants Scheme, Department of Health, to improve access to culturally appropriate smoking cessation support.

Culturally appropriate tools are required to evaluate systematic reviews and projects that are developed for Aboriginal and Torres Strait Islander people. Aboriginal and Torres Strait Islander people's culture incorporates pre-colonial and modern practices, and sustaining these practices is essential to maintain good health and wellbeing ([MacLean *et al.* 2015](#)). The importance of incorporating a decolonised perspective within Aboriginal

and Torres Strait Islander health research is critical to the dismantlement of colonial paradigms (Krusz *et al.* 2019). This notion has been highlighted by Indigenous scholars such as Smith (1999) and by non-Indigenous researchers who choose to ally themselves with Indigenous epistemological positions (Bainbridge *et al.* 2013). Indigenous research that advocates strengthening Indigenous voices and social and cultural institutions to revitalise language and culture to collectively find solutions, remains an important priority to challenge western paradigms of inquiry (Smith 2005; Bovill 2020). Challenging the status quo means that non-Indigenous allies may be led by Indigenous peoples in the production of knowledge while reflecting on their ownership of power and privilege (Sherwood 2010; Krusz *et al.* 2019). What is needed are the tools, strategies, insights and expert knowledge from the communities in which research occurs, to influence and inform quantitative methodologies, offering a promise of counterhegemonic work that may lead to emancipation and social justice (Smith 2005).

Systematic reviews may overlook the influence of the contexts in which interventions are implemented (Pawson *et al.* 2005), an important consideration within Aboriginal and Torres Strait Islander communities where unique opportunities strongly influence the transferability of interventions or programs described in studies. Historically, qualitative and other primary studies may have been excluded, as they were considered of lower evidentiary value compared to randomised controlled trials. This propensity has led to inconclusive results in reviews in some sound primary intervention studies that have lacked 'scientific criteria' (MacLean *et al.* 2015; Krusz *et al.* 2019). A strength-based inquiry is important to avoid deficit stereotypes and perspectives when research is conducted by Indigenous and non-Indigenous researchers with Aboriginal and Torres Strait Islander people (Krusz *et al.* 2019).

A study by Krusz *et al.* (2019), which was undertaken in consultation with senior Aboriginal and Torres Strait Islander academics and advisors, describes the experience of four non-Indigenous researchers working with Aboriginal and Torres Strait Islander people. This study described the process of reflection and consciousness raising with regard to the unique and important Aboriginal and Torres Strait Islander ways of knowing (connection to lands and aspirations for sovereignty). The Cultural Identity Intervention Systematic Review Proforma (CIR) tool developed by MacLean *et al.* (2015) attempts to navigate some of the challenges implicit in undertaking systematic reviews of studies in Aboriginal and Torres Strait Islander health by utilising a methodological approach that is acceptable within both non-Indigenous and Indigenous research traditions. As the analysis of the three projects was conducted by both Indigenous and non-Indigenous researchers, the CIR tool was used. This article demonstrates this novel approach and provides insight on how and why this type of tool could be used.

This review was conducted as part of a contract with the Australian Department of Health. The contract was to assess the impacts of three culturally appropriate smoking cessation support for pregnant Aboriginal and Torres Strait Islander women projects that were funded by the Department of Health. We acknowledge the support of the Department in providing these grants, and the permission given for the review article to be published. Although acknowledging the review of the three TIS pregnancy projects is not a systematic review, we considered the tool to be highly suitable for this purpose.

Methods

This review was led by a Māori researcher, Moana Tane, who, along with Leah Stevenson (an Australian of European descent), scored the grants included in this paper according to the CIR tool. Tane wrote the first draft, made the changes and approved the final draft with co-author Liz Cameron (Aboriginal researcher) and Gillian Gould (Indigenous Judean). The review used primary sources of information, including the Grantee Applications, Reports and Summaries, emails received during the review from Grantees and any relevant material that has been published by the Grantees in academic journals. These documents were reviewed in association with each project's aims, methods, results, and conclusions (comprising qualitative and quantitative findings). The guiding question for this review was: What are the impacts of culturally appropriate smoking cessation support for pregnant Aboriginal and Torres Strait Islander women?

