







Socio-ecological factors that influence youth vaping: perspectives from Western Australian school professionals, parents and young people

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ABSTRACT

Purpose: To understand from the perspectives of school professionals, parents and young people the socio-ecological factors that may facilitate and prevent e-cigarette use among young people in Perth, Western Australia.

Methods: Purposive sampling was used to recruit school professionals, parents and young people for one-on-one ($n = 35$) or joint ($n = 3$) interviews (in-person $n = 11$ or online $n = 27$). Data were analysed using thematic analysis and classified into four domains based on the socio-ecological model: i) individual, ii) interpersonal, iii) organizational/community and iv) societal/policy.

Results: Factors that were found to support vaping among young people included sensation-seeking and risk-taking behaviour; a low-risk perception of vapes; attractive characteristics of vapes; ease of access; perception vaping is a social activity; and lack of knowledge about vaping among parents and school professionals. Vaping prevention messages originating from the familial, educational and community spheres are lacking but wanted by adults and young people.

Conclusions: The pervasiveness of the e-cigarette trade and persistent challenges related to surveillance and enforcement need to be addressed to reduce exposure and access to e-cigarettes. A mixture of “hard” and “soft” public policy tools involving key stakeholders in a range of settings is needed to prevent e-cigarette access and uptake by young people.

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1. Introduction

The use of electronic cigarettes (e-cigarettes), commonly referred to as vapes and vaping, among young people, and its associated harms are a priority public health issue (Banks et al., 2023). To date, Australian governments have adopted a precautionary approach to the access, promotion and use of e-cigarettes, primarily due to the risks associated with these products in terms of tobacco control and population health (Australian Government Department of Health and Aged Care, 2023). This approach has been guided by the World Health Organization (World Health Organization, 2021), and evidence of the direct adverse effects posed by e-cigarettes on human health, their influence on the initiation, continuation, and cessation of tobacco consumption, along with their increased uptake by adolescents and young people, and their dual use with traditional tobacco products (Banks et al., 2023; Byrne et al., 2018; Gotts et al., 2019; Kennedy et al., 2019). However, worldwide, there are a range of regulatory approaches applied to e-cigarettes (Global Center for Good Governance in Tobacco Control, 2023; Jenkins et al., 2022).

In October 2021, a regulatory framework was implemented in Australia mandating that consumers possess a prescription from an accredited Australian medical practitioner to acquire nicotine vaping products (Australian Government Department of Health and Aged Care, 2023). This framework was devised with the dual objectives of deterring adolescents and young adults from using e-cigarettes while facilitating access to these products for individuals seeking smoking cessation assistance, contingent upon appropriate medical guidance (Australian Government Department of Health and Aged Care Therapeutic Goods Administration, n.d.). However, under this scheme, e-cigarettes have been accessed via illegitimate channels (Jongenelis, 2023; McCausland et al., 2021; Watts et al., 2022), rather than the prescription model, fuelling uptake.

In response to the unintended outcomes of this original regulatory framework, in early 2023, the Albanese Labor Government proposed new legislation to increase enforcement, education and support to reduce vaping. This comprehensive legislation aims to protect Australians, particularly young

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people from the harms of vaping and nicotine dependence and includes measures to prevent domestic manufacture, advertising, supply and commercial possession of non-therapeutic and disposable single-use vapes to ensure control of vapes across the supply chain (The Hon Mark Butler, 2023; Therapeutic Goods Administration, 2023). In December 2023, it was announced that the first stage of Australia's vaping reforms would commence in early 2024, with the passing of the Public Health (Tobacco and Other Products) Act, applying comprehensive prohibitions to advertising, sponsorship, and promotion of e-cigarettes (Parliament of Australia, 2023).

Notwithstanding Australia's stringent regulatory framework, which is restrictive in comparison to global standards, surveys reveal large increases in adolescent e-cigarette use (Australian Bureau of Statistics, 2022; Australian Institute of Health and Welfare, 2020; Guerin & White, 2020; Wakefield et al., 2023; Watts et al., 2022). Of which the most recent Australian Secondary Students' Alcohol and Drug Survey (2022/2023) confirms swift adoption of vaping among students and highlights a troubling trend of growing vulnerability to initiate smoking among never-smokers—a pattern not identified in Australian records for over three decades (Scully et al., 2023). Data show that since 2017, there have been large increases in lifetime and past month vaping among Australian secondary school students, with ever-vaping increasing from 14% to 30%, and past month vaping from 4% to 16% (Scully et al., 2023).

E-cigarettes accessed within Australia have been shown to contain an array of noxious substances and exhibit dangerous inaccuracies in labelling (Larcombe et al., 2022), thus complicating the assessment of users' exposure to harmful chemicals and nicotine. Early exposure to nicotine exerts a substantial influence on the developing brain (Castro et al., 2023), and increases the risk of depression and anxiety (Lechner et al., 2017), sleep disruption (Merianos et al., 2021) and poor academic performance (Dearfield et al., 2021). Additional health harms and risks associated with e-cigarette use include nausea, headache, cough, throat irritation, vomiting and loss of consciousness caused by nicotine overdose, and burns and injuries (Banks et al., 2023). Furthermore, evidence signifies that the adoption of e-cigarettes is linked to an increased likelihood of initiating tobacco smoking, particularly among young people who are considered low-risk in terms of tobacco use initiation (Aladeokin & Haighton, 2019; Best et al., 2018; Conner et al., 2018; Wills et al., 2017).

Although the evidence of the harms associated with vaping is well documented (Banks et al., 2023), Australian adolescents' perceptions of e-cigarette harms are scantily reported, with a recent systematic

review on e-cigarette health perceptions among adolescents in various countries highlighting the considerable lack of data from Australia (Sharma et al., 2021). Moreover, Australian parents (Measey et al., 2023) and school professionals' (Jongenelis & Robinson, 2023; Pettigrew et al., 2022) perceptions of e-cigarettes are even less well-documented. This study, therefore, aimed to understand from the perspectives of school professionals, parents and young people the socio-ecological factors that may facilitate and prevent e-cigarette use among young people in Perth, Western Australia.

2. Materials and methods

2.1. Theoretical framework

The social-ecological model (Bronfenbrenner, 1979) offers a comprehensive perspective, encompassing an array of elements that can influence wellbeing. Within this model, health is the outcome of interplays between the individual, the community, and the physical, social, and political contextual domains. Social ecology offers a successful model for identifying the multi-dimensional factors that influence e-cigarette use among young people (Han & Son, 2022), from the perspective of students, teachers, parents (Brown et al., 2020) and other groups (Brown et al., 2020; Corbett, 2001; Han & Son, 2022).

2.2. Sampling

Purposive sampling was used to recruit young people (13–17 years old; never-vapers, ever-vapers (ever used) and current-vapers), parents of young people (13–17 years old) and school professionals (senior leadership staff, health education teachers and nurses) residing within the Greater Capital City Statistical Area of Perth, Western Australia (Australian Bureau of Statistics, 2012).

