

Reasons for using e-cigarettes among adults who smoke: comparing the findings from the 2016 and 2020 ITC Korea Surveys

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► Additional supplemental material is published online only. To view, please visit the journal online (<https://doi.org/10.1136/tc-2023-058506>).

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Received 16 November 2023
Accepted 19 May 2024



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To cite: Yoon W, Seo HG, Lee S, et al. *Tob Control* Epub ahead of print: [please include Day Month Year]. doi:10.1136/tc-2023-058506

ABSTRACT

Introduction Dual use of e-cigarettes and cigarettes is a growing usage pattern in adults, but little is known about the motivations underlying this trend. We investigated the reasons for e-cigarette use among adults who smoke, considering variation in sociodemographic subgroups.

Methods This repeated cross-sectional study analysed adults who smoked at least weekly and vaped at any frequency. Data were from the International Tobacco Control Korea Surveys conducted in 2016 (n=164) and 2020 (n=1088). Fourteen reasons for e-cigarette use were assessed in both waves. Subgroup analyses were performed by age, sex and educational level.

Results The top reasons for e-cigarette use in 2020 were curiosity (62.8%), less harmful than smoking (45.4%) and taste (43.2%). Curiosity was the most cited across age, sex and education subgroups. Significant differences were observed in 2020 compared with 2016, with lower percentages in goal-oriented reasons: helping quit smoking (36.3% vs 48.9%; p=0.017), helping cut down smoking (35.3% vs 52.7%; p=0.001), less harmful to others (39.0% vs 54.6%; p=0.003) and more acceptable (31.6% vs 61.2%; p<0.001). By contrast, non-goal-oriented reasons showed higher percentages in 2020, such as curiosity (62.8% vs 27.9%; p<0.001), taste (43.2% vs 22.1%; p<0.001) and enjoyment (26.8% vs 8.6%; p<0.001). In 2020, a majority of adults who smoked and vaped (53.3%) reported no intention to quit or reduce smoking.

Conclusions E-cigarette use for curiosity and pleasure predominated among adults who smoked. The reasons for dual use in adults have shifted from goal-oriented to non-goal-oriented.

INTRODUCTION

Dual use of e-cigarettes (also called vapes) among people who smoke is a growing usage pattern.^{1,2} However, whether this pattern is beneficial to public health or not is controversial.² If dual use represents a transition state to completely switching to e-cigarettes or quitting all tobacco products, it would reduce the burden of smoking.^{3,4} By contrast, if dual use prolongs and supplements nicotine use, it may inhibit quitting smoking and lead to public health risks.^{5,6} Understanding the primary motivations behind dual use can predict subsequent tobacco use behaviours and inform intervention strategies for this pattern.⁷

WHAT IS ALREADY KNOWN ON THIS TOPIC

- ⇒ Previous studies based on data collected before 2020 have indicated that the most common reasons for vaping among adults who smoke are smoking cessation and health concerns.
- ⇒ A significant decline was observed in the proportion of adults who perceive that e-cigarettes are not addictive or less harmful than cigarettes.

WHAT THIS STUDY ADDS

- ⇒ The most common reasons for vaping among adults who smoked in South Korea in 2020 were curiosity (62.8%), less harmful than smoking (45.4%) and taste (43.2%).
- ⇒ Curiosity was the top reason for vaping across all sociodemographic subgroups by age, sex and educational level.
- ⇒ Goal-oriented reasons for vaping (eg, smoking cessation, health and social influence) were significantly lower in 2020 compared with 2016 in adults who smoked.
- ⇒ Non-goal-oriented reasons for vaping (eg, curiosity, taste and enjoyment) were significantly higher in 2020 compared with 2016 in adults who smoked.
- ⇒ The majority of adults who smoked and vaped (53.3%) in 2020 did not aim to quit or reduce cigarette smoking, compared with 34.0% in 2016.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

- ⇒ The main reasons for vaping have shifted from goal-oriented to non-goal-oriented ones among adults who smoke.
- ⇒ Dual use among adults does not represent a means of completely transitioning away from cigarettes or reducing tobacco consumption.
- ⇒ E-cigarette regulation policies targeting adults who smoke need to promptly address the experimental and recreational reasons for dual use.