The Cultural Identity Intervention Systematic Review proforma (CIR) tool

The Cultural Identity Intervention Systematic Review Proforma (CIR) tool (Supplementary file S1) utilised a methodological approach (MacLean *et al.* 2015). MacLean *et al.* (2015) developed the CIR tool, which was considered as acceptable in relation to both non-Indigenous and Indigenous research traditions. The adoption of the CIR tool for use in this evaluation was an attempt to counteract a tendency for research to adopt a solely western view, which historically has tended to exclude Indigenous concepts of sovereignty, self-determination and cultural capital and strengths. The acceptance of the tool from both research traditions means that measurable indicators (such as those found within clinical trials) can be utilised, alongside other measures such as Indigenous voices of community, in ways that reflect traditional elements such as language and culture as strengths in terms of engagement. We do not attempt to account for the scope of diversity, rather, we sought to utilise a more holistic approach that attributed value to those communities who

participated in the programs, and the service providers who were part of the research evaluation. The CIR instrument used for the project assessments was developed by Indigenous and non-Indigenous researchers and sought to address a tendency to focus on biomedical disease grounded in a quantitative model, rather than social and cultural health determinants, within systematic reviews.

In 2020, the Department of Health commissioned a review of three TIS pregnancy projects (Department of Health report, unpubl. data), where pregnant Aboriginal and Torres Strait Islander women were supported locally to quit smoking. The CIR tool (MacLean *et al.* 2015) was used to evaluate the TIS pregnancy projects that were implemented prior to the time of the review. The CIR instrument was considered the best tool for this review because this review was conducted with both Indigenous and non-Indigenous researchers.

In the first section, the tool asks questions about the study design. Questions in this section are related to various aspects of the study, namely, population, study setting, intervention target level, intervention, intervention delivery, comparators, outcomes, time frame, method of outcome measurement, quantitative results, study aims, fit of methods with intervention purpose, appropriateness of study design, recruitment strategies, method of data collection and analysis, clarity in reporting of results and conclusions and any strengths and weaknesses of the study. The second section considers the cultural elements of the intervention, and the involvement of the priority population in the research, including ethics approvals, participation of Aboriginal and Torres Strait Islander researchers and/or research participants, input into the research question, study design, analyses, interpretation and reporting of the results, feedback processes, community involvement in implementation of the program, reporting back of results to the community, value of research to participants, measurement of value of the research and any strengths and/or weaknesses. The third section seeks further information about contextual factors that may have impacted on the study results and the transferability of the intervention such as environmental aspects, resources, influence of other policies and programs, potential for future local adaptation and evolution of the program over time (MacLean *et al.* 2015). After assessing the study for each section, each assessor rates the studies/programs as high, moderately high, moderate, or low quality.

The three projects that were included in this review are listed in Table 1. Two reviewers (M.T. and L.C.S.) independently assessed and rated each grant for the three sections of the CIR and ascribed an overall score of high, moderately high, moderate, or low. These scores were then discussed with two additional reviewers (L.C.S. and G.S.G.), who reached a consensus rating. In addition, the reviewers considered the evidence-based smoking cessation components that the projects included and commented on

their likely impact and the resultant project outcomes related to other available literature.

Our review of the projects used intention-to-treat quit rates, being the acceptable industry standard for consistency in smoking cessation reporting, in line with the Russell Standard (West *et al.* 2005). We converted the reported quit rates of two TIS Grantees (i.e. The Inala and Waminda grants) into intention-to-treat rates and, where possible, compared the quit rates at an equivalent time point where available (e.g. 12 weeks) and where the self-reported abstinence criteria as a 7-day point prevalence was provided. The review also reported on the feasibility and scalability of the projects for future adaptation and adoption; the recruitment and retention rates of participants; and the qualitative measures of acceptability by the communities, where data had been provided.

The rating sheets for the individual projects were sent to the respective Grantees for any comments or reflections, before the review was finalised.

Results

Three TIS pregnancy projects were included in this review: Inala's 'Empowering Strong Families 4077' project, situated in south-western Brisbane; TIS project undertaken by Telethon Kids Institute with remote communities in the Pilbara region of Western Australia; and Waminda: The Balaang and Binjilaang project – South Coast Aboriginal Women's Tobacco Intervention Program in the Southern Coast of New South Wales. Table 1 presents the TIS grantee outcomes and results. All three TIS pregnancy projects achieved a score of moderately high in the Cultural Identity Rating. Also, all three projects utilised evidence-based approaches that acknowledged the importance of cultural knowledge, and the opportunity to practise culture. Loss of these has been recognised as central determinants of ill health for many Aboriginal and Torres Strait Islander people (Commonwealth of Australia 2013). The projects also reported regular engagement with Elders and Leaders (men and women), yarning sessions, on-Country Camps, men's groups, women's groups, weaving and artwork sessions, where these activities were integrated within the cultural life of the communities.

