

Generation smoke-free: Protective factors for never smoking among young First Nations peoples aged 10–15 years in the Next Generation Youth Wellbeing Study



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Abstract

Purpose In Australia, smoking accounts for half of all Aboriginal and Torres Strait Islander (First Nations) deaths aged ≥ 45 years. Regular smoking is more common among First Nations than non-Indigenous peoples in Australia. Smoking primarily commences during adolescence and young adulthood. Preventing uptake is important for long-term health outcomes. This study aimed to identify the protective factors that support young people to be smoke-free, to inform prevention programs and strategies.

Methods The 'Next Generation Youth Wellbeing Study' is a mixed-methods cohort study. It includes First Nations adolescents aged 10–24 years and living in urban, rural and remote communities in central Australia, Western Australia and New South Wales. This study analysed self-reported data on smoking

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from young people aged 10–15 years, collected during 2018–20, using Poisson regression to investigate the relation of various factors to never-smoking.

Main findings Among 682 participants, 54% were female, 90% had never smoked tobacco and 79% lived in smoke-free homes. Factors independently associated with never smoking were: having friends who did not smoke (prevalence ratio [PR] 1.22, 95% confidence interval [CI] 1.15–1.30); daily school attendance (PR 1.14, 1.06–1.22), never drinking (PR 1.84, 1.38–2.46), self-reported good/excellent health (PR 1.12, 1.00–1.26), good mental health (PR 1.12, 1.04–1.20), never been questioned by police (PR 1.24, 1.14–1.34) and never interacting with the justice system (PR 1.23, 1.13–1.33), compared with participants without these exposures. There was no association between never smoking and sex, available money or physical activity.

Principal conclusions Most First Nations young people had never smoked; this was related to multiple smoke-free influences, good health and wellbeing and positive social engagement and experiences. Alongside opportunities in home, school and community settings to support smoke-free behaviours, broader system-wide changes are required.

Keywords: Indigenous; Young people; Tobacco; Adolescence; Aboriginal and Torres Strait Islander; Cigarettes

Highlights

- Most young people had never smoked. This was related to good health and wellbeing and positive social engagement and experiences.
- There are opportunities in home, school and community settings to support smoke-free behaviours with broader system-wide changes also required.
- Community programs must support wellbeing – keeping people physically healthy, in good mental health and engaged and active, centring family, community and culture.
- Bigger systemic changes are needed. No negative interactions with the police was one of the strongest predictors of being a never smoker. The culture of over-policing and systemic racism that targets young Aboriginal people is directly impacting their health.

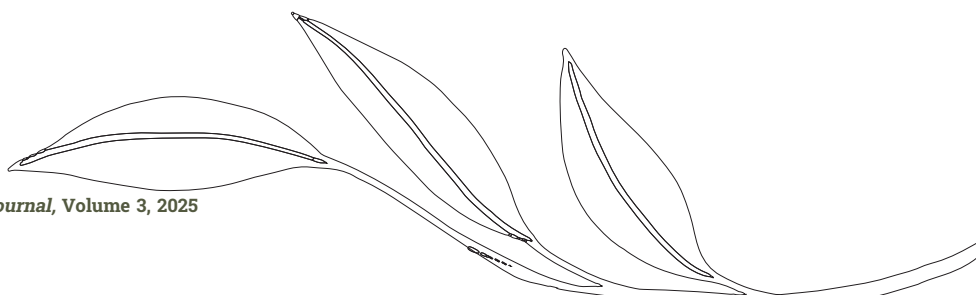
Introduction

Tobacco smoking is the largest risk factor in disease burden between Aboriginal and Torres Strait Islander (First Nations) and non-Indigenous peoples in Australia (Australian Institute of Health Welfare 2022) and accounts for half of all deaths among First Nations adults aged ≥ 45 years (Thurber et al. 2021a).

Adolescence (ages 10–24 years) is an important period of development that influences lifelong health

trajectories (Sawyer et al. 2018). As most tobacco use commences in adolescence, preventing uptake among First Nations adolescents is a significant opportunity to improve future health outcomes (Australian Institute of Health and Welfare 2018, p.12; Heris et al. 2020a; US Department of Health and Human Services 2012).

There have been significant declines in smoking prevalence among First Nations peoples over the past





two decades (Heris et al. 2022; Lovett et al. 2017a; Maddox et al. 2020). A range of policies and strategies from governments and non-government organisations (e.g. cancer councils) have communicated the harms of smoking, including community-level health promotion programs, such as the Tackling Indigenous Smoking program, alongside national tobacco control measures, such as excise increases, advertising bans, plain packaging and graphic health warnings (Tackling Indigenous Smoking 2025; Australian Government Department of Health 2020; Australian Government Department of Health 2018; Calma and McLennan 2023; Thomas and Calma 2020). Between 1994–2019, First Nations adults who self-reported current smoking (daily and less than daily) declined from 54.5% to 43.3% (Thurber et al. 2020a). The largest declines were among 18–24 year olds, from 55.4% to 39.5% (Thurber et al. 2020a). First Nations secondary students aged 12–17 years who had never smoked also increased from 49% in 2005 to 70% in 2017 (Heris et al. 2020b). Further, the age of smoking initiation may be occurring later in young adulthood (18–24 years) (Heris et al. 2020a).

Commercial tobacco use was introduced to First Nations peoples in Australia during colonisation and was used as a form of payment and control, including in rations up to the late 1960s, and it is within this context that the higher smoking prevalence must be understood (Colonna et al. 2020). First Nations adolescents experience similar risk factors for smoking as non-Indigenous young people, including the normalisation of smoking among peers and family, life stressors, mental health, and substance use (due to the clustering of youth risk behaviours increasing the likelihood of trying others) (Heris et al. 2019; Heris et al. 2021a; Jessor and Costa n.d.). First Nations young people are more likely to experience

those risk factors and experience additional risk factors, due to the ongoing legacy of colonisation and contemporary colonisation processes. This includes experiences of racism, discrimination and marginalisation, exclusion from education and workforce opportunities increasing social disadvantage, with each social determinant of smoking contributing to a higher prevalence of tobacco use and the greater normalisation of smoking (Colonna et al. 2020).

