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LONG RESEARCH ARTICLE

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Evaluating an Aboriginal tobacco social marketing project in Sydney, Australia

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Funding Information
The project was jointly resourced by partner organisations. Each participating organisation contributed significant in-kind resources to support the project and Health Promotion Service provided funding.

Abstract

Introduction: A partnership between three Aboriginal Community Controlled Organisations and a mainstream health service was formed to develop, implement and evaluate a comprehensive and culturally appropriate social marketing project which aimed to encourage smokers to quit smoking. The project also supported quit attempts and promoted denormalisation of smoking.

Methods: The project was evaluated through baseline (n = 427) and follow-up (n = 611) surveys carried out face-to-face with Aboriginal and/or Torres Strait Islander participants 18 years and older recruited through convenience sampling at community events and venues during 2010-2011 and 2015.

Results: The proportion of participants who had made one or more quit attempts increased significantly between baseline and follow-up surveys (54%, 101 out of 187; vs 64%, 189 out of 297; $P < 0.05$). Participants who had intended to quit within 6 months (AOR, 3.29; 95% CI 1.90-5.68; $P < 0.01$); and participants disagreeing with the statement "I don't mind if people smoke inside my home" (AOR, 1.74; 95% CI 1.06-2.84; $P < 0.05$) were significantly more likely to have made one or more quit attempts compared to the respective reference groups.

Conclusion: Study findings demonstrate that the project was associated with increased quit attempts. Intention to quit and attitude were found to be the predictors of making a quit attempt.

So what? Many studies suggest the need to denormalise smoking; this study demonstrated both change in attitudes and an increase in quit attempts. It is recognised that many quit attempts may be needed for long-term smoking cessation.

KEYWORDS

Aboriginal, evaluation, partnership, social marketing, tailored, tobacco and smoking

1 | INTRODUCTION

The effects of tobacco smoking are well-documented; smoking is a leading cause of disease and premature death in New South Wales.[1,2] New South Wales and Australia at large has a long history in tobacco control.[3,4] However, smoking rates remain high in the Aboriginal and Torres Strait Islander population.[4–6]

Evidence for effective strategies to reduce smoking prevalence in Aboriginal communities is inadequate.[5,7–9] Strong cultural identity is fundamental to Aboriginal health and social well-being, as is connectedness to family and ancestral country.[6] Engaging with Aboriginal people and their families in a respectful and culturally competent way is vital to enable communities to develop initiatives appropriate to their needs.[5,10] Key documents[3,5,7,8] recommend using culturally tailored campaigns, and working with and being guided by Aboriginal Community Controlled Organisations (ACCOs).[5,7,8]

Stead et al highlight there are four key features to social marketing.[11] Firstly, it is about making a voluntary change; there should be a clear benefit for the person making the change; marketing techniques, such as targeting, and orientated market research are used to develop the project; and finally the social marketing focuses on an improvement for the individual's welfare, not a benefit for the organisation(s) doing the social marketing. Social marketing is often misunderstood as just the use of mass media or advertisements. Social marketing uses a range of activities targeted to various settings and groups. The use of social marketing has been noted across a range of behaviours and has been found to be effective to achieve behavioural change, including in smoking.[11]

A partnership was formed in 2010 between three ACCOs (Aboriginal Medical Service Redfern, Tharawal Aboriginal Corporation, Babana Aboriginal Men's Group) and Health Promotion Services and Aboriginal Health Units in two Local Health Districts (South Western Sydney and Sydney), to develop a comprehensive and culturally appropriate social marketing project to encourage and support smokers to quit. Developed for the community by the community, it aimed to reduce self-reported smoking status, to increase quit attempts, and stimulate attitude and behaviour change to denormalise smoking within the Aboriginal community living in inner Sydney and south west Sydney.

The baseline survey[12] found high levels of knowledge of the harms of smoking and of intention to quit (ITQ), with a majority of respondents wanting to make a quit attempt in the next 30 days to 6 months. These results were similar to those found in a nation-wide study.[13]

This paper reports on: the reach of the social marketing project; quit attempts, smoking behaviours and attitudes before and after the implementation of the project; and identifies factors associated with making a quit attempt. Qualitative evaluation undertaken to complement and explain findings is reported elsewhere (submitted to HPJA).

The term Aboriginal has been used in this paper to include both Aboriginal and Torres Strait Islander communities living in NSW.

