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Youth's engagement and perceptions of disposable e-cigarettes: a UK focus group study

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Youth's engagement and perceptions of disposable e-cigarettes: a UK focus group study

Marissa J. Smith[1]*, Anne Marie MacKintosh[2], Allison Ford[2] and Shona Hilton[1]

[1] MRC/CSO Social and Public Health Sciences Unit, University of Glasgow, Glasgow, G3 7HR, UK

[2] Institute for Social Marketing and Health, University of Stirling, Stirling, FK9 4LA, UK

*Corresponding author email: marissa.smith@glasgow.ac.uk Tel: (+44) 0141 353 7500

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13   **ABSTRACT**

14   **Objectives:** Evidence suggests that use of flavoured disposable electronic cigarettes (e-cigarettes) is

15   increasing. Considering the growing popularity and rapid evolution of e-cigarettes, we explored

16   youth's perceptions and engagement with disposable e-cigarettes.

17   **Design:** Twenty focus groups were conducted between March and May 2022, with 82 youths aged

18   11-16 living in the Central belt of Scotland.

19   **Methods:** Youths were asked about smoking and vaping behaviours and disposable e-cigarettes and

20   were shown vaping-related images and videos from social media which were used to stimulate

21   discussion about different messages, presentations, and contextual features. Transcripts were imported

22   into NVivo 12, coded thematically, and analysed.

23   **Results:** Youths described disposable e-cigarettes as 'cool', 'fashionable', and enticing and viewed as

24   a modern lifestyle 'accessory'. Tank models were perceived as being used by older adults. Youths

25   stated that disposable e-cigarettes were designed in a way to target youths and the brightly coloured

26   devices and range of flavourings encouraged youths to want to try the products, particularly sweet

27   flavourings. Participants perceived e-cigarettes to be less harmful compared to combustible cigarettes

28   but noted the uncertainty of ingredients in disposable e-cigarettes.

29   **Conclusions:** Youths distinguish between e-cigarettes with varying characteristics and social

30   perceptions of users. These findings provide evidence that disposable e-cigarettes are attractive to

31   youths. Future research is needed to understand the factors that contribute to youth perceptions of

32   disposable e-cigarettes. Policymakers should work together to design and implement policies and

33   strategies to prevent youth uptake of vaping.

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35 **Strengths and limitations of this study**

36 • This research offers timely insights into youths perceptions about the growing use of

37 disposable e-cigarettes.

38 • It provides an in-depth analysis from interviews with a diverse sample of 82 youths

39 aged 11-16.

40 • Our findings present new evidence on how youths experience targeted e-cigarette

41 marketing via social media content as visual prompts.

42 • Our qualitative thematic analysis of the data allows depth of opinions but cannot offer

43 predictions about the frequency of specific opinions with a wider population.

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BACKGROUND

The use of e-cigarettes among youths in Great Britain (GB) has increased in 2022 compared to 2021; however, use among never-smokers remains low and mostly experimental [1, 2]. Since the development of e-cigarettes, public health researchers and tobacco control advocates have debated the role of e-cigarettes as a harm reduction tool. Proponents of e-cigarette harm reduction believe e-cigarettes can play a role in eliminating smoking related diseases and consider them to be a breakthrough in harm reduction development [3-5] Whereas opponents of the e-cigarette harm reduction debate argue that caution should be taken when endorsing e-cigarette products until crucial evidence becomes available [6]. E-cigarettes are often termed a short-term tobacco harm reduction tool, as they do not contain tobacco or tar which are known to cause numerous smoking-related diseases, including cardiovascular disease. A newly published Cochrane review [7] found that nicotine e-cigarettes were superior to placebo e-cigarettes and at least as effective as nicotine replacement therapy (NRT) for smoking cessation, which is consistent with findings from other randomised controlled trials (RCTs) [8-10]. In addition, the review stated that there is moderate certainty in the evidence that nicotine-containing e-cigarettes increase the quit rate compared to NRT and non-nicotine-containing e-cigarettes [7]. Despite differences in opinion within the public health community regarding the value of e-cigarettes in harm reduction for adults, there is broad consensus on the need to protect young people from initiating vaping [11].

