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Awareness, experience and prevalence of heated tobacco product, IQOS, among young Korean adults

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ABSTRACT

Introduction Philip Morris International introduced 'IQOS' to the Korean market in June 2017. To monitor the use of IQOS among young Korean adults, we identified their awareness, experience and current use of IQOS.

Methods Three months after the introduction of IQOS in Korea, we conducted an online survey with 228 general young adults, aged 19–24 years.

Results 87 participants (38.1%) were aware of IQOS, 13 (5.7%) were IQOS ever users and 8 (3.5%) were current IQOS users. All the current IQOS users were triple users of conventional cigarettes and electronic cigarettes (e-cigarettes). There were no IQOS-only users and one IQOS ever user was a non-cigarette smoker. Among the eight current IQOS users who smoked 9.1 conventional cigarettes a day on average, four smoked 10–20 HEETS sticks a day. The current IQOS users decided to use IQOS because they believed it was less harmful or to stop smoking. The current conventional cigarette smokers were much more likely to be aware of IQOS (OR 4.496; 95% CI 2.185 to 9.250) and to be IQOS ever users (OR 11.649; 95% CI 1.024 to 132.564).

Conclusion Awareness, experience and use of IQOS among young Korean adults were relatively higher than among their Japanese counterparts. Current IQOS users were more likely to smoke conventional cigarettes and/or e-cigarettes, which contradicts the tobacco industry's claims that conventional cigarette smokers will switch to heated tobacco products. Until obtaining robust evidence concerning heated tobacco products, the government should regulate the tobacco industry's marketing tactics and health claims.

INTRODUCTION

Philip Morris International (PMI) introduced its heated tobacco product, IQOS, to the Korean market in June 2017. After their market success in Japan, the company penetrated the Korean market by establishing two flagship stores in Seoul and signing a contract with CU—Korea's largest convenience store chain with 1654 locations in the capital city and 7946 nationwide—to sell IQOS and packs of modified cigarettes, named HEETS.[1]

PMI offered discount coupons to customers who registered on their IQOS website (www.myiQOS.com). With these coupons, the price of a device can be discounted by 20% and the warranty period can be extended from 6 to 12 months.[1] The company has marketed their heated tobacco product as a harm reduction product and it advertised that IQOS reduces harmful substances by approximately 90% on average compared with conventional cigarettes which are sold in the Korean market (figure 1).[2] This assumes that Korean smokers' behaviour reflects these marketing tactics.[3] It is not hard to find IQOS users on the streets of Korea.

Korea has been successful in enforcing tobacco control policies. Tobacco tax increased in 2015 and pictorial health warnings were introduced on cigarette packages in 2016. The smoking prevalence among adult men decreased to 40.7% in 2016 from 66.3% in 2001.[4] However, the introduction of new types of tobacco products, such as heated tobacco products, to the Korean market can threaten this achievement. Although there are many current smokers who can quit and be free from nicotine addiction with existing tobacco control policies and programmes, the tobacco industry claims that they developed alternative products, such as heated tobacco products, to continue cigarette smoking. The industry tries to hold on to their customers with 'harm reduction' strategies.[5]

Three months after the introduction of IQOS in the Korean market, the government and Congress were confused about IQOS while preparing to define the product and impose taxes on it. Due to this situation, the public has been exposed to marketing messages generated by the tobacco company. There is an urgent need to collect data related to IQOS to develop effective policies regarding heated tobacco products.

The purpose of this study was to identify awareness, experience and current use of the heated tobacco product, IQOS, among Korean adults aged 19–24 years. The results of this study can contribute to helping the government to prepare appropriate regulations to control such products.

METHODS

In September 2017, three months after the introduction of IQOS in Korea, we carried out an online survey to identify the awareness, experience and prevalence of the new product, IQOS, among young Koreans. We recruited 228 general adults aged 19–24 years, which included 114 men and 114 women, from an online survey panel, which was managed by a survey company, EMBRAIN (http://www.embrain.com/eng/). The study participants were defined by age and gender. The online survey consisted of 24 questions and only took 10–15 min to complete. If there were questions that were not answered, participants could not complete the survey. The survey company, EMBRAIN, provided online points, which can be exchanged for cash or gifts, to participants who completed the survey.