2 | METHODS

2.1 | Project strategies

A project committee comprising representatives from partner organisations oversaw all stages of the social marketing project, and worked closely with local Aboriginal communities to develop the campaign and build respect, trust and ownership. Aboriginal Health Workers were consulted and in-depth interviews were held with smokers who wanted to quit.[14] Community recommendations for project strategies and messages included: using local Aboriginal faces and statistics; incorporating visual images and storytelling; using strong impact (hard hitting) advertisements in combination with positive messages and featuring local people sharing personal quit stories and messages.

Project strategies were implemented from 2011 to 2014 (Table 1) and were designed to stimulate discussion and create community-wide engagement. They also aimed to provide support for those wishing to quit. The project included: three phases of advertising; three rounds of a community grants program open to local organisations to undertake tobacco control activities; customised quit groups providing brief intervention, support and nicotine replacement therapy; development and distribution of tailored resource materials; a project website (www.iquitbecause.org.au) and social media (Facebook) pages; training on brief intervention for smoking cessation for health and community workers; mentoring ACCO staff; promotion of project messages at Aboriginal and other community events.

2.2 | Study design and data collection

This study applied a before and after mixed methods (qualitative and quantitative) evaluation approach. A brief description of the baseline survey has been reported elsewhere[12] outlining the design and implementation and sourcing of questions and participant eligibility criteria. In brief, quantitative data were collected by trained staff using surveys conducted mainly through face-to-face interviews and using convenience sampling. The two main surveys were conducted at baseline (2011, N = 685) and follow-up (2015, N = 1025). A small number of follow-up surveys were conducted via telephone by a trained Aboriginal community educator, with respondents who had previously completed the baseline survey and consented to be contacted for future follow-up. Additional surveys with smaller samples were conducted in 2012 (Round 1) and 2013 (Round 2) after each 3-month advertising campaign, in order to: assess reach and effectiveness of social marketing strategies; access accurate data throughout the project and explore any impact. Results from Round 1 and Round 2 surveys are not reported here. Details of the qualitative study are presented in a separate paper (submitted to HPJA).

The survey questionnaires, sampling methods and data collection procedures remained the same across baseline and follow-up phases. The major survey topics of this study included demographics, smoke

TABLE 1 Timeline of implementation of project strategies

Time period	Project stage	Description	Participants
2010			
April	Planning, implementation and evaluation	Inaugural steering committee held	N/A
September-March 2011	Planning	Worker consultations – 5 sessions	Participants = 30
May-July	Planning	Mapping cessation services	N/A
June	Implementation	Training conducted – 2 sessions	Participants = 22
October	Planning and Evaluation	Baseline survey undertaken	N = 685
October-March 2015	Planning, implementation and evaluation	Community events attended throughout project	Events attended = 72
December	Planning	In-depth interviews	Participants = 15
2011			
January	Implementation	Community Educators employed	CEs employed = 2
April-October	Planning and Implementation	Development of Phase 1 of the advertising: Focus testing Filming talents & spokespersons	Participants = 65 Participated = 36
October-December	Implementation	Phase 1 Advertising commenced	
October	Implementation	Website goes live www.iquitbecause.org.au	N/A
2012			
January-April	Evaluation	Round 1 Follow-up surveys	N = 425
January-December	Implementation	Round 1 Community Grant activities commenced	Funded projects = 6
March-July	Implementation	Development of Phase 2 Advertising Focus testing Filming of talents	 Participants = 19 Participants = 25
Mid July-October	Implementation	Phase 2 Advertising commenced	
August-September	Planning and Evaluation	Mid-term review – 6 groups	Participants = 52
October	Implementation	Pilot quit group at AMS Redfern	Participants = 6
Mid November–March 2013	Implementation	Development of Phase 3 Advertising Focus testing Filming of talents	 Participants = 28 Participants = 36
2013			
January-mid June	Evaluation	Round 2 Follow-up surveys	N = 425
January-December	Implementation	Community grants Round 2 activities commenced	Funded projects = 7
April-May	Implementation	Quit groups – 5 held	Participants = 47
May-July	Implementation	Phase 3 Advertising commenced	
August-October	Evaluation and Planning	Quit group review	Participants = 33
October	Implementation	Facebook approval received and goes live	Followers = 425
December–February 2014	Implementation	Phase 3 Review focus group	Participants = 69
2014			
January-December	Implementation	Round 3 Community grant activities commenced	Funded projects = 5
January-December	Implementation	Quit Groups – 6 held	Participants = 36
May-November	Implementation	Training conducted– 3 sessions	Participants = 27
November-March 2015	Evaluation	Focus groups - 6 groups	Participants = 40
November-Mar 2015	Evaluation	Final Follow-up surveys	N = 1025
2015			
January-March	Evaluation	In-depth interviews	Participants = 15

free home, self-reported smoking status, time to first cigarette, recall of any project message, recall of project messages, intention to quit, confidence to quit, number of quit attempts and attitudes towards smoke free home. The survey questions were adopted from standard surveys.[15–17]