Identifying factors that help prevent First Nations adolescents from starting to smoke is important for designing appropriate prevention programs. Some protective factors among First Nations young people include good mental health, strong family relationships, stable housing and no criminal justice interactions (Heris et al. 2021b). However, those data were from urban and regional communities in New South Wales (NSW) only, and collected prior to the introduction of new tobacco control policy changes between 2014–17 (including plain packaging, price increases, retail display bans, smoking in cars legislation and outdoor dining) (Heris et al. 2021b). These gaps highlight the need for updated evidence that reflects the current policy environment and includes a greater range of community settings. This strengths-based study (Fogarty et al. 2018; Thurber et al. 2020b) aimed to identify the protective factors for smoking using recent data from a broad geographical area to better inform the design of prevention programs.

Methods

Study design

The Next Generation: Youth Wellbeing Study is a mixed-methods cohort study of First Nations adolescents aged 10–24 years from urban, regional





and remote communities in central Australia (CA), Western Australia (WA) and NSW (Gubhaju et al. 2019).

Recruitment

Recruitment was through trusted community networks and has been described elsewhere (Graham et al. 2021; Gubhaju et al. 2019; McKay et al. 2023; Williams et al. 2024). Briefly, 1,244 First Nations participants aged 10–24 years were recruited through two main channels: community networks (both personal contacts and through Aboriginal community organisations, sports clubs and youth centres) and peer recruitment (Williams et al. 2024). Each of the three sites employed two to four community-based researchers (including RW, TF, MO) and young Aboriginal peer researchers (KD, JW) who identified and recruited eligible young people and their carers in their networks, conducted data collection and chose an appropriate gift voucher incentive in consultation with local partners (e.g. selecting a relevant retailer). Recruitment was led by the Aboriginal research team in family groups where their trusted social networks facilitated culturally safe engagement with young people and community. Once trust had been established, a large number of young people were recruited in short periods of time (e.g. 200 participants in three days) (Williams et al. 2024).

Data collection/administration

Participants completed a questionnaire (REDCap survey on tablets or paper-based) independently or with some assistance from the research team if requested. Participants aged 10–15 years completed a different survey to those aged 16–24 years because ethics restricted some substance use questions to the older cohort. Data were collected between 1 March 2018 and 30 March 2020. This study only used data from the 10–15-year-old cohort, reflecting their unique life stage and survey questions (data from the 16–24-

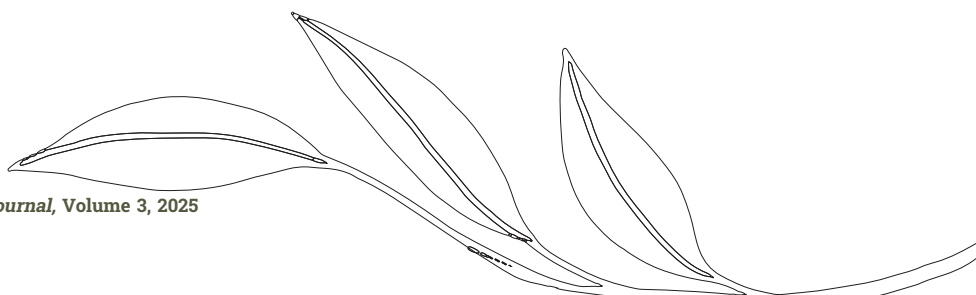
year-old cohort will be the subject of a subsequent study).

Measures

The main outcome was ‘never smoked’ versus ‘ever smoked’ among 10–15-year-olds from the survey question ‘have you ever tried smoking a tobacco cigarette?’.

Exposures

The survey included exposure factors based on published literature and identified by First Nations community organisations, accounting for local context and terminology to maximise the potential to inform relevant programs. Demographic factors included site/state, sex, age, friends who did not smoke and smoke-free homes. Sociodemographic factors included amount of spending money, school attendance, carer encouragement to attend school, expectations of work or study in five years, availability of community activities and participation in recreational activities. Physical health measures included having never drunk alcohol, self-rated good health, number of days physically active and hours of screentime. Participants’ mental health was examined using the Strengths and Difficulties Questionnaire (SDQ) Total Difficulties Score with the score reported in three categories of low risk/close to average, borderline, high risk/abnormal (Youth in Mind 2022). The 12-item Child and Youth Resilience Measure (CYRM-12) was also used, reporting the total score and key individual subscale measures of Role Models, Parent Relationships, School Belonging and Skill Development (Resilience Research Centre 2023; Liebenberg et al. 2013). Participants were asked about the importance of culture, cultural connectedness and identity, whether they spoke an Indigenous language and the importance of Indigenous languages. Finally, several individual and composite measures around not being bullied, no personal experiences of racism or





vicarious racism, and no interactions with the justice system were included.

Other variables of interest

The reasons people selected having never smoked from an eight-item list (multi-select) were also described, reporting the frequency and proportion choosing each reason (number (*n*) and proportion (%)).

Statistical analysis

This study presents the cross-sectional analyses. Each model was restricted to those with outcome, covariate and exposure data. Those with missing data were excluded from the corresponding analyses. Descriptive statistics are provided for the overall sample (*n* and %) and for each exposure, as well as mean age at which young people first started to smoke.

Multi-level mixed-effects Poisson regression was undertaken reporting prevalence ratios (PRs) for the association between the exposure and the outcome with 95% confidence intervals (CI). PRs were adjusted for age (continuous) and state/site and accounted for clustering in the sample (using a family ID indicator). All analyses were conducted in Stata/SE v16.1 (StataCorp, College Station, TX, USA).

Governance

The Next Generation Youth Wellbeing Study is a First Nations-led study (SE) with oversight from a governance committee of both First Nations and non-Indigenous peoples. It has been conducted with Aboriginal community-controlled health services and other community partners. The authorship group included those with Aboriginal lived experience (SE, SG, RW, FE, KD, JW, CM, TF, MO) and with research expertise in Indigenous health (all authors), adolescent health (all authors) and tobacco control (SE, EB, CH, TR, GJ). Aboriginal community members were involved throughout all stages of this study. Priority research

questions and selected exposure variables were identified through consultation. Feedback on early descriptive results was adopted, with further feedback on the interpretation of the findings incorporated.

