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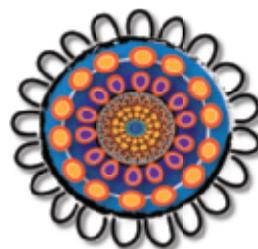
Indigenous-led evidence to inform smoking cessation care for Aboriginal and Torres Strait Islander women

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Cover image: *Kith and Kin*, Felicity Cocuzzoli (Wiradjuri), 2022. Drawing inspiration from the richness of First Nations kinship connections, *Kith and Kin* further represents our intrinsic relationships to “Kith”— to country and to the natural world, represented in the image by two organic shapes which symbolise human and plant cells. These relationships are the foundation for our experience in and of the world.

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Miilwarranha (opening): introducing the Which Way? study

Michelle Kennedy^{1,*} , Raglan Maddox^{2,†} 

Australian Aboriginal peoples are the oldest living culture in the world, with Euro-Western academic research and science currently dating a continuing connection to Country at over 75 000 years.¹ Aboriginal and Torres Strait Islander birthing practices have been critical to the oldest living culture, comprising a living discipline with origins that predate Euro-Western medicine by millennia and continue to foster environments for Aboriginal and Torres Strait Islander peoples to thrive.² However, the ongoing nature of colonisation, associated policies and systemic racism³ continue to impact Aboriginal and Torres Strait Islander peoples today, including maternal and child health outcomes.⁴ One factor contributing to this is smoking, which has been systematically embedded through colonisation. Colonisers used tobacco to exploit Aboriginal and Torres Strait Islander peoples' labour and services, providing tobacco as payment in lieu of wages and in rations until the late 1960s. This entrenched smoking among Aboriginal and Torres Strait Islander peoples.⁵ The mechanics of colonisation also increase exposure to the basic causes or drivers of tobacco use, including economic and educational exclusion.⁶ Such racialised inequities result in Aboriginal and Torres Strait Islander smoking during pregnancy being over three times higher than among their non-Indigenous counterparts.⁵ Identifying culturally safe and acceptable strategies that increase effectiveness for Aboriginal and Torres Strait Islander women to quit smoking are urgently required. However, appropriate evidence to inform smoking cessation care, particularly during pregnancy, drawn from Indigenous peoples is scarce. Evidence included in this *MJA* supplement aims to privilege Aboriginal and Torres Strait Islander women in the development of Indigenous-led evidence on smoking cessation care.^{7,8}

Most health care providers have and will continue to encounter Aboriginal and Torres Strait Islander peoples in their daily practice. As such, identifying respectful and effective strategies that resonate with Aboriginal and Torres Strait Islander peoples to quit tobacco use, particularly during pregnancy, through health care systems are required.

Researchers and clinicians have conducted qualitative,⁹⁻¹³ quantitative¹⁴⁻¹⁶ and pilot trials¹⁷⁻¹⁹ and one randomised trial²⁰ to develop an evidence base to address the disproportionate smoking rates experienced by Aboriginal and Torres Strait Islander women during pregnancy. All trials have incorporated health provider smoking cessation training and resources for women and health providers and offered nicotine replacement therapy to pregnant women who were unable to quit unaided.¹⁷⁻²⁰ Two included peer support groups and financial incentives.^{18,19} One considered the wider social and economic context of smoking in pregnancy and tailored supports to incorporate broader support services for women.¹⁹ However, to date no trial has been able to report effective strategies to empower smoke-free pregnancies and the evidence base is still lacking.

Research and evaluation are particularly important to better tailor supports for Aboriginal and Torres Strait Islander peoples, especially given the diverse language, social and nation groups. Research has the potential to quantify the nature and characteristics of smoking in pregnancy and what types of smoking cessation supports resonate with Aboriginal and Torres Strait Islander women.²¹ Generally, data from diverse nation groups across Australia report smoking characteristics as a binary outcome (yes/no). However, our previous research reports that Aboriginal and Torres Strait Islander women are making multiple quit attempts during pregnancy,²² with national data commonly failing to accurately detail such nuance in the quitting journey that can be critical to guiding best practice. Given the lack of Indigenous-specific evidence and the substantial room for improvement in health outcomes, the *Which Way?* study, reported in this supplement of the *MJA*,^{7,8} aims to address an urgent need to better understand smoking, for and by Aboriginal and Torres Strait Islander women, using community-led research questions informed through an Indigenous lens.²³ In the words of Linda Tuhiwai Smith:

When Indigenous peoples become the researchers and not merely the researched, the activity of research is transformed. Questions are framed differently, priorities are ranked differently, problems are defined differently, people participate on different terms.²⁴

The foundations of *Which Way?* are derived from Aboriginal and Torres Strait Islander-led research which recognised that Aboriginal and Torres Strait Islander women want to quit smoking and are interested in non-pharmacological options to be smoke-free.²² The project aims to build an Indigenous-led evidence base for culturally responsive smoking cessation care and to inform policymakers and health service providers on how improvements can be made to the health and wellbeing of Aboriginal and Torres Strait Islander mothers and babies.

Which Way? is a culturally responsive, co-designed and co-owned study with urban and regional Aboriginal communities in New South Wales.²⁵ The study is consistent with the United Nations Declaration on the Rights of Indigenous Peoples,²⁶ the World Health Organization Framework Convention on Tobacco Control,²⁷ and the updated Aboriginal Health and Medical Research Council guidelines for ethical research with communities.²⁸ This national cross-sectional survey was developed through collaborative, community-driven processes with partnering communities to understand community-led research questions, address current knowledge gaps, and refine content and questions for relevance, cultural acceptability and sensitivities. This process was iterative and completed during COVID-19 lockdowns. The survey was developed and then approved by community partners, and included pilot testing with 15 Aboriginal women known to the research team before going live.

* Wiradjuri; † Modewa.

Recruitment methods

Online recruitment for research of this sensitive nature was not common research practice in Aboriginal and Torres Strait Islander health research at the time of recruitment, but we recognise that COVID-19 has also driven significant changes in innovative recruitment processes. As such, establishing trust and rapport, and highlighting social accountability in this research was critical. All Aboriginal community partners shared posts recruiting participants in the study. Sharing of posts was also supported by peak bodies, such as the National Aboriginal Community Controlled Health Organisation. The project also utilised paid advertisement and sharing via community pages such as Tiddas for Tiddas, to increase reach and provide the opportunity to participate, particularly for Aboriginal and Torres Strait Islander women who did not use or follow an Aboriginal health service.

Analysis and reporting

Indigenous governance and meaningful engagement of Aboriginal and Torres Strait Islander peoples informed the analysis and reporting but was embedded from conception to reporting the study findings, consistent with the United Nations Declaration on the Rights of Indigenous Peoples and the Framework Convention on Tobacco Control. Australia is a party to the Framework Convention on Tobacco Control, which details the need for Aboriginal and Torres Strait Islander peoples to be engaged in the development, implementation and evaluation of tobacco control programs.

The analysis and reporting process privileged Aboriginal and Torres Strait Islander voices, knowledges and experiences, particularly communities as the knowledge holders, to address the health and wellbeing of their peoples. In facilitating meaningful analysis and interpretation, an iterative analysis process was undertaken in partnership with community partners and guided by an Indigenous-led analysis team.

Preliminary findings were initially exported using REDCap electronic data capture software, and summarised for community partners. Lead researcher (MK) provided presentations to community partners for response and direction, including prioritising analysis in an iterative process. All analysis plans were driven by community partners' questions, and only community relevant factors were reported. Shifting from problem-based to solution-focused Aboriginal and Torres Strait Islander-led tobacco control enacts Indigenous sovereignty to be ultimately free from nicotine dependence and related death and disease. In the words of Walter and Anderson:

From an Indigenous ontology the more important question is not what differences exist, but why? A reversing of the ontological lens would compel different questions in a different research agenda.²³

Ethics and dissemination

The Which Way? project upholds the prioritisation of the CONSIDER statement²⁹ and acknowledges the need for transparency of research practice (Box).

Conclusion

The Which Way? study reported in this MJA supplement highlights the need to embed culturally safe care, including

The CONSIDER statement²⁹

Governance: The community governance committee oversees all aspects of the research, guiding and strengthening the research process and ensuring all conducted research is held accountable. This means the research is Aboriginal-led, Aboriginal-owned, and upholds the prioritisation of Aboriginal communities.

Prioritisation: Strong community partnerships are developed and sustained through ongoing respect, consultation and appropriate dissemination of research and continued transparency with all communities. The research priorities are built on community strengths, interests, and worldviews. Development of lasting relationships with partnered community services and engagement of staff and community at all services ensures research aims address specific community priorities.

Methodology: The research acknowledges the importance of building on *gulbanha* (knowledge), to ensure the research is relevant and meaningful to improving the health and wellbeing of Aboriginal and Torres Strait Islander peoples. Indigenous knowledges are the processes and the outcome of the research.

Participation: The seeking of individual and community consent is imperative to mitigate the burden placed upon both the individual and the communities involved in the research. This upholds Indigenous data sovereignty, and ensures the safety and security of participants remains unidentified throughout the research.

Capacity: Guidance and mentorship is woven through the research process at every level. Capacity building is enabled through the mentorship of two Aboriginal and Torres Strait Islander medical students working as research assistants throughout the research. Through respectful relationships with partnering communities, 360° learning and knowledge sharing is offered, to build capacity within the academy in Indigenous and wellbeing, as well as in the health sector with diverse community health needs, research design and implementation, knowledge translation, and health promotion. This is reflected through, but not limited to, authorship opportunities and governance committee membership.

Analysis and interpretation: Aboriginal and Torres Strait Islander communities direct the analysis and interpretation that is then undertaken by an Indigenous-led team.

Dissemination: Accountability of the research is upheld through monthly updates and consultation with partnering services, governance committees and communities. Ongoing translation plans are co-developed with the research team, governing bodies and community partners to appropriately acknowledge the wisdom, leadership and expertise of partnering communities in developing an Indigenous-led evidence base for smoking cessation care. Outcomes of this research have been presented through a range of webinars with peak bodies (Cancer Institute NSW, the Aboriginal Health and Medical Research Council, the Victorian Aboriginal Community Controlled Health Organisation). We have also developed infographics for community to share, and have developed and conducted workshops for Tackling Indigenous Smoking teams nationally.

cessation supports, into everyday practice. The study also provides an example of how research in Aboriginal and Torres Strait Islander contexts can be undertaken in a “good way”, with Aboriginal and Torres Strait Islander communities.

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- 1 Malaspina A-S, Westaway MC, Muller C, et al. A genomic history of Aboriginal Australia. *Nature* 2016; 538: 207-214.
- 2 Adams K, Faulkhead S, Standfield R, Atkinson P. Challenging the colonisation of birth: Koori women's birthing knowledge and practice. *Women Birth* 2018; 31: 81-88.
- 3 Sherwood J. Colonisation – it's bad for your health: the context of Aboriginal health. *Contemp Nurse* 2013; 46: 28-40.
- 4 Close the Gap Campaign Steering Committee. Leadership and legacy through crisis: keeping our mob safe. Close the Gap report 2021. Lowitja Institute, 2021. <https://www.lowitja.org.au/page/services/resources/Cultural-and-social-determinants/culture-for-health-and-wellbeing/close-the-gap-report-2021> (viewed Jan 2022).
- 5 Australian Institute of Health and Welfare. Australia's mothers and babies (Cat. no. PER 101). Last updated: 15 Dec 2021. <https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies/contents/about> (viewed Nov 2021).
- 6 Maddox R, Waa A, Lee K, et al. Commercial tobacco and Indigenous peoples: a stock take on Framework Convention on Tobacco Control progress. *Tob Control* 2019; 28: 574-581.
- 7 Kennedy M, Barrett E, Heris C, et al. Smoking and quitting characteristics of Aboriginal and Torres Strait Islander women of reproductive age: findings from the Which Way? study. *Med J Aust* 2022; 217 (2 Suppl): S6-S18.
- 8 Kennedy M, Heris C, Barrett E, et al. Smoking cessation support strategies for Aboriginal and Torres Strait Islander women of reproductive age: findings from the Which Way? study. *Med J Aust* 2022; 217 (2 Suppl): S19-S26.
- 9 Wood L, France K, Hunt K, et al. Indigenous women and smoking during pregnancy: knowledge, cultural contexts and barriers to cessation. *Soc Sci Med* 2008; 66: 2378-2389.
- 10 Bovill M, Gruppetta M, Cadet-James Y, et al. Wula (Voices) of Aboriginal women on barriers to accepting smoking cessation support during pregnancy: findings from a qualitative study. *Women Birth* 2017; 31: 10-16.
- 11 Gould GS, Bovill M, Clarke MJ, et al. Chronological narratives from smoking initiation through to pregnancy of Indigenous Australian women: a qualitative study. *Midwifery* 2017; 52: 27-33.
- 12 Gould GS, Munn J, Avuri S, et al. "Nobody smokes in the house if there's a new baby in it": Aboriginal perspectives on tobacco smoking in pregnancy and in the household in regional NSW Australia. *Women Birth* 2013; 26: 246-253.
- 13 Passey ME, Gale JT, Sanson-Fisher RW. "It's almost expected": Rural Australian Aboriginal women's reflections on smoking initiation and maintenance: a qualitative study. *BMC Women's Health* 2011; 11: 1-12.
- 14 Passey ME, D'Este CA, Stirling JM, Sanson-Fisher RW. Factors associated with antenatal smoking among Aboriginal and Torres Strait Islander women in two jurisdictions. *Drug Alcohol Rev* 2012; 31: 608-616.
- 15 Gilligan C, Sanson-Fisher RW, D'Este C, et al. Knowledge and attitudes regarding smoking during pregnancy among Aboriginal and Torres Strait Islander women. *Med J Aust* 2009; 190: 557-561. <https://www.mja.com.au/journal/2009/190/10/knowledge-and-attitudes-regarding-smoking-during-pregnancy-among-aboriginal-and>
- 16 Panaretto KS, Mitchell MR, Anderson L, et al. Tobacco use and measuring nicotine dependence among urban Indigenous pregnant women. *Med J Aust* 2009; 191: 554-557. <https://www.mja.com.au/journal/2009/191/10/tobacco-use-and-measuring-nicotine-dependence-among-urban-indigenous-pregnant>
- 17 Gould GS, Bovill M, Pollock L, et al. Feasibility and acceptability of Indigenous Counselling and Nicotine (ICAN) QUIT in Pregnancy multicomponent implementation intervention and study design for Australian Indigenous pregnant women: a pilot cluster randomised step-wedge trial. *Addict Behav* 2019; 90: 176-190.
- 18 Passey M, Stirling J. Evaluation of 'Stop Smoking in its Tracks': an intensive smoking cessation program for pregnant Aboriginal women incorporating contingency-based financial rewards. *Public Health Res Pract* 2018; 28: 1-8.
- 19 Askew DA, Guy J, Lyall V, et al. A mixed methods exploratory study tackling smoking during pregnancy in an urban Aboriginal and Torres Strait Islander primary health care service. *BMC Public Health* 2019; 19: 1-10.
- 20 Eades SJ, Sanson-Fisher RW, Wenitong M, et al. An intensive smoking intervention for pregnant Aboriginal and Torres Strait Islander women: a randomised controlled trial. *Med J Aust* 2012; 197: 42-46. <https://www.mja.com.au/journal/2012/197/1/intensive-smoking-intervention-pregnant-aboriginal-and-torres-strait-islander>
- 21 Thomas DP, Davey M, Briggs VL, Borland R. Talking about the smokes: summary and key findings. *Med J Aust* 2015; 202 (10 Suppl): S3-S4. <https://www.mja.com.au/journal/2015/202/10/talking-about-smokes-summary-and-key-findings>
- 22 Bovill M. What ngidhi yinaaru nhal yayi (this woman told me) about smoking during pregnancy. *Med J Aust* 2020; 212: 358-359. <https://www.mja.com.au/journal/2020/212/8/what-ngidhi-yinaaru-nhal-yayi-woman-told-me-about-smoking-during-pregnancy>
- 23 Walter M, Andersen C. Indigenous statistics: a quantitative research methodology. New York: Routledge, 2013.
- 24 Smith LT. Decolonizing methodologies: research and Indigenous peoples. London: Zed Books, 1999.
- 25 Bovill M, Chamberlain C, Bennett J, et al. Building an Indigenous-led evidence base for smoking cessation care among Aboriginal and Torres Strait Islander women during pregnancy and beyond: research protocol for the Which Way? project. *Int J Environ Res Public Health* 2021; 18: 1-11.
- 26 United Nations. United Nations declaration on the rights of Indigenous peoples. <https://www.un.org/development/desa/indigenouspeoples/declaration-on-the-rights-of-indigenous-peoples.html> (viewed Feb 2022).
- 27 World Health Organization. WHO Framework Convention on Tobacco Control. Geneva: WHO, 2003. <https://fctc.who.int/who-fctc/overview> (viewed Feb 2022).
- 28 Aboriginal Health and Medical Research Council. AH&MRC ethical guidelines: key principles (2020) V2.0. <https://www.ahmrc.org.au/publication/ahmrc-guidelines-for-research-into-aboriginal-health-2020/> (viewed Jan 2022).
- 29 Huria T, Palmer SC, Pitama S, et al. Consolidated criteria for strengthening reporting of health research involving indigenous peoples: the CONSIDER statement. *BMC Med Res Methodol* 2019; 19: 173. ■

Smoking and quitting characteristics of Aboriginal and Torres Strait Islander women of reproductive age: findings from the Which Way? study

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The known: National priorities to reduce smoking rates during pregnancy among Aboriginal and Torres Strait Islander women are in place, but little published evidence exists to inform strategies to address these priorities.