Since the development of the first e-cigarette in 2003, there are now a variety of models or 'generations' available. First-generation e-cigarettes (sometimes referred to as 'cigalikes') were disposable and designed to mimic the look and feel of combustible cigarettes [12]. Over time, new e-cigarette types were developed to more effectively deliver nicotine contained in e-liquid. Second-generation e-cigarettes are larger and are generally refillable using e-liquids [13]. Third-generation e-cigarettes (tanks or mods) are much larger than the previous generations and are refillable and rechargeable [12, 14]. They are modifiable devices ('mods'), meaning the user can customise the substances in the device [15] and adjust the power of the device to give a stronger throat hit [16, 17].

75 The fourth generation of e-cigarettes is called 'Pod Mod'. They contain a prefilled or refillable 'pod'

76 or pod cartridge with a modifiable 'mod' system ('Pod-Mod') [14].

77 Recently, disposable e-cigarettes (such as "Puff-bar", "Elf-bar", or "Geek-bar") have started to

78 dominate the market [18]. Disposable e-cigarettes retail for around £5 to £7 ($7 to $9) in the UK —

79 about half the price of a pack of 20 cigarettes [19]. In Great Britain, data captured in 2022, found that

80 disposable e-cigarettes have become the most common device type (52.0% compared to 7.7.% in

81 2021), with Elf Bar and Geek Bar being the most popular brands [1]. Despite the popularity of

82 disposable e-cigarettes, little is known about the design, chemical characteristics, or how they may

83 impact health.

84 Considering the rapid growth and popularity of disposable e-cigarettes, this research aims to explore

85 youth's perceptions and engagement with disposable e-cigarettes, awareness of product

86 characteristics, appeal of products and flavours, perceptions of harm, perceived target group, and

87 purchasing behaviours. User-generated and influencer marketing content on social media represents a

88 key influence on young people's understandings of products. It is essential to monitor the content that

89 young people access related to e-cigarettes and through focus groups with youths so we can

90 understand how young people relate to that content, why e-cigarettes might appeal to youths, and why

91 they need protected, which would not be feasible with population surveys.

92

METHODS

94 We conducted 20 focus groups between March and May 2022. Focus groups included between three

95 and five participants (a total of 82 participants). Purposive sampling was used to recruit a diverse

96 sample of youths in terms of sex, socio-economic background, and smoking and vaping status. Eleven

97 groups were recruited through youth workers in local youth organisations. These gatekeepers handed

98 out information sheets and helped achieve the sampling frame in terms of youth demographics and

99 experiences with regard to traditional cigarettes and e-cigarettes. The three organisations that helped

100 with participant recruitment worked specifically with young people from disadvantaged backgrounds

101 in urban areas. This recruitment strategy resulted in the inclusion of a range of participants from more

102   affluent and more deprived backgrounds and with experiences of smoking and vaping. Seven groups

103   were recruited through the Schools Health and Wellbeing Improvement Research Network (SHINE)

104   Newsletter which is distributed monthly to over 500 schools in Scotland. The remaining two groups

105   were recruited via personal networks directly by MS.

106   Focus group discussions were facilitated to allow the research team to explore how opinions about

107   disposable e-cigarettes are developed. Friendship groups of 3–5 participants were used to facilitate in-

108   depth insights and promote participant interaction. Each participant was given a £20 shopping

109   voucher as compensation for their time.

110   Prior to the start of the focus groups, participants completed a short anonymous questionnaire about

111   their age, sex, postcode, smoking, and e-cigarette use status. For both traditional cigarettes and e-

112   cigarettes, the questionnaire asked participants to specify whether they had tried or used them in the

113   past or were using them at the time of the study. Based on a review of the literature a topic guide was

114   developed which covered three key areas, including different types of e-cigarette products and

115   flavours, perceptions of harm, and purchasing behaviours.