2.3. Recruitment

Participants were recruited via social media, sporting clubs, youth centres, networks of researchers and snowball sampling (Liamputtong, 2013). In addition, school professionals were recruited through professional associations and a professional development event for teachers. Information by way of a conversation and flyer invited potential participants to contact a researcher if they were interested in participating in the study. Potential participants were provided with an information sheet. If willing to participate, a suitable time was arranged for a one-on-one ($n = 35$) or joint ($n = 3$) interview (either in-person ($n = 11$) or online ($n = 27$)).

2.4. Data collection

Prior to the interview, participants completed a short questionnaire that collected demographic data, their perceptions of tobacco and nicotine product use, and access to these products by young people. Data collection was facilitated by trained interviewers using a structured interview guide for each target group (Appendix 1). All interviews were conducted in English and audio recorded with participant consent. After the interview, participants were offered a retail gift voucher (AUD \$30 for young people and \$50 for adults) in appreciation for their time. On average, the interview duration was 41 min (range 20–59 min) with school professionals, 28 min (range 15–42 min) with parents, and 17 min (range 12–28 min) with young people.

Development of the interview guides to explore individual, interpersonal, organizational, community, and societal factors associated with e-cigarette use and access by young people was informed by a desktop review, project advisory panel consultation and the socio-ecological model (Corbett, 2001). The interview guides were pilot-tested with people who were recruited through the networks of two researchers.

2.5. Analysis and interpretation

Interviews were transcribed verbatim by a professional transcription service or the automated service attached to the business communication platform used to conduct the online interviews. All transcripts were checked against the audio recording for accuracy and any anomalies were rectified.

Green's (Green et al., 2007) four-stage thematic analysis was applied to the data and consisted of data immersion (Stage 1), whereby the transcripts were read and re-read to become familiar with them. This process of immersion is critical to data familiarity, namely determining the scope of "talk" and also stimulates ideas for possible analysis. The data was coded (Stage 2) by importation into NVivo v12 qualitative software package for systematic management, analysis and visualization. Deductive codes were developed initially from the interview questions with reference to the study objectives. Inductive codes were developed from the participants' responses to derive meaning and create themes from the data without preconceptions. Stage 3, categorization, involved the review and linking of codes to create meaningful categories. Stage 4 involved the identification of themes that move beyond descriptive categorization and provide an interpretation of the issue. In stages 3 and 4, 10% of the transcripts were reviewed by additional members of the research team and the categories and themes were discussed to achieve refinement and final consensus.

Demographic data and perceptions of tobacco and nicotine product use and access among young people were analysed using descriptive statistics (Microsoft Excel). Participant's home and school postcodes were given a Socio-Economic Indexes for Areas (SEIFA) score based on the Index of Relative Socio-economic Advantage and Disadvantage which summarizes information about the economic and social conditions of people and households within an area, including both relative advantage and disadvantage measures (Australian Bureau of Statistics, 2018).

The reporting of this study is guided by the Standards for Reporting Qualitative Research (SRQR) (O'Brien et al., 2014).

2.6. Ethical considerations

Informed consent was obtained from all participants. Young people who were currently vaping, or had ever used a vape were not jointly interviewed with a young person who had never vaped. The study was approved by the Curtin University Human Research Committee (HRE2021–0676). Quotes have been attributed a pseudonym to protect participants' identity.

3. Results

In total, 41 interviews were conducted between April and August 2022. These consisted of school professionals (n = 15), parents (n = 12) and young people (n = 14) (Table 1). School professionals consisted of equal numbers of leadership staff (n = 5, 33%; age range 44–70), health education teachers (n = 5, 33%; age range 26–37) and school nurses (n = 5, 33%; age range 46–57). The majority of school professionals were female (n = 10, 67%) with an average age of 45 (range 25–70). School professionals worked with students in years 7 through 12. Parents were mostly female (n = 11, 92%) and had an average age of 46 (range 35–54). Young people were mostly female (n = 9, 64%) and had an average age of 16 (range 15–17). The sample of young people consisted of equal numbers of ever-vapers (past and current) (n = 7, 50%) and never-vapers (n = 7, 50%).

Participants' perception of e-cigarette use and access among young people is reported in Table 2. All school professionals and young people reported that students at their school vape. School professionals and parents thought young people primarily accessed e-cigarettes via friends and shops, whereas young people thought friends and online were the primary acquisition avenues. All school professionals and the majority of parents and young people reported vaping among young people to be an issue.

Table 1. Participants' demographic characteristics.

	Number	Percent
School professionals (n=15)		
Participant sub-type		
Leadership personnel	5	33
Health education teacher	5	33
School nurse	5	33
Gender		
Female	10	67
Male	5	33
Age		
20–30 years	2	13
31–40 years	3	20
41–50 years	2	13
51–60 years	5	33
61+ years	3	20
Ethnicity		
Australian Anglo-Saxon	13	87
Other	1	7
Missing data	1	7
Home postcode SEIFA score		
Quintile 1 – Most disadvantaged	-	-
Quintile 2	2	13
Quintile 3	3	20
Quintile 4	3	20
Quintile 5 – Most advantaged	7	47
School postcode SEIFA score		
Quintile 1 – Most disadvantaged	-	-
Quintile 2	2	13
Quintile 3	1	7
Quintile 4	5	33
Quintile 5 – Most advantaged	7	47
Parents (n=12)		
Gender		
Female	11	92
Male	1	8
Age		
31–40 years	3	25
41–50 years	6	50
51–60 years	3	25
Ethnicity		
Australian Anglo-Saxon	10	83
Other	2	17
Home postcode SEIFA score		
Quintile 1 – Most disadvantaged	1	8
Quintile 2	1	8
Quintile 3	3	25
Quintile 4	3	25
Quintile 5 – Most advantaged	4	34
Children's school postcode SEIFA score		
Quintile 1 – Most disadvantaged	1	8
Quintile 2	1	8
Quintile 3	3	25
Quintile 4	4	34
Quintile 5 – Most advantaged	3	25
Young people (n=14)		
Gender		
Female	9	64
Male	5	36
Age		
13–15 years	9	64
16–19 years	5	36
Vaping status		
Ever-vaper	7	50
Never-vaper	7	50
Ethnicity		
Australian Anglo-Saxon	12	86
Other	2	14
Home postcode SEIFA score		
Quintile 1 – Most disadvantaged	-	-
Quintile 2	2	14
Quintile 3	-	-
Quintile 4	6	43
Quintile 5 – Most advantaged	6	43
School postcode SEIFA score		
Quintile 1 – Most disadvantaged	2	14
Quintile 2	1	7
Quintile 3	-	-
Quintile 4	5	36
Quintile 5 – Most advantaged	6	43

Table 2. Participants' perception of e-cigarette use and access among young people.