2.3 | Participants

People aged ≥18 years and who identified as Aboriginal and/or Torres Strait Islander were eligible to participate in the survey and were recruited in one of the two ways; firstly at Aboriginal health and community events where participant either attended the project stall or were randomly approached by staff or contracted Aboriginal community educators circulating at the event; secondly Aboriginal community educators and or staff attended clinics held at local ACCOs, on random days and times and approached all clients in the waiting room during these periods. We used postcodes to identify and exclude from our analysis participants from outside the project target area. This resulted in a total of N = 427 participants at baseline and N = 611 at follow-up being included in this paper. This sample size was not sufficient to report any findings on self-reported smoking status. However, post hoc test results showed that this study (with a combined sample size of 1038 participants, 0.10 effect size, $\alpha = 0.05$, two tailed) has 90% power to detect 10% change in the rate of quit attempts following the project implementation; hence this paper reports the findings associated with quit attempts.

2.4 | Outcome and predictor variables

The outcome variable for this paper was change in number of quit attempts (QA) made in the previous 18 months. The predictor variables included: socio-demographic characteristics (gender, age, education and employment); smoke-free home status; two behavioural variables: time to first cigarette (smoking ≤ or >than 30 minutes after waking) and intention to quit smoking (in next 6 months); and three attitudinal variables expressed as responses to the statements: "it is rude to ask guests not to smoke inside your home," "I don't mind if people smoke in my home" and "Parents should not smoke at all inside the home."

2.5 | Data management and analysis

A combined data set was created by merging the baseline and follow-up survey data; the combined data set was used for data analysis. For variables other than yes/no categories were coded as follows: smoke-free home – either smoke free (my home is smoke free) or not smoke free (people occasionally smoke inside the home plus people frequently smoke inside the home); self-reported smoking status – either current smoker (I smoke cigarettes daily plus I smoke cigarettes occasionally) or not current smoker (collapsed those who never smoked, those who previously smoked and those who tried a few times); time to first cigarette – either ≤30 minutes (within the first five minutes of waking plus six to 30 minutes of waking) or >30 minutes after waking[18] (31-60 minutes plus greater than 60 minutes); intention to quit (ITQ) – either intended to quit (those who intended to quit in 30 days plus those who intended to quit in 6 months) or no intention to quit (those who did not intend to quit); number of quit attempts in previous 18 months either– none or quit attempt (one or more quit attempts). The responses to the three attitudinal statements: "It is rude to ask guests not to smoke inside your home" "I don't mind if people smoke in my home" and "Parents should not smoke at all inside the home" were coded as – agree (strongly agree plus agree) and disagree (disagree plus strongly disagree). To assess project recall, data from a monitoring survey (Round 1) was used and compared with the follow-up survey.

Demographic variables were coded as follows: age group – 18 to 39 years (18-29 years plus 30-39 years) or ≥ 40 years (40-49 years plus 50-59 years plus 60-69 years plus over 70); education – either university (undergraduate plus post graduate), or SSC/HSC/TAFE (School Certificate plus High School Certificate plus TAFE plus trade certificate) or <Year 10 (no formal schooling plus did not complete primary school plus completed primary school plus left high school before Year 10); employment – either employed (employed full-time plus part-time plus casual) or unemployed – (not employed) or other (retired plus unable to work/ill plus home duties plus student). Responses such as don't know, not applicable or not sure were treated as missing information.

SPSS (version 19) was used to compare descriptive results and to assess the associations between the outcome variable and its predictors. The proportion of participants in baseline and follow-up surveys who had made one or more quit attempts (QA) in the previous 18 months was determined using two-by-two cross-tabulation methods including chi-squared test; and the associations between the outcome and predictor variables were determined employing logistic regression analyses using the data set that comprised both baseline and follow-up surveys.