The new: Aboriginal and Torres Strait Islander women are making quit attempts and 36% have used nicotine replacement therapy and/or stop-smoking medications. Age, measures of nicotine dependence and remoteness are not associated with sustained quitting. Quitting suddenly, rather than reducing cigarette consumption, is associated with sustained abstinence.

The implications: Health providers should support all women to quit smoking, and should avoid relying on measures of dependence and advising reduction. Uptake of medications to support cessation can change over time. Access to a range of cessation options is important to address addiction and uphold sovereignty and self-determination of quitting.

Australia is recognised as a leader in tobacco control internationally,¹ but tobacco is responsible for over a third (37%) of all Aboriginal and Torres Strait Islander adult deaths.² Smoking is intrinsically linked to colonisation, racism and dispossession.³ This includes the introduction of tobacco as an addictive commodity in lieu of wages and the provision of tobacco rations before Aboriginal and Torres Strait Islander peoples' engagement in the cash economy. National calls have been made for comprehensive approaches to support Aboriginal and Torres Strait Islander people to be smoke-free.⁴⁻⁷ Currently, 40.2% of Aboriginal and Torres Strait Islander people smoke daily, 38.6% of Aboriginal and Torres Strait Islander females smoke daily,⁸ and 43.0% of Aboriginal and Torres Strait Islander women smoke during pregnancy.⁹

Addressing smoking during pregnancy has been a key target in closing the gap in life expectancy for Aboriginal and Torres Strait Islander people. Smoking during pregnancy is the most significant modifiable risk factor for adverse pregnancy and long term health outcomes for mothers and their children.¹⁰ Smoking during pregnancy is linked to a range of poor infant health outcomes, including increased risk of cleft lip and palate,¹¹ ectopic pregnancy,¹² fetal growth restriction and low birth weight,¹³ preterm delivery,¹² spontaneous abortion (miscarriage),¹⁴ and stillbirth and perinatal mortality.^{15,16} Further, evidence links maternal smoking with later life outcomes for the child, including attention deficit hyperactivity disorder,¹⁷ obesity,¹⁸ asthma at age <2 years,¹⁹ and diabetes.²⁰ Currently, out of every ten Aboriginal and Torres Strait Islander women who smoke, only one successfully quits during pregnancy.⁹

Abstract

Objective: To describe smoking characteristics, quitting behaviour and other factors associated with longest quit attempt and the use of nicotine replacement therapy (NRT) and stop-smoking medication (SSM) in a population of Indigenous Australian women of reproductive age.

Design, setting and participants: A national cross-sectional survey of Aboriginal and Torres Strait Islander women aged 16–49 years who were smokers or ex-smokers was conducted online during the period July to October 2020.

Main outcome measures: Quitting experience: attempt to cut down, time since last quit attempt, longest period without smoking, attempt to cut down during last quit attempt, any use of NRT and/or SSM.

Results: Most of the 428 participating women (302 [70.6%]) reported using an Aboriginal health service. Younger women (16–20-year-olds) smoked fewer cigarettes daily (24/42 [57.1%], 0–5 cigarettes per day), waited longer to smoke after waking (20/42 [47.6%], > 60 minutes after waking), and were categorised as low smoking dependency compared with those aged 35 years and over. One-third of women (153 [35.7%]) had ever used NRT and/or SSM. A greater proportion of older women (35–49-year-olds) had sustained a quit attempt for years (62/149 [45.6%]) and reported trying NRT and/or SSM (78/149 [52.4%]) than women in younger age groups. Quitting suddenly rather than gradually was significantly associated with sustained abstinence (prevalence ratio, 1.27 [95% CI, 1.10–1.48]). Among women who had never used NRT or SSM, most (219/275 [79.6%]) reported reasons for this in the category of attitudes and beliefs. NRT and SSM use was also more likely among women who were confident talking to their doctor about quitting (odds ratio, 2.50 [95% CI, 1.23–5.10]) and those who received most of their information from a health professional (odds ratio, 1.71 [95% CI, 1.11–2.63]).

Conclusion: Aboriginal and Torres Strait Islander women want to quit smoking and are making attempts to quit. Quitting suddenly, rather than reducing cigarette consumption, is associated with increased sustained abstinence. Health providers can enable access and uptake of NRT and/or SSM and should recognise that NRT and/or SSM use may change over time. Consistent messaging, frequent offers of smoking cessation support, and access to a range of smoking cessation supports should be provided to Aboriginal and Torres Strait Islander women to enable them to be smoke-free.

Implementing appropriate supports for Aboriginal and Torres Strait Islander women of reproductive age to be smoke-free (to prevent uptake of smoking and promote smoking abstinence before, during and after pregnancy) is crucial for reducing rates of smoking during pregnancy and improving health outcomes for mothers and children. However, evidence on effective tobacco control that is specific to Aboriginal and Torres Strait Islander people (including pregnant women) is limited, and this has impeded clinical and public health practice.^{3,4,21} The rates

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of smoking during pregnancy among Aboriginal and Torres Strait Islander women are decreasing, but there is substantial room for improvement.⁹ Research has revealed high motivation to quit smoking, but also barriers including inconsistent health messaging and advice offered during pregnancy, including advice to reduce cigarette consumption and not specific advice to quit.²²

Medications to support smoking cessation include nicotine replacement therapy (NRT), varenicline and bupropion. Use of evidence-based medications combined with behavioural counselling is effective to support quitting; use of medications improves the rate of successful quitting by up to 2.88 times.²³ The Royal Australian College of General Practitioners and Royal Australian and New Zealand College of Obstetricians and Gynaecologists recommend that, for those unable to quit during pregnancy with behavioural support alone, clinicians could offer NRT.²⁴

However, research indicates that use of smoking cessation medication among Aboriginal and Torres Strait Islander smokers is lower than that for non-Indigenous smokers (NRT, 37% versus 59%; varenicline, 11% versus 29%; bupropion, 1% versus 2%).^{25,26} Barriers to use of smoking cessation medications include, but are not limited to, cost.²⁵ As a result, NRT, bupropion and varenicline are subsidised through the Pharmaceutical Benefits Scheme (PBS). This includes the Closing the Gap PBS Co-payment Program and the Remote Area Aboriginal Health Service Program,²⁷ which offer two free courses of medications per year. Most Aboriginal community controlled health services (78%) report providing NRT at low or no cost,²⁸ and 74% of smokers report receiving NRT at low or no cost.²⁷ This is expected to improve accessibility and uptake.²⁹ However, there is limited evidence on how smoking cessation medications are being offered, accepted and used among Aboriginal and Torres Strait Islander women, including during pregnancy.

The Which Way? project aims to improve care relating to smoking cessation by developing an Indigenous-led evidence base for smoking cessation to support Aboriginal and Torres Strait Islander women to be smoke-free during pregnancy and beyond.³⁰ In this article, we:

- describe Aboriginal and Torres Strait Islander women's smoking and quitting behaviour;
- explore concurrence between measures of nicotine dependence — specifically, relationships between Heaviness of Smoking Index (HSI) scores, frequency of urge to smoke (hereafter referred to as urge frequency), and strength of urge to smoke (hereafter referred to as urge strength);
- explore factors associated with longest successful quit attempt; and
- explore factors associated with use of cessation support medications (NRT, bupropion and varenicline).

Methods

Research team

The research methods and the research team members' world views have influence on: perspectives, values, and conduct of the Which Way? study; levels of engagement in the study; and interpretation of the study the findings.^{31,32} The study was conceptualised and led by one of us (MK, Wiradjuri woman), in partnership with Aboriginal communities and women (HL,

SB). Our team brings together Aboriginal and Torres Strait Islander lived experience (MK, CC, HL, SB), Indigenous lived experience (RM), and expertise in Aboriginal health services (PH, HL, SB), Indigenous tobacco research (MK, CC, CH, RM) and epidemiology (CH, EB, AM, RM). Which Way? is co-owned and governed by Aboriginal partnering communities.³⁰ Aboriginal and Torres Strait Islander people were involved in all aspects of the study, from survey development through to manuscript writing and dissemination of the study findings. Which Way? used integrated knowledge translation embedding knowledge users to ensure Aboriginal and Torres Strait Islander community and health care delivery relevance, privileging Indigenous knowledge and scientific excellence.

The Which Way? study

A cross-sectional survey targeting Aboriginal and Torres Strait Islander women of reproductive age (16–49 years) who were smokers or ex-smokers was conducted online during the period July to October 2020. The full survey is available online (Supporting Information, Table 1).

Survey items were informed by previous publications (including a report on a national tobacco survey),³³ validated measures for smoking and quitting, and Aboriginal knowledge through Which Way? project partners (including female Aboriginal health workers). An iterative co-design process was used, in which one of us (MK, Aboriginal researcher) and Aboriginal community partners informed the survey item categories. The preliminary survey was then reviewed by the research team to establish face and content acceptability and validity, and later pilot tested for feasibility and acceptability with 15 Aboriginal women known to the research team.

Sampling frame

The survey was promoted through social media using paid and organic advertisements and promoted by Aboriginal community partners. We acknowledge that Aboriginal and Torres Strait Islander people are avid users of social media, and this is commonly leveraged for health and community programs.³⁴ To our knowledge, using social media for research recruitment has not previously been undertaken with Aboriginal and Torres Strait Islander women of reproductive age in this context, but has been used in Australia and overseas in health research.³⁵

Demographics

Demographic variables that we collated from survey responses included Aboriginal and/or Torres Strait Islander status, age group (16–20, 21–34 or 35–49 years), number of children at home (none, 1–2, or 3 or more), use of an Aboriginal Health Service (yes or no), highest level of education (did not complete high school [up to Year 11], completed high school and/or currently studying, or completed post-school qualifications), remoteness (major city or regional/remote area), and socio-economic status (greatest, moderate or least area-level disadvantage). The latter two measures were derived from postcodes using the Australian Bureau of Statistics Australian Statistical Geography Standard Remoteness Structure (based on the Accessibility and Remoteness Index of Australia) and the Socio-Economic Indexes for Areas 2016 Index of Relative Socio-economic Disadvantage, respectively.

Smoking status

Smoking status included current smoking status (current smoker or ex-smoker [any intensity]), smoking intensity in cigarettes per

day (CPD) (0–5, 6–10 or ≥ 11 CPD), HSI score,^{36,37} urge frequency³⁸ and urge strength.³⁹ The HSI score was used to categorise participants at high or moderate dependency (combined owing to few participants) or low dependency.

Quitting behaviour

Current smokers were asked whether they had tried to cut down in the previous month (yes or no). Current smokers and ex-smokers were asked about the duration of their longest quit attempt (categorised as unsustainable [duration of hours or weeks] or sustained [duration of months or years]) and whether their last quit attempt was a sudden stop or a gradual cut down of cigarettes. Experiences of quitting were assessed based on definitions provided in previous publications.^{40–42} Quitting suddenly can be understood as sudden or abrupt cessation of smoking, while quitting gradually refers to an attempt to quit smoking over a period (ie, reduce tobacco use or consumption, and then quit). Women were also asked about the amount of time since their last quit attempt, attempt to cut down in their last quit attempt and their use of stop-smoking medication (SSM).

We used two classifications of smoking status for all participants: current smoker versus ex-smoker, and daily/ex-daily smoker versus occasional/ex-occasional smoker. The first was used to understand differences in use of NRT and SSM by those who had successfully quit smoking, and the second was to explore whether NRT and SSM use differed between those who smoke daily and those who smoke less frequently. For current smokers, we also used the following indicators of nicotine dependence. This included smoking intensity (0–5, 6–10 or ≥ 11 CPD); time to first cigarette after waking (> 60 , 31–60, 6–30 or ≤ 5 minutes), HSI score (low, moderate or heavy [calculated from smoking intensity and time to first cigarette after waking]),³⁴ urge frequency in the previous 24 hours (low or high), and urge strength (low or high).

All women were asked whether they feel confident talking to their doctor about quitting (reported as yes or no, with those who selected “not relevant” set as missing). Women were asked to select from a list of ten options of where they receive most of their information about smoking and quitting (with multiple responses allowed). Four separate variables were developed to categorise women based on whether they did, or did not, select each of the aggregated categories of health professionals, social marketing, word of mouth and online.

Stop-smoking medication

The primary SSM outcome of interest was whether the women had ever used (versus never used) NRT and/or SSM. Types of NRT and SSM used and reasons for never using them were secondary outcomes of interest. Women were asked to select which types of medications they had used from a list of NRT and SSM options (with multiple responses allowed), and we report these individually and aggregated into four categories: NRT only, SSM only, both NRT and SSM, and neither NRT nor SSM. Women who had never used NRT or SSM were asked to select from a list of reasons for not using NRT or SSM (with multiple responses allowed). The five most selected reasons are reported individually within the full list, and we also report these aggregated into four categories: attitudes and beliefs, barriers, not quitting, and pregnancy.

Statistical analysis

Analysis was conducted by an Indigenous-led statistical team with direction and oversight from the Which Way? governance committee, an Aboriginal and Torres Strait Islander governance

group. All analyses were conducted in Stata 16 (StataCorp). Demographic characteristics of women were quantified for the full sample. Distribution of smoking characteristics were quantified by remoteness groups (regional and remote areas combined due to small numbers) and age groups. χ^2 tests were used to test for differences between groups.

To explore concurrence between measures of nicotine dependence, the relationship between HSI score (low dependence versus moderate and high dependence combined), urge frequency and urge strength was assessed using the phi (ϕ) coefficient. Where estimated for two binary variables (as in the case here), this is equivalent to the Pearson correlation coefficient. A ϕ coefficient of 0 indicates no relationship, 1 indicates a perfect positive relationship, and -1 indicates a perfect negative relationship.

Associations between a priori selected demographic and smoking characteristics and sustained abstinence were examined. Characteristics selected were those conceptually thought to be linked to abstinence, restricted to available data, including quit method, use of Aboriginal health service, use of SSM, remoteness, HSI score, urge frequency and urge strength. The prevalence of sustained abstinence (ie, longest quit attempt lasting months or years) by each characteristic was calculated. Prevalence ratios (PRs) and 95% confidence intervals (CIs) for sustained abstinence by all characteristics were calculated using log binomial regression. Associations were run unadjusted and adjusted for age group and remoteness category.

Logistic regression was used to assess associations between demographic factors or characteristics and the use of NRT or SSM, reported as unadjusted odds ratios (ORs) (bivariate analysis) and 95% CIs. Logistic regression was also used to explore relationships between demographic variables, the types of NRT and SSM used, and reasons for never using them. An alpha level of 0.05 was the threshold for statistical significance (significance level), and a statistically significant relationship is reported where the P value is less than 0.05. For all analyses, data points with five or fewer responses are suppressed to protect confidentiality.

Exclusion criteria

Participants were excluded from all analyses if they did not meet the inclusion criteria (self-identifying as an Aboriginal and/or Torres Strait Islander woman, aged 16–49 years, and a current or ex-smoker) or if their survey was incomplete.

Ethics

The Which Way? study was developed by, and is co-owned with, Aboriginal communities in regional and urban New South Wales. The project upholds ethics principles of research with Aboriginal and Torres Strait Islander peoples in line with the National Health and Medical Research Council's *Guidelines for ethical conduct in Aboriginal and Torres Strait Islander health research*, the Aboriginal Health and Medical Research Council's *AH&MRC ethical guidelines: key principles (2020) V2.0* and the international CONSIDER statement. Ethics approvals were obtained from the Aboriginal Health and Medical Research Council (1603/19) and the University of Newcastle (H-2020-0092). All participants provided informed consent.