	School professionals n=15 (37%)	Parents n=12 (29%)	Young people n=14 (34%)
<i>Do young people you know use e-cigarettes?</i>			
Yes	15 (100%)	9 (75%)	14 (100%)
<i>How are young people accessing e-cigarettes?</i>			
Friends	15 (100%)	11 (92%)	14 (100%)
Shops	15 (100%)	7 (58%)	8 (57%)
Online	5 (33%)	5 (42%)	13 (93%)
Family	-	2 (17%)	-
<i>Is vaping among young people an issue?</i>			
Yes	15 (100%)	10 (83%)	12 (86%)

4. Findings

The data is presented under the four domains of the socio-ecological model—individual, interpersonal, organizational/community, and societal/policy (Figure 1).

5. Individual-level factors

5.1. “Kids who you wouldn’t even imagine would be doing it”: risks and protections for vaping

School professionals described vaping as common amongst students who wanted to fit in, who came from disadvantaged backgrounds or who were predominantly risk-takers. However, vaping was also described as omnipresent across all student year levels regardless of gender, or social or cultural background and occurring in “kids who you wouldn’t even imagine would be doing it.” Vaping was reported by school professionals as being most common amongst students in years 8–10, however, students in year 7 had also been identified. Students perceived as less likely to vape were those who were academically focused, had a chronic health issue or sporting aptitude.

5.2. “Push[ing] the boundaries”: sensation-seeking and risk-taking

In the context of age-appropriate experimentation, vaping was seen as an attractive product to use among young people who want to “push the boundaries” and exercise “risk-taking behaviour”. Across the interviews, one of the drivers of vaping among young people was a sense of doing something illegal and not getting caught.

... the sort of sense of oh we’re doing something like against the law or doing something we probably shouldn’t be doing. ... the danger and the risk is like a big part [of why young people vape].
[Timothy (16yo), never-vaper]

Parents and school professionals described vaping as “a thrill for kids” and an act of “rebellion” against how

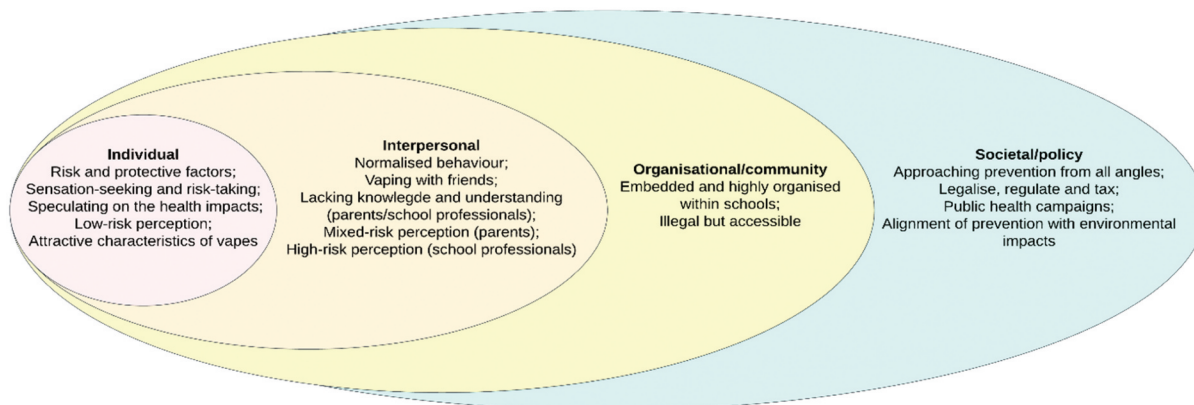


Figure 1. Data visualisation under the four domains of the socio-ecological model.

the law and authority figures stipulate young people should behave. Further, they perceived that young people relished the thought of being able to vape without detection by adults as the practice of vaping is easily hidden, especially compared to smoking and e-cigarette devices can be easily mistaken for other innocuous objects such as pens, highlighters and USB drives.

I think the fact that [young] people can do it and potentially hide it in front of, you know, teachers or their parents or whatever, I think that appeals to young people. So, there could be a little bit of that sort of rebellion coming in, trying to outsmart the adult [laughs].

[Tyrone, health education teacher]

5.3. “Not really any positive impact”: vaping is strongly associated with negative health impacts

Among young people, vaping was strongly associated with negative health impacts.

Um well, there’s not really any positive impact from vapes. I can only think of negatives.

[Hamish (15yo), vaper]

The majority could broadly list areas of the body and or body systems where a health impact was likely (e.g., respiratory—introducing irritants (i.e., vapour with unknown chemicals) into the lungs); cardiovascular—hypertension, damage to the heart muscle; mental health—stress, anxiety, depression, addiction), with some young people able to provide more specific detail.

People like teens who have died or like, been taken to the ICU [intensive care unit] because of, like, their lungs filled with water and stuff. And also a few people that I know of have like a nicotine addiction. Like, it’s like they’ve admitted to it. And then like short term people always talk about like getting head spins. And then they’re like, their breath smells and stuff like that.

But I think the long-term effects are mainly to do with your lungs and your throat, I think.

[Isabella (15yo), non-vaper]

When describing the health impacts, some young people recounted their personal experiences and those of their peers.

I mean, when I tried vaping, I found, cause like I’m asthmatic and I’ve like quite severe asthma, ... it would cause like asthma flare ups for like days after and I thought about it and I was like look like clearly, it’s not worth it. Like clearly like if it’s impacting me this much in the short term, like it’s definitely not great for the long term. And just like other people, like people talk about how like it’s made their, like, sport worse.

[Nikki (17yo), vaper]

5.4. “There’s not much campaigning against it”: low-risk perception of vaping among young people

Despite young peoples’ recognition of negative health impacts associated with vaping, they *did* perceive vaping to pose some risk to their health, albeit “less of a risk” than that posed by smoking cigarettes. This perception was attributed to various factors such as the lack of anti-vaping public health campaigns, the perceived lack of credible scientific evidence on the risks associated with vaping compared with the high levels of information and education about the health impact of smoking, a belief that lower levels of nicotine are used in vapes, the attractive smell of vapes and the lack of smoking-related stigma attached to vaping.

I think with smoking ... they show the tar and how your lungs are gonna fill up with black stuff and then they show like a lifetime smoker’s lungs, like that stuff kind of gets you. But then for vapes they’re just like we don’t know like. And like yeah it feels like if the people who are researching it are uncertain, like maybe they’re hedging their bets by saying it’s bad for you.

[Nikki (17yo), vaper]

... it [vaping] feels a lot better I think because like, there's not much ... campaigning against it. You don't see too many 'vaping is bad for you' ads ... but also the smell is nicer. Like it's, it just feels cleaner. So, it, in my mind, it feels like it's a lot, and a lot healthier than cigarettes.