116   Images of different types of e-cigarettes ('tanks', disposables, and pod devices) and e-liquids were

117   used as conversation starters. Group discussions were facilitated by MS. Ten of the groups were

118   conducted online using Microsoft Teams and ten were conducted face-to-face. Of these, one of the

119   groups was conducted on the youth organisation's premises, and the other nine were conducted at the

120   school, with representatives of the youth organisation present. Groups lasted between 40 and

121   66 minutes. Field-notes reflecting on the focus group and individual issues discussed were written up

122   for each group. All focus groups were audio recorded with participants' permission and transcribed

123   verbatim. We conducted thematic analysis of the data form the interview transcripts and discussion

124   group minutes. The process followed Braun and Clarke's [20] six-phase framework for thematic

125   analysis. The steps involved were: 1) familiarisation with the data; 2) generating initial codes; 3)

126   searching for themes; 4) reviewing themes; 5) defining and naming themes; and 6) writing the report

127   [20]. The research team read and re-read the transcripts to become familiar with the data, and then

128   iteratively constructed a coding frame based upon the topic to enable consistent organisation of

129   relevant data. NVivo was used to organise categories on the basis of inductive themes that emerged

130 from close reading of the, capture of both areas of agreement and less typical perspectives across a

131 range of categories. Each transcript was imported into NVivo 12, coded independently, cross-

132 checked, and analysed by MS and SH. Contradictory cases and group dynamics were discussed,

133 making use of transcripts and field notes. The researcher reflected on her role as researcher, remained

134 constantly aware of her position and took care not to introduce bias throughout the research. To

135 further reduce bias the researcher recorded the focus groups and analysed them some time after they

136 were completed ensuring a more reflective view point of occurrences. Ethical approval for the study

137 was obtained from the University of Glasgow's Medical and Veterinary Life Sciences Ethics

138 Committee (reference 200210034).

139

140 **Patient and public involvement**

141 None.

142

143 # RESULTS

144 **Participant characteristics**

145 Eighty-two youths aged 11–16 years participated (47 females (57%) and 35 males (43%)) in this

146 study. This sample represented a wide diversity in sociodemographic characteristics and smoking-

147 related behaviours. The age distribution within the sample was skewed slightly towards 14–15-year-

148 olds, with 14-year-olds making up the largest subgroup (n= 24). While the majority of participants did

149 not currently smoke or use e-cigarettes, the sample included 10 smokers and 18 youths who used e-

150 cigarettes. Table 1 describes the focus group composition and participants in more detail and Table 2

151 summarises smoking and e-cigarette use among the sample.

152

Group	Area	Sex	Age	Cigarette Smoker	E-cigarette use
1	Affluent	Female	13-15	Never	Never
2	Affluent	Female	14-15	Never	Mixed – Never (4) / Tried (1)
3	Affluent	Female	13-16	Never	Mixed – Never (2) / Tried (1)
4	Deprived	Mixed – Male (3)/Female (2)	12-15	Mixed – Never (3) / Current (2)	Mixed – Never (3) / Tried (1)/ Current (1)
5	Deprived	Mixed – Male (1)/ Female (4)	14-16	Mixed – Never (2)/ Tried (2)/ Current (1)	Mixed – Never (2)/ Tried (2)/ Current (1)
6	Deprived	Male	12-15	Never	Never
7	Deprived	Male	16	Current	Current
8	Affluent	Mixed – Male (2)/Female (3)	14	Never	Never
9	Deprived	Male	16	Mixed – Tried (1)/ Current (2)	Current
10	Deprived	Mixed – Male (4)/Female (1)	14-15	Mixed – Never (3)/ Tried (1)/ Current (1)	Mixed – Never (3)/ Tried (1)/ Current (1)
11	Deprived	Mixed – Male (3)/Female (2)	13-16	Mixed – Never (2)/ Tried (2)/ Current (1)	Mixed – Never (1)/ Current (4)
12	Affluent	Mixed – Male (2)/Female (1)	15-16	Tried	Mixed – Tried (2)/ Current (1)
13	Affluent	Female	13-16	Never	Never
14	Deprived	Mixed – Male (1)/Female (3)	11-12	Never	Never
15	Deprived	Mixed – Male (3)/Female (1)	11-12	Never	Never
16	Deprived	Mixed – Male (2)/Female (2)	11-12	Never	Never
17	Deprived	Female	14-16	Mixed – Never (4)/ Tried (1)	Mixed – Never (1)/ Tried (1)/ Current (3)
18	Deprived	Male	13-16	Never	Never
19	Deprived	Female	14	Never	Mixed – Tried (2)/ Current (1)
20	Affluent	Female	15-16	Never	Tried (3)