Several studies have reported that adults who smoke commonly use e-cigarettes to stop smoking and to address health concerns.^{8–10} A study conducted in the USA showed that the most common reason for vaping among adults who

smoked in 2014 was smoking cessation/health (85.4%).⁸ A cross-country study that used 2016 data indicated that cutting down on cigarettes (85.6%), reducing harm (77.9%) and quitting smoking (77.4%) were the largest drivers of vaping among adults who smoke across the USA, England, Canada and Australia.⁹ Smoking cessation (41.5%) and less harmful than smoking (18.6%) were the common reasons for vaping among adults who smoked according to a national representative study conducted in the Republic of Korea (hereafter, South Korea) in 2015.¹¹ However, these findings may not reflect the latest trends in the reasons for vaping.

The main reasons for vaping have expanded beyond smoking cessation and health concerns in recent years.^{12–13} E-cigarettes were initially marketed as an effective tool for smoking cessation or as a less harmful alternative, but companies are no longer allowed to make unproven therapeutic claims.¹⁴ E-cigarette companies now promote how their e-cigarette products are different from traditional cigarettes in a variety of ways, such as flavour, better scent, availability and ability to vape in smoke-free areas, rather than their health benefits.^{15–16} The number of adults who perceive e-cigarettes as not addictive or less harmful than traditional cigarettes as markedly dropped,^{17–18} but limited evidence supports the changes in the reasons for vaping.^{19–20}

South Korea has experienced a rapid increase in e-cigarette use since its introduction in 2007. E-cigarette use among adults peaked in 2015, with lifetime and current prevalences of 12.3% and 4.2%, respectively.²¹ In 2016, the estimates decreased slightly to 10.6% and 2.3%, respectively, but have remained higher (11.0% and 3.2% in 2020).²¹ A national survey from 2016 to 2018 showed that e-cigarette use was highly concentrated among people who smoke (male: 10.7%; female: 9.2%), followed by people who previously smoked (1.9%; 1.1%) and was nearly absent among people who have never smoked (0.2%; 0.04%).²² The e-cigarette market and regulations in South Korea have evolved during this period, particularly with the introduction of a new generation prefilled pod systems such as JUUL pod and Lil Vapor with various flavours and distinctive design features in 2019.²³ This launch provided another alternative nicotine product in addition to heated tobacco products (HTPs), which had a 6.2% prevalence of current use among adults that year.²⁴ To combat the popularity of e-cigarettes, the Korean government released anti-smoking advertisements in early 2019 discouraging the use of e-cigarettes to quit smoking. Subsequently, an outbreak of e-cigarette or vaping, product use-associated lung injury in late 2019 prompted the Korean government to issue a strong warning to the public not to use e-cigarettes due to health risks.²³

In this study, we explored the reasons for vaping in adults who smoke, using nationally representative data from the 2016 and 2020 cohorts of the International Tobacco Control (ITC) Korea Surveys. The specific objectives were to identify the ranking and prevalence of reasons for vaping in 2020; to compare these findings with those from 2016; and to examine variation by sociodemographic characteristics. Our results elucidate the main reasons for dual use in the adult population.

METHODS

Sample

Cross-sectional data were collected from the ITC Korea Surveys conducted in 2016 (June 7–July 20) and 2020 (June 18–June 28). The 2016 ITC Korea (KOR1) Survey included a nationally representative sample of adults aged ≥ 19 , who reported smoking more than 100 cigarettes in their lifetime, and currently