Ethics

Ethics approvals were received from the Central Australian Aboriginal Human Research Ethics Committee (Ref #16-398), Western Australian Aboriginal Health Ethics Committee (Ref #719), Aboriginal Health and Medical Research Council of NSW Ethics Committee (Ref #1255-17), Alfred Health Ethics Committee (Ref #255-16) and the University of Melbourne Medicine and Dentistry Human Ethics Subcommittee (ID# 1851155). This paper was approved for submission for publication by Aboriginal Health and Medical Research Council of NSW Ethics Committee.

Results

Sample

Of the 726 participants aged 10–15 years, 44 (6%) were excluded as their smoking status was ‘missing’ (having skipped the question or they responded with ‘prefer not to answer’); leaving a final sample of 682 participants. Two-thirds of the sample were from WA, just over a quarter from NSW with a smaller proportion (5%) from CA. There was a slightly higher proportion of females than males (53% vs. 47%) and 10–12-year-olds vs. 13–15-year-olds (56% vs. 44%). Overall, 79% of participants completed the survey independently. There was no significant difference in missing smoking data ($X^2 P = .277$) or never smoked status ($X^2 P = .631$) if they completed the survey independently or received assistance from the research team.

Smoking experience, exposure and attitudes/beliefs

The majority (90%) of participants had never smoked (Table 1). Among the 10% who had tried smoking, the median age of initiation was 12 years. Most (79%) also





Sample characteristics (N = 682)	10–15 years
Site	
Central Australia	5.3% (36)
Western Australia	67.3% (459)
New South Wales	27.4% (187)
Sex	
Female	53.5% (360)
Male	46.5% (313)
Age – years	
10–12	55.9% (381)
13–15	44.1% (301)
Never smoked cigarettes	
Ever smoked	10.1% (69)
Never smoked	89.9% (613)
Age of initiation–years	
Median age (IQR)	12 (3)
Range	5–15
Smoke-free home	
Non-smoke-free home	20.9% (134)
Smoke-free home	79.1% (508)
Among never smokers age 10–15 years (N = 613)	
Reasons for never smoking	
Worried about my health	56.3% (345)
Family/friends told me not to	37.0% (227)
No reason	18.4% (113)
Worried about the health of others	17.3% (106)
Anti-smoking advertising	10.9% (67)
Other reason	7.7% (47)
Too expensive	4.7% (29)
Too many non-smoking areas	1.1% (7)
Received assistance to complete survey (N = 396)	
Self-complete independently or clarification only	78.5% (311)
Research team assisted to complete the survey	21.5% (85)
[Not recorded (earlier survey version) n = 286]	
Data are shown as % (n) unless otherwise shown. Category frequencies may not sum to sample total due to missing data, percentages represent the category proportions among those with data for that variable.	

Table 1: Sample characteristics, tobacco use, exposure and reasons for never smoking

lived in smoke-free homes. The two primary reasons youth who had never smoked gave for avoiding smoking were ‘Worried about my health’ (56%) and ‘Family/friends told me not to’ (37%) (Table 1).

Regression analysis

Demographic and sociodemographic factors

WA had the highest proportion of participants who had never smoked and CA the lowest (Table 2, Figure A).

Never smoking was less likely with increasing age (PR 0.85, 0.80–0.90). Having friends who do not smoke was associated with an increased prevalence of never smoking (PR 1.22, 1.15–1.30), as was living in a smoke-free home (PR 1.10, 1.02–1.18), attending school daily (PR 1.14, 1.06–1.22) and participating in recreational activities in the previous 12 months (PR 1.10, 1.01–1.21).

Physical health, mental health and cultural factors

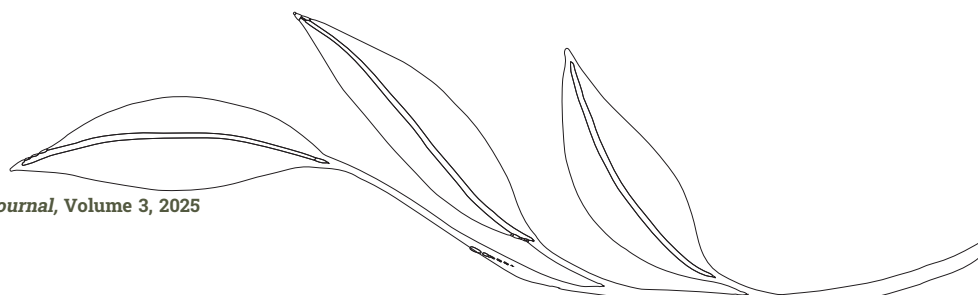
Having never drunk alcohol (PR 1.84, 1.38–2.46), self-rated health as good to excellent (vs. poor to fair, PR 1.12, >1.00–1.26), and having a low/average risk SDQ (i.e. better wellbeing) (PR 1.12, 1.04–1.20) were each associated with never smoking (Table 3, Figure B). Although not significantly associated with never smoking, some trending towards a protective effect was highlighted for increasing physical activity and parent/carer relationships.


Systems of exclusion

While levels of never smoking were higher among those who had not experienced racism or bullying across most measures, there was only a significant association for those who had not been called insulting names (PR 1.05, >1.00–1.11) (Table 4, Figure C). Never smoking was consistently higher for those who had not had interactions with the justice system.

Discussion

Most (90%) 10–15-year-olds had never smoked tobacco and were motivated by their own health, family and friends to be smoke-free. Never smoking was related to having friends who do not smoke, smoke-free homes, not drinking alcohol, participating in recreational activities, being engaged with school and having good mental and physical health. No interactions with the criminal justice system was also an important predictor of never smoking. These findings are consistent with Australian and international literature (Heris et al. 2021b; Heris et al.