Results

The survey was started by 865 individuals, of whom 607 were eligible. Of those eligible, 179 did not complete the survey,

1 Demographic and smoking characteristics of participants included in the analysis (n = 428)

	Number (percentage)*
Age	
16–20 years	61 (14.3%)
21–34 years	218 (50.9%)
35–49 years	149 (34.8%)
Mean ± SD age in years	30.5 ± 7.9
Number of children	
None	106 (24.8%)
1–2	178 (41.6%)
3 or more	144 (33.6%)
Highest level of education	
Up to year 9	46 (10.8%)
Year 10–11	115 (26.9%)
Year 12	85 (19.9%)
Current student at university/ TAFE or apprentice	84 (19.6%)
Trade certificate	44 (10.3%)
University degree	54 (12.6%)
Remoteness	
Urban	212 (49.5%)
Regional	187 (43.7%)
Remote	29 (6.8%)
State or territory	
New South Wales	191 (44.6%)
Queensland	112 (26.2%)
Western Australia	38 (8.9%)
Northern Territory	12 (2.8%)
Victoria	44 (10.3%)
South Australia	20 (4.7%)
Tasmania	6 (1.4%)
Australian Capital Territory	5 (1.2%)
Aboriginal and Torres Strait Islander identity	
Aboriginal	401 (93.7%)
Torres Strait Islander	8 (1.9%)
Aboriginal and Torres Strait Islander	19 (4.4%)
Use of Aboriginal health service	
Yes	302 (70.6%)
No	126 (29.4%)
Smoking status	
Current smoker, ≥ 1 CPD	215 (50.2%)
Current smoker, < 1 CPD	54 (12.6%)
Ex-smoker, ≥ 1 CPD	139 (32.5%)
Ex-smoker < 1 CPD	20 (4.7%)

Continues

1 Demographic and smoking characteristics of participants included in the analysis (n = 428) (Continued)

	Number (percentage)*
Ever tried quitting	
Yes	386 (90.2%)
No	42 (9.8%)
Ever used NRT and/or SSM	
Yes	153 (35.7%)
No	275 (64.3%)

*Data are number (percentage) unless otherwise specified. CPD = cigarettes per day. NRT = nicotine replacement therapy. SD = standard deviation. SSM = stop-smoking medication. TAFE = Technical and Further Education. ◆

leaving 428 Aboriginal and Torres Strait Islander women who were included in the analyses. Demographic and smoking characteristics of those included are shown in Box 1. Their mean age was 30.5 years, 49.5% resided in urban areas, 43.7% resided in regional areas, 44.6% resided in NSW, and 26.2% in Queensland. Most women (70.6%) reported using an Aboriginal health service, 62.9% were current smokers, and 90.2% had ever tried quitting.

Smoking and quitting characteristics of women residing in urban areas and women residing in regional and remote areas were generally similar. Among current smokers, those in regional and remote areas reported low urge frequency (62.0%) more often than those in urban areas (43.2%). About one-third of women (30.1%) in regional and remote areas reported having ever used SSM, compared with 41.5% of women in urban areas (Supporting Information, Table 2).

Among women who smoked, younger women (aged 16–20 years) tended to smoke fewer cigarettes daily (57.1% smoked 0–5 CPD) and older women (aged 35–49 years) tended to smoke more cigarettes daily (48.2% smoked ≥ 11 CPD) (Box 2). A higher proportion of younger women (47.6%) than older women (14.5%) reported waiting over 60 minutes after waking to smoke. These findings coincide with greater proportions of women in the two younger age groups classified as having a low HSI score (61.9% of those aged 16–20 years, 41.0% of those aged 21–34 years) compared with older women (22.9% of those aged 35–49 years). In addition, more older women reported ever trying SSMs (52.4%) than younger women (11.5%). Of women who made a quit attempt, greater proportions of women in the two older age groups had sustained the attempt for years (45.6% and 38.8% in those aged 35–49 years and 21–34 years, respectively) compared with younger women.

Moderate positive relationships were found between HSI categories and urge frequency ($\varphi = 0.38$) and HSI categories and urge strength ($\varphi = 0.30$), while a strong relationship was found between urge frequency and urge strength ($\varphi = 0.64$). However, some discrepancies in categorisation of women existed; 32.7% of women with low dependence based on HSI score had high urge strength (9.6%), high urge frequency (7.7%), or both (15.4%); 50.3% of women with moderate or high dependency based on HSI score had low urge strength (12.7%), low urge frequency (5.5%), or both (32.1%) (Supporting Information, Table 3).

Our analysis of associations with sustained abstinence is shown in Box 3. Quitting suddenly, rather than gradually, was significantly associated with sustained abstinence after adjusting for age and remoteness (PR, 1.27 [95% CI, 1.10–1.48]).

2 Smoking characteristics of participants included in the analysis, by age group (n = 428)

	Number (percentage)		
Current smokers only (n = 269)	16–20 years (n = 42)	21–34 years (n = 144)	35–49 years (n = 83)
Smoking intensity*			
0–5 CPD	24 (57.1%)	48 (33.3%)	15 (18.1%)
6–10 CPD	12 (28.6%)	52 (36.1%)	28 (33.7%)
≥ 11 CPD	6 (14.3%)	44 (30.6%)	40 (48.2%)
Time to first cigarette after waking*			
> 60 minutes	20 (47.6%)	40 (27.8%)	12 (14.5%)
31–60 minutes	7 (16.7%)	24 (16.7%)	17 (20.5%)
6–30 minutes	9 (21.4%)	55 (38.2%)	29 (34.9%)
≤ 5 minutes	6 (14.3%)	25 (17.4%)	25 (30.1%)
Heaviness of Smoking Index score*			
Low	26 (61.9%)	59 (41.0%)	19 (22.9%)
Moderate	16 (38.1%)	62 (43.1%)	45 (54.2%)
High	0	23 (16.0%)	19 (22.9%)
Types of smoking products used (multi-selection)			
Factory-rolled cigarettes	27 (64.3%)	99 (68.8%)	67 (80.7%)
Roll-your-own cigarettes*	23 (54.8%)	65 (45.1%)	27 (32.5%)
E-cigarettes/other	7 (16.7%)	11 (7.6%)	8 (9.6%)
Urge frequency in last 24 hours			
Low	24 (57.1%)	78 (54.2%)	40 (48.2%)
High	18 (42.9%)	66 (45.8%)	43 (51.8%)
Urge strength in last 24 hours			
Low	30 (71.4%)	77 (53.5%)	45 (54.2%)
High	12 (28.6%)	67 (46.5%)	38 (45.8%)
Attempted to cut down in last month			
Yes	29 (69.0%)	93 (64.6%)	52 (62.7%)
No	13 (31.0%)	51 (35.4%)	31 (37.3%)
Current smokers and ex-smokers (n = 428)	16–20 years (n = 61)	21–34 years (n = 218)	35–49 years (n = 149)
Use of NRT and/or SSM*			
Yes	7 (11.5%)	68 (31.2%)	78 (52.3%)
No	54 (88.5%)	150 (68.8%)	71 (47.7%)
Time since last quit attempt*			
Days	8 (13.1%)	30 (13.8%)	11 (7.4%)
Weeks	15 (24.6%)	37 (17.0%)	18 (12.1%)
Months	27 (44.3%)	133 (61.0%)	107 (71.8%)
Never	11 (18.0%)	18 (8.3%)	13 (8.7%)
Longest period of not smoking (n = 381)*†			
Years	< 5‡	76 (38.8%)	62 (45.6%)
Months	22 (44.9%)	55 (28.1%)	43 (31.6%)
Weeks	10 (20.4%)	27 (13.8%)	10 (7.4%)
Days	13 (26.5%)	28 (14.3%)	19 (14.0%)
Hours	< 5‡	10 (5.1%)	< 5‡
Method used in last quit attempt (n = 386)†			
Stopped suddenly	34 (68.0%)	114 (57.0%)	82 (60.3%)
Cut down gradually	16 (32.0%)	86 (43.0%)	54 (39.7%)

* Statistically significant difference between groups ($P < 0.05$). † For those who had attempted to quit. ‡ Fewer than five responses; data suppressed to protect confidentiality. CPD = cigarettes per day. NRT = nicotine replacement therapy. SSM = stop-smoking medication. ◆

3 Prevalence and prevalence ratios of sustained abstinence (longest quit attempt of months or years) by demographic and smoking characteristics for included participants who had attempted to quit

	Number (percentage) with sustained abstinence	Unadjusted sustained abstinence PR (95% CI)	Adjusted sustained abstinence PR (95% CI)*
Current smokers and ex-smokers (n = 381)			
Method used in last quit attempt [†]			
Cut down gradually	90/151 (59.6%)	1 (Ref)	1 (Ref)
Stopped suddenly	171/230 (74.3%)	1.25 (1.07–1.45)	1.27 (1.10–1.48)
Use of Aboriginal health services			
No	77/109 (70.6%)	1 (Ref)	1 (Ref)
Yes	184/272 (67.6%)	0.96 (0.83–1.11)	0.93 (0.81–1.07)
Use of NRT and/or SSM			
No	155/233 (66.5%)	1 (Ref)	1 (Ref)
Yes	106/148 (71.6%)	1.08 (0.94–1.23)	1.02 (0.89–1.17)
Remoteness			
Urban	134/189 (70.9%)	1 (Ref)	1 (Ref)
Regional	109/166 (65.7%)	0.93 (0.80–1.07)	0.95 (0.83–1.09) [‡]
Remote	18/26 (69.2%)	0.98 (0.74–1.28)	1.04 (0.81–1.34) [‡]
Current smokers only (n = 231)			
Heaviness of Smoking Index score			
High	23/38 (60.5%)	1 (Ref)	1 (Ref)
Moderate	49/101 (48.5%)	0.80 (0.58–1.11)	0.83 (0.60–1.14)
Low	53/92 (57.6%)	0.95 (0.70–1.30)	1.04 (0.76–1.42)
Urge frequency in last 24 hours			
High	59/110 (53.6%)	1 (Ref)	1 (Ref)
Low	66/121 (54.5%)	1.02 (0.80–1.29)	1.05 (0.83–1.34)
Urge strength in last 24 hours			
High	56/101 (55.4%)	1 (Ref)	1 (Ref)
Low	69/130 (53.1%)	0.96 (0.75–1.21)	1.00 (0.79–1.26)

* Adjusted for age group and remoteness unless otherwise specified. † Statistically significant ($P < 0.05$). ‡ Adjusted for age group only. NRT = nicotine replacement therapy. PR = prevalence ratio. Ref = reference category. SSM = stop-smoking medication. ◆

Use of Aboriginal health services, use of NRT and/or SSM, remoteness of residence, HSI score, urge frequency and urge strength were not associated with length of abstinence.

Use of cessation aids and associated factors

Over one-third of women had ever used NRT and/or SSM (35.7%) (Box 1), and there was variation in NRT and SSM use across different demographics (Box 4). NRT and SSM use was significantly more likely in the two older age groups compared with the youngest age group (21–34 years: OR, 3.50 [95% CI, 1.51–8.08]; 35–49 years: OR, 8.47 [3.62–19.84]), and less likely in women residing in regional and remote areas compared with those residing in major cities (OR, 0.61 [95% CI, 0.41–0.90]), but there were no other significant demographic predictors of NRT and SSM use (Box 5). Similar proportions of women had used products across the broad NRT and SSM categories (14.5% [62/428] NRT only, 8.6% [37/428] SSM only, 12.6% [54/428] both NRT and SSM) (Box 6). The most used products were nicotine patches (23.1% [99/428]), varenicline (20.1% [86/428]) and nicotine gum (10.7% [46/428]). The median number of NRT and SSM

types used by women who had ever used these products was 2 (interquartile range, 1).

Among those who had never used NRT or SSM, the most frequently reported reasons were in the category of attitudes and beliefs, with 79.6% of women in this group (219/275) selecting a reason in this category (Box 6). People living in regional and remote areas were significantly less likely to select a reason in this category than those living in urban areas (OR, 0.50 [95% CI, 0.27–0.94]). Women in older age groups were significantly less likely to select a reason in the barriers category than those aged < 21 years (21–34 years: OR, 0.51 [95% CI, 0.27–0.96]); 35–49 years: OR, 0.41 [95% CI, 0.20–0.86]), as were those in the moderate disadvantage category compared with those in the greatest disadvantage category (OR, 0.50 [95% CI, 0.29–0.88]). Those who were least disadvantaged were more likely to say they were not ready to quit or that NRT was not relevant to them (OR, 2.61 [1.06–6.44]).

The five most frequently selected individual reasons for not using NRT or SSM were: wanting to quit on my own without help (31.6% [87/275]); cost (27.3% [75/275]); prefer not to use

4 Use of NRT and/or SSM in different demographic characteristic categories

	Number/total (percentage) who had ever used NRT and/ or SSM (n = 153)
Age	
16–20 years	7 (4.6%)
21–34 years	68 (44.4%)
35–49 years	78 (51.0%)
Number of children	
None	33 (21.6%)
1–2	64 (41.8%)
3 or more	56 (36.6%)
Use of Aboriginal health service	
No	39 (25.5%)
Yes	114 (74.5%)
Highest level of education	
Did not complete high school	64 (41.8%)
Completed high school and/or currently studying	52 (34.0%)
Completed tertiary education/other post-school qualifications	37 (24.2%)
Remoteness	
Major cities	88 (57.5%)
Regional/remote	65 (42.5%)
Socio-economic status	
Greatest area-level disadvantage	76 (50.0%)
Moderate area-level disadvantage	57 (37.5%)
Least area-level disadvantage	19 (12.5%)

NRT = nicotine replacement therapy. SSM = stop-smoking medication. ♦

medicines (26.9% [74/275]); concerns about side effects (20.0% [55/275]); and think it's better to quit cold turkey (19.6% [54/275]). Women who had three or more children at home were significantly less likely to select that they wanted to quit on their own, without help (OR, 0.40 [95% CI, 0.20–0.79]). No other differences by demographic characteristics were identified in the top five reasons.

There were several factors related to smoking characteristics and quitting behaviour that were significantly associated with NRT and SSM use (Box 5). Occasional and ex-occasional smokers were significantly less likely to have used NRT and/or SSM (OR, 0.20 [95% CI, 0.10–0.42]) compared with daily and ex-daily smokers. Those who smoked more frequently and those with higher levels of nicotine dependence were more likely to have ever used NRT or SSM (6–10 CPD: OR, 2.52 [95% CI, 1.23–5.18]; ≥ 11 CPD: OR, 7.47 [95% CI, 3.67–15.18]; time to first cigarette after waking 6–30 minutes: OR, 2.99 [95% CI, 1.46–6.11], and time to first cigarette after waking ≤ 5 minutes: OR, 4.78 [95% CI, 2.18–10.48]; moderate HSI score: OR, 2.44 [95% CI, 1.34–4.46]; heavy HSI: OR, 8.82 [95% CI, 3.92–19.83]; high urge frequency: OR, 2.08 [95% CI, 1.25–3.44]). Those who had tried to cut down gradually

in their last quit attempt were more likely to have ever used NRT and/or SSM than those who had tried to stop smoking suddenly (OR, 3.04 [95% CI, 1.98–4.65]). NRT and SSM use was also more likely among women who were confident talking to their doctor about quitting (OR, 2.50 [95% CI, 1.23–5.10]) and who received most of their information from a health professional (OR, 1.71 [95% CI, 1.11–2.63]).

Discussion

Which Way? is among the first Indigenous-led and governed studies centred on reporting on smoking and quitting behaviour among Aboriginal and Torres Strait Islander women across diverse nation groups as a national sample, and exploring associations with sustained abstinence and use of cessation medications. Social media was used to recruit participants to complete a community-developed online survey, which had a high completion rate (70.5%). This suggests that conducting this type of research is feasible and acceptable, especially considering that the survey was rolled out during the coronavirus 2019 (COVID-19) pandemic and taking into account the safety of potential participants.

Smoking and quitting behaviour

Our study has shown that Aboriginal and Torres Strait Islander women of reproductive age are making quit attempts and are successfully quitting. Suddenly quitting, rather than reducing, was associated with sustained abstinence. Smoking characteristics and quitting behaviour were similar for women residing in urban and regional areas, coinciding with evidence on the wider Aboriginal and Torres Strait Islander community.⁴³ Over 60% of women reported making a quit attempt in the past month, with 70.9% of women in urban areas and 65.7% of women in regional areas maintaining cessation for months or years. Younger women smoked fewer cigarettes per day and delayed the first cigarette of the day compared with older women. Older women reported greater sustained quit attempts and more use of cessation aids. Some of the differences reported by age are likely to reflect differences in smoking behaviour across the life course.⁴⁴

These findings are consistent with the vast majority of Aboriginal and Torres Strait Islander smokers wanting to quit, wishing they never took up smoking, and making quit attempts.⁴⁵ For many women, pregnancy motivates a change in tobacco use,^{46,47} including frequent quit attempts.²² Previous and current interventions are providing Aboriginal and Torres Strait Islander women with cessation aids and supports during pregnancy,^{40,48–50} which may have influenced the results among older women.