Conventional cigarette smoking questions were: 'Have you ever smoked in your life?' (none/less than 100 cigarettes/more than 100 cigarettes) and 'Do you currently smoke?' (yes/no). Electronic

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Figure 1 The IQOS ad on top of the shelf in a convenience store claims, 'IQOS reduces harmful substances by approximately 90% on average compared to conventional cigarettes which are sold in the Korean market' (photo taken by Dr Jinyoung Kim).

cigarette (e-cigarette) use questions were: 'Have you ever used e-cigarettes?' (yes/no) and 'Have you used e-cigarettes in the past 30 days?' (yes/no). IQOS use questions were 'Have you ever used IQOS?' (yes/no) and 'Have you used IQOS in the past 30 days?' (yes/no). The IQOS awareness question was 'Are you aware of IQOS?'

We included several demographic variables because these variables could be associated with IQOS use: age, education level (using the question, 'What is the highest *educational* qualification that you have completed?') and monthly allowance (using the question, 'How much money do you spend a month?'). Response options for educational level were 'high school', '2 year college degree' and '4 year college degree'. Response options for monthly allowance were 'none', 'less than 50 000 won' (equivalent to approximately US$50), '50 000 to 99 999 won', '100 000 to 149 999 won' and 'more than 150 000 won'. We also asked about the amount of IQOS daily use and the reason that current IQOS users decided to use it.

Data analyses were performed using SPSS software, V.21.0 for Windows (SPSS).

RESULTS

Among the participants, those aged 23 years old were the largest group with 27.2%, followed by those aged 24 years old with 21.5%, and those aged 22 years old with 20.6%. The mean age and SD of the male participants and female participants were 22.3 years old (±1.4) and 22.0 years old (±1.5), respectively. A total of 53.1% of all participants were university students and 16.2% of participants were college students. The remaining 70 participants' (30.7%) education level was a high school degree. More than half of participants (57.9%) lived in Seoul, the capital city, or Gyeonggi Province. Almost one-third (30.7%) of participants spent between 50 000 and 99 999 won a month. 18.0% and 19.7% spent 100 000–149 999 won or more than 150 000 won, respectively. The number of current conventional cigarette smokers in this study sample was 38 (33.3%) among men and 39 (34.2%) among women. Among the participants, 20 men (17.5%) and 14 women (12.3%) were current e-cigarette users.

Table 1 shows the awareness, experience and current use of IQOS among the study group.

Eighty-seven participants (38.1%) were aware of IQOS. More men (52.9%) were aware of IQOS than women (47.1%), but the difference was not statistically significant (p=0.495). IQOS awareness was significantly higher for conventional cigarette smokers (57.5% vs 42.5% for non-cigarette smokers; p<0.0001). Among participants who were aware of IQOS, 25 (28.7%) were current e-cigarette users, while 62 (71.3%) did not use e-cigarettes (p<0.0001).

Thirteen participants (5.7%) had tried IQOS; nine of these were men and four were women. Almost every IQOS ever user (12 out of 13) was also a current conventional cigarette smoker and the one non-current cigarette smoker was a never smoker. In addition, 10 of the 13 IQOS ever users were current e-cigarette users. There were eight current IQOS users (3.5%) among all the participants and all current IQOS users were triple users of conventional cigarettes and e-cigarettes.

Although the current IQOS users were few, we analysed their daily IQOS use and reasons for IQOS use. Among the eight current IQOS users, four participants smoked less than 10 HEETS sticks a day, but the other four participants smoked 10–20 HEETS sticks a day. Six current IQOS users decided to use the product because they believed that heated tobacco products were less harmful and less smelly compared with conventional cigarettes. Two out of eight current IQOS users used it to stop smoking. They believed that IQOS was a smoking cessation aid.