[Timothy (16yo), never-vaper]

5.5. "Raspberry-lime breath": attractive characteristics of vapes

Many young people commented on the attractive characteristics of vapes, including the bright colours and aroma. The flavoured, fruity aroma of e-cigarettes was preferred over the obvious toxic residue left by regular cigarette smoke, which is absorbed by hair and clothing.

I think people think because it doesn't have as strong of a smell as cigarettes it's like healthier for you or like less of a risk I guess cause like you know how you can get the fruit smells from it.

[Jessica (16yo), vaper]

However, young people mostly spoke about the variety of appealing flavours. Some young people were intrigued by the flavours, and this influenced them to first try an e-cigarette, and for others, sampling different flavours reinforced their ongoing use. Another attractive characteristic of e-cigarettes was convenience, which included being small, easily portable in a pocket, having a push-button ignition, so no matches or lighter are required, and no generation of ash or butts.

I think it's the bright colours and the flavours that they come in, like, you're told that there's like, mango-raspberry flavoured vape. Like, you're gonna be like, mmm, I want some mango-raspberry flavoured stuff, you know. And then they come in like the bright colours and everything and they're easily accessible as well. It's just like a little pen size thing in your pocket. You can just take out, you know, you can put it in your mouth and have your raspberry-lime breath and then, you know, put it away, like it's just easily accessible and attractive.

[Holly (17yo), vaper]

A health education teacher speculated that the availability of different flavours meant the vaping experience was novel every time and encouraged young people's expanded use to sample different products.

... having the ability to put different flavours in, oh, I've got watermelon, I've got strawberry now. And you're almost in a way, having a different experience every time you vape because you have those options of changing up the flavours and things like that. ... I know there's a whole different bunch of cigarettes out there ... But if you buy a carton of cigarettes, it's gonna taste the same every time you have it.

[Tyronne, health education teacher]

6. Interpersonal-level factors

6.1. "I would be more shocked if people didn't have one": vaping is normalised among young people

Regardless of individual experience, there was a clear perception amongst young people that most young people are vaping, and it has "just become [a] normalised" and socially accepted behaviour.

Oh, you can access it from anyone pretty much [laughs] so everyone sells. It's quite easy to know a person in your friend group that has one. I would be more shocked if people didn't have one right now.

[Kelly (17yo), vaper]

... there's not really much peer pressure, like people saying 'Ohh you should try this', you know? ... like a lot of people just vape. And I think it's just become normalised.

[Hayley (17yo), never-vaper]

6.2. "It's something you do together": vaping with friends

Parents and school professionals postulated that youth are attracted to vaping because of their desire to establish, validate and maintain social connections with their peers, all of whom "seem to be doing it ... so why don't I try it."

There was a sense that young people were searching for acceptance and wanting to belong to the "in crowd" and take part in this novel activity. Additionally, some young people were "just curious" to discover what vaping was like and keen to it "a go". The practice of vaping amongst young people was described as "social".

What motivated you to give it a go? [Facilitator]

I guess like at parties people just like hand it to you and you're just like 'Yeah alright.' Like if I'm not doing it regularly it's not bad, you know, like I won't buy one or vape by myself. But like it's fine with other people because like it's not as often or like they're doing it too ... And then the other times where one of my friends is like really, really hooked on vapes and normal cigarettes. So, like I'll do it with her just because she's doing it all the time. So, it's kind of like something you do together. [Nikki (17yo), vaper]

6.3. "It's got water in there as well": accurate knowledge and understanding of vaping are mostly lacking among parents and school professionals

Limited knowledge about e-cigarettes (the product) and vaping (the action) led to high levels of confusion and misinformation among the adults interviewed. There was also uncertainty about e-cigarettes (i.e.,

heated liquid) and other heated products (e.g., hookah pipes, heat-not-burn products) and combustible tobacco products (e.g., cigarettes, cigars), how they differed from one another, and the appropriate language associated with each. Further, some interviewees indicated they understood an aspect of e-cigarettes, but subsequently when probed were misinformed or could not explain the concept.

There is a difference between e-cigarettes and regular vapes. ... I think e-cigarettes you actually physically need to change the battery, I think, and then in vapes, I think you can charge them.

[Tyrone, health education teacher]

I think it uses some sort of [pauses in thought] product. I don't really know what it's called, that you put into some sort of device [comical tone]. And I assume that if it's vaped, it's got water in there as well. It produces the steam smoke stuff, and you can get tobacco, I believe, and non-tobacco components to it.

[Damian, parent]

Some school professionals described vaping as a contemporary issue coupled with a lack of availability of information and evidence, particularly less than that available for tobacco smoking, which they felt contributed to their lack of knowledge and understanding about vaping.

I think it's still very relatively new ... and everyone [staff] is maybe a little bit misinformed or just lacks that added sort of knowledge.

[Tyrone, health education teacher]

Parents were the least knowledgeable group with seven of the 12 parents interviewed explicitly stating that they did not know a lot about e-cigarettes. Most parents had basic knowledge that e-cigarettes were used in the community as part of a smoking cessation strategy, however, beyond this they were unable to provide additional details about e-cigarettes and vaping. Many parents felt they did not need to know about vaping, with their limited knowledge predominantly gained through information from their children. Parents often focused on aspects of the device including, "it's a thing for helping people quit smoking", "they all have different scents and flavours" and "it's like a pen thing". Only a few parents raised considered questions such as:

"I don't even know who is producing them? Whose packaging them? Where are they coming from? I have no idea." [Tanya, parent]

In discussing the health impacts, some respondents drew on tentative guesses or assumptions based on their prior knowledge and evidence of the impacts of tobacco smoking:

Well, I don't really know how much nicotine is in there and I don't know how addictive it is. ... I think

we knew that cigarettes were addictive, so we tried to steer them [kids] away from them. But it seems, that maybe there are some vapes that are not as addictive as others, I'm not, really sure.

[Lynn, parent]

6.4. "There are some potential health benefits": mixed perceptions of vaping risk among parents

Parents held the most positive perceptions of e-cigarettes. However, their views on vaping risk were divided, irrespective of socio-economic status, between those who perceived vaping as riskier than smoking and those who thought vaping was less risky than smoking.

Parents who thought vaping was risky, tended to frame vaping as a smoking cessation product or a healthier alternative to tobacco smoking but concluded that the risks were probably the same.

And then I thought, oh well, you know, that's probably an alternative to smoking and to getting people to quit. But then I heard that you could get different flavours, which concerns me greatly because that actually seems like it would do the opposite of getting someone to stop smoking if it was pleasantly tasting and you had different flavours to choose from ... well then that to me would be an indicator to increase the uptake as opposed to decrease. So, I think now that they're [vapes] probably just as bad as the other [cigarettes].