	Ever smoked (N = 69) % (n)	Never smoked (N = 613) % (n)	Never smoked PR Adj ^c (95% CI)
Demographic			
Site			
Central Australia	33.3% (12)	66.7% (24)	1.00
Western Australia	5.4% (25)	94.6% (434)	1.35 (1.08–1.68)*
New South Wales	17.1 (32)	82.9% (155)	1.21 (0.96–1.52)
Sex			
Female	10.6% (38)	89.4% (322)	1.00
Male	9.9% (31)	90.1% (282)	1.01 (0.97–1.06)
Age group – years			
10–12	2.9% (11)	97.1% (370)	1.00
13–15	19.3% (58)	80.7% (243)	0.85 (0.80–0.90)*
Friends who smoke			
Have smoking friends	25.5% (60)	74.5% (175)	1.00
Non-smoking friends	1.8% (7)	98.2% (376)	1.22 (1.15–1.30)*
Smoke-free home			
Non-smoke-free home	17.9% (24)	82.1% (110)	1.00
Smoke-free home	8.3% (42)	91.7% (466)	1.10 (1.02–1.18)*
Sociodemographic			
Money to spend on self each week			
\$40 or less	8.1% (41)	91.9% (466)	1.00
More than \$40	20.4% (19)	79.6% (74)	0.95 (0.86–1.05)
School attendance			
Don't go everyday	19.8% (34)	80.2% (138)	1
Everyday	5.8% (28)	94.2% (453)	1.14 (1.06–1.22)*
Encouragement from parents/carers/family to attend school			
Not at all/a little	13.0% (6)	87.0% (40)	1
At least some/a lot	9.7% (58)	90.3% (540)	1.04 (0.93–1.16)
In 5 years: Working full-time			
No	9.3% (54)	90.7% (528)	1
Yes	15.0% (15)	85.0% (85)	1.00 (0.92–1.08)
In 5 years: In school			
No	14.8% (58)	85.2% (333)	1
Yes	3.8% (11)	96.2% (280)	1.04 (0.99–1.09)
Amount of activities available in community			
None	<25% (<5)	>75% (>15)	1
A little	8.8% (10)	91.2% (104)	1.19 (0.97–1.47)
Some	10.7% (27)	89.3% (225)	1.17 (0.95–1.44)
A lot	9.4% (20)	90.6% (192)	1.19 (0.96–1.47)
Participation in recreation activities past 12 months			
No activities	18.7% (20)	81.3% (87)	1
At least one activity	8.0% (45)	92.0% (520)	1.10 (1.01–1.21)*

Data are shown as % (n). Category frequencies may not sum to sample total due to missing data, percentages represent the category proportions among those with data for that variable. * $P < .05$ PRs adjusted for site and age, except those for age group, which is adjusted for site only.

Table 2: Relationship between demographic and sociodemographic factors and having never smoked

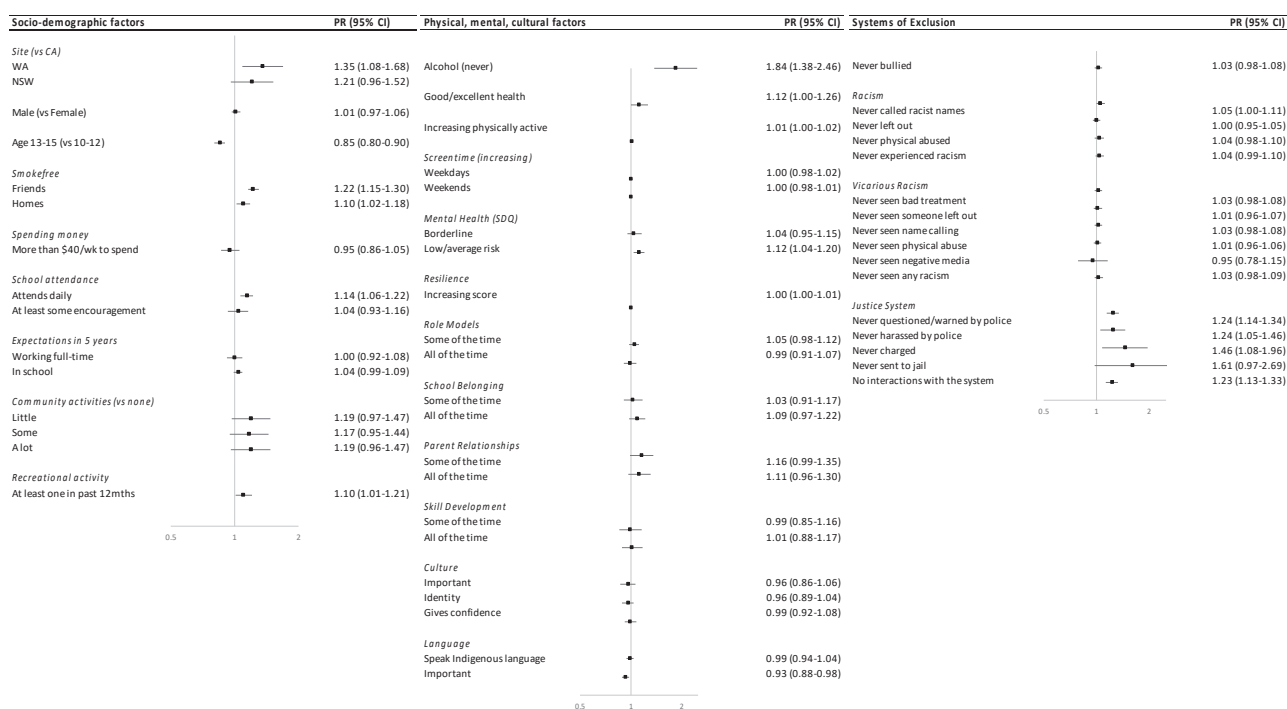


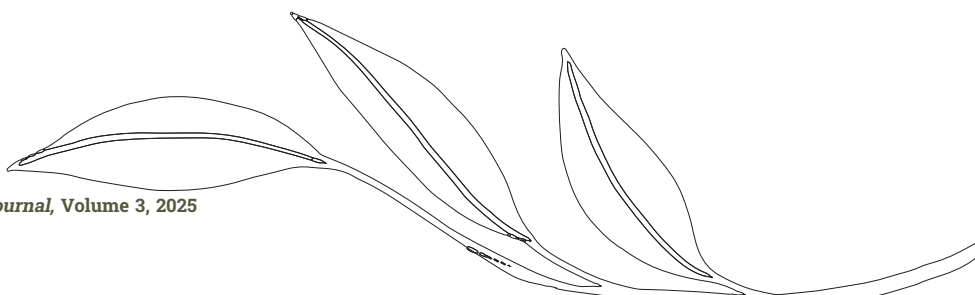
Figure: Relationship of (A) Sociodemographic factors, (B) Physical, mental and cultural factors, and (C) Systems of exclusion to never smoking among First Nations peoples aged 10–15 years.