Inala's 'Empowering Strong Families 4077' project achieved self-reported quit rates (13%; 4/31) at 12 weeks (Askew *et al.* 2019), and are consistent with the trend of carbon monoxide validated quit rates of 14% (3/22 at 12 weeks), from the pilot randomised step-wedge research 'ICAN QUIT in Pregnancy' intervention (Gould *et al.* 2019). 'Waminda: The Balaang and Binjilaang project' reported a carbon monoxide validated quit rate of 12% (4/51) at 12 weeks, which is slightly less than the trend of quit rates (14%) at 12 weeks in the 'ICAN QUIT in Pregnancy' intervention (2019).

Table 1. Tackling Indigenous Smoking innovation grants, outcomes and results.

Project	Study design assessment			Aboriginal and Torres Strait Islander involvement assessment and cultural elements and overall CIR rating
	Outcome measure	Interventions	Results	
<i>Inala: Empowering Strong Families 4077</i>	9-item Patient Health Questionnaire (aPHQ-9); Hooked on Nicotine Checklist and Carbon monoxide readings at Baseline, 2-weeks, 4-weeks, 12-weeks and 1-month postpartum	Psychosocial interventions such as social support (significant others), Life Coaches, Counselling and Education; Smoking cessation support (Motivational interviewing; Nicotine replacement therapy (NRT) and Contingent rewards included)	<p>Recruitment: 31/40 women were recruited (78% recruitment rate)</p> <p>Quit attempts reported*:</p> <p>5/31 (16%) at 2-weeks</p> <p>8/31 (26%) at 1-month</p> <p>7/31 (23%) at 3-months</p> <p>4/31 (13%) at 1-month postpartum</p> <p>Quit rates (pregnant women)*</p> <p>0/31 (0%) 2 weeks</p> <p>0/31 (0%) 4 weeks</p> <p>4/31 (13%) 12 weeks</p> <p>2/31 (6%) 2 weeks post-partum</p> <p>Significant others quit attempts reported*:</p> <p>2/16 (13%) at 2-weeks</p> <p>3/16 (19%) at 1-month</p> <p>3/16 (19%) at 3-months</p> <p>3/16 (19%) at 1-month postpartum</p> <p>5/16 (31%) significant others completed the final assessment 1-month post-partum</p> <p>Quit rates (significant others)*:</p> <p>0/16 (0%) at 2-weeks</p> <p>0/16 (0%) at 1-month</p> <p>1/16 (6%) at 3-months</p> <p>0/16 (0%) at 1-month postpartum</p>	Arts program; involvement of Indigenous Australian leaders, attendance at Cultural events, ability to adapt the program Moderately high.
<i>Rural Health West/ Telethon Kids Institute: A women-centred approach to Indigenous Australian women's smoking</i>	<p>Community-based participatory action research</p> <p>Qualitative data analysed thematically; interviews, surveys, focus groups and workshop feedback forms</p>	<p>Health education, health promotion messages</p> <p>Smoking cessation: Data not available.</p>	<ul style="list-style-type: none"> • Locally relevant, culturally responsive health promotion messages and education materials were produced for the respective sites; • A culturally responsive approach to identify where smoking fits into existing Primary Health Care Service programs was mapped; 	<p>Women-centred Yarning and Weaving program; Community participation (Ranger program, Language Resource Centre, play groups, community workshops, films, barbeques)</p> <p>Moderately high</p>

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Table 1. (Continued).