153   **Table 1: Focus group location, participants and their cigarette smoking and e-cigarette use**.

| Cigarette smoker | E-cigarette use | | | | | | | | | | | |
| | Never | | | Tried | | | Current | | | Total | | |
	n	(col %)	(row %)	n	(col %)	(row %)	n	(col %)	(row %)	n	(col %)	(row %)
Never	49	98.0%	79.0%	9	64.3%	14.5%	4	22.2%	6.5%	62	75.6%	100.0%
Tried	1	2.0%	10.0%	4	28.6%	40.0%	5	27.8%	50.0%	10	12.2%	100.0%
Current	0	0.0%	0.0%	1	7.1%	10.0%	9	50.0%	90.0%	10	12.2%	100.0%
Total	50	100.0%	89.0%	14	100.0%	14.6%	18	100.0%	22.0%	82	100.0%	100.0%

Table 2: E-cigarette use according to cigarette smoking.

Product characteristics

Youths referred to disposable e-cigarettes as vapes or disposable vapes. Participants described

products based on product characteristics including rechargeable/disposable and design (small versus

large). Some reported that the disposable variety were not e-cigarettes and the rechargeable were.

"They [disposable e-cigarettes] aren't real 'cause they are disposable, they aren't

real vapes." (Male, current smoker, current vaper)

Product characteristics such as design were also used to classify products. Participants discussed

disposable e-cigarettes being small colourful products, whereas the rechargeable tank models were

bulky.

"I think they've been designed differently, so you can tell which ones apart. Like,

the electrical ones, the ones that you charge, they're like bigger, and a bit, like,

bulkier." (Female, never smoker, never vaper)

Participant views diverged when shown illustrative examples of different types of vaping products,

particularly disposable e-cigarettes. Several participants were able to easily recognise disposable e-

cigarettes but not other types:

"There is definitely like one that I recognise like the small wee pink one with the

black top. But I didn't recognise the rest to be honest." (Female, never smoker,

never vaper)

Several participants were not able to identify disposable e-cigarettes when shown illustrative

examples and often thought they were other products, such as highlighters or lighters.

"That's not a vape, it was a highlighter." (Male, never smoker, never vaper)

"When I first saw it, it looked like a lighter." (Male, never smoker, never vaper)

"Like a tin of mints or something." (Female, never smoker, tried vaping)

Appeal of products

Participants described several positive attributes of disposable e-cigarettes including the design, as

they were portable and discreet.

"If you're an underage child vaping you're not going to want to have that big

bulky thing 'cause you might get caught with it. Something as small as the thin

thing, that could easily fit in your pocket and not have anyone notice. But that

thing [tank model], you'd have it sticking out to see." (Male, never smoker, never

vaper)

This was also discussed by participants when referring to using the products at school.

"Yeah, they are much smaller so, they can hide them when at school." (Female,

never smoker, current vaper)"

Appeal of flavours

Participants particularly liked the variety of flavours that are available such as apple and pink

lemonade. Several participants discussed that the variety of flavours encouraged users to try other

available flavours.

"You get like different flavours in sweets and stuff, you might like the taste of

blueberry and because in the vape you've got that same taste, that's where it'd be

like, oh I really like blueberry, I'd want to see if it is, and then that's what also

gets you addicted to it." (Male, tried smoking, current vaper)

Interestingly, when participants discussed flavours, they specifically referred to disposable e-

cigarettes, with several participants unaware that e-liquids were available in a variety of flavourings.