2019; US Department of Health and Human Services 2012; Wood et al. 2019). This is within the context of declining smoking trends among First Nations young people nationally (Heris et al. 2020a; Heris et al. 2021a; Heris et al. 2020b; Thurber et al. 2020a). Understanding the contributing factors to this is important for supporting young people to stay smoke-free.

The protective impact of smoke-free environments and social influences has been established (Heris et al. 2019; US Department of Health and Human Services 2012; Wood et al. 2019; Heris et al. 2023). This study found that those who had never smoked were more likely to have friends who did not smoke and to live in a smoke-free home. A review of Indigenous youth in Australia, New Zealand, Canada and the United States found that living in smoke-free homes related to

reduced exposure to second-hand smoke, better quit support and deterred uptake (Stevenson et al. 2017). These homes had high levels of knowledge about smoking harms, motivating parents to protect their children. Clearly communicating smoke-free expectations was key to discouraging adolescent uptake (Stevenson et al. 2017). In Australia, First Nations smoke-free households are increasingly the norm; this does not substantially vary by remoteness (Thomas et al. 2015) but may be related to the presence of local tobacco control programs (Cohen et al. 2021).

There was a higher proportion of never smoking among participants who attended school daily. Adolescent smoking is influenced by the social norms and expectations set at home and school.





	Ever smoked (N = 69)	Never smoked (N = 613)	Never smoked PR Adj (95% CI)
Physical health			
Never had a full serve of alcohol			
Ever	54.2% (26)	45.8% (22)	1
Never	7.0% (41)	93.0% (548)	1.84 (1.38–2.46)*
Self-rated health status			
Poor to fair	22.5% (16)	77.5% (55)	1
Good to excellent	8.4% (47)	91.6% (514)	1.12 (>1.00–1.26)*
Days physically active per week (PR continuous measure)			
Increasing days active (0–7) (Mean (SD))	2.4 (2.0)	3.5 (2.3)	1.01 (<1.00–1.02)
Screen time (hrs/day) M-F (PR continuous measure)			
Increasing time 1hr/day (0–5+) (Mean (SD))	3.0 (1.7)	2.7 (1.6)	1.00 (0.98–1.02)
Screen time (hrs/day) weekend (PR continuous measure)			
Increasing time 1hr/day (0–5+) (Mean (SD))	3.2 (1.8)	2.7 (1.7)	1.00 (0.98–1.01)
Mental health			
SDQ high–low risk			
High risk/abnormal 20–40	15.8% (21)	84.2% (112)	1
Borderline 16–19	13.9% (17)	86.1% (105)	1.04 (0.95–1.15)
Low risk/close to average 0–15	6.2% (24)	93.8% (361)	1.12 (1.04–1.20)*
Youth Resilience Score (PR continuous measure)			
Increasing 1 unit score (0–24) (Mean (SD))	17.2 (4.9)	18.7 (4.5)	1.00 (<1.00,1.01)
CYRM role models: ‘I have people I look up to/want to be like’			
None of the time	11.6% (14)	88.4% (107)	1
Some of the time	7.6% (24)	92.4% (290)	1.05 (0.98–1.12)
All of the time	11.1% (18)	88.9% (144)	0.99 (0.91–1.07)
CYRM parent relationships: ‘I feel my parent(s)/caregiver(s) know a lot about me’			
None of the time	22.0% (9)	78.0% (32)	1
Some of the time	8.8% (16)	91.2% (165)	1.16 (0.99–1.35)
All of the time	9.0% (35)	91.0% (356)	1.11 (0.96–1.30)
CYRM school belonging: ‘I feel I belong at my school’			
None of the time	18.6% (11)	81.4% (48)	1
Some of the time	14.3% (26)	85.7% (156)	1.03 (0.91–1.17)
All of the time	6.4% (24)	93.6% (353)	1.09 (0.97–1.22)
CYRM skill development: ‘I have opportunities to learn things that will be useful’			
None of the time	<26% (<5)	>74% (>14)	1
Some of the time	12.7% (16)	87.3% (110)	0.99 (0.85–1.16)
All of the time	9.2% (43)	90.8% (424)	1.01 (0.88–1.17)
Cultural factors			
Importance of Aboriginal culture			
Not very/somewhat important	11.1% (5)	88.9% (40)	1
Important/very important	10.1% (64)	89.9% (568)	0.96 (0.86–1.06)
Cultural identity: ‘My connection to the land of my ancestors helps me know who I am’			
Strongly disagree–neither agree/disagree	<8% (<5)	>92% (>54)	1
At least agree/strongly agree	10.6% (65)	89.4% (548)	0.96 (0.89–1.04)
Culture gives confidence: ‘The more I learn about my culture, the more confident I feel about my life’			
Strongly disagree–neither agree/disagree	11.3% (7)	88.7% (55)	1
At least agree/strongly agree	10.1% (62)	89.9% (549)	0.99 (0.92–1.08)
Speak an Indigenous language, Aboriginal English or Pidgin			
No	10.0% (28)	90.0% (251)	1
Yes	10.3% (41)	89.7% (357)	0.99 (0.94–1.04)

(Table 3 continues on next page)