To check individual associations and report unadjusted odds ratios (OR) each of the variables was used separately in univariate logistic regression analysis. To report adjusted odds ratios (AOR), all variables (listed in Table 3) were included in the binary logistic regression (model 1) and then backward elimination was used to develop the final model (model 2) which included four variables of interest: baseline and follow-up, employment, ITQ and "I don't mind if people smoke in my home." These four variables were chosen based on the level of significance: either they were significantly associated with QA individually or showed a $P \leq 0.06$ in model one.

2.6 | Ethics

Ethics approval was received from the former Sydney South West Area Health Service Human Research Ethics Committee (HREC/10/RPAH/163) and the Aboriginal Health and Medical Research Council (740/10).

3 | RESULTS

3.1 | Demographic characteristics

Table 2 compares the rates of the key variables between baseline (N = 427) and follow-up surveys (N = 611). There were 71% females at baseline and 69% at follow-up, and 29% males at baseline and 31% at follow-up; 44% of respondents were aged 18-39 years and 56% aged 40 years and over, in both baseline and follow-up surveys. The rates of participants with a university degree differed by eight percent (23% vs 15%) and those with <Year 10 differed by 10% (31% vs 41%). An 11% difference was seen in unemployed groups (29% vs 40%). The only significant differences between baseline and follow-up surveys were in relation to education (in the group <Year 10 $P < 0.05$) and employment (unemployed $P < 0.05$), which were both higher in the follow-up survey. These variables were adjusted for in the logistic regression models.

3.2 | Project reach

In relation to recall of any Aboriginal-specific tobacco campaigns, a significant increase was seen between baseline and follow-up (49% vs 68%); $P < 0.01$. There was an increase in recall of the project "I Quit Because" between Round 1 monitoring survey and follow-up, but this was not significant (53% vs 58%). At follow-up, participants who recalled the project message "I Quit Because" found project messages convincing (90%), persuasive (89%), made people more likely to quit (48%), and prompted discussions with family/friends (58%). The latter findings are not presented in the table and have not been used for further analysis.

3.3 | Smoking behaviour and attitude – before and after project implementation

There was an increase in the rate of reported smoke-free homes at follow-up (68% vs 73%). A significant increase was seen in the outcome variable "number of QA made in previous 18 months" (54% vs 64%; $P < 0.05$). Significant positive changes were also observed in respondents who disagreed with the statements: "It is rude to ask guests not to smoke inside your home" (74% vs 85%; $P < 0.01$) and "I don't mind if people smoke in my home" (79% vs 85%; $P < 0.05$). Respondents who agreed that "Parents should not smoke at all inside the home" were high at both baseline and follow-up (97% vs 98%). The follow-up survey showed no improvement in time to first cigarette or ITQ.

3.4 | Predictors of quit attempts (QA)

Table 3 shows the results of cross tabulation between QA and other variables. It includes the analyses of associations between QA and its predictors including unadjusted and AOR, 95% CI and *P* values.

The combined data set for people making a quit attempt (N = 484) shows that a higher proportion of women than men reported making one or more QA in previous 18 months (62% vs 57%). Higher rates of QA were also found among: the groups with higher educational attainment (University 66% and SSC/HSC/TAFE 60%) compared to <Year 10 (57%); unemployed (64%) and employed (59%) compared to others (53%); time to first cigarette ≤30 minutes after waking (62%) compared to the group of >30 minutes (57%); participants who reported intending to quit compared with those who did not (67% vs 38%); and those who disagreed with the statement "I don't mind if people smoke in my home" compared with those agreeing (65% vs 47%).

In the univariate logistic regression analysis, two variables showed significant associations with making a QA: ITQ (unadjusted OR 3.23, 95% CI 1.98-5.27, $P < 0.01$) and "I don't mind if people smoke in my home" (unadjusted OR 2.09, 95% CI 1.36-3.21, $P < 0.01$). However, only ITQ remained significantly associated with making a QA after adjusting along with all other variables in the table (model 1: adjusted OR 2.90, 95% CI 1.48-5.66, $P < 0.01$).

