

The Relationship between University Student Behavior and Perception of Electronic Cigarette

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Abstract: The objective of this study was to analyze the relationship between perception of E-cigarette and smoking cessation attempts in college students known to have strong mental and physical maturity, social justice, and ideals compared to adolescents and have strong desire. Data analysis was done by using frequency analysis and chi-square test to analyze the general characteristics and E-cigarette perception of the subjects, and the relationship with the smoking cessation attempt using SPSS version 25.0. An analysis of the relationship between general characteristics and reasons for E-cigarette selection, the average no. of cigarettes smoked per day and smoking cessation were statistically significant ($p < .05$ for each) factors contributing to the selection of E-cigarettes. A health policy should be established so that continuous smoking cessation support services can be provided to college students along with a healthcare approach to disseminate proper awareness of E-cigarette.

Keywords: *Electronic Cigarette, Behavior, Smoking Cessation*

1. Introduction

According to the World Health Organization report, about 4 million people die from smoking each year, and by 2020, the death toll is expected to reach 10 million [1]. In Korea, the rate of daily smoking among adults was 20.0% in 2014, which is higher than the average daily smoking rate of 19.7% among OECD adults and the third highest among OECD member countries. The smoking rate of adults aged above 19 years decreased gradually from 66.3% in males and 6.5% in females in 1998, to 43.2% in males and 5.7% in females in 2014. The average smoking rate of males (43.2%) was higher than the total smoking rate (24.2%) [2].

E-cigarette is a battery-powered device that can vaporize e-liquid containing various chemical substances such as nicotine, flavors, propylene glycol, glycerol, etc. Smokers inhale the vapor from e-cigarette. Various types of products are being developed and sold, ranging from first-generation products such as disposable 'Cigalike' to third-generation high-end mechanical devices [3][4].

With the increasing use of E-cigarettes, and issues related to the safety and smoking cessation effects of E-cigarette, under the World Health Organization's Framework Convention Alliance for Tobacco Control (2014) 179 countries unanimously agreed to regulate all types of products promoting the use of tobacco, with or without nicotine [5]. Until the evidence suggests that E-cigarette is safe, governments should prohibit the indoor use of E-cigarette and stop their promotion or advertisements as a means of smoking cessation. In addition, the results of clinical studies on the effects of smoking cessation have not been reported, and the safety controversy remains in the presence of harmful substances in the cartridge, apart from the presence or absence of nicotine [6].

In a previous study, the recognition of adverse effects associated with E-cigarette among US college students was nearly doubled from 16.4% (2009) to 32.2% (2010), and the experience rate of E-cigarette was also 0.6 (2009) to 2.7% (2010), which is more than four-fold higher than the previous year [7]. E-cigarette is less harmful to health than general tobacco, and helps to reduce general consumption of tobacco as a smoking cessation aid and alleviates withdrawal symptoms and facilitates smoking cessation. [8].

In Korea, 83.9% of respondents were aware of E-cigarette in the cognitive survey conducted by

Ministry of Health & Welfare, in which 40.1% of respondents answered that E-cigarette was a substitute for tobacco to quit smoking, and 37.2% responded that E-cigarette was less harmful to health than general tobacco [9]. In addition, E-cigarette was considered more economical, or had the effect of smoking without smoke [10]. Also, most of the studies were conducted on youth and adults [11], and were related to factors associated with E-cigarette use and experience [12] [13]. There are no studies on the relationship between E-cigarette selection factors and smoking cessation attempts among college students.

Therefore, the perception of electronic cigarettes and the use of electronic cigarettes for college students Identifying factors affecting dragons and why Attempts were made to correct distorted perceptions and to provide basic data for health education and health approaches.

2. Method

2.1. Research Subjects

This study used data derived from the 2016 Korea National Health and Nutrition Examination Survey conducted by Ministry of Health and Welfare.