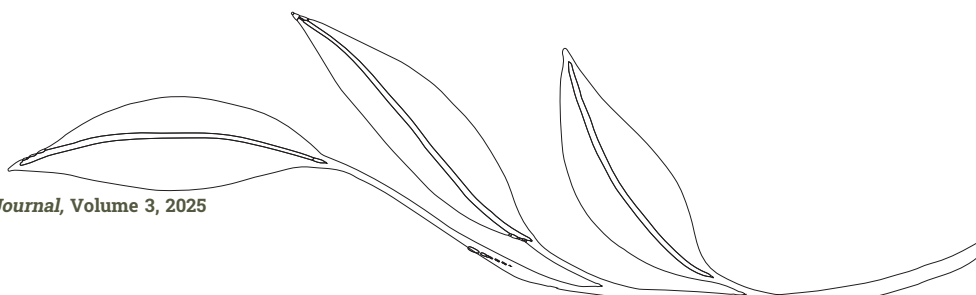
	Ever smoked (N = 69)	Never smoked (N = 613)	Never smoked PR Adj (95% CI)
(Continued from previous page)			
Language is important			
Strongly disagree–neither agree/disagree	6.5% (7)	93.5% (100)	1
At least agree/strongly agree	10.8% (61)	89.2% (504)	0.93 (0.88–0.98)*
Data are shown as % (n) unless otherwise shown. Category frequencies may not sum to sample total due to missing data, percentages represent the category proportions among those with data for that variable. *P < .05 †PR adjusted for site and age.			
Table 3: Relationship between physical health, mental health and cultural factors and having never smoked			


Internationally, students who attend schools with clear and strongly enforced smoke-free policies are less likely to smoke and may delay uptake, as do those who feel connected to school and have peers and family who do not smoke (Sabiston et al. 2009; Lovato et al. 2010). Academic achievement and engagement is also related to preventing uptake (Wood et al. 2019). The related measure of participation in recreational activities in the past year was also associated with never smoking in the current study. Another study with the full Next Generation sample of 10–24-year-olds found strong associations between high levels of physical activity and never smoking, as well as friends who do not smoke, suggesting that the relationship between physical activity and never smoking may become more important in later adolescence (Macniven et al. 2023). While the finding of increased never smoking with increasing physical activity was not significant, it was likely limited by a smaller sample. Young First Nations peoples who are socially engaged and feel connected to their families, communities and schools are more likely to not smoke (Heris et al. 2019; Heris et al. 2023). These results suggest a need to prioritise funding for community sport, recreation and social engagement as one part of broader health promotion efforts. These programs support young people to stay active and engaged in their communities, both within school settings and more generally, and present a valuable public health opportunity to take direct action on several outcomes,

including smoking, mental health and blood pressure when delivered as part of broader health promoting environments and systems.

Never smoking was associated with never drinking alcohol, in line with an earlier study of First Nations young people in Australia (Heris et al. 2021b; Heris et al. 2023). This association was similarly demonstrated in the 2017 Australian Secondary Students' Alcohol and Drug survey and the potential clustering effect among those who reported smoking tobacco and drinking alcohol (and cannabis use) (Heris et al. 2021a) and First Nations young people in Canada (Elton-Marshall et al. 2011). Comprehensive approaches to preventing substance use among young people, that address the shared influences of tobacco, alcohol and other drug use, are important.

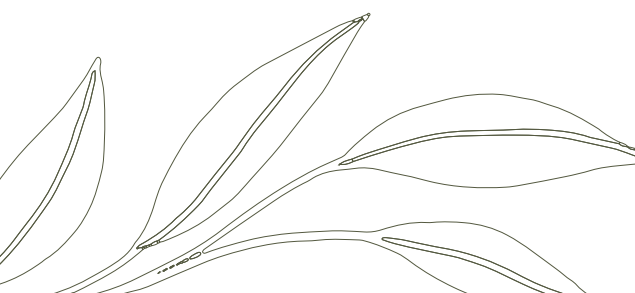
Participants who self-reported good mental health were more likely to have never smoked, as has been demonstrated elsewhere (noting this may be bidirectional) (Heris et al. 2019). Although many people report using smoking to cope with life stressors and anticipate that quitting may worsen their mental health, evidence shows that smoking is a risk factor for poor mental health – and that quitting can actually improve mental health outcomes (Hughes 2007; Taylor and Munafò 2019; Heris et al. 2023). For young people, building social and emotional wellbeing supports into comprehensive prevention programs are





	Ever smoked (N = 69)	Never smoked (N = 613)	Never smoked PR Adj (95% CI)
Bullied ever			
Yes	11.7% (35)	88.3% (264)	1
No/never	7.8% (25)	92.2% (297)	1.03 (0.98–1.08)
Racism – own experiences			
Racism – called insulting names			
Yes	12.4% (35)	87.6% (247)	1
No	8.3% (30)	91.7% (333)	1.05 (>1.00–1.11)*
Racism – left out of activities			
Yes	8.8% (19)	91.2% (196)	1
No	10.9% (47)	89.1% (385)	1.00 (0.95–1.05)
Racism – physical abuse			
Yes	11.4% (17)	88.6% (132)	1
No	9.8% (49)	90.2% (449)	1.04 (0.98–1.10)
Racism – any (3 questions only)			
Experienced at least 1 event	11.5% (41)	88.5% (316)	1
Not experienced any (or did not answer)	8.8% (26)	91.2% (270)	1.04 (0.99–1.10)
Racism – vicarious racism experiences			
Vicarious racism – ever seen someone treated badly			
Ever	11.5% (51)	88.5% (391)	1
Never	7.0% (11)	93.0% (147)	1.03 (0.98–1.08)
Vicarious racism – ever seen someone left out			
Ever	11.3% (43)	88.7% (336)	1
Never	8.6% (18)	91.4% (191)	1.01 (0.96–1.07)
Vicarious racism – ever seen someone called names			
Ever	10.8% (48)	89.2% (398)	1
Never	7.8% (12)	92.2% (142)	1.03 (0.98–1.08)
Vicarious racism – ever seen someone physically abused			
Ever	10.6% (36)	89.4% (304)	1
Never	9.2% (23)	90.8% (227)	1.01 (0.96–1.06)
Vicarious racism – negative media portrayal			
Ever	15.8% (9)	84.2% (48)	1
Never	24.1% (7)	75.9% (22)	0.95 (0.78–1.15)
Vicarious racism – any			
Ever experienced any vicarious racism	10.8% (55)	89.2% (453)	1
Never	6.5% (7)	93.5% (100)	1.03 (0.98–1.09)
Justice system interactions			
Police – ever questioned/given warning			
Yes	25.4% (45)	74.6% (132)	1
No	3.9% (17)	96.1% (417)	1.24 (1.14–1.34)*
Police – ever harassed (physical/verbal abuse)			
Yes	29.6% (16)	70.4% (38)	1
No	7.8% (43)	92.2% (506)	1.24 (1.05–1.46)*
Police – ever charged			
Yes	43.3% (13)	56.7% (17)	1
No	8.3% (48)	91.7% (529)	1.46 (1.08–1.96)*
Police – ever sent to jail by a judge/magistrate			
Yes	50.0% (7)	50.0% (7)	1
No	8.9% (53)	91.1% (544)	1.61 (0.97–2.69)