smoked at least monthly. In total, 2000 adults who smoked were recruited for this survey using dual-frame (landlines and mobile phones) random-digit dialling, comprising 423 from the landline frame and 1577 from the mobile phone frame. In the landline frame, up to two adults who smoke from the same household could be interviewed, whereas only the phone owner was eligible for interview in the mobile phone frame. They were sampled based on regions, sex and age groups quotas. The 2016 participants were interviewed via a computer-aided telephone interview system. The 2020 ITC Korea (KRA1) Survey was a new cohort survey established in 2020. This survey included a nationally representative sample of adults across different product use patterns for cigarettes, e-cigarettes and HTPs. In all, 4740 adults, consisting of 4180 who used cigarettes and/or e-cigarettes and/or HTPs at least weekly, and 560 who did not use any of these products at the time of the survey were recruited via the Rakuten Insight web panel. Participants were sampled based on target quotas for user groups: adults who smoked cigarettes exclusively at least weekly; those who used e-cigarettes; those who used HTPs; adults who concurrently used cigarettes and HTPs, cigarettes and e-cigarettes, and e-cigarettes and HTPs; adults who used three of these products at least weekly; and those who did not use any of these products at the time of the survey. Additional quotas were implemented based on region, sex and age group to achieve final sample sizes proportional to the stratum sizes derived from national smoking prevalence estimates. The 2020 participants completed the ITC KRA1 Survey online. Cross-sectional sampling weights were constructed and calibrated to the target marginal joint population distributions of user groups, sex, age groups and geographical regions, thus allowing generalisation to the Korean population. Further details on the methods can be found elsewhere.^{25–27}

Online supplemental figure S1 depicts the two study samples. The 2016 survey consisted of 2000 respondents and the 2020 survey consisted of 4740 respondents. To ensure comparability, participants who smoked at least weekly in both surveys were included ($n=1989$ in 2016 and $n=3763$ in 2020). Participants not using e-cigarettes at the time of the survey ($n=1825$ in 2016 and $n=2667$ in 2020) and those with missing covariates ($n=8$ in 2020) were excluded. Consequently, the final sample of this study included 164 from the 2016 survey and 1088 from the 2020 survey who reported smoking at least weekly and vaping at any frequency (ie, daily, weekly or less than weekly).

Measures

Reasons for vaping

The reasons for vaping were assessed using the question ‘Which of the following are reasons for your using liquid e-cigarettes?’ (the term ‘liquid e-cigarettes’ is the English translation of ‘e-cigarettes’ of the Korean term and it was used to differentiate from HTPs, which is translated as cigarette type e-cigarettes). 14 specific reasons were investigated in the 2016 and 2020 surveys (table 1). All items were surveyed with dichotomous responses of ‘yes’ or ‘no’, with responses of ‘refused’ and ‘do not know’ coded as ‘no’. The 14 reasons were broadly divided into goal-oriented reasons and non-goal-oriented reasons based on previous studies.^{28–29} The goal-oriented reasons included (a) smoking cessation/health (eg, help quit smoking, help cut down smoking, less harmful than smoking, less harmful to others and advice from health experts) and (b) social influence (eg, help stay smoking, more acceptable, avoid a smoking ban and cost). The non-goal-oriented reasons included (c) experimental (eg, curiosity and someone offered) and (d) recreational (eg, taste,

Table 1 Classification and questionnaire of the reasons for vaping

Themes	Reasons	Questions
Goal-oriented reasons		
Smoking cessation/health	Help quit smoking	They might help me quit smoking ordinary cigarettes
	Help cut down smoking	Liquid e-cigarettes help me cut down on the number of ordinary cigarettes I smoke
	Less harmful than smoking	They are less harmful to my health than cigarettes
	Less harmful to others	They are less harmful to the health of people around me than ordinary cigarettes are
	Advice from health experts	A health professional advised me to try them
Social influence	Help stay smoking	Replacing some of my ordinary cigarettes with liquid e-cigarettes means I do not have to give up smoking ordinary cigarettes altogether
	More acceptable	Using liquid e-cigarettes is more acceptable than smoking ordinary cigarettes to people around me
	Avoid a smoking ban	I can use liquid e-cigarettes in places where smoking ordinary cigarettes is banned
	Cost	I save money by using liquid e-cigarettes instead of smoking ordinary cigarettes
Non-goal-oriented reasons		
Experimental	Curiosity	I was curious
	Someone offered	Someone offered me one
Recreational	Taste	They taste good
	Enjoyment	I enjoy using liquid e-cigarettes
	Look cool	Liquid e-cigarettes make me look cool

enjoyment and looking cool). Following a previous study,⁸ a three-category quit–reduce composite measure was derived and coded as those who selected ‘to quit smoking’ as a reason for vaping, those who selected ‘to reduce smoking but not to quit smoking’ and those who selected ‘neither to quit nor reduce smoking’.