Maternal care has been identified as the optimal setting to support Aboriginal and Torres Strait Islander women to quit during pregnancy.⁵¹ However, “proportionate universalism” needs to be considered, whereby maternal care and general tobacco control is accompanied by additional measures for priority settings and populations. Specifically, appropriately resourced, holistic, women-centred smoking cessation care, including relevant supports to reduce uptake and prevent relapse, is required. This should include Aboriginal health service leadership in developing appropriate supports and resources. Over 70% of Aboriginal and Torres Strait Islander women reported Aboriginal health services as their preferred service provider.⁵² These services should be resourced

5 Analysis of factors associated with use of NRT and/or SSM

	Number/total (percentage) who had ever used NRT and/or SSM	Odds ratio (95% CI) for ever using NRT and/or SSM
Demographic factors (current smokers and ex-smokers; n = 428)		
Age		
16–20 years	7/61 (11.5%)	1 (Ref)
21–34 years	68/218 (31.2%)	3.50 (1.51–8.08)*
35–49 years	78/149 (52.3%)	8.47 (3.62–19.84)*
Number of children		
None	33/106 (31.1%)	1 (Ref)
1–2	64/178 (36.0%)	1.24 (0.74–2.07)
3 or more	56/144 (38.9%)	1.41 (0.83–2.39)
Use of Aboriginal health service		
No	39/126 (31.0%)	1 (Ref)
Yes	114/302 (37.7%)	1.35 (0.87–2.11)
Highest level of education		
Did not complete high school	64/161 (39.8%)	1 (Ref)
Completed high school and/or currently studying	52/169 (30.8%)	0.67 (0.43–1.06)
Completed tertiary education/other post-school qualifications	37/98 (37.8%)	0.92 (0.55–1.54)
Remoteness		
Major cities	88/212 (41.5%)	1 (Ref)
Regional/remote	65/216 (30.1%)	0.61 (0.41–0.90)*
Socio-economic status		
Greatest area-level disadvantage	76/211 (36.0%)	1 (Ref)
Moderate area-level disadvantage	57/149 (38.3%)	1.1 (0.71–1.70)
Least area-level disadvantage	19/65 (29.2%)	0.73 (0.40–1.34)
Smoking characteristics and quitting behaviour (current smokers and ex-smokers; n = 428)		
Smoking status		
Current smoker	97/269 (36.1%)	1 (Ref)
Ex-smoker	56/159 (35.2%)	0.96 (0.64–1.45)
Smoking status		
Daily/ex-daily	144/354 (40.7%)	1 (Ref)
Occasional/ex-occasional	9/74 (12.2%)	0.20 (0.10–0.42)*
Longest period of not smoking [†]		
Unsustained attempt (hours or weeks)	44/125 (35.2%)	1 (Ref)
Sustained abstinence (months or years)	106/261 (40.6%)	1.26 (0.81–1.96)
Method used in last quit attempt		
Stopped suddenly	65/230 (28.3%)	1 (Ref)
Cut down gradually	85/156 (54.5%)	3.04 (1.98–4.65)*
Confident talking to doctor about quitting		
No	11/50 (22.0%)	1 (Ref)
Yes	110/266 (41.4%)	2.50 (1.23–5.10)*

Continues

5 Analysis of factors associated with use of NRT and/or SSM (Continued)

	Number/total (percentage) who had ever used NRT and/or SSM	Odds ratio (95% CI) for ever using NRT and/or SSM
Sources of most information about smoking and quitting (multi-selection)		
Health professionals		
Not selected	42/150 (28.0%)	1 (Ref)
Selected	111/278 (39.9%)	1.71 (1.11–2.63)*
Social marketing		
Not selected	98/258 (38.0%)	1 (Ref)
Selected	55/170 (32.4%)	0.78 (0.52–1.17)
Word of mouth		
Not selected	108/278 (38.8%)	1 (Ref)
Selected	45/150 (30.0%)	0.67 (0.44–1.03)
Online		
Not selected	118/327 (36.1%)	1
Selected	35/101 (34.7%)	0.94 (0.59–1.50)
Smoking characteristics and quitting behaviour (current smokers only; n = 269)		
Smoking intensity		
0–5 CPD	14/87 (16.1%)	1 (Ref)
6–10 CPD	30/92 (32.6%)	2.52 (1.23–5.18)*
≥ 11 CPD	53/90 (58.9%)	7.47 (3.67–15.18)*
Time to first cigarette after waking		
> 60 minutes	14/72 (19.4%)	1 (Ref)
31–60 minutes	14/48 (29.2%)	1.71 (0.73–4.00)
6–30 minutes	39/93 (41.9%)	2.99 (1.46–6.11)*
≤ 5 minutes	30/56 (53.6%)	4.78 (2.18–10.48)*
Heaviness of Smoking Index score		
Low	21/104 (20.2%)	1 (Ref)
Moderate	47/123 (38.2%)	2.44 (1.34–4.46)*
Heavy	29/42 (69.0%)	8.82 (3.92–19.83)*
Urge frequency in last 24 hours		
Low	40/142 (28.2%)	1 (Ref)
High	57/127 (44.9%)	2.08 (1.25–3.44)*
Urge strength in last 24 hours		
Low	48/152 (31.6%)	1 (Ref)
High	49/117 (41.9%)	1.56 (0.95–2.58)
Attempted to cut down in last month		
No	34/95 (35.8%)	1 (Ref)
Yes	63/174 (36.2%)	1.02 (0.60–1.71)

* Statistically significant ($P < 0.05$). † For those who had attempted to quit. CPD = cigarettes per day. NRT = nicotine replacement therapy. Ref = reference category. SSM = stop-smoking medication. ◆

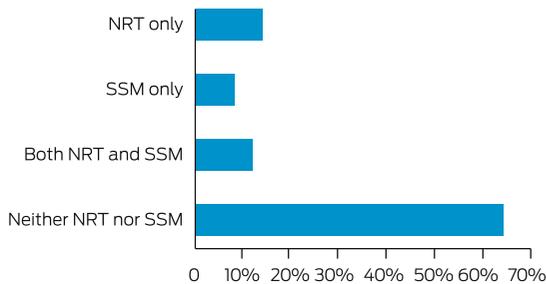
appropriately to offer tailored supports for Aboriginal and Torres Strait Islander women to be smoke-free before, during and after pregnancy.

Research has detailed health professionals advising Aboriginal and Torres Strait Islander women to reduce tobacco use, rather than quit.²² Our study found a statistically significant association

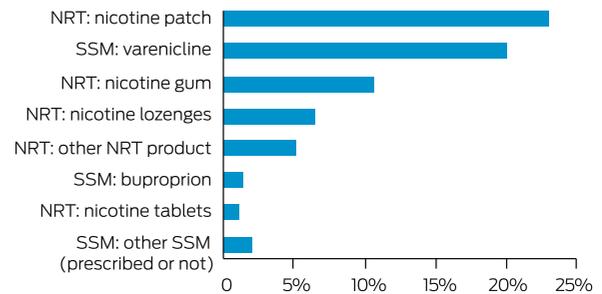
between sudden quitting and sustained abstinence. These findings support the call for health providers to advise quitting, rather than reducing consumption.⁴¹ Previous research has shown that maternal health staff lack the confidence to advise quitting,⁵³ which could be influencing the continued high rates of tobacco use during pregnancy.

6 Use of NRT and/or SSM and reasons for not using cessation aids*

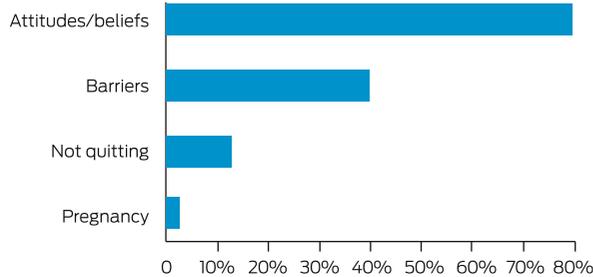
Proportion of women who had or had not used NRT and/or SSM (of all participants included in analysis; n = 428)



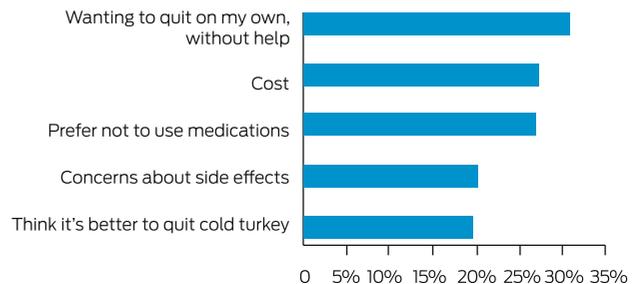
Proportion of women who had tried each type of NRT or SSM (of all participants included in analysis; n = 428)



Four categories of reasons for not using cessation aids (of those who had not used them; n = 275)



Top five reasons for not using cessation aids (of those who had not used them; n = 275)



NRT = nicotine replacement therapy, SSM = stop-smoking medication. * Multiple reasons were allowed.

Although HSI score, urge frequency and urge strength are reported as predictors of abstinence in the general population,^{38,39,54} our research has shown that there was variance in categorical measures in our study population (such as low HSI scores among women with high urge strength and/or high urge frequency) and that urge frequency and urge strength were not predictors of abstinence. Similarly, previous research with Aboriginal and Torres Strait Islander smokers has shown that previous quit attempts, frequent quit attempts and dependence are not associated with sustained abstinence.⁵⁵ However, dependence measures have been shown to be associated with wanting to quit.⁵⁶ Encouragingly, these results indicate that Aboriginal and Torres Strait Islander women can and will quit at any stage. Identifying nicotine dependence or a specific stage of behaviour change is not essential when offering support to quit; rather, planning a quit date and offering evidence-based support can lead to successful smoke-free outcomes.

Use of cessation aids and associated factors

Women across demographic groups used and were interested in using NRT and SSM, including women of different ages, levels of disadvantage, geographical contexts and numbers of children. Just over one-third of women had ever tried using NRT and/or SSM, in line with evidence in the wider Aboriginal and Torres Strait Islander community, in which use of these products is lower than in the general population.²⁵ Nicotine patches (23.1%), varenicline (20.1%) and nicotine gum (10.7%) were most commonly used. PBS subsidies are likely to have affected these results by improving access to NRT and SSM.

We found that women who smoked more frequently and those who were more nicotine dependent were more likely to have ever used NRT and/or SSM, in line with the recommended practice of offering NRT or SSM to women reporting higher nicotine dependence and not to lower level smokers. We also found that women were significantly more likely to have used NRT and/or SSM if they had tried to quit gradually, rather than suddenly. It is unclear whether women are being advised to use NRT or SSM to quit and/or reduce cigarette smoking. Suddenly quitting may be more effective than gradually reducing consumption as a cessation method.⁵⁷

Of the women in our study who had never used NRT or SSM, most reported attitudes and beliefs as the primary reason (80.0%). Many women in our study reported wanting to quit on their own and “cold turkey” due to concerns about adverse effects of medications and a preference to not use medications, as seen in qualitative research.^{22,58} However, those with multiple children at home were significantly less likely to want to quit on their own or without help.

The Which Way? study found that any past use of NRT or SSM was more likely among older, heavier smokers, partly due to opportunities to access NRT and SSM over time (exposure-response relationship), suggesting that access schemes may mostly be reaching those with greater need. However, NRT and SSM use is lower in Aboriginal and Torres Strait Islander populations than in the broader Australian population, presenting an opportunity to improve access and use among Aboriginal and Torres Strait Islander women, which would help address racialised inequities in smoking prevalence. Consistent messages from health professionals are recommended to increase the uptake of and motivation to use NRT and SSM to quit successfully during

pregnancy.^{39,59,60} Overseas evidence among smokers highlights safety- and efficacy-related misinformation, with the majority of smokers reporting that they would start using NRT or SSM if they were provided information to address their medication-related doubts and misconceptions.⁶⁰ Our study found that confidence in talking to health professionals and receiving information from a health professional increased the likelihood of using NRT or SSM. This evidence highlights the opportunity to increase support, including offering NRT and SSM, and the important role of health providers in fostering smoke-free behaviour. This is consistent with the National Preventive Health Strategy commitment to eliminating smoking during pregnancy to provide newborns with the best chance to have a healthy start to life.

Many people quit cold turkey, without help from anyone else.⁶¹ However, there are many people who want to stop smoking but require support.²³ Coupled with support and counselling, NRT and SSM may help people to quit successfully. Ultimately, sovereignty and self-determination in the approach to quitting is of utmost importance, and this is reflected in the use of smoking cessation aids. Health providers should be aware that client interest and uptake in cessation aids may change over time, including subsequent pregnancies. This aligns with cessation guidelines which state “The choice of therapy is based on clinical suitability and patient preference”.⁶²

In successfully supporting Aboriginal and Torres Strait Islander smokers to quit, it is valuable to understand coloniality and the ongoing effects of colonisation on tobacco use.³ This evidence helps to contextualise and better understand the Aboriginal and Torres Strait Islander tobacco use epidemic, which requires continuation and extension of the suite of comprehensive tobacco reduction programs and policies used in Australia.⁶² This includes urgently required work to support the development and implementation of meaningful cessation support services, to accelerate reductions in tobacco use during pregnancy and tobacco-related morbidity and mortality. While smoking cessation appears to be a priority — as outlined in the National Preventive Health Strategy and the imminent new Implementation Plan for the National Aboriginal and Torres Strait Islander Health Plan — such strategies need to be adequately resourced, for a sustained period, and informed by the strongest available evidence. Comprehensive and multi-faceted support strategies are required and, consistent with the WHO Framework Convention on Tobacco Control, should be embedded within the health care system to promote smoke-free behaviour.

Limitations

This study is not population representative and involved various challenges, such as the sensitive nature of the survey topic, the stigma associated with smoking and pregnancy, and the lengthy period needed to collect original data on Aboriginal and Torres Strait Islander women smoking during pregnancy. This study built rapport and generated important evidence on smoking and quitting among Aboriginal and Torres Strait Islander women of reproductive age, building on previous work by other authors.⁶³ National Aboriginal and Torres Strait Islander studies that uphold Indigenous data sovereignty principles, such as *Mayi Kuwayu*, report a 2.3% response rate, with the highest number of respondents being over 50 years of age,⁶⁴ reflecting some of the challenges of meaningfully undertaking research in Aboriginal and Torres Strait Islander contexts. We recognise that NSW and Queensland respondents are most represented in the sample, somewhat reflective of the population distribution. However, work is

required in remote areas of Australia to better understand the unique experiences in these settings. We also acknowledge that access to social media and connectivity affects the sample. Aboriginal community partners suggested this approach given the rapid uptake of digital technologies, and recognising COVID-19 restrictions and the need to keep participants and communities as safe as possible. Acknowledging the hard-to-reach population, this study provides evidence that a community-developed online survey promoted through social media can be an appropriate method to reach the community.

Conclusion

We found that Aboriginal and Torres Strait Islander women across urban, regional and remote settings are making quit attempts and are successfully quitting. We also found that suddenly quitting rather than reducing smoking was associated with sustained abstinence. Services should systematically support all women to quit and avoid relying on measures of dependence to trigger an offer of support. Women smoking fewer cigarettes with lower urge strength and lower urge frequency are no more likely to sustain abstinence than women reporting higher dependency. Smoking cessation care should uphold sovereignty and self-determination of quitting and provide consistent health education and messaging on cessation options, acknowledging that interest and uptake may change over time. Cessation supports need to be embedded within the health care system. Although use of an Aboriginal health service did not predict quit duration, given that they are the preferred health provider for many Aboriginal and Torres Strait Islander women, there is an opportunity for these services to be better resourced to develop and embed appropriate cessation supports accessible through a wide range of services for all women. Ongoing research is required to measure and accelerate effectiveness of sustainable smoking cessation supports, helping to foster an environment in which Aboriginal and Torres Strait Islander people can thrive.

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- 1 Australian Government Department of Health. Introduction of tobacco plain packaging in Australia. Canberra: Australian Government Department of Health, 2018. <https://www.health.gov.au/resources/publications/introduction-of-tobacco-plain-packaging-in-australia> (viewed Dec 2021).
- 2 Thurber KA, Banks E, Joshy G, et al. Tobacco smoking and mortality among Aboriginal and Torres Strait Islander adults in Australia. *Int J Epidemiol* 2021; 50: 942-954.