(Table 4 continues on next page)





	Ever smoked (N = 69)	Never smoked (N = 613)	Never smoked PR Adj (95% CI)
(Continued from previous page)			
Ever had interactions with the justice system (combined)			
Ever	24.9% (46)	75.1% (139)	1
Never	3.9% (17)	96.1% (416)	1.23 (1.13–1.33)*

Data are shown as % (n) unless otherwise shown. Category frequencies may not sum to sample total due to missing data, percentages represent the category proportions among those with data for that variable. *P < .05 PR adjusted for site and age.

Table 4: Relationship between systems of exclusion and having never smoked

likely to be important for improving mental health, and could contribute to staying smoke-free.

Participants in this study who had not had negative interactions with the justice system were significantly more likely to have never smoked. The strong relationship between these justice interactions and smoking has previously been shown among young First Nations people (Heris et al. 2021b). The repeated targeting of young First Nations people by police was raised in a recent qualitative study as reinforcing the psychosocial risks for smoking (Heris et al. 2023). Although the current study was able to report a slightly higher prevalence of never smoking among those who had not experienced any racism events, the justice interactions are a manifestation of racism and discrimination in the criminal justice system. A study of First Nations adults in Australia has demonstrated the significant impact that discrimination (even at ‘low levels’) has on wellbeing, including in increasing the likelihood of smoking (Thurber et al. 2021b). A possible benefit of less racialised patterns of policing of young people, and a less racialised society more broadly, may be a decrease in young people smoking.

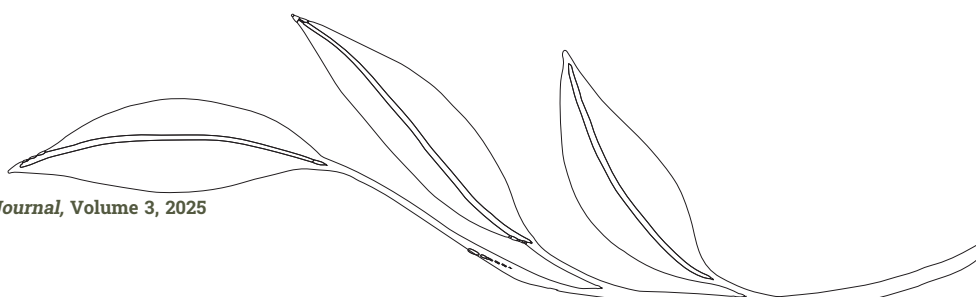
Strengths and limitations

A key strength of Next Generation is the First Nations leadership, governance and involvement throughout. Trusted relationships were critical for recruitment and will be important in follow-up. Further, it took a

strengths-based approach to reporting key protective factors that promote never smoking, including a range of positive exposures that are not frequently included in studies of ‘risk behaviours’.

Young people were recruited from specific locations; therefore, this sample may not be generalisable to all young First Nations peoples in Australia. The variation in smoking prevalence between locations within this sample is consistent with the geographical variation in prevalence between communities across Australia, reflecting differing levels of tobacco control, access to health promotion programs, exposure to structural disadvantage and relative stage of the tobacco epidemic (Heris et al. 2022; Lovett et al. 2017b). Further, those who did not consent to participate may have had different risk behaviours or views. Participants may have underreported smoking and other behaviours associated with negative stereotypes or shame, increasing the chance of misclassification bias. Where the study team aided, this did not materially impact the reporting of smoking status.

As Next Generation is a young cohort, age may have played a role and the authors accept that some individuals who reported never smoking may take it up in the future. Further, as this was a cross-sectional analysis it was only possible to assess how factors related to never smoking at that point in time. This does not imply a causal relationship.





Recommendations

Clear messaging about smoking harms is an important strategy that continues to deter young people from experimenting, as evidenced by more than half selecting that worries about their health was a primary reason for not smoking. The second most selected reason was that family and friends told them not to, indicating the importance of social norms and family and peers reinforcing smoke-free messages. That a substantial number could not identify a specific reason for never smoking is likely a reflection of their younger age and potentially reduced exposure of living in smoke-free homes, highlighting how environmental and structural measures may prevent smoking without individuals needing to internally process rational reasons for avoidance.

There is a need to continue to support First Nations communities to deliver First Nations-designed and -led solutions to prevent smoking. This includes local level health promotion programs that can increase smoke-free environments, increase awareness of the benefits of being smoke-free, and support smoke-free behaviours, including cessation among young people who do smoke. Programs that promote overall wellbeing (Luger and Collins 2022), facilitate good mental and physical health, reduce boredom, and create supportive school environments that promote engagement and academic achievement are also needed. Prevention programs should centre culture (Fields et al. 2024; Biles et al. 2024) and family (Heris et al. 2023), rather than the risk factor (smoking), moving away from deficit-based approaches. Such programs are fundamentally strengths-based and likely to be more effective through a culture-as-health approach (Thorpe et al. 2023). Engaging in cultural practices and connection to Country is protective to physical and mental health (Bourke et al. 2018; Wright

et al. 2021; Biles et al. 2024; Yashadhana et al. 2024), which are associated with not smoking. While variables related to culture were not directly associated with smoking status in this study, the findings show that most participants, regardless of smoking status, highly valued Aboriginal culture. Further research on culture and language programs as prevention strategies is warranted (Fields et al. 2024; Brady et al. 2024) as centring language and culture in health promotion will increase safety, relevance and acceptability.