E-cigarette type and use frequency

The frequency of vaping was determined by the question, ‘On average, how often do you currently use liquid e-cigarettes?’. The answers were classified as daily use, weekly use and less than weekly use. The type of e-cigarette was determined by asking the question, ‘Which of the following best describes the type of liquid e-cigarette you currently use most?’ to those who were vaping at least weekly and ‘Which of the following best describes the type of liquid e-cigarette you used last?’ for those who vaped less than weekly. The answers were divided into disposable, prefilled cartridge/pod, refillable tank and others/unknown (refused/do not know).

Sociodemographic characteristics

The sociodemographic characteristics included age (19–24, 25–39, 40–54 and 55+ years), sex (male and female), education (high: university degree or higher; moderate: high school or some university; and low: middle school or lower), annual income level (high: 75+ million KRW (~US\$56 724), moderate: 30–<75 million KRW (~US\$22 689–US\$56 724), low: <30 million KRW (~<US\$22 689) and unknown (refused/do not know)) and marital status (married: married/common law, never-married: single and others: separated/divorced/widowed). Unknown responses for educational level or marital status were treated as missing.

Statistical analysis

Frequency analysis was performed with percentages to describe the sociodemographic and product use-related characteristics of respondents who smoked and vaped for the survey years 2016 and 2020. The prevalences of reasons for vaping in 2016 and 2020 were assessed by logistic regression models, using the SURVEYLOGISTIC procedures with the LSMEANS statement. All prevalence estimates were calculated using sample weights and

incorporated survey design information (strata) and adjusted for the above sociodemographic characteristics, smoking frequency (daily, weekly) and vaping frequency (at least weekly, less than weekly). The results were presented as prevalences and 95% CIs for the dichotomised variables: (a) the 14 reasons for vaping and (b) the 3 categories of quit–reduce composite reasons. Differences in prevalence between the 2 years were tested using t-tests by inclusion of the DIFF option in the LSMEANS statement, with statistical significance set at $p < 0.05$. Subgroup analyses of the prevalences of reasons for vaping were performed by sociodemographic characteristics (eg, age groups, sex and educational level) for each year. In the subgroup analysis by educational level, the ‘moderate’ and ‘low’ groups were combined because of the small sample size ($n = 2$ in 2016; $n = 9$ in 2020) of the latter. All analyses were conducted using SAS V.9.4 software (SAS Institute, Cary, NC, USA).

RESULTS

Online supplemental table S1 shows the basic characteristics of the respondents who smoked and vaped in 2016 and 2020. Most were males, aged 25–39 years, highly educated, and with a moderate income level in both survey years. More than half (57.3%) of the participants in 2016 were of single marital status, whereas the majority were married (58.0%) in 2020. Most of the participants reported daily smoking (93.9% and 81.4%, for each year) and moderated smoking dependence (Heavy Smoking Index 2–3: 42.7% and 52.7%, for each year). About half of the participants (50.8%) vaped less than weekly in 2016, whereas they were evenly distributed (daily: 32.2%, weekly: 35.5%, less than weekly: 32.3%) in 2020. A refillable tank (43.9%) was the most commonly used type of e-cigarette in 2016, and the prefilled cartridge/pod type (48.2%) was the most common in 2020.

Reasons for vaping

Figure 1 illustrates the reasons for vaping among adults who smoked. In 2020, the top three reasons were curiosity (62.8%), less harmful than smoking (45.4%) and taste (43.2%). Compared to 2016, the reasons for vaping with significantly lower percentages in 2020 were more acceptable (31.6% vs 61.2%; $p < 0.001$), less harmful to others (39.0% vs 54.6%; $p = 0.003$), help cut