"Like the range of flavours, and how we were saying about how the disposable

vapes had, like, a lot of different flavours. But we weren't aware of the flavours

that came with e-liquid ones." (Female, never smoker, never vaper)

Participants associated the colour of disposable e-cigarettes with flavourings, for example, one dual user stated, *"certain flavours would have different designs. Strawberry would have pink or red" (Male, current smoker, current vaper)*. While, one nonuser explained, *"the likes of strawberry, that would be red because strawberries are red. And they would do different colours like that, 'cause of the flavours" (Female, never smoker, never vaper)*.

Perceived negative attributes

Disposable e-cigarettes are designed for single use and the environmental impact of the waste was raised by participants.

"They [disposable e-cigarettes] are bad for the environment because people just

throw them away." (Female, never smoker, current vaper)

Participants also spoke about the products being non-recyclable and that this affects the environment. One participant stated, "*I don't think they're recyclable, either, so it's like a lot more waste" (Female, never smoker, never vaper),* another participant added, "*they [disposable e-cigarettes] take longer to break down, definitely" (Male, never smoker, never vaper)*.

One e-cigarette user explained that the environmental impact of using a disposable e-cigarette does not affect his choice to use them.

"I like to use the ones which are disposable and not ones which are refillable. It is

a collective effort to save the environment, but I don't want to put extra money to

save the environment." (Male, tried smoking, current vaper)

Perceived target audience

The design of the products was further referred to by participants when discussing the target audience of the different types of vaping products. Participant views of users were dependent on the subtype of products used. For example, the larger tank models were perceived to be targeted at and used by users older in age, while disposable e-cigarettes were described as 'cool', 'trendy', and a 'fashion accessory' and were perceived to be targeted at and used by youths.

"The disposables are used by like all younger people like aged 15 and 16. But adults, they've got the bigger ones like the rechargeable ones." (Female, tried smoking, tried vaping)

"The disposable ones have got different colours, they're brighter, that's probably more aimed at younger people. Whereas, you know, like the big chunky ones are probably more aimed for people who have actually come off smoking." (Female, never smoker, tried vaping)

Perceptions of harm

Many youths perceived disposable e-cigarettes as less harmful than combustible cigarettes.

"They're not as bad as actual cigarettes for you. So, it can cut down the amount of cigarettes that you smoke." (Female, current smoker, current vaper)

Although disposable e-cigarettes were perceived as less harmful compared to tobacco cigarettes, non-user youths who mentioned composition and the ingredients of disposable e-cigarettes, were concerned about the uncertainty of product ingredients and how they could affect their health.

"There's like about 40 or 50 chemicals that go into vapes that nobody in this room could name, all cheaply produced. So, see when you're inhaling it deep into your lungs it's obviously not going to be the best for you." (Male, never smoker, never vaper)

"I saw a thing on TikTok, Elfbars and Geek bars have got 50 unknown chemicals in them." (Male, never smoker, never vaper)

"Just see like the actual vapes instead of the disposables, they've all been tested. I don't think the disposables have been tested." (Male, never smoker, never vaper)

Several participants from different focus groups reported seeing people attempting to reuse the disposable e-cigarettes once they have been discarded.

"A lot of people will go and find them. It's weird. It's like people chuck them and other people go and find them and use them." (Male, never smoker, never vaper)

Purchasing behaviours

Several participants commented on the low cost of disposable e-cigarettes.

"Like metal ones, I don't even know, I'm guessing around like 70 or £80, but then the disposable ones are like 6 to 12 or something like that." (Female, never smoker, never vaper)

With some participants commenting favourably on the relatively low cost of disposable e-cigarettes, suggesting that price could be a factor in why youths experiment with the products.