In the final multivariate analysis model, four variables of interest were adjusted for each other based on their level of significance in previous unadjusted and adjusted univariate analyses being $P \leq 0.06$ these were: project survey, employment, ITQ and disagreement with the attitude statement "I don't mind if people smoke in my home." Participants who had ITQ within 6 months were three times more likely to have made one or more QA compared to the reference group who had no ITQ (adjusted OR 3.29, 95% CI 1.90-5.68; $P < 0.01$); those who disagreed with "I don't mind if people smoke in my home" were significantly more likely to have made a QA compared to the reference group (adjusted OR 1.74, 95% CI 1.06-2.84, $P < 0.05$).

4 | DISCUSSION

To our knowledge, this is the first study to report on findings before and after implementation of a comprehensive culturally tailored social marketing project with Aboriginal communities in Australia. The project was disseminated widely and reached large numbers through community events, surveys and project activities. Recall increased over the project's lifetime and participants who recalled the project considered it convincing and persuasive. The proportion of Aboriginal community members who made one or more quit attempts significantly increased. Predictors of making a quit attempt were: intention to quit within the next 6 months and disagreeing with the statement "I don't mind if people smoke in my home."

Advertising in the media was used as one of the strategies throughout the social marketing project. The use of media appears to have played an important role in helping the project reach a large numbers in the community, and media has been shown in other studies to play an important part in influencing someone to make a quit attempt.[19,20] Comprehensive mass media campaigns which include a strong visual presence for an extended period of time,[19] a variety of messages, and which work within an overall strategy to denormalise smoking, have been shown to encourage smokers to consider

TABLE 2 The rates of study participants' demographic characteristics and smoking related items at baseline and follow-up surveys

Variables	Baseline N = 427[a]; n (%)	Follow-up N = 611[a]; n (%)	Baseline + follow-up N = 1038[a]; n (%)
Demographics			
Gender			
Female	298 (71)	413 (69)	711 (69)
Male	124 (29)	189 (31)	313 (31)
Age group (years)			
18-39	184 (44)	219 (44)	403 (44)
40-Over	234 (56)	284 (56)	518 (56)
Education			
<Year 10*	130 (31)	248 (41)	378 (37)
University	98 (23)	88 (15)	186 (18)
SSC/HSC/TAFE	192 (46)	266 (44)	458 (45)
Employment status			
Employed	211 (50)	293 (48)	504 (49)
Unemployed*	125 (29)	241 (40)	366 (36)
Others	87 (21)	70 (12)	157 (15)
Project reach			
Recall any campaign			
No	211 (51)	196 (32)	407 (40)
Yes	206 (49)	411 (68)**	617 (60)
Recall project (I Quit Because)[b]			
No	80 (47)	249 (42)	N/A
Yes	91 (53)	342 (58)	…
Smoking behaviour			
Home situation			
Not smoke free	133 (32)	164 (27)	297 (29)
Smoke free	279 (68)	439 (73)	718 (71)
Self-reported smoking status (all participants)			
Current smokers	203 (49)	311 (53)	514 (51)
Not current smokers	210 (51)	277 (47)	487 (49)
Number of quit attempts (QA) made in previous 18 months			
None	86 (46)	108 (36)	194 (40)
1 or more	101 (54)	189 (64)*	290 (60)
Time to first cigarette			
≤30 min	144 (72)	221 (71)	365 (71)
>30 min	57 (28)	90 (29)	147 (29)
Intention to quit (ITQ)			
No	36 (20)	63 (22)	99 (21)
Yes	147 (80)	224 (78)	371 (79)
Attitudes			
It is rude to ask guests not to smoke			
Agree	107 (26)	86 (15)	193 (19)
Disagree	309 (74)	490 (85)**	799 (81)

(Continues)

TABLE 2 (Continued)

Variables	Baseline N = 427[a]; n (%)	Follow-up N = 611[a]; n (%)	Baseline + follow-up N = 1038[a]; n (%)
I don't mind: people smoke in my home			
Agree	83 (21)	86 (15)	169 (17)
Disagree	321 (79)	493(85)*	814 (83)
Parents should not smoke inside home			
Disagree	11 (3)	12 (2)	23 (2)
Agree	402 (97)	576 (98)	978 (98)

SSC, Secondary School Certificate; HSC, Higher School Certificate; TAFE, Technical and Further Education.
N = total number of survey participants; n = total number of respondents.
[a]In various categories total number (N) do not match due to missing data.
[b]Data collected at round one monitoring survey was considered as baseline for this variable.
$^{**}P < 0.01$, $^{*}P < 0.05$.