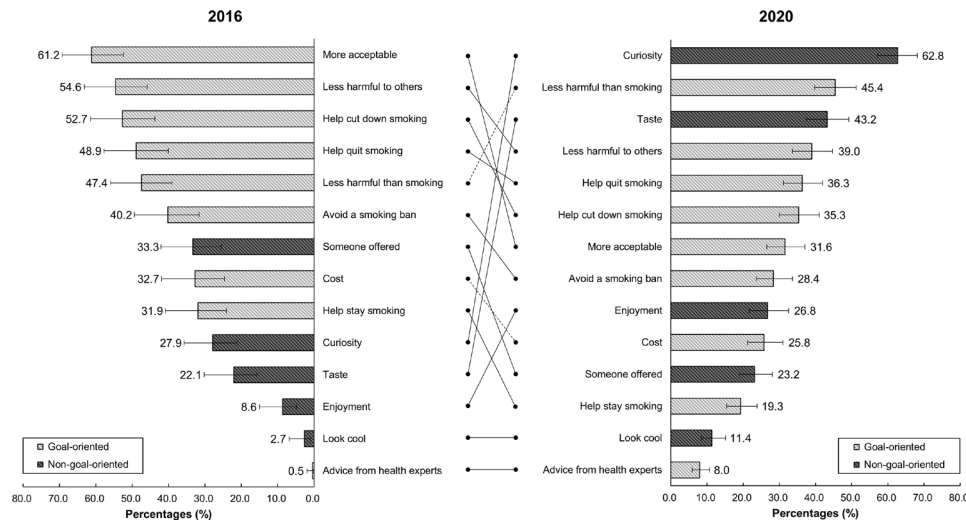


Figure 1 Reasons for vaping among adults who smoked in 2016 and 2020. The solid bars represent the percentages and the error bars represent the 95% CI. The solid arrows indicate significant differences in percentages between the two years and the dashed arrows indicate non-significant differences at the level $p < 0.05$.

down smoking (35.3% vs 52.7%; $p = 0.001$), help quit smoking (36.3% vs 48.9%; $p = 0.017$), avoid a smoking ban (28.4% vs 40.2%; $p = 0.018$), someone offered (23.2% vs 33.3%; $p = 0.028$) and help stay smoking (19.3% vs 31.9%; $p = 0.006$). Using e-cigarettes because they are less harmful than smoking (45.4% vs 47.4%; $p = 0.701$), and cost (25.8% vs 32.7%; $p = 0.163$) showed lower percentages in 2020 than in 2016, although not significantly. The reasons with significantly higher percentages in 2020 were curiosity (62.8% vs 27.9%; $p < 0.001$), taste (43.2% vs 22.1%; $p < 0.001$), enjoyment (26.8% vs 8.6%; $p < 0.001$), look cool (11.4% vs 2.7%; $p = 0.002$) and advice from health experts (8.0% vs 0.5%; $p < 0.001$). The raw values displayed in figure 1 are listed in online supplemental table S2.

Figure 2 shows the quit-reduce composite reasons for vaping. In 2020, one-third (36.3%) of respondents who vaped intended to quit smoking, which was lower than 48.9% in 2016 ($p = 0.017$). The percentages of participants who intended to use e-cigarettes to reduce but not quit smoking was lower in 2020 compared with 2016 (8.3% vs 14.0%; $p = 0.063$). However, the percentage of respondents who vaped neither to quit nor reduce smoking was 53.3% in 2020, which was higher compared with 34.0% in 2016 ($p < 0.001$).

Reasons for vaping by sociodemographic characteristics

Table 2 presents the reasons for vaping in 2020 according to age group, sex and educational level. The most frequently cited reason across all age groups (aged ≥ 19) was curiosity, whereas the second and third most frequently cited reasons varied. Among respondents aged 19–24, the top three reasons were curiosity (76.9%), taste (71.8%) and less harmful than smoking (56.1%). In the 25–39 age group, respondents mostly vaped because of curiosity (45.3%), less harmful than smoking (46.1%) and taste (45.3%). In the 40–54 age group, the most common reasons were curiosity (62.5%), followed by less harmful than smoking (36.0%) and less harmful to others (30.0%). Participants aged ≥ 55 most frequently cited curiosity (65.9%), less harmful than smoking (35.6%) and someone offered (28.1%) as reasons for vaping. Only younger participants (aged 19–39) cited taste (aged 19–24: 74.3%, aged 25–39: 45.1%) as one of the top three reasons.