Project	Study design assessment Outcome measure	Interventions	Results	Aboriginal and Torres Strait Islander involvement assessment and cultural elements and overall CIR rating
Waminda: The Balaang and Binjilaang project	<p>Qualitative data collection to measure changes in knowledge, attitudes and behaviour of participants: Individual and group yarning sessions; Field observations; Semi-structured and informal interviews with staff</p> <p>Quantitative data collected, Nicotine dependence (Fagerström Test for Nicotine Dependence); Psychological distress (Kessler-10), number of quit attempts made (for >24 h), and increased periods of abstinence (7-day point prevalence abstinence). Carbon monoxide levels in expired breath to validate the reduction in tobacco use and abstinence. During camps, finger prick blood samples pre-intervention and post-intervention (after 4 days) to show positive impacts on blood sugar levels after physical activity, good nutrition and smoking cessation</p> <p>Frequency: Pre-/baseline data; Post-intervention data routinely extracted at 3-month intervals</p>	<p>Smoking cessation: Brief interventions. Counselling; opportunistic screening; education; nicotine replacement therapy Carbon monoxide readings (Smokerlyzer).</p>	<ul style="list-style-type: none"> • Exploration to integrate the approach into the maternal and child health strategy; • Identification of strategies to address barriers and enablers to better engage with women and their families. <p>51/248 recruited (21% recruitment rate) <i>Interventions provided:</i> total brief interventions given: 377</p> <ul style="list-style-type: none"> • 4.1% written information • 15.3% counselling sessions • 37.1% nicotine replacement • 59% verbal information • Smokerlyzer readings: 355 • Fagerström readings: 91 • Kessler-10 assessments: 182 • Health checks: 40 during the period 2018–19 <p><i>Midterm evaluation of smoking reduction, quit attempts and cessation results mid-term (after 12-months)*:</i></p> <ul style="list-style-type: none"> • 24% (n = 12) reduction in smoking (12/51); • 22% (n = 11) reduction in Kessler-10 scores from first assessment to final assessment) (11/51); • 63% (n = 32) commenced NRT (32/51); • 12% (n = 6) quit smoking, validated by a carbon monoxide (CO) monitor reading (6/51 = 12%); 	<p>Program was based on the Waminda Model of Care, founded on a culturally safe and trauma-informed framework for Indigenous Australian women and their families; Strong community governance and leadership including Elders, strong staff, leaders and mentors. The model also extends to broader aspects of community engagement and partnerships, research and evaluation and cultural immersion, cultural camps; group yarning sessions</p> <p>Moderately high</p>

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Table 1. (Continued).

Project	Study design assessment	Interventions	Results	Aboriginal and Torres Strait Islander involvement assessment and cultural elements and overall CIR rating
			<ul style="list-style-type: none"> • Kessler-10 scores: indicated up to 47% of participants were in the moderate-to-severe range for psychological distress; • Improved social and emotional wellbeing was 22% ($n = 11$) reduction in K10 scores of psychological distress from first to last assessment (11/51); • Finger prick blood tests indicated 29% of the participants had elevated blood sugar levels; • Based on waist circumference, nearly all participants (96%) were at risk for chronic disease; • Workplace smoking policy and nutrition policies were updated 	

Legend: * – converted to intention-to-treat quit rates (number reported divided by the whole sample), refer to p. 6 in [Askew et al. \(2019\)](#).

Discussion

Each of the TIS pregnancy projects was scored using the Cultural Identify Intervention Systematic Review Proforma (CIR) tool, and all three projects incorporated culturally based approaches that sought to work with the participants in culturally informed ways. Acknowledgement was made of the short life span of the research projects, and that a large percentage of research participants presented with complex life and social challenges requiring comprehensive and holistic approaches over extended periods of time, in addition to their smoking cessation needs. The projects and their findings were also reviewed for innovation and alignment with the current evidence base for smoking cessation among Aboriginal and Torres Strait Islander pregnant women, and scalability of these for future recommendations were considered.

Each of the projects utilised existing social networks and partnerships within communities to provide their participants with access to a range of community resources and supports, adding value to existing programs with these connections. A strong feature of the projects was their integration into existing primary healthcare and social, emotional wellbeing programs. The benefits of focusing engagement with participants through painting, videos, photographs, weaving, children's books, health promotion posters and resources, enabled communication and promotion of these innovative interventions to reach into the community, raising awareness and providing a platform for local voices to contribute and be heard.

There is strong evidence that Indigenous communities globally appear to experience better health and wellbeing where cultural practices have been maintained (MacLean *et al.* 2017; Akbar *et al.* 2020). In Australia, involvement in traditional cultural practices has been linked to improved educational attainment and employment levels, and lower levels of risky alcohol consumption (Dockery 2010). In a study investigating 'Caring for Country', Burgess *et al.* (2009) found there was a significant association among community members in remote Arnhem Land with more frequent physical activity, better diet and lower body mass index and that these benefits were associated with Aboriginal and Torres Strait Islander people managing their own Country (Northern Land Council 2006).