However, broader systems-wide changes are also required around the structural, cultural and commercial determinants of health (Crocetti et al. 2022). The overrepresentation of First Nations peoples, including children, in the Australian criminal justice system point to the embedded racism, discrimination and colonisation processes that are having a direct impact on health and wellbeing outcomes.

Conclusion

The majority of 10–15-year-olds in this study had never smoked and this was related to smoke-free homes and peers, good physical and mental health, no alcohol use, school engagement, recreational participation and no interactions with the criminal justice system. Harnessing these protective factors in adequately resourced, First Nations-led programs and policies will likely contribute to an ongoing reduction of smoking among young First Nations peoples in Australia. While there are clear opportunities in the home, school and community settings to support smoke-free behaviours, broader system-wide changes are also required. These include eliminating commercially-produced tobacco, and addressing racism, discrimination and the incarceration of First Nations children.



Author contributions

S. Eades led the study with stewardship provided by S. Eades, C. Heris, S. Graham, R. Williams, E. Banks, R. Ivers and supervision by S. Graham, E. Banks, S. Eades. The study was conceived by S. Eades, C. Heris, S. Graham, R. Williams, K. Davis, T. Fields, M. O'Leary, E. Banks, R. Ivers, B. Liu, L. Gubhaju. Data collection and curation by C. Heris, R. Williams, K. Davis, J. Whitby, T. Fields, M. O'Leary, C. McKay, S. Eades. Formal analysis and visualisation by C. Heris supported by G. Joshy, findings validated by all authors. Investigation: all authors. Methodology: C. Heris, S. Graham, R. Williams, K. Davis, J. Whitby, T. Fields, M. O'Leary, E. Banks, C. McKay, F. Eades, R. Ivers, L. Gubhaju, S. Eades. C. Heris wrote the original draft and all authors contributed to, reviewed and approved the final manuscript. Funding acquired by S. Eades, E. Banks, L. Gubhaju. Project administration by C. Heris, S. Graham, C. McKay, L. Gubhaju, T. Rahman, S. Eades.

Declaration of interests

The authors have nothing to declare.

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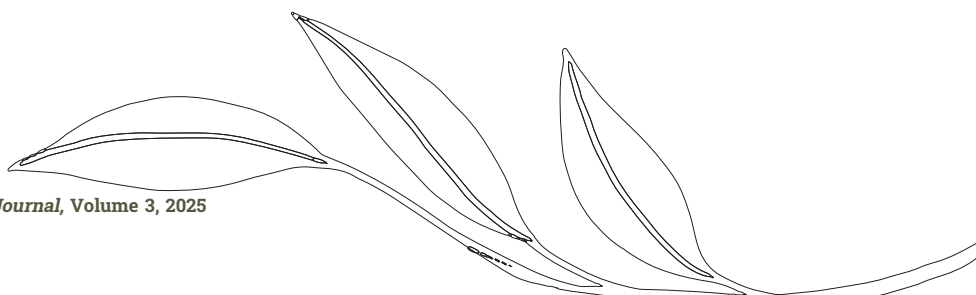
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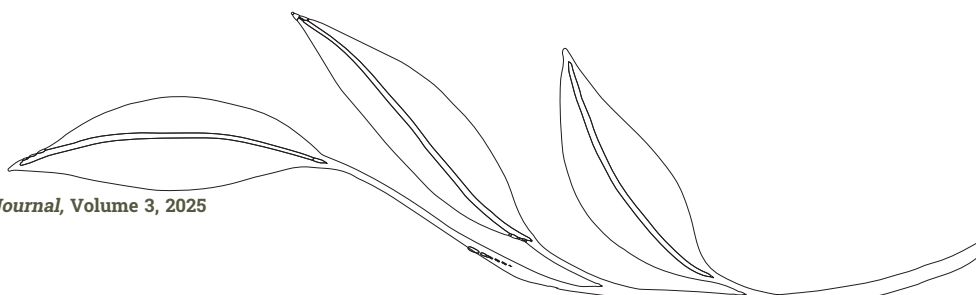
Tabassum Rahman (PhD) is an early career public health researcher with 10 years of experience working in Australia and overseas. She works as a Research Fellow in the Indigenous Epidemiology and Health Unit at the University of Melbourne. Tabassum has a mixed-methods research background, with a focus on integrating quantitative and qualitative evidence to provide a comprehensive insight into health and wellbeing issues. Over the past years, Tabassum worked on a range of topics cutting across broader health research domains, such as social determinants of health and health equity, behavioural change, and health and wellbeing of youth, women and refugee populations.

Sandra Eades (PhD) is a Noongar woman and Professor, currently holding the position as the Associate Dean (Indigenous) at the University of Melbourne, where she heads up the Indigenous

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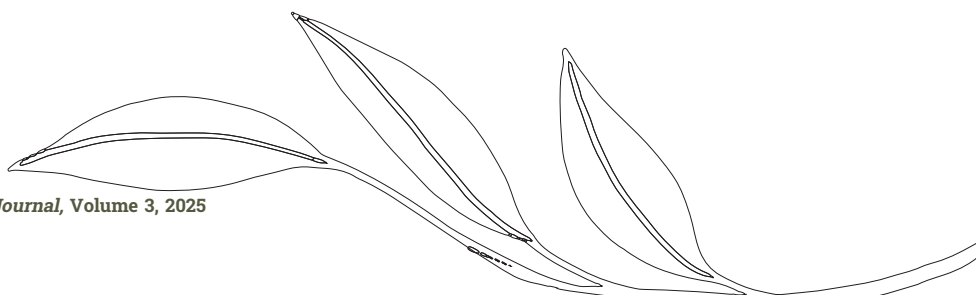
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