Multivariable logistic regression analysis indicated that current conventional cigarette smokers were much more likely to be aware of IQOS (OR 4.496; 95% CI 2.185 to 9.250) and to be IQOS ever users (OR 11.649; 95% CI 1.024 to 132.564) than non-smokers. Men, older participants and those with a high monthly allowance and higher education levels were more likely to be aware of IQOS and to become IQOS ever users, although the differences were not significant. In addition, the OR for being IQOS ever users among current e-cigarette users was 9.647 (95% CI 1.632 to 57.013).

DISCUSSION

In 2014, PMI introduced IQOS in Japan. Compared with Ploom, which is another type of heated tobacco product manufactured by Japan Tobacco International, the growth of IQOS in Japan was relatively very rapid. After a big success in Japan, PMI accessed the Korean market in 2017 with similar marketing tactics to that used in Japan. Once the product was marketed in Korea, the media focused on IQOS and introduced it as the equivalent of the 'iPhone' in the field of the tobacco business.

A previous study found that 48% of Japanese people were aware of IQOS, 6.6% had ever used it and 1.3% had used it in the last 30 days in 2015, one year after its introduction in the Japanese market.[6] Later research conducted in 2017 found that 3.6% of Japanese people were current IQOS users.[7] The prevalence of IQOS use in Japan has increased almost threefold in the last 2 or 3 years. The study also found that 4.7% of Japanese people used at least one type of heated tobacco product or e-cigarettes; of these, 72% smoked conventional cigarettes.[7] Unlike the tobacco industry's claim that current cigarette smokers can switch from conventional cigarettes to heated tobacco products, it was found that most IQOS users were triple or dual users of conventional cigarettes and/or e-cigarettes.

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Table 1 Awareness, experience and prevalence of IQOS among the Korean young adults and multivariable association of IQOS awareness and ever use

			Univariate association between IQOS awareness/ever use/current use and sociodemographic characteristic and smoking behaviour						Multivariable association of IQOS awareness and ever use	
			IQOS awareness (n=87)		IQOS ever use (n=13)		Current IQOS use (n=8)		IQOS awareness	IQOS ever use
Factor	Category	n (228)	n (%)	P values	n (%)	P values	n (%)	P values	OR (95% CI)	OR (95% CI)
Gender	Female	114	46 (52.9)	0.495	9 (69.2)	0.153	6 (75.0)	0.569	Ref	Ref
	Male	114	41 (47.1)		4 (30.8)		2 (25.0)		1.10 (0.59 to 2.05)	3.11 (0.67 to 14.30)
Age (mean±SD)		228	22.31±1.43	0.279	21.92±1.12	0.526	21.50±0.93	0.082	1.12 (0.89 to 1.40)	0.80 (0.46 to 1.37)
Education level	High school	121	27 (31.0)	0.497	4 (30.8)	0.770	2 (25.0)	0.850	Ref	Ref
	2-year college degree	37	11 (12.6)		3 (23.1)		2 (25.0)		0.70 (0.25 to 1.96)	0.84 (0.10 to 6.78)
	4-year college degree	70	49 (56.3)		6 (46.2)		4 (50.0)		1.51 (0.71 to 3.20)	1.22 (0.22 to 6.68)
Monthly allowance (KRW)	None	49	14 (16.1)	0.076	1 (7.7)	0.028	0 (0.0)	0.386	Ref	Ref
	Less than 50 000 won	39	13 (14.9)		1 (7.7)		1 (12.5)		1.65 (0.59 to 4.61)	1.72 (0.06 to 50.87)
	50 000–99 999 won	54	17 (19.5)		3 (23.1)		1 (12.5)		1.28 (0.49 to 3.29)	3.63 (0.23 to 57.01)
	100 000–149 999 won	41	20 (23.0)		1 (7.7)		1 (12.5)		1.59 (0.60 to 4.27)	0.37 (0.02 to 9.47)
	More than 150 000 won	45	23 (26.4)		7 (53.8)		5 (62.5)		1.00 (0.36 to 2.80)	1.95 (0.17 to 22.78)
Conventional cigarette smoking	Never smoker	151	37 (42.5)	0.000	1 (7.7)	0.000	0 (0.0)	0.188	Ref	Ref
	Current smoker	77	50 (57.5)		12 (92.3)		8 (100.0)		4.50** (2.19 to 9.25)	11.65* (1.02 to 132.56)
E-cigarette use	Never e-cigarette user	194	65 (71.3)	0.000	3 (23.1)	0.000	0 (0.0)	0.012	Ref	Ref
	Current e-cigarette user	34	25 (28.7)		10 (76.9)		8 (100.0)		2.99* (1.11 to 8.07)	9.65* (1.63 to 57.01)

KRW is South Korea's currency, the won (1000 won=US$1).
*P<0.05; **P<0.0001.