In a study protocol from 2017, Bovill *et al.* (2017) highlighted the importance of Aboriginal and Torres Strait Islander community involvement within research, during the participatory research approach adopted for the developmental phase of the 'ICAN QUIT in Pregnancy' project. The research, developed in partnership with two Aboriginal Community-Controlled Health Services in NSW, involved negotiation, consultation and participation of Aboriginal and Torres Strait Islanders with researchers. Jamieson *et al.* (2012) outlined essential principles in conducting research with Aboriginal and Torres Strait

Islander people, including establishing partnerships to set priorities, investment in capacity building among the communities and flexibility in study implementation while maintaining scientific rigour. As well, the authors called for respect and acknowledgement of the history of Aboriginal and Torres Strait Islander people (assimilation and government-sanctioned policies including the removal of children and ongoing social disadvantage), and in research, an understanding that people have the power to withdraw support when appropriate and an expectation that the research will be beneficial and impactful for the communities who are involved (O'Donahoo and Ross 2015).

Recognition of the diversity of Aboriginal and Torres Strait Islander people, with a focus not on the individual, but on the social, emotional and cultural wellbeing of the entire community in which each individual can achieve their full potential, was also highlighted by Bovill (2020). She proposed that any support program to address health inequities should focus on community engagement and empowerment, privileging the voices of Aboriginal and Torres Strait Islander women in the process of developing effective and meaningful supports within smoking cessation (Bovill 2020). The expression of cultural identity is also important within Aboriginal and Torres Strait Islander people's health and wellbeing, as it signifies and actively acknowledges Aboriginal and Torres Strait Islander people's sovereignty and authority (Tuck and Yang 2012), and that Aboriginal and Torres Strait Islander lands were never ceded. In Australia, participation in traditional cultural practices, including caring for Country, are associated positively to improved education, employment, physical and mental health and wellbeing (MacLean *et al.* 2017).

The CIR proforma is an assessment tool for systematic reviews that has been developed by experienced researchers who have insight into the aspirations of Aboriginal and Torres Strait Islander people who consent to participate and partner for research studies. Its use in this review of three projects was novel and an attempt to apply rigour in accordance with Aboriginal and Torres Strait Islander people research principles and values, and to represent and acknowledge the key cultural ingredients that each of the TIS Grantees applied to ensure genuine engagement and collaboration with the communities involved in their research projects. For each of the projects, the CIR tool was effective in recording and assessing the methods used within the projects to incorporate the abundance of cultural resources present within each of the communities, and the efforts utilised by the Grantees to achieve community buy-in and participation. The tool also allowed non-clinical features to contribute to the success of the research, such as integrating smoking cessation into existing primary healthcare and social, emotional wellbeing programs.

Looking ahead, extending the use of the CIR as an evaluation tool may lead to increased participation of Aboriginal and Torres Strait Islander communities and

organisations in the design of research studies, enabling their own priorities to be set, while incorporating cultural values and practices. The tool also has the potential to increase opportunities for reflexivity in the work of researchers and for communities to engage with all participants in self-evaluation and self-reflection processes, contributing to authentic and respectful knowledge exchange and information sharing between Aboriginal and Torres Strait Islander people and non-Indigenous researchers.

Strengths and limitations

A strength of the review was using a culturally appropriate tool designed for systematic reviews in a novel way to rate the quality of the selected studies, which allowed for a strength-based approach and comparisons across diverse projects. The review also discussed the evidence-based components of the projects and gave an estimate of the impact related to evidence where appropriate and commented on quit rates where available. The review was limited by not having all final reports or analyses completed by the Grantees during the period of assessment, and some data were not reported in a standardised way.

Conclusions

The review of these projects found efforts had been made by all Grantees to intentionally and effectively incorporate culturally based approaches that sought to work with the participants in culturally informed ways. Each project utilised existing social networks and partnerships to provide their participants with access to a range of community resources, adding value to existing programs with these connections. The review explored the feasibility and scalability of the projects for future adaptation and adoption, examining the recruitment and retention rates of participants and the qualitative measures of acceptability by the communities, where data were reported. A strong feature of the projects was their integration into existing primary healthcare and social, emotional wellbeing programs. In addition, we advocate the ongoing use of the CIR tool within health interventions with Aboriginal and Torres Strait Islander people to assess scientific rigour and ethical standards associated with Aboriginal and Torres Strait Islander health research principles and values.

Supplementary material

Supplementary material is available [online](#).

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Author affiliations

^ANorthland District Health Board, Private Bag 9742, Whangarei 0148, New Zealand.

^BFaculty of Health, Southern Cross University, Hogbin Drive, Coffs Harbour, NSW 2450, Australia.

^CFaculty of Arts and Education, Deakin University, 221 Burwood Highway, Burwood, Vic. 3125, Australia.