- 3 Colonna E, Maddox R, Cohen R, et al. Review of tobacco use among Aboriginal and Torres Strait Islander peoples. *Australian Indigenous Health Bulletin* 2020; 20 (2). <http://healthbulletin.org.au/articles/review-of-tobacco-use-among-aboriginal-and-torres-strait-islander-peoples> (viewed May 2022).
- 4 Chamberlain C, Perlen S, Brennan S, et al. Evidence for a comprehensive approach to Aboriginal tobacco control to maintain the decline in smoking: an overview of reviews among Indigenous peoples. *Syst Rev* 2017; 6: 135.
- 5 Australian Government Department of Health. Indigenous smoking and pregnancy roundtable – summary report. Canberra: Australian Government Department of Health, 2020. <https://tacklingsmoking.org.au/resources/pregnancy-roundtable-2020> (viewed Oct 2021).
- 6 Lowitja Institute. Leadership and legacy through crisis: keeping our mob safe. Close the Gap campaign report 2021. Close the Gap Campaign Steering Committee, 2021. <https://www.lowitja.org.au/page/services/resources/Cultural-and-social-determinants/culture-for-health-and-wellbeing/close-the-gap-report-2021> (viewed Oct 2021).
- 7 Calma T. Tackling Indigenous smoking. *Of Substance: The National Magazine on Alcohol, Tobacco and Other Drugs* 2011; 9: 28-29.
- 8 Thurber K, Walker J, Maddox R, et al. A review of evidence on the prevalence of and trends in cigarette and e-cigarette use by Aboriginal and Torres Strait Islander youth and adults. Canberra: Australian National University, 2020. <https://openresearch-repository.anu.edu.au/handle/1885/210569> (viewed Jan 2022).
- 9 Australian Institute of Health and Welfare. Australia's mothers and babies (AIHW Cat. No. PER 101). Canberra: AIHW, 2021. <https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies/contents/about> (viewed Nov 2021).
- 10 McInerney C, Ibiebele I, Ford JB, et al. Benefits of not smoking during pregnancy for Australian Aboriginal and Torres Strait Islander women and their babies: a retrospective cohort study using linked data. *BMJ Open* 2019; 9: e032763.
- 11 Xuan Z, Zhongpeng Y, Yanjun G, et al. Maternal active smoking and risk of oral clefts: a meta-analysis. *Oral Surg Oral Med Oral Pathol Oral Radiol* 2016; 122: 680-690.
- 12 Shah NR, Bracken MB. A systematic review and meta-analysis of prospective studies on the association between maternal cigarette smoking and preterm delivery. *Am J Obstet and Gynecol* 2000; 182: 465-472.
- 13 Pereira PP, Da Mata FA, Figueiredo AC, et al. Maternal active smoking during pregnancy and low birth weight in the Americas: a systematic review and meta-analysis. *Nicotine Tob Res* 2017; 19: 497-505.
- 14 US Department of Health and Human Services. Smoking cessation: a report of the Surgeon General. Atlanta: Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2020. <https://www.hhs.gov/sites/default/files/2020-cessation-sgr-full-report.pdf> (viewed Nov 2021).
- 15 Marufu TC, Ahankari A, Coleman T, Lewis S. Maternal smoking and the risk of still birth: systematic review and meta-analysis. *BMC Public Health* 2015; 15: 239.
- 16 Pineles BP, Hsu S, Park E, Samet JM. Systematic review and meta-analyses of perinatal death and maternal exposure to tobacco smoke during pregnancy. *Am J Epidemiol* 2016; 184: 87-97.
- 17 He Y, Chen J, Zhu L-H, et al. Maternal smoking during pregnancy and ADHD: results from a systematic review and meta-analysis of prospective cohort studies. *J Atten Disord* 2020; 24: 1637-1647.
- 18 Rayfield S, Plugge E. Systematic review and meta-analysis of the association between maternal smoking in pregnancy and childhood overweight and obesity. *J Epidemiol and Community Health* 2017; 71: 162-173.
- 19 Jayes L, Haslam PL, Gratzou CG, et al. SmokeHaz: systematic reviews and meta-analyses of the effects of smoking on respiratory health. *Chest* 2016; 150: 164-179.
- 20 Montgomery SM, Ekbohm A. Smoking during pregnancy and diabetes mellitus in a British longitudinal birth cohort. *BMJ* 2002; 324: 26-27.
- 21 Passey ME, Bryant J, Hall AE, Sanson-Fisher RW. How will we close the gap in smoking rates for pregnant Indigenous women? *Med J Aust* 2013; 199: 39-41. <https://www.mja.com.au/journal/2013/199/1/how-will-we-close-gap-smoking-rates-pregnant-indigenous-women>
- 22 Bovill M, Gruppetta M, Cadet-James Y, et al. Wula (voices) of Aboriginal women on barriers to accepting smoking cessation support during pregnancy: findings from a qualitative study. *Women Birth* 2018; 31: 10-16.
- 23 Cahill K, Stevens S, Perera R, Lancaster T. Pharmacological interventions for smoking cessation: an overview and network meta-analysis. *Cochrane Database Syst Rev* 2013; (5): CD009329.
- 24 Royal Australian College of General Practitioners. Supporting smoking cessation: a guide for health professionals. RACGP, 2021. <https://www.racgp.org.au/clinical-resources/clinical-guidelines/key-racgp-guidelines/view-all-racgp-guidelines/supporting-smoking-cessation> (viewed Nov 2021).
- 25 Thomas DP, Briggs VL, Couzos S, et al. Use of nicotine replacement therapy and stop-smoking medicines in a national sample of Aboriginal and Torres Strait Islander smokers and ex-smokers. *Med J Aust* 2015; 202 (Suppl 10): S78-S84.
- 26 Skinner A, Havard A, Tran DT, Jorm LR. Access to subsidized smoking cessation medications by Australian smokers aged 45 years and older: a population-based cohort study. *Nicotine Tob Res* 2017; 19: 342-350.
- 27 Keitaanpa S, Thomas D, Hefler M, Cass A. Using Pharmaceutical Benefit Scheme data to understand the use of smoking cessation medicines by Aboriginal and Torres Strait Islander smokers. *Aust N Z J Public Health* 2021; 45: 34-38.
- 28 Davey ME, Hunt JM, Foster R, et al. Tobacco control policies and activities in Aboriginal community-controlled health services. *Med J Aust* 2015; 202 (Suppl 10): S63-S66. <https://www.mja.com.au/journal/2015/202/10/tobacco-control-policies-and-activities-aboriginal-community-controlled-health>
- 29 Australian Government Department of Health. Listings on the PBS for Aboriginal and Torres Strait Islander people. Canberra: Australian Government Department of Health, 2022. <http://www.pbs.gov.au/info/publication/factsheets/shared/pbs-listings-for-aboriginal-and-torres-strait-islander-people> (viewed May 2022).
- 30 Bovill M, Chamberlain C, Bennett J, et al. Building an Indigenous-led evidence base for smoking cessation care among Aboriginal and Torres Strait Islander women during pregnancy and beyond: research protocol for the Which Way? project. *Int J Environ Res Public Health* 2021; 18: 1342.
- 31 Smith LT. Decolonizing methodologies: research and indigenous peoples. London: Zed Books, 1999.
- 32 Nilson C. A journey toward cultural competence: the role of researcher reflexivity in indigenous research. *J Transcult Nurs* 2017; 28: 119-127.
- 33 Couzos S, Nicholson AK, Hunt JM, et al. Talking About The Smokes: a large-scale, community-based participatory research project. *Med J Aust* 2015; 202 (Suppl 10): S13-S19. <https://www.mja.com.au/journal/2015/202/10/talking-about-smokes-large-scale-community-based-participatory-research-project>
- 34 Rice ES, Haynes E, Royce P, Thompson SC. Social media and digital technology use among Indigenous young people in Australia: a literature review. *Int J Equity Health* 2016; 15: 81.
- 35 Whitaker C, Stevelink S, Fear N. The use of Facebook in recruiting participants for health research purposes: a systematic review. *J Med Internet Res* 2017; 19: e7071.
- 36 Heatherton TF, Kozlowski LT, Frecker RC, et al. Measuring the heaviness of smoking: using self-reported time to the first cigarette of the day and number of cigarettes smoked per day. *Addiction* 1989; 84: 791-800.
- 37 Borland R, Yong HH, O'Connor RJ, et al. The reliability and predictive validity of the Heaviness of Smoking Index and its two components: findings from the International Tobacco Control four country study. *Nicotine Tob Res* 2010; 12 Suppl 1: S45-S50.
- 38 Riaz M, Lewis S, Coleman T, et al. Which measures of cigarette dependence are predictors of smoking cessation during pregnancy? Analysis of data from a randomized controlled trial. *Addiction* 2016; 111: 1656-1665.
- 39 Fidler JA, Shahab L, West R. Strength of urges to smoke as a measure of severity of cigarette dependence: comparison with the Fagerström Test for Nicotine Dependence and its components. *Addiction* 2011; 106: 631-638.
- 40 Passey ME, Stirling JM. Evaluation of 'Stop Smoking in its Tracks': an intensive smoking cessation program for pregnant Aboriginal women incorporating contingency-based financial rewards. *Public Health Res Pract* 2018; 28: e28011804.
- 41 Bovill M. What ngidhi yinaaru nhal yayi (this woman told me) about smoking during pregnancy. *Med J Aust* 2020; 212: 358-359. <https://www.mja.com.au/journal/2020/212/8/what-ngidhi-yinaaru-nhal-yayi-woman-told-me-about-smoking-during-pregnancy>
- 42 Bovill M, Bar-Zeev Y, Bonevski B, et al. Aboriginal *Wingadhan Birrang* (woman's journey) of smoking cessation during pregnancy as they participate in the *ICAN QUIT in pregnancy* pilot step-wedge trial. *Women Birth* 2020; 33: 300-308.

- 43 Nicholson A, Borland R, Davey M, et al. Past quit attempts in a national sample of Aboriginal and Torres Strait Islander smokers. *Med J Aust* 2015; 202 (Suppl 10): S20-S25. <https://www.mja.com.au/journal/2015/202/10/past-quit-attempts-national-sample-aboriginal-and-torres-strait-islander>
- 44 Clennell S, Kuh D, Guralnik JM, et al. Characterisation of smoking behaviour across the life course and its impact on decline in lung function and all-cause mortality: evidence from a British birth cohort. *J Epidemiol Community Health* 2008; 62: 1051-1056.
- 45 Thomas DP, Davey M, Briggs VL, Borland R. Talking About The Smokes: summary and key findings. *Med J Aust* 2015; 202 (Suppl 10): S3-S4. <https://www.mja.com.au/journal/2015/202/10/talking-about-smokes-summary-and-key-findings>
- 46 Johnston V, Thomas DP, McDonnell J, Andrews RM. Maternal smoking and smoking in the household during pregnancy and postpartum: findings from an Indigenous cohort in the Northern Territory. *Med J Aust* 2011; 194: 556-559. <https://www.mja.com.au/journal/2011/194/10/maternal-smoking-and-smoking-household-during-pregnancy-and-postpartum-findings>
- 47 Wood L, France K, Hunt K, et al. Indigenous women and smoking during pregnancy: knowledge, cultural contexts and barriers to cessation. *Soc Sci Med* 2008; 66: 2378-2389.
- 48 Askew DA, Guy J, Lyall V, et al. A mixed methods exploratory study tackling smoking during pregnancy in an urban Aboriginal and Torres Strait Islander primary health care service. *BMC Public Health* 2019; 19: 343.
- 49 Gould GS, Bovill M, Pollock L, et al. Feasibility and acceptability of Indigenous Counselling and Nicotine (ICAN) QUIT in Pregnancy multicomponent implementation intervention and study design for Australian Indigenous pregnant women: a pilot cluster randomised step-wedge trial. *Addict Behav* 2019; 90: 176-190.
- 50 Daly JB, Dowe S, Tully B, et al. Acceptance of smoking cessation support and quitting behaviours of women attending Aboriginal Maternal and Infant Health Services for antenatal care. *BMC Pregnancy Childbirth* 2021; 21: 85.
- 51 Lumley J, Oliver S, Waters E. Interventions for promoting smoking cessation during pregnancy. *Cochrane Database Syst Rev* 2000; (2): CD001055.
- 52 Larke BM, Broe GA, Daylight G, et al. Patterns and preferences for accessing health and aged care services in older Aboriginal and Torres Strait Islander Australians. *Australas J Ageing* 2021; 40: 145-153.
- 53 Tzelepis F, Daly J, Dowe S, et al. Supporting Aboriginal women to quit smoking: antenatal and postnatal care providers' confidence, attitudes, and practices. *Nicotine Tob Res* 2017; 19: 642-646.
- 54 Taggar JS, Lewis S, Docherty G, et al. Do cravings predict smoking cessation in smokers calling a national quit line: secondary analyses from a randomised trial for the utility of 'urges to smoke' measures. *Subst Abuse Treat Prev Policy* 2015; 10: 15.
- 55 Thomas DP, Lyons L, Borland R. Predictors and reasons for starting and sustaining quit attempts in a national cohort of Aboriginal and Torres Strait Islander smokers. *Drug Alcohol Rev* 2019; 38: 244-253.
- 56 Nicholson A, Borland R, Davey M, et al. Predictors of wanting to quit in a national sample of Aboriginal and Torres Strait Islander smokers. *Med J Aust* 2015; 202 (Suppl 10): S26-S32. <https://www.mja.com.au/journal/2015/202/10/predictors-wanting-quit-national-sample-aboriginal-and-torres-strait-islander>
- 57 Lindson-Hawley N, Banting M, West R, et al. Gradual versus abrupt smoking cessation: a randomized, controlled noninferiority trial. *Ann Intern Med* 2016; 164: 585-592.
- 58 Bond C, Brough M, Spurling G, Hayman N. 'It had to be my choice' Indigenous smoking cessation and negotiations of risk, resistance and resilience. *Health Risk Soc* 2012; 14: 565-581.
- 59 Campbell K, Coleman-Haynes T, Bowker K, et al. Factors influencing the uptake and use of nicotine replacement therapy and e-cigarettes in pregnant women who smoke: a qualitative evidence synthesis. *Cochrane Database Syst Rev* 2020; 5 (5): CD013629.
- 60 Ferguson SG, Gitchell JG, Shiffman S, et al. Providing accurate safety information may increase a smoker's willingness to use nicotine replacement therapy as part of a quit attempt. *Addict Behav* 2011; 36: 713-716.
- 61 Australian Institute of Health and Welfare. National Drug Strategy household survey 2019 (AIHW Cat. No: PHE 270). Canberra: AIHW, 2020. <https://www.aihw.gov.au/reports/illegal-use-of-drugs/national-drug-strategy-household-survey-2019/contents/summary> (viewed Nov 2021).
- 62 Australian Government Department of Health. Smoking cessation guidelines for Australian general practice. Canberra: Australian Government Department of Health, 2012.
- 63 Eades SJ, Sanson-Fisher RW, Wenitong M, et al. An intensive smoking intervention for pregnant Aboriginal and Torres Strait Islander women: a randomised controlled trial. *Med J Aust* 2012; 197: 42-46. <https://www.mja.com.au/journal/2012/197/1/intensive-smoking-intervention-pregnant-aboriginal-and-torres-strait-islander>
- 64 Wright A, Thurber KA, Yap M, et al. Who responds? An examination of response rates to a national postal survey of Aboriginal and Torres Strait Islander adults, 2018-2019. *BMC Med Res Methodol* 2020; 20: 149. ■

Supporting Information

Additional Supporting Information is included with the online version of this article.

Smoking cessation support strategies for Aboriginal and Torres Strait Islander women of reproductive age: findings from the Which Way? study

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The known: Reduction of smoking rates among Aboriginal and Torres Strait Islander women is urgently needed. However, evidence on acceptable smoking cessation support strategies is limited.

The new: Aboriginal and Torres Strait Islander women are interested in a range of cessation support strategies. Strategies with the highest levels of acceptability are group support and holistic approaches. Women want support from their health care providers — in particular, Aboriginal health workers at their Aboriginal health service.

The implications: Currently there are no consistent supports for health services to integrate smoking cessation care. Appropriate funding models, resources, and standardised training to support health care providers should be prioritised and implemented to address smoking prevalence among Aboriginal and Torres Strait Islander women, including during pregnancy.

Smoking during pregnancy is the most significant modifiable risk factor linked to adverse pregnancy and long term health outcomes for both expecting mother and child.¹ Out of every ten Aboriginal and Torres Strait Islander women who smoke, only one successfully quits during pregnancy,¹ so smoking during pregnancy is a recognised factor in the current health, wellbeing and life expectancy inequalities experienced by Aboriginal and Torres Strait Islander people.² The higher prevalence of tobacco use among Aboriginal and Torres Strait Islander women during the perinatal period is directly linked to colonisation and other social determinants of health.

Access to appropriate cessation supports, particularly in the primary care setting, is known to increase quitting rates in the general population.^{3,4} Smoking cessation guidelines from the Royal Australian College of General Practitioners recommend integrating brief advice for all smokers during routine appointments, and follow-up for those making a quit attempt. This places health professionals in a key role in cessation care.⁵ Behavioural support and counselling, coupled with first line pharmacotherapy (where appropriate) and follow-up, is recommended as best practice.⁵ Among the general population, accessing and engaging with cessation support options, such as Quitline, can increase quitting success by 25% compared with pharmacotherapy alone.⁶ Further, Australian health promotion initiatives have increased referrals to and uptake of cessation support services.⁷

It is critical to recognise that current guidelines and recommendations for best practice smoking cessation draw on general population evidence, and do not always reflect the

Abstract

Objective: To identify smoking cessation support strategies that resonate with Aboriginal and Torres Strait Islander women.

Design, setting and participants: A national cross-sectional survey of Aboriginal and Torres Strait Islander women aged 16–49 years who were smokers or ex-smokers was conducted online during the period July to October 2020.

Main outcome measures: Preferred strategies, providers and locations for smoking cessation support.

Results: Among a total of 428 women who participated in the survey, group-based support and holistic support were the most preferred strategies (preferred by 31.8% and 22.2% of women, respectively). Use of an Aboriginal health service was positively associated with choosing holistic support programs (prevalence ratio, 1.14 [95% CI, ≥ 1.00–1.28]). Women with high or moderate nicotine dependency were more likely to consider group-based support to be helpful (prevalence ratio, 1.13 [95% CI, ≥ 1.00–1.27]) than those with low nicotine dependency. The most preferred providers for smoking cessation support were Aboriginal health workers (64.3%). Most women (73.4%) preferred face-to-face support at an Aboriginal health service, 38.8% preferred online support and 34.8% preferred phone support. A higher percentage of older women (≥ 35 years) preferred online or phone support (prevalence ratio, 1.70 [95% CI, 1.03–2.80]) compared with younger women (16–20 years). Use of an Aboriginal health service was positively associated with preference for an Aboriginal health worker (prevalence ratio, 1.35 [95% CI, 1.12–1.62]), and receiving face-to-face support at an Aboriginal health service (prevalence ratio, 1.28 [95% CI, 1.10–1.49]).