quitting and attempt to quit.[21] Targeted messages are more likely to be noticed and internalised, and smokers find it harder to avoid these messages.[21] These findings were incorporated into the project strategies and this study suggests that they were successful in contributing to changes in community norms and prompting quit attempts. However, behaviour change may be slow.[21] The more recent the exposure, the more likely there will be a behavioural change but this is not always sustained after exposure to the message ceases.[19]

The study adds weight to recommendations that culturally tailored projects can bring change.[5,7,8] The involvement of local community members in developing the project and featuring in the project resources may have provided motivation to quit. "I Quit Because" was recalled by more than half of those surveyed indicating that the project attracted attention. Further, the majority considered the messages to be convincing, persuasive, prompted discussion with family or friends and influenced them to quit. Our results support other findings that a project that resonates within the community will prompt discussion and can lead to changes in attitudes and to increased quit attempts.[20,21] These observations are further explored in the qualitative evaluation study (submitted to HPJA for publication).

The current study found encouraging results in rates of quit attempts. While motivation can increase the number of quit attempts, this does not always transfer into long-term quitting.[22] Successful cessation requires multiple quit attempts[23]; with some reports suggesting that 12-14 quit attempts[24] may be needed, or as many as 30.[25] The number of quit attempts may be influenced by an individual's smoking behaviour such as number of cigarettes smoked per day[26] and broader physical, social and environmental characteristics like smoke-free homes and absence of people who smoke in the immediate environment.[23] The longer a person is able to remain abstinent from smoking, the higher their chance of long term cessation.[27] This study's findings of an increase in one or more quit attempts may contribute to further quit attempts, and could lead to eventual longer term cessation for some community members.

Project advertisements featured both men and women with their families; messages were not gender differentiated and gender was not found to be a significant variable in the rate of quit attempts. These findings are consistent with a recent study with Aboriginal communities suggesting that men and women smoke for similar reasons.[28] Our findings are also similar to another study in the Aboriginal community, which found no difference between men and women in their quitting activity.[29]

In this study, time to first cigarette was not found to be a predictor of making a quit attempt and improving trends were noticed in making quit attempts among both groups (within 30 minutes and after 30 minutes of waking). Education and employment were also not found to be associated with making a quit attempt. A similar finding was reported in a large national survey of Aboriginal and Torres Strait Islander smokers.[30]

The intention to quit remained high among smokers at follow-up, in line with previous research[13] including the baseline study.[12] Having found high intention to quit at baseline, the project team decided it was important to focus on quit attempts rather than education of the harms of smoking. Intention to quit proved to be a significant predictor for quit attempts, reflecting findings in non-Aboriginal communities.[31]

The study found a significant association between quit attempts and people who disagreed with the statement "I don't mind if people smoke inside my home" suggesting that continued efforts to denormalise smoking can facilitate quit attempts. Community attitudes to smoking play an important role, and it appears that the project contributed to some changes in community norms around smoking. Increasing trends were seen in the number of participants who disagreed with the statements "It is rude to ask guests not to smoke in your home" and "I don't mind if people smoke in my home." Taken together, this suggests a change in community attitudes about smoking in the home, which could contribute to denormalisation of smoking.

The significant increases in quit attempts and changes in attitudes around smoking are encouraging signs that smoking may be becoming denormalised. A recent report[6] argues the need to think long term and commit appropriate funding as there will not be immediate changes; it advised a focus on denormalising smoking and factors which maintain a smoking culture.

TABLE 3 Quit attempts (QA) by variables of interest at baseline and follow-up: 2 × 2 cross-tabulation and logistic regression (unadjusted and adjusted odds ratio, 95% CI & *P* value)