"They're cheap and cheerful." (Female, never smoker, current vaper)

"That's probably an attraction for young people because they're more affordable." (Female, never smoker, tried vaping)

Participants also described the ease of purchasing disposable e-cigarette products, particularly in corner shops.

"Like, I'm 16 and I buy Red Bull in there [corner shop] but I've got such a baby face. Like, I could walk into the shop and go, you're not 16. But if I was to buy a

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vape they would give me it, loads of folk underage buy them [disposable e-cigarettes] there." (Female, tried smoking, tried vaping)

Several participants discussed the ease of being able to purchase the products online as well.

"Some places, some websites online, you don't need to put your age or anything. I've seen a thing on TikTok. Like, they put them [disposable e-cigarettes] in the wee boxes and all that, or you could put them in secret packaging like behind the lashes. Like you can order it off their website and they'll hide it in the packaging, they put a few bits of sweeties on top of your vapes so your mum doesn't see it." (Female, tried smoking, current vaper)

DISCUSSION

E-cigarettes have become increasingly popular and visible in public life and perceptions about e-cigarette users were tied to product characteristics, with tank models being associated with adults and disposable e-cigarettes associated with youths. The design of disposable e-cigarettes was a recurrent topic. Youth discussed the positives of the compact design of the product as this allowed them to be discretely carried and hidden when in school. We found that youths commonly mistake the products for other everyday products, such as highlighters and tins of mints. This combined with the compact design of the products raises concerns about the way manufactures design the products and if this has been done intentionally to target a younger audience.

E-cigarette users believed that disposable e-cigarettes are less harmful than combustible cigarettes, while nonusers reported concerns about the unknown chemical composition of disposable e-cigarettes. It is possible that if e-cigarette users perceive cigarettes as more harmful to their health they will be less likely to take up smoking and this may explain the potential displacement of cigarettes as reported in [2]. This suggests it is important to tract such changes in the population through longitudinal studies to detect and monitor youths perceptions, behaviours and assessment of risk in relation to e-cigarettes verse cigarettes. While e-cigarettes are considered less harmful than

combustible cigarettes [21, 22], balanced policies are needed that motivate cigarette smokers to switch

to e-cigarettes, yet prevent non-smokers or non-nicotine users from initiating, particularly youths.

The increased popularity of disposable e-cigarettes (such as PuffBar and ElfBar), has resulted in the

generation of more single-use plastic waste. Both users and non-users were aware of the negative

environmental impact of using disposable e-cigarettes. E-cigarettes remain subject to political and

public health debates for various reasons, including the lack of evidence on their long-term health

impact, and now there is a new topic in the scientific debate; disposable e-cigarettes are a rising

environmental threat [23, 24]. Thus, regulation should not only focus on the health effects of e-

cigarette products, but may wish to consider their environmental impact.

Consistent with previous research [25-29], our study found that participants particularly like the

variety of disposable e-cigarette flavours and the variety of available flavours is one of the top reasons

for experimentation with e-cigarettes among youths. Interestingly, in our study, participants discussed

flavours predominately in relation to disposable e-cigarettes, often associating the colour of the

product with its flavour. It was perceived from the youths in this study that disposable e-cigarettes are

targeted to younger audiences. While rechargeable e-cigarettes (tank models) were perceived by our

participants, as products for adults. Several studies [30-33] have recommended banning the sale of all

flavoured e-cigarette products to help protect children and youth from the harms of vaping. However,

some researchers argue that removing flavours will promote more combustible tobacco use and

remove a product that facilitates smoking cessation [34, 35] as research has shown that flavourings

may help reduce the amount of cigarettes used by adult smokers in the short term [8]. In late 2022,

China prohibited the domestic marketing and sales (including online) of flavoured disposables e-

cigarettes, meaning e-cigarette that have flavourings other than tobacco cannot be sold on the

domestic market [36, 37]. In addition, they have introduced regulations that all e-cigarette packaging

must include warning labels stating that they are harmful to health and must not be used by

schoolchildren [36, 37]. Notably, flavoured disposable e-cigarettes can still be manufactured in China

and shipped around the world, including to the UK. The Chinese government have stated that the

devices must conform to the regulations of the importing country [36, 37].