Conclusion: Aboriginal and Torres Strait Islander women prefer a range of cessation supports, with most women preferring group support and holistic approaches. Cessation supports that resonated with women varied by age, remoteness, nicotine dependence, and whether participants used an Aboriginal health service. Women want support to quit smoking from the Aboriginal health workers at their Aboriginal health service, at their health care providers and in their community. Comprehensive, multifaceted supports are required. Online support and phone-based support are also preferred by some women, which helps to increase accessibility. Appropriate models of care — including sufficient funding for Aboriginal health services and Aboriginal health workers — are required and should be developed in partnership with communities to implement meaningful and culturally safe cessation care. This research demonstrates the need for and importance of multifaceted, comprehensive cessation support strategies.

unique needs of Aboriginal and Torres Strait Islander people. There is new and emerging evidence for individualised support strategies, including mobile phone apps,⁸ text message-based

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interventions⁹ and internet-based interventions,¹⁰ but limited evidence exists for interest in and uptake of such options among Aboriginal and Torres Strait Islander people. The limited access to culturally appropriate programs and services is a known barrier to Aboriginal and Torres Strait Islander people accessing and accepting smoking cessation support.⁵

The Which Way? project aims to develop an Indigenous-led evidence base for smoking cessation to support Aboriginal and Torres Strait Islander women to be smoke-free during pregnancy and beyond.¹¹ In this study, we sought to inform clinical practice and health care delivery by identifying smoking cessation support preferences among Aboriginal and Torres Strait Islander women, including preferred strategies, providers and locations.

Methods

Research team

As argued by Linda Tuhiwai Smith (former professor of Indigenous education at the University of Waikato), “When Indigenous peoples become the researchers, and not merely the researched, the activity of research is transformed.”¹² In keeping with this idea, our study was conceptualised and led by one of us (MK, Wiradjuri woman) in partnership with Aboriginal communities and women (HL, BF, PH). Our team brings together Aboriginal and Torres Strait Islander lived experience (MK, SM, CC, HL, FR, BGF, BF, JB), Indigenous lived experience (RM), and expertise in Aboriginal health services (AHSs) (PH, HL, FR, BGF, BF), Indigenous tobacco research (MK, CC, CH, RM) and epidemiology (CH, EB, RM). This self-location partly fulfils our respective relational protocols.

This work was directed by the interest and needs of Aboriginal and Torres Strait Islander women in New South Wales, Queensland and South Australia, and governed by the Which Way? governance committee, an Aboriginal and Torres Strait Islander governance group that includes partnering communities.¹¹ In addition to this governance, Aboriginal and Torres Strait Islander people were involved on a daily basis in all aspects of the study, from conception through to manuscript writing and dissemination of the study findings. This everyday engagement is further reflective of the relational nature of this work, embedding knowledge users in an integrated knowledge translation approach to help ensure Aboriginal and Torres Strait Islander community and health care delivery relevance, and scientific excellence.

Data sources and categorisation

An online cross-sectional survey was conducted during the period July to October 2020, targeting Aboriginal and Torres Strait Islander women of reproductive age (16–49 years) who were smokers or ex-smokers. The survey details and sampling frame are reported elsewhere in this supplement.¹³ Participants’ ages were categorised as 16–20 years, 21–34 years, or 35–49 years; remoteness as urban, or regional or remote; and education as completing up to year 11, completing year 12 or current student (TAFE or university) or apprentice, or having completed a degree or trade certificate. Participants were categorised as using an AHS or not; by smoking status (current smoker or ex-smoker [any intensity]); and by smoking intensity (0–5 in cigarettes per day [CPD], 6–10 CPD, or ≥11 CPD). The Heaviness of Smoking

Index was used to categorise participants as having moderate or high dependency (combined due to few participants), or low dependency. Urge frequency and urge strength were both categorised as high or low.

Support strategies

Participants were asked “What type of program do you think would help Aboriginal women quit smoking?”, as a multiple choice question where participants could select all program types that they felt would be useful, and were then asked to rank their selections by specifying their first, second and third preferences. The 19 program types listed within the survey were categorised into seven broad groups (Box 1). If participants selected “other”, they were asked to specify their choice in an open-ended question, and responses to this were categorised into the seven broad groups.

Support providers

Participants were asked “Who would you like to receive quit smoking support from?” and could select a single preference from the following options: doctor, nurse, midwife, Aboriginal health worker, my community (not health service), or someone I don’t know.

Support locations

Participants were asked “If you decided you wanted to make a quit attempt, where would you rather receive support?” and could select one or more choices from the following options: face to face at my AHS, face to face with a non-Aboriginal service, over the phone, online, or other.

Statistical analysis

The Which Way? governance committee oversaw the analysis, which was conducted by an Indigenous-led statistical team, using

1 Categorisation of 19 program types into seven broad groups

Group-based support	<ul style="list-style-type: none"> • Support groups at Aboriginal helath service • Support groups somewhere else • Facebook support groups • Other (where relevant)
Holistic support	<ul style="list-style-type: none"> • Acupuncture • Art/craft activities • Bush medicine • Exercise program • Yoga • Other (where relevant)
Cultural programs	<ul style="list-style-type: none"> • Cultural programs • Other (where relevant)
One-on-one support	<ul style="list-style-type: none"> • Caseworker support • One-on-one counselling, over video • One-on-one counselling, online • One-on-one counselling, face-to-face • Quitline • Other (where relevant)
Self-directed support	<ul style="list-style-type: none"> • QuitCoach • Phone app • Text message support • Other (where relevant)
Cessation support	<ul style="list-style-type: none"> • Free nicotine replacement therapy mailed out • Other (where relevant)
Incentives	<ul style="list-style-type: none"> • Incentives • Other (where relevant)

NRT = nicotine replacement therapy. ♦

Stata 16 (StataCorp). Demographic and smoking characteristics were quantified for the full sample. Distribution of participants by preferred strategy (by broad categorisation groups, both any preference and first preference), preferred support provider, and preferred support location were examined.

Prevalence ratios (PRs) and 95% confidence intervals (CIs) for preferred support program (any preference only), support provider and support location by demographic and smoking characteristics were calculated using log binomial regression. Choice of doctor, nurse or midwife as preferred support provider, and choice of support location as online or over the phone were combined for the regression analysis. Choices made by fewer than 10% of participants were not explored in the regression analysis. As this analysis was exploratory in nature and as directed by the Which Way? governance committee (consistent with ethical practice), no additional factors were adjusted for in the models.

Participants were excluded from all analyses if they did not meet the inclusion criteria (determined in initial screening questions of the survey), specifically: Aboriginal and/or Torres Strait Islander woman, reproductive age (16–49 years), and a current or ex-smoker. An alpha level of 0.05 was the threshold for statistical significance (significance level).

Ethics approval

The Which Way? study was developed by, and is co-owned with, Aboriginal communities in regional and urban NSW. The project upholds ethics principles of research with Aboriginal and Torres Strait Islander peoples. Ethics approvals were obtained from

the Aboriginal Health and Medical Research Council (1603/19) and the University of Newcastle (H-2020-0092). All participants provided informed consent.

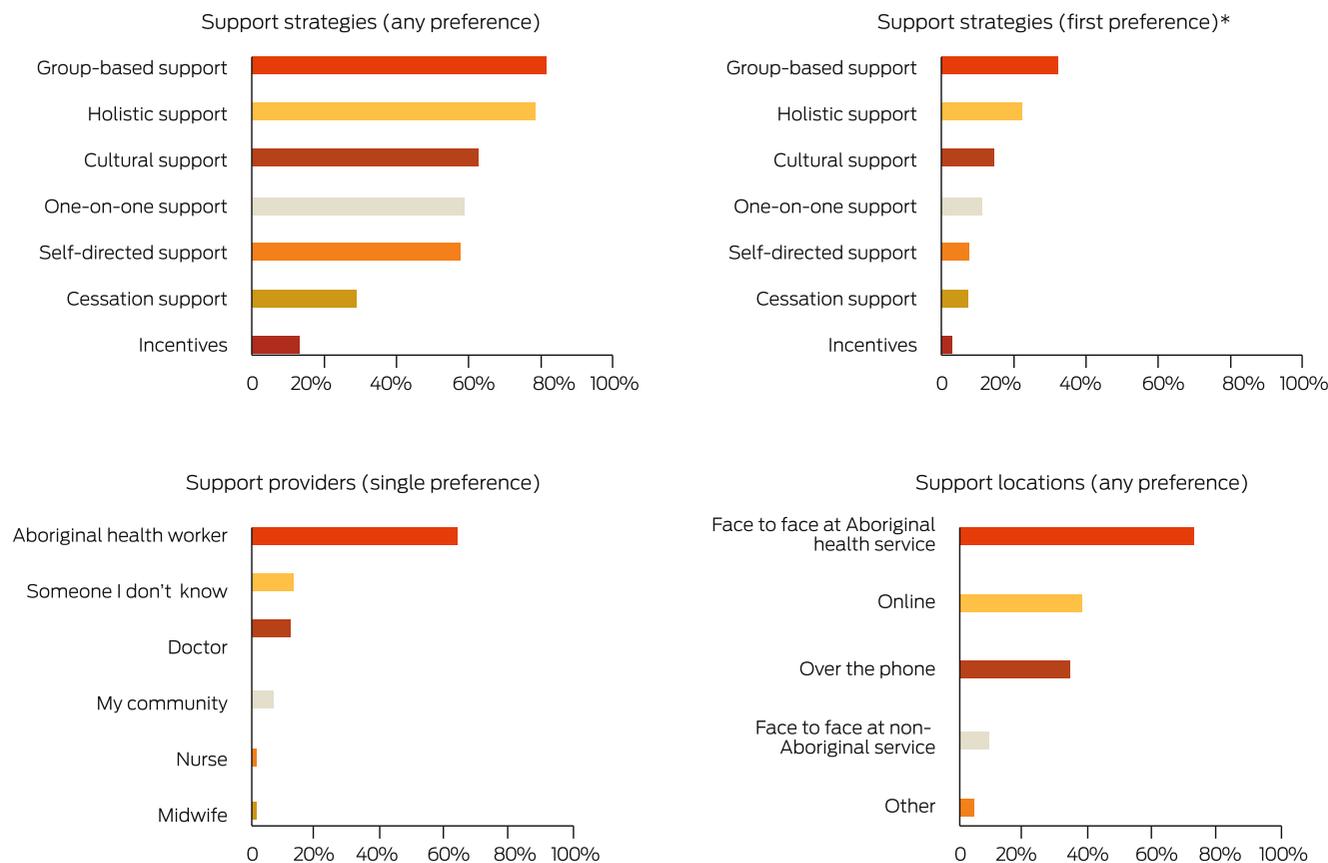
Results

The sample demographics are detailed elsewhere in this supplement.¹³ A total of 428 Aboriginal and Torres Strait Islander women with a mean age of 30.5 years completed the survey and were included in the analyses. Half resided in urban areas (49.5%). Most participants reported using an AHS (70.6%), and about two-thirds of participants (62.9%) were current smokers.

When asked to select all the support strategies that they thought would help Aboriginal and Torres Strait Islander women quit smoking, five of seven broad categories (group-based support, holistic support, cultural programs, one-on-one support, and self-directed support) were chosen by more than half of the participants (57.2% to 80.8%) (Box 2). When selecting first preferences (ie, the most helpful strategy), more than half chose group-based support or holistic support programs (31.8% and 22.2% of participants, respectively) (Box 2).

Interpretation of incentives, chosen by 12.6% of women, differed considerably. Based on responses to an open-ended question within the survey (data not shown), participants considered incentives to be a variety of motivations including activity-based rewards, financial incentives, tangible goods (eg, merchandise), incremental rewards, or assistance with saving and tracking money saved from no longer buying cigarettes.

2 Participants' preferences for support strategies, support providers and support locations (n = 428)*



* Data on first preference of support strategy were missing for 20 participants. ♦

3 Associations between demographic and smoking characteristics and support preferences of women who participated in the Which Way? survey (n = 428)

	Group-based support		Holistic support		Cultural programs		Self-directed support		One-on-one support		Cessation support		Incentives	
	Percentage (95% CI)	PR (95% CI)	Percentage (95% CI)	PR (95% CI)	Percentage (95% CI)	PR (95% CI)	Percentage (95% CI)	PR (95% CI)	Percentage (95% CI)	PR (95% CI)	Percentage (95% CI)	PR (95% CI)	Percentage (95% CI)	PR (95% CI)
Age														
16-20 years	93.4% (87.2-99.7%)	1 (Ref)	82.0% (72.3-91.6%)	1 (Ref)	65.6% (53.6-77.5%)	1 (Ref)	47.5% (35.0-60.1%)	1 (Ref)	60.7% (48.4-72.9%)	1 (Ref)	9.8% (2.3-17.3%)	1 (Ref)	16.4% (1.6-4.8%)	1 (Ref)
21-34 years	78.4% (73.0-83.9%)	0.84 (0.76-0.92)	78.4% (73.0-83.9%)	0.96 (0.83-1.10)	61.0% (54.5-67.5%)	0.93 (0.75-1.15)	59.8% (52.6-65.7%)	1.24 (0.94-1.66)	57.8% (51.2-64.4%)	0.95 (0.76-1.20)	27.5% (21.6-33.5%)	2.80 (1.27-6.16)	11.9% (7.6-16.2%)	7.28 (1.01-52.54)
35-49 years	79.2% (72.7-85.7%)	0.85 (0.76-0.94)	76.5% (69.7-83.3%)	0.93 (0.81-1.08)	62.4% (54.6-70.2%)	0.95 (0.76-1.19)	58.4% (50.5-66.3%)	1.23 (0.91-1.65)	59.0% (51.1-67.0%)	0.97 (0.76-1.24)	36.9% (29.1-44.7%)	3.75 (1.71-8.25)	18.1% (11.9-24.3%)	11.05 (1.54-79.55)
Remoteness														
Urban	78.8% (73.2-84.3%)	1 (Ref)	80.2% (74.8-85.6%)	1 (Ref)	63.7% (57.2-70.2%)	1 (Ref)	61.8% (55.2-68.4%)	1 (Ref)	59.0% (52.3-65.6%)	1 (Ref)	33.5% (27.1-39.9%)	1 (Ref)	14.2% (9.4-18.9%)	1 (Ref)
Regional or remote	82.9% (77.8-87.9%)	1.05 (0.96-1.15)	76.4% (70.7-82.1%)	0.95 (0.86-1.05)	60.6% (54.1-67.2%)	0.95 (0.82-1.10)	52.8% (46.1-59.5%)	0.85 (0.72-1.01)	58.3% (51.7-64.9%)	0.99 (0.84-1.16)	23.1% (17.5-28.8%)	0.69 (0.51-0.94)	11.1% (6.9-15.3%)	0.79 (0.48-1.30)
Education														
Up to year 11	81.4% (75.3-87.4%)	1 (Ref)	80.7% (74.6-86.9%)	1 (Ref)	57.8% (50.1-65.4%)	1 (Ref)	53.4% (45.7-61.1%)	1 (Ref)	54.7% (46.9-62.4%)	1 (Ref)	28.0% (21.0-34.9%)	1 (Ref)	9.3% (4.8-13.8%)	1 (Ref)
Year 12, or current student or apprentice	82.8% (77.1-88.5%)	1.02 (0.92-1.13)	76.9% (70.6-83.3%)	0.95 (0.85-1.07)	66.9% (59.7-74.0%)	1.16 (0.98-1.37)	57.4% (49.9-64.9%)	1.07 (0.88-1.30)	58.0% (50.5-65.5%)	1.06 (0.88-1.28)	26.7% (19.9-33.3%)	0.95 (0.67-1.36)	8.3% (4.1-12.5%)	0.89 (0.44-1.78)
Degree or trade certificate	76.5% (68.1-84.9%)	0.94 (0.82-1.07)	76.5% (68.1-84.9%)	0.95 (0.83-1.08)	61.2% (51.6-70.9%)	1.06 (0.86-1.30)	63.3% (53.7-72.8%)	1.18 (0.96-1.46)	66.3% (56.9-75.7%)	1.21 (0.99-1.48)	31.6% (22.4-40.9%)	1.13 (0.77-1.66)	25.5% (16.9-34.2%)	2.74 (1.52-4.93)
Aboriginal health service used														
No	78.6% (71.4-85.8%)	1 (Ref)	71.4% (63.5-79.3%)	1 (Ref)	57.9% (49.3-66.6%)	1 (Ref)	61.9% (53.4-70.4%)	1 (Ref)	59.5% (50.9-68.1%)	1 (Ref)	28.6% (20.7-36.5%)	1 (Ref)	11.1% (5.6-16.6%)	1 (Ref)
Yes	81.8% (77.4-86.2%)	1.04 (0.94-1.16)	81.1% (76.7-85.6%)	1.14 (≥ 1.00-1.28)	63.9% (58.5-69.3%)	1.10 (0.93-1.31)	55.3% (49.7-61.0%)	0.89 (0.75-1.06)	58.2% (52.7-63.9%)	0.98 (0.82-1.16)	28.1% (23.1-33.2%)	0.99 (0.71-1.37)	13.2% (9.4-17.1%)	1.19 (0.67-2.11)
Smoking status														
Ex-smoker	84.2% (78.5-89.9%)	1 (Ref)	76.6% (70.0-83.2%)	1 (Ref)	68.4% (61.1-75.6%)	1 (Ref)	53.8% (46.0-61.6%)	1 (Ref)	62.0% (54.4-69.6%)	1 (Ref)	27.8% (20.8-34.9%)	1 (Ref)	14.6% (9.0-20.1%)	1 (Ref)
Current smoker	78.9% (74.0-83.8%)	0.94 (0.86-1.03)	79.3% (74.4-84.1%)	1.03 (0.93-1.15)	58.5% (52.6-64.4%)	0.86 (0.74-0.99)	59.3% (53.4-65.1%)	1.10 (0.92-1.31)	56.7% (50.7-62.6%)	0.91 (0.78-1.07)	28.5% (23.1-33.9%)	1.02 (0.75-1.40)	11.5% (7.7-15.3%)	0.79 (0.48-1.30)
HSI score														
Low	75.8% (69.5-82.2%)	1 (Ref)	79.2% (73.2-85.2%)	1 (Ref)	59.0% (51.7-66.2%)	1 (Ref)	56.1% (48.9-63.5%)	1 (Ref)	56.2% (48.9-63.5%)	1 (Ref)	25.8% (19.4-32.3%)	1 (Ref)	9.0% (4.8-13.2%)	1 (Ref)
Moderate or high	85.7% (78.5-92.9%)	1.13 (≥ 1.00-1.27)	79.1% (70.7-87.5%)	1.00 (0.88-1.14)	58.2% (48.1-68.4%)	0.99 (0.80-1.22)	64.8% (55.0-74.7%)	1.15 (0.95-1.41)	58.2% (48.1-68.4%)	1.04 (0.83-1.29)	34.1% (24.3-43.8%)	1.32 (0.90-1.93)	16.5% (8.8-24.1%)	1.83 (0.95-3.54)