[Shelly, parent]

Amongst parents who perceived e-cigarettes to be less risky than smoking, vapes were believed to be "not be as harmful" and contain a lower nicotine content than cigarettes and hence perceived as "smoking light". Vapes were also described as the "healthier cousin", "less sinister", somehow "better" or marginally less addictive than cigarettes. Further, some felt that vaping offered a harm minimization alternative and a pathway out of cigarette smoking.

I think there are some potential [emphasises word potential with uncertainty] health benefits. I don't know if it's, if you're having a tobacco-based juice if you can get that, I'm not even sure you can [laughs]. But yeah, I don't know if there's any benefit between vaping and burning. But yeah, if you can get stuff without tobacco then it's just the flavour, then that would appear to be better from the layman's point of view.

[Damian, parent]

6.5. "Same dangers": high-risk perception of vaping among school professionals

Most school professionals held high-risk perceptions of e-cigarettes.

[Vaping] can actually play around with people's mental health ... particularly in young people whose brains are still developing ... if you're sort of introducing all these chemicals into a developing brain, we know that it can have an impact ... things like depression and anxiety can also sort of stem from that.
[Tyrone, health education teacher]

Many drew on their own experience of tobacco smoking and were cognizant of the history of anti-smoking campaigns and messages. This knowledge informed the basis of their high-risk perception of vaping, even though many had a cursory understanding of the practice.

[E-cigarettes and cigarettes are the] same thing for me. Yeah, same dangers. It is incredible that we did so much public health campaigning and all information around smoking and people don't smoke, but we've come full circle and now it's vaping instead.
[Julie, leadership staff]

7. Organisational/community-level factors

7.1. "The vaping saga": vaping is embedded and highly organised within schools

All participants were aware that vaping is deeply entrenched within the school community. School professionals, in particular, noted that vaping was not only common but increasing among young people with some describing vaping in schools as "a big deal" and an "epidemic", with one school professional concluding, "we've got a problem" on our hands. The following quote provides a sense of the scale of the issue and its management implications for school professionals:

The vaping saga, this is a ready market. We're all under the pump with vaping.
[Ben, leadership staff]

Vaping among young people at school was acknowledged by most parents, and many were informed by their children who had observed the practice among other students. Vaping was reported by young people, school professionals and parents to routinely take place in the school toilets. School professionals further provided examples of high levels of coordination among young people at school which included systematic arrangements for multiple students to rendezvous in the school toilets during class time to vape together, and the employment of student lookouts as early warning systems to signal for approaching teachers:

I did duty one day during term one and it was such an organised thing, and those were year 9's ... and they were just being dodgy ... One was around the corner and as soon as I turned up, they had the signal on.
[Emma, health education teacher]

7.2. "You just have to ask in a certain way": vapes are illegal but easily accessible

School professionals reported that young people access vapes via the internet, older siblings and friends. Some school professionals also reported instances where entrepreneurial school students had bought multiple vapes and on-sold them at a profit (student vape dealers).

The kids are selling them to each other. ... they're buying it from the rich kids at the private schools and then they're selling them to each other here, at the train station with the older kids. ... someone [a student] had kept a spreadsheet of all their buyers with all the money ... we got a copy ... and it showed the pyramid scheme ... it was our students and ... kids in the ... suburbs and ... all their names on there.
[Julie, leadership staff]

Parents also assumed young people are accessing vapes through the internet, social media, siblings, older friends, theft from parents who vape or via school-based dealers. A small number of parents were aware of specific retail outlets that were engaged in illegal sales to minors as well as young people buying them online and on-selling them at school:

I know for a fact that there's very specific service stations and like delis and different shops that literally have them under the counter and it's just they know that if they go in at this time, this person will be working and they can get one [a vape] and off they go.
[Tracey, parent]

Information about how to access vapes was commonplace even among students who do not vape, reinforcing the embedded nature of vaping. Young people confirmed that procuring nicotine vapes was relatively easy, despite being illegal, and occurred in numerous ways, including asking arbitrary people to buy on their behalf, online purchases, "vape drops" (student makes contact with a seller via social media and arranges to meet), friends, older peers or siblings, parental supply or via illegal sales to minors at specific retail e-cigarette outlets, sometimes purchased by stating a "code word" or asking for products in a "certain way". Further, young people reported a small financial outlay to acquire a vape.

... there are heaps of accounts all over Snapchat. ... I've seen my friends just flicking through and see them holding up vapes for 20 bucks [dollars] or whatever. Snapchat's a huge selling platform because it's an account and it's personal so they've got more control whereas if you put up a thing on YouTube it'll just get taken down straight away.
[Finn (15yo), never-vaper]

I know there's is like a few places in the city which are like convenient, tobacco stores, which like still kind of do them [vapes], you just have to ask like in a certain way.

[Nikki (17yo), vaper]

Notably, there are inter- and intra-school-based access channels connecting vape sellers and buyers via social media platforms.

There's lots of systems within schools. It would be really easy for me to get a vape. I'd just have to go up to someone and say, can you get it for me? Because it's usually like two to three main people at the school who have access to everyone ... they're like lesser druggies at the school ... they have a whole system ... run through social media, and it's not restricted to year levels ... it's throughout the entire school. And then it's also from school to school.

[Isabella (15yo), never-vaper]

8. Societal/policy-level factors

Here we present data for population-level education and policy responses. Our data relating to specific school-based education and policy responses are reported elsewhere.

8.1. "A multi-faceted approach": approaching vaping prevention from all angles

Across all the data, participants were generally in agreement that a multi-faceted response, involving key stakeholders (i.e., government and non-government organizations) in a range of settings (i.e., government, home and schools) was required and likely to be most effective in reducing the use of e-cigarettes amongst young people. Schools were unable to deal with vaping on their own and a tripartite approach with parents and students was suggested.

I would have a multifaceted approach. So, I would look at social media, the televised media, I would look at the Internet, like written media as well ... your news online and all those sorts of things and ... using research-based approaches that we know would work, getting stuff into schools, even youth centres, youth programs.

[Tracey, parent]

8.2. "Take some control over it": legalise, regulate and tax

A small number of school professionals and young people were supportive of public health policy approaches that legalize, regulate and tax e-cigarettes. Illegal and or illicit substances such as nicotine-based vapes purchased without a prescription

were labelled "too grey" as they elude government control.

Taxation. Make sure it's as hard for them to gain profit from somebody else's disadvantage. ... I probably don't have a problem ... if it's legalised or whatever ... then people are forced into decisions. Because right now, it's too grey.

[Ben, leadership staff]

Legalization and regulation of e-cigarettes were viewed as a way to control the constituent ingredients used in the production of e-cigarettes and would enable front-of-pack graphic images, thus making them less desirable.

... if they [e-cigarettes] were sold legally, like cigarettes. ... cigarettes have ... ads about them and ... a lot more effort [has] gone into informing people of what they're doing to themselves and ... packets ... have the ugly photos of people's teeth. I think if they did that ... [government] could use the same thing [strategy] to get them out of it [cessation].