Korea has experienced a similar situation to that of Japan. Compared with a Japanese study,[6] which was carried out 1 year after the introduction of IQOS in the Japanese market, awareness of IQOS (48% in Japan vs 38.1% in Korea) and ever-use of IQOS (6.6% in Japan vs 5.7% in Korea) were slightly lower. However, since there were similar percentages of current IQOS users in Korea (3.6% in Japan vs 3.5% in Korea), urgent action is needed to tackle the rapid growth of heated tobacco product use in Korea.

Given that the sample size of the present study was relatively smaller than previous studies in Japan, there is a limitation in directly comparing the results. However, if we consider that our study was carried out just 3 months after the introduction of IQOS in the Korean market, we could assume the IQOS growth in Korea has been much faster compared with its growth in Japan. According to the announcement of the Ministry of Finance, the market share of heated tobacco products, including IQOS, British American Tobacco's Glo, and KT&G's (the largest tobacco company in Korea) lil, reached 9.1% of the total sale of tobacco products in Korea.[8]

Importantly, our study found that none of the IQOS current users had switched from conventional cigarettes to IQOS. In addition, among 13 IQOS ever users, one ever user smoked neither conventional cigarettes nor e-cigarettes. This can be explained in that IQOS might possibly be a gateway product for tobacco use among never smokers. Similarly, a recent study describing the Italian experience of heated tobacco products reported that nearly half (45%) of Italian IQOS current users and over half (51%) of Italian people who were interested in IQOS were never smokers.[9]

In our sample, there were many conventional female cigarette smokers, although the smoking prevalence among Korean female adults was low. This might affect the finding that there was no significant difference in awareness of IQOS between men and women.

Not surprisingly, we found that all current IQOS users in the sample were current conventional cigarette and e-cigarette users. This is similar to the finding of a Japanese study.[7] In addition, four out of eight current IQOS users consumed 10–20 HEETS sticks a day, while they smoked 9.1 conventional cigarettes a day on average. Considering that Korean adult smokers aged 19–29 years old smoke 10.8 cigarettes a day on average,[4] dual users of conventional cigarettes and IQOS in our study sample were exposed to more nicotine and other tobacco-related toxic substances. Although six out of eight decided to replace their tobacco products with heated tobacco products with the faith that IQOS was less harmful and can be used as a smoking cessation aid, these triple users' total nicotine absorption and toxic exposure from conventional cigarettes, e-cigarettes and IQOS can be really high and cause serious adverse effects to their health.

This study has a limitation in that the sample was small, and thus the findings should be interpreted carefully. Nevertheless, this study is likely to remain valuable because it analysed the early influence of IQOS on young Korean adults.

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CONCLUSIONS

Due to aggressive marketing activities by the tobacco industry, awareness, experience and use of heated tobacco products, particularly among young adults, have rapidly increased. Additionally, smokers readily believe that heated tobacco products are less harmful and would help them quit smoking. Current IQOS users are more likely to smoke conventional cigarettes and/or e-cigarettes, which contradicts the tobacco industry's claims that conventional cigarette smokers will switch to heated tobacco products.

What this paper adds

- Awareness, experience and use of IQOS among young Korean adults were relatively higher than among their Japanese counterparts.
- IQOS users decided to use the product because they believed it was less harmful and would help them quit smoking. All the current IQOS users were triple users of conventional cigarettes and electronic cigarettes, which contradicts the tobacco industry's claims that conventional cigarette smokers would switch to heated tobacco products.

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