Continues

1 (Continued)

	Group-based support		Holistic support		Cultural programs		Self-directed support		One-on-one support		Cessation support		Incentives	
	Percentage (95% CI)	PR (95% CI)	Percentage (95% CI)	PR (95% CI)	Percentage (95% CI)	PR (95% CI)	Percentage (95% CI)	PR (95% CI)	Percentage (95% CI)	PR (95% CI)	Percentage (95% CI)	PR (95% CI)	Percentage (95% CI)	PR (95% CI)
Smoking intensity														
1-5 CPD	75.9% (66.8-84.9%)	1 (Ref)	81.6% (73.4-89.8%)	1 (Ref)	57.5% (47.0-67.9%)	1 (Ref)	60.9% (50.6-71.2%)	1 (Ref)	54.0% (43.5-64.5%)	1 (Ref)	13.8% (6.5-21.1%)	1 (Ref)	4.6% (0.2-9.0%)	1 (Ref)
6-10 CPD	78.3% (69.8-86.7%)	1.03 (0.88-1.21)	75.0% (66.1-83.9%)	0.92 (0.79-1.07)	59.8% (49.7-69.8%)	1.04 (0.81-1.33)	53.2% (43.0-63.5%)	0.87 (0.68-1.13)	55.4% (45.2-65.6%)	1.03 (0.79-1.34)	28.3% (19.0-37.5%)	2.05 (1.10-3.80)	8.7% (2.9-14.5%)	1.89 (0.59-6.06)
≥11 CPD	83.3% (75.6-91.1%)	1.10 (0.95-1.28)	81.1% (73.0-89.2%)	0.99 (0.86-1.14)	58.9% (48.7-69.1%)	1.02 (0.80-1.32)	63.3% (53.3-73.3%)	1.04 (0.83-1.31)	61.1% (51.0-71.2%)	1.13 (0.88-1.46)	43.3% (33.0-53.6%)	3.14 (1.77-5.59)	21.1% (12.6-29.6%)	4.59 (1.63-12.95)
Urge frequency														
Low	74.6% (67.5-81.8%)	1 (Ref)	76.1% (69.0-83.1%)	1 (Ref)	59.2% (51.0-67.3%)	1 (Ref)	57.0% (48.9-65.2%)	1 (Ref)	57.7% (49.6-65.9%)	1 (Ref)	24.6% (17.5-31.8%)	1 (Ref)	10.6% (5.5-15.6%)	1 (Ref)
High	84.3% (77.9-90.6%)	1.13 (≤ 1.00-1.27)	82.7% (76.0-89.3%)	1.09 (0.96-1.23)	58.3% (49.7-66.9%)	0.99 (0.81-1.20)	61.4% (52.9-69.9%)	1.08 (0.88-1.31)	55.9% (47.2-64.6%)	0.97 (0.79-1.19)	33.1% (24.9-41.3%)	1.34 (0.92-1.96)	12.6% (6.8-18.4%)	1.19 (0.61-2.31)
Urge strength														
Low	75.7% (68.8-82.5%)	1 (Ref)	80.9% (74.6-87.2%)	1 (Ref)	61.8% (54.1-69.6%)	1 (Ref)	58.6% (50.7-66.4%)	1 (Ref)	58.6% (50.7-66.4%)	1 (Ref)	23.7% (16.9-30.5%)	1 (Ref)	9.9% (5.1-14.6%)	1 (Ref)
High	83.8% (77.0-90.5%)	1.11 (0.98-1.25)	76.9% (69.3-84.6%)	0.95 (0.84-1.08)	54.7% (45.6-63.8%)	0.88 (0.72-1.09)	59.8% (50.9-68.8%)	1.02 (0.84-1.25)	54.7% (45.6-63.8%)	0.93 (0.76-1.16)	35.0% (26.4-43.7%)	1.48 (1.01-2.16)	13.7% (7.4-19.9%)	1.39 (0.71-2.69)

CPD = cigarettes per day, HSI = Heaviness of Smoking Index, PR = prevalence ratio, Ref = reference category. ♦

About two-thirds of women (64.3%) chose Aboriginal health worker as their preferred provider of cessation support (Box 2). Clinical support providers (doctors, nurses and midwives) were chosen by a total of 15.6% of women, 12.9% of women chose someone they did not know, and 7.2% of women chose their own community. Support provided face to face at an AHS was selected by 73.4% of women (Box 2). Online support was preferred by 38.8% of participants, and 34.8% of women preferred support over the phone. Face-to-face support with a non-Aboriginal service was preferred by 9.4% of participants, and 5.1% of participants preferred support provided at a different location, which included support provided at their own home with family or local groups.

Associations between demographic and smoking characteristics and support preferences are provided in Box 3. A higher percentage of older women considered cessation support (PR, 3.75 [95% CI, 1.71–8.25]) and incentives (PR, 11.05 [95% CI, 1.54–79.55]) helpful compared with women in the youngest age group, but a lower percentage considered group-based support helpful (PR, 0.85 [95% CI, 0.76–0.94]). The prevalence of considering incentives helpful was almost three times (PR, 2.74 [95% CI, 1.52–4.93]) as high for women with a degree or a trade certificate compared with women who had completed up to year 11. Fewer women in regional and remote areas considered cessation support helpful compared with women in urban areas (PR, 0.69 [95% CI, 0.51–0.94]). Choice of holistic support programs was 14% higher (PR, 1.14 [95% CI, ≥ 1.00 –1.28]) in women who reported using an AHS compared with those who did not.

Compared with ex-smokers, a lower percentage of current smokers considered cultural programs helpful (PR, 0.86 [95% CI, 0.74–0.99]). High smoking intensity (≥ 11 CPD) and high urge strength were positively associated with choosing cessation support (PR, 3.14 [95% CI, 1.77–5.59] and 1.48 [95% CI, 1.01–2.16], respectively). Women with higher Heaviness of Smoking Index scores had a 13% higher prevalence (PR, 1.13 [95% CI, ≥ 1.00 –1.27]) of considering group-based support helpful, compared with women with lower Heaviness of Smoking Index scores. The percentage of women who considered incentives helpful was over four times as high among those who smoked ≥ 11 CPD compared with those smoking 0–5 CPD (PR, 4.59 [95% CI, 1.63–12.95]).

Older women (≥ 35 years) were 1.7 times more likely to prefer support provided online or over the phone (PR, 1.70 [95% CI, 1.03–2.80]) than younger women (16–20 years), and a lower percentage of older women preferred support provided face to face at an AHS (PR, 0.84 [95% CI, 0.72–0.99]) compared with younger women (16–20 years). Among women who reported using an AHS compared with women who did not, the prevalence of selecting an Aboriginal health worker as preferred support provider was 35% higher (PR, 1.35 [95% CI, 1.12–1.62]) and the prevalence of selecting face-to-face support at an AHS was 28% higher (PR, 1.28 [95% CI, 1.10–1.49]). Using an AHS was inversely associated with choice of someone unknown as a support provider (PR, 0.47 [95% CI, 0.29–0.76]). Compared with ex-smokers, a lower percentage of current smokers preferred face-to-face support at an AHS (PR, 0.86 [95% CI, 0.77–0.96]). High urge frequency was positively associated with choosing an Aboriginal health worker as a support provider (PR, 1.22 [95% CI, 1.01–1.47]) (Supporting Information, Table 1 and Table 2).

Discussion

Aboriginal and Torres Strait Islander women who smoke want to quit. They consider smoking cessation support acceptable and of interest, and prefer a range of support options. For five of the

seven broad categories of support, at least half of participants indicated that they thought the strategy would be helpful. There was no clear first preference of program, but the most frequently chosen program type was group-based support, which was selected by about one-third of women. However, preferences varied when considering age, remoteness, nicotine dependence, and use of an AHS.

Over three-quarters of women considered holistic support to be helpful. This included yoga and exercise, which has been reported to provide moderate effectiveness in short term smoking cessation outcomes when used to complement behavioural therapy in the general population.^{14,15} However, this requires exploration within Indigenous contexts. Holistic supports also incorporated art activities, which have also been reported as being useful in the development of community-relevant Aboriginal tobacco campaigns.¹⁶ A recent pilot program with Aboriginal and Torres Strait Islander women during pregnancy also showed that the incorporation of art activities with men's and women's groups was meaningful to participants.¹⁷ However, details of these activities and their effectiveness have not been reported. Women in our study reported culture as being important. Culture is broadly acknowledged as a protective factor for health and wellbeing, but it is not yet known if this can specifically support smoking cessation.^{18,19} In our study, cultural programs were more likely to be selected by ex-smokers. While it is not clear whether cultural programs are desired by ex-smokers to support quitting or to sustain cessation, there are opportunities for health messaging that incorporates culture and cultural practices to empower smoke-free behaviour.

Overseas, group-based smoking cessation support has been shown to be feasible, effective, and cost-effective.^{20–23} However, there is limited evidence on the components and fidelity of an effective program.²⁰ In a maternal smoking cessation program with Aboriginal and Torres Strait Islander women, support groups had challenges such as transport, and the program's evaluation provided limited evidence on effectiveness.²⁴

Experts have explored smoking cessation incentives with concerns about low evidence of effectiveness, the associated shame and stigma, and unethical exploitation of economic desperation.²⁵ While two recent interventions with Aboriginal and Torres Strait Islander women have incorporated incentives,^{17,24} and a recent international Cochrane review concluded that financial incentives improve smoking cessation rates at long term follow-up,²⁶ few women in our study wanted incentives. In addition, they did not consistently interpret incentives as financial rewards. Notably, incentives were more likely to be selected by women with a degree or trade certificate, which may challenge incentive-associated economic desperation concerns.²⁵ Regardless, these findings highlight that other strategies may be preferred by Aboriginal and Torres Strait Islander women who may experience higher levels of socio-economic disadvantage.

Aboriginal and Torres Strait Islander women in our study want support to quit smoking in a variety of ways. About two-thirds of surveyed women (64.3%) wanted this support from their Aboriginal health worker, while others preferred their clinical support provider, their community, or someone they did not know. A range of support settings were appropriate and of interest to Aboriginal and Torres Strait Islander women in this study; face-to-face support at an AHS was preferred by most (73.4%), and just over one-third of women selected phone and online support. This study provides further evidence that there is no one-size-fits-all approach to culturally appropriate cessation care; women have different needs and preferences at different times.

Our findings show that AHSs are the preferred health provider for most Aboriginal and Torres Strait Islander women. This coincides with evidence that AHSs are well placed to mitigate and overcome the social and cultural determinants of health that impede access to health care.²⁷ We found that Aboriginal and Torres Strait Islander women who already use an AHS were more likely to select an Aboriginal health worker as their preferred provider for cessation support, and for this to be face to face at an AHS. This is likely due to positive community perceptions of AHSs,²⁸ including community ownership of programs and supports,²⁹ as well as women having established relationships with their health providers that could facilitate continuity of care during pregnancy, helping to embed smoking cessation care.

A suite of options for smoking cessation care is needed, as opportunities and access will vary between women and over time (before, during and after pregnancy). While Aboriginal and Torres Strait Islander-specific services may be preferred by most women, all health professionals should proactively offer support for quitting to Aboriginal and Torres Strait Islander women who smoke, consistent with clinical guidelines. Further, it is not always possible for women to attend their AHS, particularly during pregnancy, and women may receive health care from multiple providers.

Conclusion

Aboriginal and Torres Strait Islander women who smoke want to quit. They are interested in a range of smoking cessation support strategies and want to receive support from a variety of health care providers. There is an opportunity to foster smoke-free pregnancies by systematically providing cessation services that cover the pre-conception, pregnancy, and post-partum periods, which should be embedded into clinical practice and health care delivery. Appropriate models of care, including funding for AHSs and Aboriginal health workers — in both mainstream health services and AHSs — are urgently required and should be developed in partnership with Aboriginal and Torres Strait Islander communities. This will help to decrease the burden of tobacco-related morbidity and mortality, improving health outcomes and reducing strain on the health care system. Aboriginal and Torres Strait Islander people require a health care system that provides culturally responsive care that meets the needs of women, families, communities and future generations.

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- 1 Australian Institute of Health and Welfare. Australia's mothers and babies. Canberra: AIHW, 2021. (AIHW Cat. No. PER 101.) <https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies/contents/about> (viewed Nov 2021).
- 2 Boyle J, Eades S. Closing the gap in Aboriginal women's reproductive health: some progress, but still a long way to go. *Aust N Z J Obstet Gynaecol* 2016; 56: 223-224.
- 3 Zwar NA, Mendelsohn CP, Richmond RL. Supporting smoking cessation. *BMJ* 2014; 348: f7535.
- 4 Lindson N, Pritchard G, Hong B, et al. Strategies to improve smoking cessation rates in primary care. *Cochrane Database Syst Rev* 2021; (9): CD011556.
- 5 Royal Australian College of General Practitioners. Supporting smoking cessation: a guide for health professionals. Melbourne: RACGP, 2021. <https://www.racgp.org.au/clinical-resources/clinical-guidelines/key-racgp-guide/lines/view-all-racgp-guidelines/supporting-smoking-cessation> (viewed Nov 2021).
- 6 Hartmann-Boyce J, Hong B, Livingstone-Banks J, et al. Additional behavioural support as an adjunct to pharmacotherapy for smoking cessation. *Cochrane Database Syst Rev* 2019; (6): CD009670.
- 7 Khan A, Green K, Khandaker G, et al. The impact of a regional smoking cessation program on referrals and use of Quitline services in Queensland, Australia: a controlled interrupted time series analysis. *Lancet Reg Health West Pac* 2021; 14: 100210.
- 8 Barnett A, Ding H, Hay KE, et al. The effectiveness of smartphone applications to aid smoking cessation: a meta-analysis. *Clin eHealth* 2020; 3: 69-81.
- 9 Whittaker R, McRobbie H, Bullen C, et al. Mobile phone text messaging and app-based interventions for smoking cessation. *Cochrane Database Syst Rev* 2019; (10): CD006611.
- 10 Taylor GMJ, Dalili MN, Semwal M, et al. Internet-based interventions for smoking cessation. *Cochrane Database Syst Rev* 2017; (9): CD007078.
- 11 Bovill M, Chamberlain C, Bennett J, et al. Building an Indigenous-led evidence base for smoking cessation care among Aboriginal and Torres Strait Islander women during pregnancy and beyond: research protocol for the Which Way? project. *Int J Environ Res Public Health* 2021; 18: 1342.
- 12 Smith LT. Decolonizing methodologies: research and indigenous peoples. London: Zed Books, 1999.
- 13 Kennedy M, Barrett E, Heris C, et al. Smoking and quitting characteristics of Aboriginal and Torres Strait Islander women of reproductive age: findings from the Which Way? study. *Med J Aust* 2022; 217 (2 Suppl): S6-S18.
- 14 Bock BC, Fava JL, Gaskins R, et al. Yoga as a complementary treatment for smoking cessation in women. *J Womens Health (Larchmt)* 2012; 21: 240-248.
- 15 Marcus BH, Lewis BA, Hogan J, et al. The efficacy of moderate-intensity exercise as an aid for smoking cessation in women: a randomized controlled trial. *Nicotine Tob Res* 2005; 7: 871-880.
- 16 Giles L, Bauer L. Working towards a tobacco-free Aboriginal community through an arts-based intervention. *Australian Indigenous Health Bulletin* 2019; 19 (4). <http://healthbulletin.org.au/articles/working-towards-a-tobacco-free-aboriginal-community-through-an-arts-based-intervention> (viewed Nov 2021).
- 17 Askew DA, Guy J, Lyall V, et al. A mixed methods exploratory study tackling smoking during pregnancy in an urban Aboriginal and Torres Strait Islander primary health care service. *BMC Public Health* 2019; 19: 343.
- 18 Hunter S-A, Skouteris H, Morris H. A conceptual model of protective factors within Aboriginal and Torres Strait Islander culture that build strength. *J Cross Cult Psychol* 2021; 52: 726-751.
- 19 Thurber KA, Banks E, Joshy G, et al. Tobacco smoking and mortality among Aboriginal and Torres Strait Islander adults in Australia. *Int J Epidemiol* 2021; 50: 942-954.
- 20 Stead LF, Carroll AJ, Lancaster T. Group behaviour therapy programmes for smoking cessation. *Cochrane Database Syst Rev* 2017; (3): CD001007.
- 21 Valera P, Acuna N, Vento I. The preliminary efficacy and feasibility of group-based smoking cessation treatment program for incarcerated smokers. *Am J Mens Health* 2020; 14: 1557988320943357.
- 22 Kotsen C, Santorelli ML, Bloom EL, et al. A narrative review of intensive group tobacco treatment: clinical, research, and US policy recommendations. *Nicotine Tob Res* 2018; 21: 1580-1589.
- 23 Bauld L, Boyd KA, Briggs AH, et al. One-year outcomes and a cost-effectiveness analysis for smokers accessing group-based and pharmacy-led cessation services. *Nicotine Tob Res* 2011; 13: 135-145.
- 24 Passey ME, Stirling JM. Evaluation of 'Stop Smoking in its Tracks': an intensive smoking cessation program for pregnant Aboriginal women