[Finn (15yo), never-vaper]

Mostly just like the visuals, like they're quite graphic and it's always showing like something deteriorating in your body, which is quite like eye-opening ... I definitely think packaging because if they're using it, they're gonna see it.

[Kelly (17yo), vaper]

Further, participants suggested tax levies could be applied to vaping products' retail price acting as a fiscal disincentive, more so than education/information campaigns.

I like the idea about legalising it again, vapes. So it's controlled and stuff and so you can make it more expensive [laughs]. You know, like with cigarettes.

[Nikki (17yo), vaper]

I think they [government] should just put a really huge tax on it and that would actually stop it [people vaping] more than any education. People aren't interested in being educated. They just need to feel the pain. ... Instead of going that softly, softly. You just need to sort of go back to autocratic sort of ways and take some control over it.

[Nancy, school nurse]

8.3. "No fluffing about with it, just e-cigarettes aren't good for you": public health awareness and information campaigns

School professionals, parents and young people all recognized there is a paucity of information and wanted access to credible, user-friendly information and resources in a variety of formats from reputable sources. To be fully informed about e-cigarette risks and the consequences of long-term use means that parents are prepared to have a conversation with

their child when required, young people can make informed decisions and school professionals are not relying on their smoking knowledge and are better equipped to make tailored management and strategic policy decisions.

Interviewees were looking to the Australian Government to design and disseminate an effective public health information campaign to prevent e-cigarette uptake, particularly among young people. Similar approaches to those used in the *Make Smoking History* and the *Alcohol Think Again* campaigns were suggested.

Young people and parents had clear ideas about campaign design and delivery. Young people wanted campaigns that got straight to the point, or as one young person said:

... no fluffing about with it, just e-cigarettes aren't good for you ... you shouldn't be willy-nilly about it.
[Ella (16yo), never-vaper]

Campaign material dissemination via digital platforms (e.g., Google, Instagram, Facebook ads, Snapchat) that can "pop up on people's feed" and video-based content were preferable and as one person said:

... you don't have to go looking for it and it sort of subconsciously just always there, that message is like being reinforced.
[Timothy (16yo), never-vaper]

Free-to-air television advertising may not be as successful as many young people watch programmes via streaming services. However, there was also one suggestion that having anti-vaping advertising on free-to-air television during high-viewing sports, such as football games, might provide some audience penetration, in other words:

... like when you're watching the footy, if one [a vaping prevention ad] comes on you're sort of like not forced to watch it, but it's put there for you. You don't have to go searching for it.
[Timothy (16yo), never-vaper]

Vaping prevention education and information, such as television advertising or a speakers bureau,¹ based on real-life examples and lived experiences were more likely to resonate with young people. Some young people drew on their experience of seeing anti-smoking advertising and suggested these approaches would work for vaping.

You know that ad, that lady who had the tracheostomy in her throat [referring to historical smoking advertisement] ... but someone ... who's in hospital and their lungs are struggling. Maybe needing a transplant ... and showing ... you do not want to be in this situation. And then like, saying don't do it. It's not worth it.
[Ella (16yo), never-vaper]

"Gory pictures" of disease-affected body organs used on cigarette packaging such as those used in tobacco control were considered impactful by young people.

... when they have the pictures of like people with lumps on them or something like that, that like turns people away from it [vaping].
[Tahlia (15yo), never-vaper]

Parents wanted credible, evidence-based information packages and resources on e-cigarettes and vaping from reputable sources for themselves and their children. With respect to being able to educate their children, one parent summed this up as "knowledge is power". For many parents, the internet would be their initial starting place to access information. Australian websites including the Cancer Council and government agencies were considered reputable compared to social media platforms such as TikTok. Information needed to be "short and sharp", user-friendly and contain no jargon, such as a factsheet or an infographic. The tone of the information should be friendly, but "in your face so people pay attention". Many parents drew on their experience of previous public health campaigns and were receptive to a range of information dissemination strategies including letterboxing, pamphlets, and free-to-air television advertising. Memorable slogan-based advertising such as those used in alcohol prevention campaigns were likely to be retained and impactful. Parents also indicated they would be receptive to information coming from their children's school in the form of a website, newsletter or school-based presentation. Like young people, parents supported vaping awareness campaigns that focussed on the consequences of e-cigarette use via a mixture of graphic imagery of the "throat and inside lungs" and presentations based on the lived experience of both parents and young people.

... if they had people that had health issues or something from it [vaping] actually go and visit the schools and say, I did it, this is what's happened to me and they can physically see or hear the impact ... maybe that would make a difference ... Like the drink driving stuff. ... If it's like real in person. I mean, they see things on TV, but I mean a lot of them are just acting ... But if they can actually see someone standing in front of them and going, this is the cause it's had on me. Maybe that will make a difference.
[Anna, parent]

Parents suggested the best way for education campaigns to reach and engage young people were those that were phone-based such as short comic videos or social media advertising that linked to a reputable website.

8.4. “No one gives a shit about the environment”: aligning the environmental impact of vaping with prevention is unlikely to be successful

Views on the environmental impact of vaping or vaping product material were mixed, however, most interviewees considered it to be detrimental to the environment in terms of the physical waste from the plastic packaging, single-use disposable vape devices (versus the refillable ones) and vapour being discharged into the environment. Several interviewees disagreed with the notion of e-cigarettes as an environmental issue. For example, many parents had not considered it, they did not know, thought it was less than cigarettes (i.e., butts littering the ground) or guessed it was likely to be unfavourable. Despite the general view that vaping had a negative environmental impact, which was probably increasing due to its popularity, the possibility of aligning prevention with an environmental and social impact angle was considered unlikely to be successful.

I just don't think it's going to hit; I don't think it's effective enough and I don't think it's going to make a difference. And no one gives a shit about the environment. That's the sad truth. ... I don't think teenagers give a stuff. And if they do care, and if they are that conscious, and that evolved already at that age, they're not vaping.

[Tanya, parent]

... people who are vaping are generally people who don't care about themselves, why would they care about the environment?

[Finn (15yo), never-vaper]

9. Discussion

This study aimed to understand the socio-ecological factors (Bronfenbrenner, 1979) that may facilitate or prevent e-cigarette use among young people, from the perspectives of school professionals, parents and young people residing in Perth, Western Australia.

Young people in this study reported witnessing students openly and consistently vaping while on school premises and within the community, resulting in the perception that vaping is a normalized, socially accepted behaviour. Australian-based research reports young people feel vaping is pervasive (AMA New South Wales, 2022; Connolly, 2022) and those who vape believe vaping is roughly twice as prevalent compared to those who do not vape (van Bueren et al., 2022). Much of this belief is influenced by the observations and information that adolescents encounter within the school environment, as well as within their extracurricular social spheres (van Bueren et al., 2022). In the context of vaping, disentangling

these two settings proves challenging, as the social networks within and beyond the school setting exhibit substantial overlap, both in physical interactions (face-to-face) and through social media (van Bueren et al., 2022).