The top three reasons for vaping were curiosity, less harmful than smoking, and taste across sex and educational levels, although with slight variation. The most common reasons for males to use e-cigarettes were curiosity (62.9%), less harmful than smoking (45.2%) and taste (42.2%). Females also state that curiosity (59.4%), less harmful than smoking (47.6%) and taste (43.5%) were the top three reasons for vaping. Similarly, the high education and moderate/low educational level groups

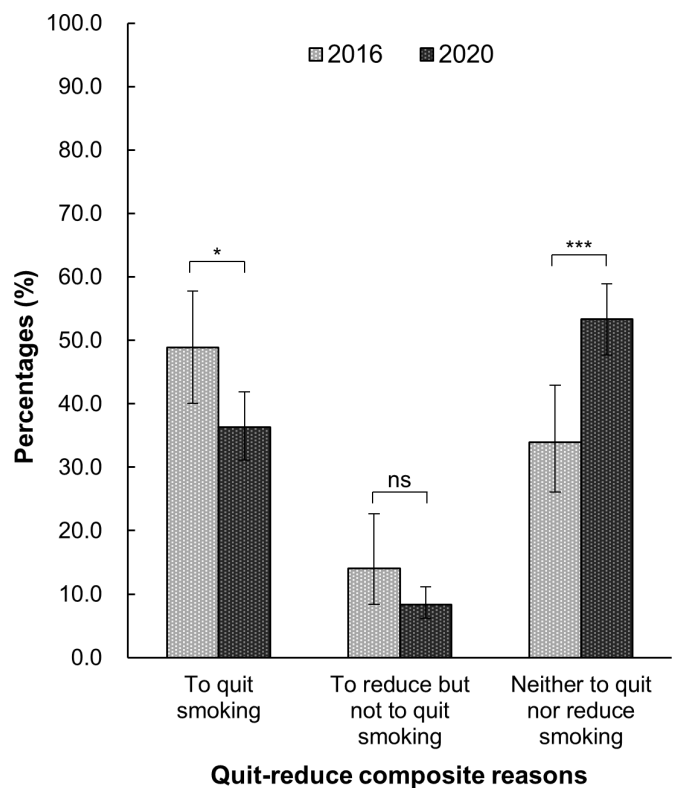


Figure 2 Quit-reduce composite reasons for vaping among adults who smoked in 2016 and 2020. The solid bars represent the percentages and the error bars represent the 95% CI; *** $p < 0.001$; * $p < 0.05$; ns, not significant.

Table 2 Reasons for vaping among adults who smoked in 2020, stratified by sociodemographic characteristics

Reasons	Age group				Sex		Education	
	19–24 (n=77)	25–39 (n=510)	40–54 (n=393)	55+ (n=108)	Male (n=803)	Female (n=285)	High (n=896)	Moderate/low (n=192)
Goal-oriented: smoking cessation/health								
Help quit smoking (%)	38.2	40.8	27.5	20.5	36.6	28.8	29.7	40.7
Help cut down smoking (%)	41.1	40.6	24.6	20.6	34.8	32.3	32.4	35.7
Less harmful than smoking (%)	56.1 ^c	46.1 ^b	36.0 ^b	35.6 ^b	45.2 ^b	47.6 ^b	41.0 ^b	49.9 ^b
Less harmful to others (%)	48.0	40.5	30.0 ^c	20.2	39.0	38.7	38.2	39.6
Advice from health experts (%)	1.6	9.6	3.9	0.8	8.6	2.5	13.1	2.1
Goal-oriented: social influence								
Help stay smoking (%)	22.5	19.5	11.5	8.2	18.2	22.8	20.2	17.0
More acceptable (%)	43.4	34.0	19.3	13.5	31.5	30.9	31.7	31.8
Avoid a smoking ban (%)	25.4	33.5	20.8	15.2	28.4	20.3	29.2	27.2
Cost (%)	25.9	31.9	15.9	6.7	27.9	11.0	27.3	15.1
Non-goal-oriented: experimental								
Curiosity (%)	76.9 ^a	60.7 ^a	62.5 ^a	65.9 ^a	62.9 ^a	59.4 ^a	56.8 ^a	68.4 ^a
Someone offered (%)	21.7	20.3	24.9	28.1 ^c	22.3	18.5	21.6	15.6
Non-goal-oriented: recreational								
Taste (%)	71.8 ^b	45.3 ^c	28.4	11.3	42.2 ^c	43.5 ^c	39.7 ^c	44.5 ^c
Enjoyment (%)	50.4	21.1	14.8	12.8	25.4	32.4	23.0	29.0
Look cool (%)	5.2	10.9	5.1	2.9	11.2	6.9	12.4	6.0

Values are weighted prevalences, adjusting for age, sex, education, income level, marital status, smoking frequency and vaping frequency. Top three reasons by subgroup are denoted by the alphabets 'a', 'b' and 'c'.

cited curiosity as the top reason for vaping (high: 56.8%, moderate/low: 68.4%), followed by less harmful than smoking (high: 41.0%, moderate/low: 49.9%) and taste (high: 39.7%, moderate/low: 44.5%). Detailed results of the subgroup analysis for 2016 are provided in online supplemental table S3.