	Baseline (N = 187)[a]		Follow-up (N = 297)[a]		Baseline & Follow-up (N = 484)[a]			Baseline & Follow-up (N = 301)[a]	Baseline & Follow-up (N = 383)[a]
Variables	Total respondents N[a]	One or more QA made n (%)	Total respondents N[a]	One or more QA made n (%)	Total respondents N[a]	One or more QA made n (%)	Unadjusted odds ratio (logistic regression) (95% CI), *P* value	Adjusted odds ratio (model 1: all variables) (95% CI), *P* value	Adjusted odds ratio (model 2: variables of interest) (95% CI), *P* value
Project survey(s)									
Baseline and Follow-up	…	…	….	….	484	290 (60)	…	…	…
Baseline (ref)	187	101 (54)	….	….	187	101 (54)	1	1	1
Follow-up	….	….	297	189 (64)*	297	189 (64)*	1.50 (1.03-2.16); 0.04*	1.23 (0.72-2.10); 0.45	1.33 (0.85-2.07); 0.21
Demographics									
Gender									
Female (ref)	129	73 (57)	207	134 (65)	336	207 (62)	1	1	–
Male	57	28 (49)	87	54 (62)	144	82 (57)	0.82 (0.55-1.23); 0.34	1.05 (0.60-1.85); 0.86	–
Age									
18-39 (ref)	100	48 (48)	123	84 (68)	223	132 (59)	1	1	–
Over 40	84	52 (62)	121	69 (57)	205	121 (59)	0.99 (0.68-1.46); 0.97	0.96 (0.56-1.63); 0.88	–
Education									–
<Year 10 (ref)	60	28 (47)	127	79 (62)	187	107 (57)	1	1	–
University	38	26 (68)	36	23 (64)	74	49 (66)	1.47 (0.84-2.57); 0.18	1.68 (0.76-3.67); 0.20	–
SSC/HSC/ TAFE	86	46 (54)	128	83 (65)	214	129 (60)	1.14 (0.76-1.69); 0.53	1.04 (0.59-1.84); 0.88	–
Employment									
Employed (ref)	79	43 (54)	128	79 (62)	207	122 (59)	1	1	1
Unemployed	62	36 (58)	123	83 (68)	185	119 (64)	1.26 (0.84-1.89); 0.27	1.80 (0.98-3.29); 0.06	1.52 (0.93-2.48); 0.09
Others	45	21 (47)	42	25 (60)	87	46 (53)	0.78 (0.47-1.29); 0.34	0.62 (0.31-1.23); 0.17	0.75 (0.42-1.35); 0.34
Project reach									
Recall any campaign									
No	88	43 (49)	96	59 (62)	184	102 (55)	1	1	–
Yes	95	56 (59)	198	127 (64)	293	183 (63)	1.34 (0.92-1.95); 0.13	0.85 (0.50-1.47); 0.57	–
Smoking behaviours									
Home									

(Continues)

TABLE 3 Continued

Variables	Baseline (N = 187)[a]		Follow-up (N = 297)[a]		Baseline & Follow-up (N = 484)[a]			Baseline & Follow-up (N = 301)[a]	Baseline & Follow-up (N = 383)[a]
	Total respondents N[a]	One or more QA made n (%)	Total respondents N[a]	One or more QA made n (%)	Total respondents N[a]	One or more QA made n (%)	Unadjusted odds ratio (logistic regression) (95% CI), *P* value	Adjusted odds ratio (model 1: all variables) (95% CI), *P* value	Adjusted odds ratio (model 2: variables of interest) (95% CI), *P* value
Not smoke free (ref)	91	50 (55)	117	74 (63)	208	124 (60)	1	1	
Smoke free	87	48 (55)	176	113 (64)	263	161 (61)	1.07 (0.74-1.55); 0.72	1.07 (0.58-1.97); 0.83	–
Time to first cigarette									
≤30 min (ref)	123	70 (57)	206	134 (65)	329	204 (62)	1	1	–
>30 min	54	27 (50)	84	51 (61)	138	78 (57)	0.80 (0.53-1.19); 0.27	0.77 (0.45-1.34); 0.36	–
Intention to quit									
No (ref)	31	9 (29)	55	24 (44)	86	33 (38)	1	1	1
Yes	127	79 (62)	210	146 (70)*	337	225 (67)	3.23 (1.98-5.27); 0.00**	2.90 (1.48-5.66); 0.00**	3.29 (1.90-5.68); 0.00**
Attitude									
"It is rude asking guests not to smoke inside your home": Agree (ref)	57	31 (54)	40	22 (55)	97	53 (55)	1	1	–
Disagree	124	68 (55)	233	151 (65)	357	219 (61)	1.32 (0.84-2.07); 0.23	0.76 (0.41-1.43); 0.40	–
"I don't mind if people smoke in my home": Agree (ref)	53	22 (42)	63	32 (51)	116	54 (47)	1	1	1
Disagree	117	71 (61)	210	140 (67)*	327	211 (65)	2.09 (1.36-3.21); 0.00**	1.98 (0.96-4.09); 0.06	1.74 (1.06-2.84); 0.03*

(Continues)