Young people, parents, and school professionals identified social influence as a significant contributor to e-cigarette use among adolescents. Young people described vaping with their peers in the school bathroom, at parties and friends homes, with the sharing of vapes an appealing and rewarding experience in terms of strengthening social ties and creating new connections. Conversely, teachers reported high levels of coordination between peers which included systematic arrangements for multiple students acting as lookouts, providing early warning systems to signal that teachers were approaching. For this age group, student peers are of primary importance in the development of knowledge and attitudes towards e-cigarettes. These findings align with the guidance provided by international studies, emphasizing the significance of social acceptability in the decision to use e-cigarettes among young people (Amin et al., 2020; Valente et al., 2023), the importance of environmental management aimed at reducing the visibility of others' vaping behaviours (McDermott et al., 2020; Rocheleau et al., 2020) and delivering educational initiatives to inform peer groups about the risks associated with vaping (Bteddini et al., 2023; McCauley et al., 2023).

The affordability and ease with which young people could access vapes via social and commercial channels without a prescription was a significant enabler of e-cigarette use among young participants, and consistent with recent Australian research (AMA New South Wales, 2022; M. I. Jongenelis, 2023; Pettigrew et al., 2023; van Bueren et al., 2022; Watts et al., 2022) and media reports (9News, 2023) demonstrating underage youth can readily access e-cigarettes. These findings indicate the pervasiveness of the illicit e-cigarette trade among young West Australians and the ability of those aged less than 18 years ability to access these products. These findings are alarming, considering in Australia's unique regulatory environment, e-cigarettes containing nicotine should only be accessible by securing an authorized prescription from a medical practitioner (Australian Government Department of Health and Aged Care Therapeutic Goods Administration, n.d.). Measures aimed at limiting access to such products are being easily evaded, highlighting the persistent challenges related to surveillance and enforcement that need to be addressed to ensure the efficacy of existing e-cigarette bans (Dessaix et al., 2022) along with the importance of the Australian Government's announced initiatives to curb this illegal activity, including stopping the imports of non-prescription

vapes; increasing the minimum quality standards for vapes by restricting flavours and colours; requiring pharmaceutical-like packaging; reducing the permitted nicotine concentrations and volumes; and banning all single-use, disposable vapes (Parliament of Australia, 2023).

Additional enablers of e-cigarette use among young people reported by school professionals, parents and young people included specific design features of vapes such as the pleasant taste and smell, and the convenience of a small, easily hidden, battery-powered product. Disposable and pod-based e-cigarette variants demonstrate a greater cost-efficiency in comparison to alternative e-cigarette models (Williams, 2020), prompting concerns regarding their economic accessibility as a potential catalyst for initiation among youth (U.S. Department of Health and Human Services, 2016). Considering the popularity of these flavoured, high-potency devices observed among young people and individuals who have never smoked (M. I. Jongenelis, 2023; Rohde et al., 2021), and the evidence indicating flavoured (Zare et al., 2018) and nicotine-salt-based (Leventhal et al., 2021; Voos et al., 2019) e-liquids enhance the appeal and palatability of e-cigarettes, efforts are required to limit the availability (Yan et al., 2023) of these products to mitigate the risk of addiction resulting from recreational e-cigarette use.

Our findings, which align with others (AMA New South Wales, 2022; Connolly, 2022; van Bueren et al., 2022), demonstrate that adolescents possess a basic understanding that vaping can lead to both immediate and lasting health issues, but remain unconvinced that they personally might be affected by adverse health consequences from vaping. A belief that is supported by young people's perception of a lack of long-term health studies and consensus within public health. Consistent with studies in other countries (Sharma et al., 2021), young people viewed vaping as distinctly different from smoking, believing that vapes are less detrimental than cigarettes and considerably more enticing. Compared to cigarettes and other illicit substances, vaping is perceived as having less social stigma and greater societal acceptance (Valente et al., 2023). Evidence indicates that young people's positive perceptions of e-cigarettes are influenced by e-cigarette marketing and promotion which has been found to focus on personal, relational, environmental and product-related benefits to draw young people to vaping (Greenhalgh & Scollo, 2023; McCausland et al., 2019; Struik et al., 2020).

Young people obtain important information about health behaviours from their parents (Trucco et al., 2021) and teachers (Nagy-Pénczes et al., 2022). Consistent with previous research (AMA New South Wales, 2022; Brown et al., 2020; Patel et al., 2019;

Pettigrew et al., 2022), we found that although school professionals held the most negative perceptions of e-cigarettes, the majority demonstrated a limited understanding of vaping and associated harms; and parents held the most positive perceptions, yet they too were mostly unaware of the health effects of vaping and the contents of vapes. A lack of accurate and consistent communication regarding e-cigarettes within families and educational institutions can lead to discernible disparities in young peoples' vaping comprehension, in contrast to tobacco smoking where the curriculum is established, and the associated risks are well-documented (Brown et al., 2020). The identification of considerable knowledge gaps among parents and educators highlights the need for e-cigarette information to help safeguard young Australians from establishing detrimental behaviours during their developmental years (Jongenelis & Robinson, 2023).

Our findings indicate that school professionals, parents and young people want strategies implemented that prevent e-cigarette access and uptake, and reduce the overall use of e-cigarettes among young people, including a mixture of "hard" (e.g., legislation and taxation) and "soft" public policy tools (e.g., public health awareness and information campaigns, plain packaging) involving key stakeholders (i.e., government and non-government organizations) in a range of settings (i.e., government, home and schools). Similar recommendations have been made by Gardner et al (Gardner et al., 2023), who suggest a multilevel approach with components at the individual, school, and community levels are required to combat youth vaping.

10. Strengths and limitations

This research generates insights into the perspectives of a range of target groups and is one of the first to include those of both school professionals and parents, alongside those of secondary school-aged young people. The findings add to the understanding of the factors that can influence e-cigarette use among young people across multiple socio-ecological domains in a highly regulated environment. The study benefitted from pilot testing of the data collection instruments, the inclusion of two coders, and the multiple team discussions, which strengthened the analysis process. The research was conducted with a purposive sample within a specific geographic context and does not claim to be representative. Overall our sample was predominantly female and of a higher socio-economic status. Future research could target males and those residing in lower socio-economic status areas.