DISCUSSION

This study investigated the reasons for vaping among adults who smoked, using the 2016 and 2020 cohorts of the ITC Korea Surveys. The most common reason for vaping in 2020 was curiosity (62.8%), across all sociodemographic subgroups. Two major patterns were observed in 2020 compared with 2016, including a lower prevalence of goal-oriented reasons related to smoking cessation/health and social influence and a higher prevalence of non-goal-oriented reasons related to experimental and recreational purposes. This study highlights the changed main reasons for dual use in Korean adults.

Our findings confirm previous concerns that vaping is motivated beyond smoking cessation and health in the adult population.^{12 13} In 2016, smoking cessation and health were commonly cited, as with most previous studies involving adult populations.^{8–10} However, our 2020 findings show that curiosity was the main reason, accompanied by a sharp increase in taste and enjoyment. Fewer adults who smoked used e-cigarettes to curtail their smoking behaviour (eg, help quit smoking or help cut down smoking), while more adults who smoked use e-cigarettes because of product interest (eg, curiosity, taste and enjoyment). This study suggests that the most cited reasons for vaping in adults who smoked have shifted from goal-oriented to non-goal-oriented ones.

Non-goal-oriented reasons predominated across all subgroups by age, sex and educational level in 2020. This is contrary to reports of subgroup differences in the main reasons for vaping.^{30–32} Some population groups, such as older aged, males and highly educated adults were use e-cigarettes for smoking cessation and health concerns, consistent with our results for

2016.^{30–32} In 2020, all of these subgroups cited curiosity as the top reason, surpassing the smoking cessation-related and health-related reasons. In addition, the quit-reduce composite classifications indicated that more than half (53.3%) of adults who used both products neither aim to quit nor reduce smoking in 2020. These findings imply that dual use does not represent a means of completely transitioning away from cigarettes or decrease tobacco consumption in the adult population.

Motivation is sensitive to the external environment, such as marketing, regulation and public perception. In South Korea, the main reasons for dual use among adults have shifted from *smoking cessation and health concern* in 2015 to *more acceptable* in 2016, and subsequently to *curiosity and taste* in 2020.¹¹ The decline in e-cigarette use to stop smoking and for better health corresponds with the Korean government's efforts to alter public perception, including anti-vaping advertisements discouraging their use as smoking cessation aids and media coverage highlighting the potential harm from e-cigarette aerosols. Similarly, the decreased use of e-cigarettes for social acceptability aligns with current policies deeming e-cigarettes as tobacco products, including tax increases and public area bans.³³ The only increasing goal-oriented reason is advice from health professionals, which implies divergent opinions among medical experts and the lack of consistent clinical guidelines for use of e-cigarettes.³⁴

Although the decline in motivation related to smoking cessation and health concerns might be an intended consequence of Korean policies, the growing use of e-cigarettes driven by curiosity and interest in its features is an unintended consequence. The sharp increase in curiosity about e-cigarettes may be attributed to advertising and promotion of e-cigarette devices, which remain unregulated as tobacco products and widespread in South Korea.^{35 36} Furthermore, the increase in vaping for recreational purposes reflects the limited regulation of unique aspects of e-cigarettes, such as device design and flavour.^{35 36} Aggressive marketing by e-cigarette companies, along with the evolution

of e-cigarette devices and the diversification of flavours, may also have contributed to this change.^{8, 37} Tobacco control policies need to expand regulatory authority to include e-cigarettes and implement regulations tailored to their unique features to address the evolving e-cigarette landscape.