TABLE 3 Continued

Variables	Baseline (N = 187)[a]		Follow-up (N = 297)[a]		Baseline & Follow-up (N = 484)[a]			Baseline & Follow-up (N = 301)[a]	Baseline & Follow-up (N = 383)[a]
	Total respondents N[a]	One or more QA made n (%)	Total respondents N[a]	One or more QA made n (%)	Total respondents N[a]	One or more QA made n (%)	Unadjusted odds ratio (logistic regression) (95% CI), *P* value	Adjusted odds ratio (model 1: all variables) (95% CI), *P* value	Adjusted odds ratio (model 2: variables of interest) (95% CI), *P* value
"Parents shouldn't smoke inside home": Disagree (ref)	9	4 (44)	8	5 (63)	17	9 (53)	1	1	–
Agree	170	95 (56)	276	178 (65)	446	273 (61)	1.40 (0.53-3.71); 0.50	1.02 (0.26-4.09); 0.97	–

ref., reference category in logistic regression analysis; SSC, Secondary School Certificate; HSC, Higher School Certificate; TAFE, Technical and Further Education.
Logistic regression: Unadjusted odds ratio: univariate analysis using all the variables in the table; Adjusted odds ratio (model 1): multivariate analysis – adjusted all variables in the table; chi-squared 25.175, –2 Log likelihood 374.218, $P < 0.05$. Adjusted odds ratio (model 2): multivariate analysis– adjusted four variables of interest with $P \leq 0.06$ (in the previous analyses); chi-squared 34.077, –2 Log likelihood 479.613, $P < 0.01$. N = total number of survey participants; n = total number of respondents.
[a]In various categories total number (N) do not match due to missing data.
*$P < 0.05$; **$P < 0.01$.

These results suggest that future efforts should continue to focus on building and strengthening the observed change in attitudes and denormalising smoking. Culturally appropriate messages and methods that are regularly refreshed can be used to prompt quit attempts, to reinforce and encourage those who have made quit attempts to stay quit, and to support/link in with cessation specific activities. Together these may empower smokers to deal with various social situations and to help sustain quit attempts so that these can lead to long-term cessation.

4.1 | Strengths and limitations

A major strength of this project was its broad reach into a community that can be hard to access. This was evident both in terms of numbers participating in the surveys and project activities, and in the high percentage of people reporting that the messages were culturally appropriate and persuasive.

However, there were some notable limitations. Data were collected using convenience sampling. This was considered to be the most feasible approach due to the complexities in identifying and accessing potential participants through other means. The original intent was to survey the same cohort of participants at baseline and follow-up, but this proved unfeasible as respondents were reluctant to provide contact details, with the resultant risk of limited participant follow-up. As a result, different people completed the baseline and follow-up surveys, and any changes found may have reflected differences between the two cohorts rather than actual changes in behaviour.

Convenience sampling limits the study's generalisability. It is arguable that a sample selected using probabilistic methods might have led to a more representative sample and minimised bias. However, the potentially low-response rate, complicated logistics and high costs to reach respondents weighed against this approach. Conducting surveys at community events and ACCOs enabled a wide reach of participants, and large numbers of surveys to be completed. This sampling approach was pragmatic but risks selection bias and thus represents a limitation.

Social desirability bias may also have been a factor, however, Aboriginal Health Workers and Aboriginal Community Educators known to the community were involved in collecting data, and helped ensure a high level of trust, ownership and authenticity.

Validity of the findings would have been strengthened by comparison with a control group. Without a control group, it is not possible to distinguish between the impact of this project and the effects of other tobacco control measures (eg, a concurrent national TV campaign). However, the cost of conducting a large control in another Aboriginal community was considered prohibitive. It was also unclear how effective a control group might be, given differences between Aboriginal communities. Despite the limitations above, the significant reach of the project lends weight to the conclusion that it contributed to the observed changes in smoking behaviours and attitudes.

5 | CONCLUSION

While the project implementation period was over a relatively short timeframe, this culturally tailored social marketing project appears to have contributed to motivate the community to take positive steps towards quitting and denormalising smoking. A number of encouraging signs were observed: recall of specific Aboriginal tobacco campaigns and the "I Quit Because" project, and positive changes in attitudes around smoking in the home. The project saw significant increase in both quit attempts and a number of variables associated with making a quit attempt. The study lends weight to the importance of continued support for people who wish to quit smoking.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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