11. Conclusion

This study found that young people view vaping as a normalized and socially accepted behaviour, with information about how to access vapes commonplace, even among those who did not vape, reinforcing the embedded nature of the practice. Young people find vaping highly appealing; it is viewed as a social activity undertaken with peers, an attractive accessory, and more convenient than tobacco smoking. We found that young people strongly associated vaping with negative health impacts, yet they perceived it to be a low-risk activity, especially when compared to tobacco smoking, reinforced by the lack of a public health anti-vaping campaign. The majority of school professionals and parents lacked a comprehensive understanding of vaping and associated harms, making it challenging for them to provide appropriately informed education messaging to young people, highlighting the need for accurate information targeting these groups. Our findings emphasize the significance of social acceptability in the decision to use e-cigarettes among young people, the importance of environmental management aimed at reducing the visibility of others' vaping and the delivery of educational initiatives to inform young people about the risks associated with vaping. Our findings lend support to the Australian Government's proposed vaping reforms including the banning of disposable vapes, a ban on all vapes irrespective of nicotine content or therapeutic claims, flavour and nicotine concentration restrictions and plain packaging requirements for therapeutic vapes used for smoking cessation. We further recommend that financial support be provided to nicotine addiction services and the promotion of said services for young people; information provision for school professionals and parents to enable the provision of accurate prevention messages to young people, role modelling of non-vaping behaviour and intolerance of youth vaping; the delivery of mass media anti-vaping public health campaigns, especially via digital and social media; and publicized information regarding the penalties imposed on people convicted of importing and/or selling vapes to ensure the community that the issue is being taken seriously by authorities.

Note

1. A speakers bureau is a collection of speakers who talk about a particular subject, usually drawing from their lived experience.

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Geolocation information

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Appendix1: Interview schedules for target groups

School professionals

- (1) What do you know about vaping?
- (2) Can you tell me about e-cigarettes and other heated tobacco products?
- (3) Is there anything that you are unsure about or would like to know about e-cigarettes and other heated tobacco products?
- (4) Which term is most commonly used amongst young people in the school context—vaping, e-cigs, e-cigarettes, or another term?
- (5) What are your thoughts on the health impacts of vaping—positive or negative health impacts?
- (6) What are your thoughts on vaping in comparison to smoking cigarettes?
- (7) What are your thoughts on the environmental impacts of vaping?
- (8) Do students at your school vape? Do you think vaping is an issue at your school?
- (9) Do you think there is a particular kind of student who vapes? If so, describe them.
- (10) What do you think attracts young people to vaping? (*Prompt: Ecological frame—self, home, peers, environment, access etc.*)
- (11) Have you any idea how students are accessing vaping products?
- (12) What do you see as the [teacher's/school nurse's] role in addressing vaping with school students?
- (13) If you came across a student with vapes in their pencil case or vaping in the toilets what would you do?
- (14) Does the school have any processes or policies to deal with vapes? (If yes, are these processes documented? Are these effective?)
- (15) What practices and policies do you think should be implemented by schools to address student vaping? (*Prompt: make sure both practices and policies are considered*)
- (16) Are there any other strategies you think would be helpful to address student vaping in the school environment?
- (17) Do you currently use any particular educational resources for vaping? What are these and where do you access them?
- (18) What do you think of these educational resources? (*Prompt: What works/doesn't work? What's useful/not useful? Is there anything that should be changed?*)
- (19) What type of vaping resources would you like to have access to? And how would you like to use these resources? (*Prompt: content of resources; format of resources—fact sheet, videos, podcasts, website, aligned to curriculum*)

- (20) What are your thoughts on highlighting the environmental impacts of vaping to deter use?
- (21) I would like you to think about a comprehensive awareness raising and/or educational intervention on vaping targeting young people but it might also have resources for teachers to use in the classroom (money is not an issue)—what would this type of intervention look like, what resources, what strategies would be incorporated, what do you think would be a good fit for young people and what would help you?

Parents

- (1) Can you tell me what you know about vaping?
- (2) Can you tell me about e-cigarettes and other heated tobacco products?
- (3) Is there anything that you are unsure about or would like to know about e-cigarettes and other heated tobacco products?
- (4) Which term do you think is most commonly used amongst young people—vaping, e-cigs, e-cigarettes, or another term?
- (5) What are your thoughts on the health impacts of vaping—positive or negative health impacts?
- (6) What are your thoughts on vaping in comparison to smoking cigarettes?
- (7) What are your thoughts on the environmental impacts of vaping?
- (8) What do you think attracts young people to vaping? (*Prompt: Ecological frame—self, home, peers, environment, access etc.*)
- (9) Have you any ideas about how young people are accessing vaping products?
- (10) What do you see as your role in addressing vaping use with your children and other young people?
- (11) If you came across vapes in your child's school backpack what would you do?
- (12) Have you ever discussed vaping with your child/ren and/or other young people? (**If yes**, what was discussed and did you do any activities? Was this useful? Was this a positive experience? Why/why not? **If no**, what has prevented discussion on this?)
- (13) Where do you think parents currently access information about vaping? (*Prompt—friends, family, Google, websites, social media?*)
- (14) What do you think of existing available prevention resources? (*Prompt: What works/doesn't work? What's useful/not useful? Is there anything that should be changed?*)
- (15) What information or what types of resources would be helpful for you to understand the issue of vaping and to talk to your kids about it?

- (16) Do you have any ideas on new prevention resources/education campaigns that could support the prevention of vaping appeal, access and uptake?
- (17) What are your thoughts on highlighting the environmental impacts of vaping to deter use?
- (18) I would like you to think about a comprehensive awareness raising and/or educational intervention on vaping targeting young people but it might also have resources for parents to use (money is not an issue)—what would this type of intervention look like, what resources, what strategies would be incorporated, what do you think would be a good fit for young people and what would help you?

Young people

- (1) Can you tell me what you know about vaping?
- (2) Can you tell me about e-cigarettes and other heated tobacco products?
- (3) Is there anything that you are unsure about or would like to know about e-cigarettes and other heated tobacco products?
- (4) Which term do you think is most commonly used amongst young people—vaping, e-cigs, e-cigarettes, or another term?
- (5) What are your thoughts on the health impacts of vaping—positive or negative health impacts?
- (6) What are your thoughts on vaping in comparison to smoking cigarettes?
- (7) What are your thoughts on the environmental impacts of vaping?
- (8) Where do you think young people access vaping products?
- (9) What do you think attracts young people to vaping? (*Prompt: Ecological frame—self, home, peers, environment, access etc.*)
- (10) What is your motivation for vaping or having vaped previously? (and if you've stopped vaping, what motivated you to stop?)
- (11) What do you think would make vapes less attractive/appealing to young people?
- (12) Where do you think young people currently access information about vaping? (*Prompt—friends, family, Google, websites, social media?*)
- (13) What do you think of existing available prevention resources? (*Prompt: Give examples of what 'prevention' resources are ie. 'Making Smoking History' strategies. What works/doesn't work? What's useful/not useful? Is there anything that should be changed?*)
- (14) What are your thoughts on highlighting the environmental impacts of vaping to deter use?
- (15) Finally, if money was not an issue, what strategies would you suggest we use to address vaping targeting young people?