More research is needed to determine the most effective means to counter the favourable/positive aspects of e-cigarettes to reduce youths' interest in product trial and use. In addition, more evidence is needed to determine what has contributed to the popularity of disposable e-cigarettes among youths, including, but not limited to, the role of marketing. These findings could inform future policies on e-cigarette prevention.

As with all research, our study has some limitations. First, and consistent with the qualitative design, the sample does not aim to be representative of UK youth, as our study focused on Scottish youths. However, we did have a diverse sample of both sexes. Secondly, the study's geographical remit has to be considered when interpreting the findings. The UK is considered an international leader in tobacco control policy. It is possible that participants' views may have been influenced by the UK's unique favourable policy approach to e-cigarettes and legal and socio-cultural context, including low smoking prevalence. Thirdly, the data was collected in different formats (online and face-to-face), and it is possible that this may have influenced participants' responses. Two of the online groups were conducted in a classroom with a teacher present, and during seven face-to-face groups, a teacher/youth worker was present in the room. It is possible that the presence of a teacher/youth worker may have influenced youth's willingness to answer questions and their responses. Finally, two of the groups were recruited through personal networks and this may have impacted on the youth's responses. Despite these limitations, our study results have implications for public health and policy. Results from our study highlighted that youths positively describe the relatively low cost of disposable e-cigarettes, suggesting that price could be a factor in why youths experiment with disposable e-cigarettes. Raising prices on combustible cigarettes and alcohol has consistently shown to be inversely related to use [38, 39], particularly among younger populations [40, 41]. Therefore, policymakers could consider implementing measures to deter youth experimentation with disposable e-cigarettes, while not making the products inaccessible to vulnerable groups who may use them as a smoking cessation option. Our study suggests the growing need for policymakers to work together to develop and implement comprehensive policies to prevent initiation among youths and evaluate the

safe recycling and disposal of disposable e-cigarettes. Our study suggests the growing need for

policymakers to work together to develop and implement comprehensive policies to prevent initiation

among youths, such as through youth awareness programs designed to prevent the start of e-cigarette

use among youths which could include information on the effects of vaping the body, how to identify

false marketing, and how to resist peer pressure [42]. In addition, our research suggests policies are

required to evaluate the safe recycling and disposal of disposable e-cigarettes (such as requiring

manufacturers and retailers to install collection points inside shops).

CONCLUSION

We found that youths differentiated between disposable e-cigarettes and larger tank models, for which

they had varying perceptions of product users. Our study highlights the need for additional research

on e-cigarette sub-types to understand product perceptions more fully; and should be considered in

future prevention and regulatory efforts. In addition, while many positive attributes of disposable e-

cigarettes were reported, key negative attributes that may discourage use, such as unknown chemical

composition and environmental impact, were also described. The findings from our study suggest the

growing need for policymakers to work together to develop and implement policies to prevent uptake

among youths.

Declarations

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Standards for Reporting Qualitative Research (SRQR)*

http://www.equator-network.org/reporting-guidelines/srqr/

	Page/line no(s).
Title and abstract	

Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	1
Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions	2

Introduction

Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	4 and 5
Purpose or research question - Purpose of the study and specific objectives or questions	5

Methods

Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**	5-7
Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability	7 and 17
Context - Setting/site and salient contextual factors; rationale**	5-7
Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**	5-7
Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	7
Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**	5-7
Data collection instruments and technologies - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	5-7
Units of study - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	5-7

1

Data processing - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	5-7
Data analysis - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale**	5-7
Techniques to enhance trustworthiness - Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale**	5-7

Results/findings

Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	7-14
Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	7-14

Discussion

Integration with prior work, implications, transferability, and contribution(s) to the field - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	15-18
Limitations - Trustworthiness and limitations of findings	17

Other

Conflicts of interest - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	18
Funding - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	18

*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research.

**The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

Reference:
O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014
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