This study had some limitations. First, we relied on self-report data, which could introduce social desirability biases in the responses to the reasons for vaping. Nevertheless, it remains a widely used and valuable method for understanding the motivations and behaviours for vaping,¹³ which were crucial in this study. Second, this study focused on participants who smoked cigarettes, thus lacking information on those who exclusively vaped after quitting cigarettes, which may have resulted in underestimation of reasons related to smoking cessation and health concerns. Third, due to the cross-sectional design, it was not feasible to detect changes within individuals (eg, from goal-oriented to non-goal-oriented and from experimental to recreational) and the corresponding behavioural action (eg, people who used both products intending to quit cigarettes and ultimately stopped smoking) for the stated motives. Future longitudinal research would be beneficial to capture changes at the individual and population levels and establish causal relationships with subsequent behavioural changes. Fourth, we controlled for sociodemographic factors and product use frequencies, but other confounders may exist, such as smoking and vaping patterns, device types and nicotine contents. Further studies should evaluate the causes of the shift in reasons, such as marketing messages, interactions with other tobacco products (eg, HTPs), smoking policies and e-cigarette policies, considering potential confounders. Finally, the generalisability of the findings may be limited to other settings, such as countries with different e-cigarette regulatory environments, the prevalence of e-cigarette use or the demographic distribution of adults who smoke. Nonetheless, the current study represents a unique examination of reasons for vaping in two periods within the same country and provide insight and a methodological framework for future studies on reasons for vaping.

CONCLUSION

The most common reasons for vaping in adults who smoke have changed from goal-oriented (eg, smoking cessation and health) to non-goal-oriented ones (eg, curiosity, taste and enjoyment). This shift can influence the product consumption behaviour of a large proportion of people who use both products and ultimately the net health outcomes of dual use. Therefore, it is important to develop and implement interventions targeting e-cigarette experimentation and recreational use, while continuously monitoring the main reasons for vaping among adults who smoke to address the public health implications of dual use.

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Contributors SC is the guarantor for the content of this manuscript. WY conceptualised the study, conducted the statistical analyses and drafted the manuscript. SC and GM advised on the data analyses. SSX and ACKQ contributed to review and editing. All authors interpreted the findings and commented and approved the final version of the manuscript.

Funding The 2016 ITC Korea (KOR) Project was supported by a grant from the Republic of Korea Ministry of Health and Welfare Fund and the Canadian Institutes of Health Research Grant (MOP-115016). Additional support for GTF a Senior Investigator Grant from the Ontario Institute for Cancer Research and a Senior Prevention Scientist Award from the Canadian Cancer Society Research Institute. The 2020 ITC Korea (KRA) Project was supported by a grant from the Republic of Korea National Health Promotion Fund and the Canadian Institutes of Health Research Foundation Grant (FDN-148477). Additional support to GTF is provided by a Senior Investigator Grant from the Ontario Institute for Cancer Research (IA-004).

The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

Competing interests GTF has served as an expert witness or consultant for governments defending their country's policies or regulations in litigation. All other authors have no competing interest to declare.

Patient consent for publication Not applicable.

Ethics approval Study procedures and materials for the 2016 ITC Korea Survey were reviewed and cleared by the Research Ethics Board, Office of Research Ethics at the University of Waterloo, Canada (REB#21287/30768) and the Internal Review Board at the Korea National Cancer Center (IRB NCCNCS2016-0129). 2020 ITC Korea Surveys were reviewed and cleared by the Research Ethics Board, Office of Research Ethics at the University of Waterloo, Canada (REB#41512) and the Institutional Review Board of Korean Health Promotion Institute (#120160811107AN01-2004-HR-042-02). All participants provided consent prior to completing both surveys. The secondary data analysis for this paper received approval from the Seoul National University Research Ethics Board (IRB No. E2103/001-004).

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data may be obtained from a third party and are not publicly available. In each country participating in the International Tobacco Control Policy Evaluation (ITC) Project, the data are jointly owned by the lead researcher(s) in that country and the ITC Project at the University of Waterloo. Data from the ITC Project are available to approved researchers 2 years after the date of issuance of cleaned data sets by the ITC Data Management Centre. Researchers interested in using ITC data are required to apply for approval by submitting an International Tobacco Control Data Repository (ITCDR) request application and subsequently to sign an ITCDR Data Usage Agreement. The criteria for data usage approval and the contents of the Data Usage Agreement are described online (<http://www.itcproject.org>).

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