- incorporating contingency-based financial rewards. *Public Health Res Pract* 2018; 28: 28011804.
- 25 Hefler M, Thomas D. The use of incentives to stop smoking in pregnancy among Aboriginal and Torres Strait Islander women. Melbourne: Lowitja Institute, 2013. <https://www.lowitja.org.au/page/services/resources/Cultural-and-social-determinants/alcohol-and-other-drugs/Pregnancy-Incentives> (viewed Nov 2021).
- 26 Notley C, Gentry S, Livingstone-Banks J, et al. Incentives for smoking cessation. *Cochrane Database Syst Rev* 2019; (7): CD00430.
- 27 Davy C, Harfield S, McArthur A, et al. Access to primary health care services for Indigenous peoples: a framework synthesis. *Int J Equity Health* 2016; 15: 163.
- 28 Baba JT, Brolan CE, Hill PS. Aboriginal medical services cure more than illness: a qualitative study of how Indigenous services address the health impacts of discrimination in Brisbane communities. *Int J Equity Health* 2014; 13: 56.
- 29 Smylie J, Kirst M, McShane K, et al. Understanding the role of Indigenous community participation in Indigenous prenatal and infant-toddler health promotion programs in Canada: a realist review. *Soc Sci Med* 2016; 150: 128-143. ■

Supporting Information

Additional Supporting Information is included with the online version of this article.

Ngaaminya (find, be able to see): summary of key findings from the Which Way? project

Michelle Kennedy^{1,*} , Raglan Maddox^{2,†} 

The cross-sectional results from the Which Way? project are outlined in this supplement^{1,2} and summarised in the Box.

This project has provided the first Indigenous-led primary evidence on smoking and cessation behaviour of Aboriginal and Torres Strait Islander women of reproductive age. It was developed for and by Aboriginal and Torres Strait Islander women, with the aim of guiding policy and practice to improve smoking cessation care provided to Aboriginal and Torres Strait Islander women during pregnancy and beyond. The novel findings highlight the importance of using a client-centred, culturally responsive approach to inform meaningful smoking cessation support strategies, clinical practice, and health care delivery.

Despite Australia being seen as a world leader in tobacco control,^{3,4} smoking is the single biggest contributor to the burden of disease.⁵ Over one-third (37%) of Aboriginal and Torres Strait Islander deaths are attributable to tobacco use, and this increases to 50% of deaths when considering only those aged 45 years or older.⁶ This reflects the systematic embedding of tobacco use by colonisers as an addictive commodity⁷ — for example, by using tobacco rations while Aboriginal and Torres Strait Islander peoples were actively excluded from both the cash economy and the education system. Consequences of this have been long and enduring, such as the low socio-economic status which is strongly associated with smoking. The overall lower socio-economic status of Australia's Aboriginal and Torres Strait Islander population is an outcome that was manufactured by colonisation, which eroded power, social structures and Indigenous community resources,⁷⁻⁹ and has led to disproportionately high risk of tobacco use and rates of tobacco-related morbidity and mortality.¹⁰ However, the vast majority of Aboriginal and Torres Strait Islander people who smoke want to quit, or wish they never took up smoking.¹¹

The results from Which Way? indicate that work is urgently required to support the development and implementation of meaningful cessation support services to accelerate reductions in tobacco use and tobacco-related morbidity and mortality among Aboriginal and Torres Strait Islander people.

Multifaceted, comprehensive and holistic approaches

The findings of the project are consistent with evidence that Aboriginal and Torres Strait Islander people want to quit smoking. They also call for strategies that are community-led, multifaceted and comprehensive, and which incorporate holistic approaches to addressing the complexities of tobacco use.⁷ There is no one-size-fits-all approach. Different strategies, and combinations of strategies, are needed to reflect community needs and supports to quit smoking. This highlights the importance of flexible program delivery that acknowledges sovereignty and principles of self-determination to empower

Aboriginal and Torres Strait Islander women to be smoke-free. It also aligns with overseas evidence which suggests that Indigenous community investment, ownership and activation are important pathways for success and sustainability — programs perceived as community owned have been linked with positive change across a diverse range of outcomes.¹²

One of the findings of the Which Way? project was that group-based and holistic supports were preferred by most women. In 2019, the Medicare Benefits Schedule Review Taskforce recommended that allied health services provide group services.¹³ The Taskforce indicated that group therapy services offer a unique opportunity to deliver preventive care more effectively to Aboriginal and Torres Strait Islander people,¹³ and thereby reduce the burden and costs of chronic disease — increasingly important benefits in the context of reduced health care capacity owing to the coronavirus disease 2019 (COVID-19) pandemic. In the United States, group-based smoking cessation supports are reimbursable in clinical settings,¹⁴ but this evidence-based practice is not incorporated in Medicare item rebates or block funding models that are necessary to integrate this type of support into current health services in Australia.

Another finding from Which Way? was that women expressed a preference to have smoking cessation care provided by Aboriginal health workers. The key role of Aboriginal health workers and practitioners in providing culturally safe care goes beyond Aboriginal health services, as these positions are included in a range of mainstream, hospital and community-controlled settings. However, not all Aboriginal and Torres Strait Islander women want face-to-face support, which highlights the need for a range of cessation supports to be available. Mobile phone apps to support cessation, developed specifically for and with Aboriginal and Torres Strait Islander people, are in trial phases.^{15,16} Preliminary evidence suggests that these apps require strong integration with currently used mobile apps and platforms, including social media, to be relevant and meaningful to Aboriginal and Torres Strait Islander people. Ensuring culturally safe, supportive, and appealing alternatives — including online and phone-based support — is important in terms of complementing face-to-face counselling services. Such alternatives would be particularly relevant for women who may not feel safe or comfortable discussing smoking during pregnancy with their health care provider.

Funding and embedding smoking cessation support in health services

Six temporary Medicare items for nicotine and cessation counselling provided by general practitioners were introduced in July 2021,¹⁷ including face-to-face, telehealth and telephone services. These provided unique opportunities to offer

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Key findings from the Which Way? project

We surveyed 428 Aboriginal and Torres Strait Islander women of reproductive age. They were smokers (269, 62.9%) and ex-smokers (159, 37.1%), and lived in urban (212, 49.5%), regional (187, 43.7%) and remote (29, 6.8%) settings.

Smoking behaviour (current smokers)

- 32.3% of the women we surveyed smoked <5 CPD, and 33.5% smoked \geq 11 CPD
- 66.2% had low nicotine dependence (based on Heaviness of Smoking Index scores)
- 32.7% of those with low dependence had high strength and/or high frequency of urges to smoke

Quitting behaviour

- 90.2% had ever tried to quit smoking
- 65.4% reported attempting to cut down smoking in the past month
- 35.7% had ever tried NRT and/or SSM
- 80.0% reported barriers of attitudes and beliefs to not using NRT or SSM
- Quitting suddenly, rather than gradually, was significantly associated with sustained abstinence (prevalence ratio, 1.27; 95% CI, 1.10–1.48)

Differences between younger and older women

- Younger women tended to smoke fewer cigarettes per day (57.1% smoking 0–5 CPD) than older women (48.2% smoking \geq 11 CPD)
- Older women were significantly more likely to have tried NRT and/or SSM than younger women (52.4% for those aged 35–49 years v 11.5% of those aged 16–20 years; 35–49 years: odds ratio, 8.47 [3.62–19.84])
- Older women were more likely to have sustained a quit attempt for years (45.6%) compared to younger women (< 5.0%)

Difference between women in urban and regional/remote areas

- Women living in regional and remote areas were less likely to have ever used NRT and/or SSM compared with women living in urban areas (30.1% v 41.5%; odds ratio, 0.50 [95% CI, 0.27–0.94])

Preferred strategies to support smoking cessation

- Group-based and holistic support were the most preferred strategies to empower women to quit smoking (31.8% and 22.2%, respectively)
- Women with higher nicotine dependency were more likely to consider group-based supports helpful (prevalence ratio, 1.13; 95% CI, \geq 1.00–1.27) than those with low nicotine dependency
- Aboriginal health workers were the most preferred providers for smoking cessation support (64.3%)
- Most women preferred face-to-face support at an Aboriginal health service (73.4%)
- One-third of women reported phone support (34.8%) and online support (38.8%) to be of interest

CPD = cigarettes per day. NRT = nicotine replacement therapy. SSM = stop-smoking medication. ♦

appropriate supports to Aboriginal and Torres Strait Islander women. Due to the high preference for Aboriginal health services and the continuity-of-care model recommended in maternity care,¹⁸ having a known health provider offer cessation support to Aboriginal and Torres Strait Islander women is recommended. This includes systematically embedding cessation supports into services with GPs using this option. As these Medicare items were aimed specifically at GPs, there is a need for block and/or Medicare funding to also support Aboriginal health workers and practitioners and Aboriginal health services to deliver smoking cessation care. Embedding smoking cessation care in health services is cost-effective,¹⁹ and has the potential to provide large cost savings and substantial health gains. This approach should be explored, implemented and evaluated, with appropriate data collection and continuous quality improvement mechanisms that facilitate better recognition of and responses to smoking behaviour. Dedicated funding to resource such work could help provide smoking cessation supports in a culturally safe and familiar environment, including by Aboriginal health workers and practitioners at Aboriginal health services. This would

integrate important services as part of routine pre-natal and maternity care without the need for referrals to other services.

While the development of relevant, appealing and targeted interventions to support attempts to quit smoking is urgently required, it is important to recognise, address and mitigate factors in the broader context of Aboriginal and Torres Strait Islander health and wellbeing. This includes racism and other social determinants of health, which underpin the basic drivers of smoking prevalence. Although addressing these broader socio-structural factors is largely beyond the scope of any health program, these should be recognised and mitigated in policy to help ensure access to culturally safe smoking cessation supports. At a broader system-wide level, tobacco control through cross-sector and cross-jurisdictional collaborations is critical to supporting women to quit. Listening to the preferences of Aboriginal and Torres Strait Islander women is an important component of meaningful co-design processes, upholding Indigenous agency, self-determination and sovereignty to be free from nicotine and tobacco.

As the National Preventive Health Strategy, the imminent new Implementation Plan for the National Aboriginal and Torres Strait Islander Health Plan, and jurisdictional tobacco programs and strategies are developed, implemented, monitored and evaluated, it is fundamentally important that they are informed by the strongest available evidence developed for and by Aboriginal and Torres Strait Islander people to urgently address the tobacco epidemic. This will help ensure that policies capture the needs of all Aboriginal and Torres Strait Islander people across this diverse country, that there is equitable access to smoking cessation support strategies, and that improvements in health outcomes are accelerated.

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- 1 Kennedy M, Barrett E, Heris C, et al. Smoking and quitting characteristics of Aboriginal and Torres Strait Islander women of reproductive age: findings from the Which Way? study. *Med J Aust* 2022; 217 (2 Suppl): S6–S18.
- 2 Kennedy M, Heris C, Barrett E, et al. Smoking cessation support strategies for Aboriginal and Torres Strait Islander women of reproductive age: findings from the Which Way? study. *Med J Aust* 2022; 217 (2 Suppl): S19–S26.
- 3 Gifford H, Tautolo E-S, McCool JP, et al. Getting there together: highlights, challenges and opportunities for tobacco control in the Oceania region. *Tob Control* 2022; 31: 164–168.
- 4 Maddox R, Durkin S, Lovett R. Plain packaging implementation: perceptions of risk and prestige of cigarette brands among Aboriginal and Torres Strait Islander people. *Aust N Z J Public Health* 2016; 40: 221–225.

- 5 Australian Government Department of Health. National Preventive Health Strategy 2021–2030. Canberra: Commonwealth of Australia, 2021. <https://www.health.gov.au/resources/publications/national-preventive-health-strategy-2021-2030> (viewed Jan 2022).
- 6 Thurber KA, Banks E, Joshy G, et al. Tobacco smoking and mortality among Aboriginal and Torres Strait Islander adults in Australia. *Int J of Epidemiol* 2021; 50: 942-954.
- 7 Colonna E, Maddox R, Cohen R, et al. Review of tobacco use among Aboriginal and Torres Strait Islander peoples. *Australian Indigenous Health Bulletin* 2020; 20 (2). <http://healthbulletin.org.au/articles/review-of-tobacco-use-among-aboriginal-and-torres-strait-islander-peoples> (viewed May 2022).
- 8 Williams DR. Race, socioeconomic status, and health the added effects of racism and discrimination. *Ann N Y Acad Sci* 1999; 896: 173-188.
- 9 Maddox R, Waa A, Lee K, et al. Commercial tobacco and indigenous peoples: a stock take on Framework Convention on Tobacco Control progress. *Tob Control* 2019; 28: 574-581.
- 10 Blakely T, Fawcett J, Hunt D, Wilson N. What is the contribution of smoking and socioeconomic position to ethnic inequalities in mortality in New Zealand? *Lancet* 2006; 368: 44-52.
- 11 Couzos S, Nicholson AK, Hunt JM, et al. Talking About The Smokes: a large-scale, community-based participatory research project. *Med J Aust* 2015; 202 (10 Suppl): S13-S19. <https://www.mja.com.au/journal/2015/202/10/talking-about-smokes-large-scale-community-based-participatory-research-project>
- 12 Smylie J, Kirst M, McShane K, et al. Understanding the role of Indigenous community participation in Indigenous prenatal and infant-toddler health promotion programs in Canada: a realist review. *Soc Sci Med* 2016; 150: 128-143.
- 13 Medicare Benefits Schedule Review Taskforce. Post consultation report from the Aboriginal and Torres Strait Islander Health Reference Group. Canberra: Commonwealth of Australia, 2020. <https://www.health.gov.au/resources/publications/post-consultation-report-from-the-aboriginal-and-torres-strait-islander-health-reference-group> (viewed Jan 2022).
- 14 Kotsen C, Santorelli ML, Bloom EL, et al. A narrative review of intensive group tobacco treatment: clinical, research, and US policy recommendations. *Nicotine Tob Res* 2018; 21: 1580-1589.
- 15 Peiris D, Wright L, News M, et al. A smartphone app to assist smoking cessation among Aboriginal Australians: findings from a pilot randomized controlled trial. *JMIR Mhealth Uhealth* 2019; 7: e12745.
- 16 Kennedy M, Kumar R, Ryan NM, et al. Codeveloping a multibehavioural mobile phone app to enhance social and emotional well-being and reduce health risks among Aboriginal and Torres Strait Islander women during preconception and pregnancy: a three-phased mixed-methods study. *BMJ Open* 2021; 11: e052545.
- 17 Royal Australian College of General Practitioners. New items for smoking cessation services. Melbourne: RACGP, 2021. <https://www.racgp.org.au/running-a-practice/practice-resources/medicare/medicare-benefits-schedule/new-items-for-smoking-cessation-services> (viewed Jan 2022).
- 18 Homer CS. Models of maternity care: evidence for midwifery continuity of care. *Med J Aust* 2016; 205: 370-374. <https://www.mja.com.au/journal/2016/205/8/models-maternity-care-evidence-midwifery-continuity-care>
- 19 Evison M, Cox J, Howle F, et al. Health economic analysis for the 'CURE Project' pilot: a hospital-based tobacco dependency treatment service in Greater Manchester. *BMJ Open Respir Res* 2021; 8: e001105. ■



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