2.2. Measurement Variables

The Korea National Health and Nutrition Examination Survey data using the questionnaire related to E-cigarette were developed for the first time in 2016. The dependent variable used the question, "Have you ever tried to quit smoking?", and was configured to respond with "no = 0" and "yes = 1". E-cigarette perception was based on the question, "What is the main reason for choosing E-cigarette?", and was configured to respond with "It seems to be less harmful than cigarette = 0", "It seems to help to quit smoking = 1", "You can smoke indoors = 2", "easily obtainable = 3", "better flavor = 4", "I like fragrance = 5", "I cannot smell the cigarette = 6", "I am curious = 7", or "Other = 8". In this study, only responses excluding non-response and missing values were used.

2.3. Analysis Method

Data analysis was done by using frequency analysis and chi-square test to analyze the general characteristics and E-cigarette perception of the subjects, and the relationship with the smoking cessation attempt using SPSS version 25.0. We assessed the significance of all tests at $p = .05$, with a 95% confidence interval.

3. Results

3.1. Subject Characteristics

The general characteristics of the subjects were as follows: 91.7% males, 58.3% engaged in economic activity, and 63.9% started smoking below age 19 years. In terms of average number of cigarettes smoked per day, 'under 10 cigarettes' was the most common (41.7%) and with regard to frequency of binge drinking, 'less than 4 times per month' was the most common (55.6%).

Table I. Subject Characteristics

Variables		N	%
Gender	Male	33	91.7
	Female	3	8.3
Economic activities	Yes	21	58.3
	No	15	41.7
Age at smoking onset	<19 years	23	63.9
	≥19 years	13	36.1
Average no. of	≤10 cigarettes	15	41.7

cigarettes smoked per day	11-≤20 cigarettes	12	33.3
	≥21 cigarettes	9	25.0
Frequency of binge drinking	<less than 4 times	20	55.6
	≥more than 4 times	16	44.4
Total		36	100.0

3.1. Relation between General Characteristics and Electronic Cigarette

Analysis of the relationship between general characteristics and E-cigarette selection showed the following results: In the case of average number of cigarettes smoked per day, 46.7% of respondents who answered with 'less than 10 cigarettes' chose 'better flavor', 33.3% of 'under 11-20 cigarettes' chose 'it seems to help to quit smoking', and 55.6% of 'over 21 cigarettes' selected 'better flavor'. In the case of smoking cessation attempts, 66.7% of respondents who answered 'No' chose 'better flavor', and 40% of 'Yes' chose 'It seems to help to quit smoking'. The average number of cigarettes smoked per day and smoking cessation attempts were statistically significant.

Table II. Relation Between General Characteristics and Electronic Cigarette

Variables		It seems to be less harmful than cigarette		It seems to help to quit smoking		Can smoke indoors		Better flavor		Total	
		N	%	N	%	N	%	N	%	N	%
Gender	Male	5	15.2	11	33.3	4	12.1	13	39.4	33	100.0
	Female	1	33.3	1	33.3	0	0.0	1	33.3	3	100.0
$\chi^2(p)$.935									
Economic activities	Yes	3	14.3	8	38.1	2	9.5	8	38.1	21	100.0
	No	3	20.0	4	26.7	2	13.3	6	40.0	15	100.0
$\chi^2(p)$.637									
Age at smoking onset	<19 years	2	8.7	9	39.1	3	13.0	9	39.1	23	100.0
	≥19 years	4	30.8	3	23.1	1	7.7	5	38.5	13	100.0
$\chi^2(p)$		3.285									
Average no. of cigarettes smoked per day	≤10 cigarettes	1	6.7	6	40.0	1	6.7	7	46.7	15	100.0
	11-≤20 cigarettes	3	25.0	4	33.3	3	25.0	2	16.7	12	100.0
	≥21 cigarettes	2	22.2	2	22.2	0	0.0	5	55.6	9	100.0
$\chi^2(p)$		7.850*									
Frequency of binge drinking	< less than 4 times	3	15.0	6	30.0	2	10.0	9	45.0	20	100.0
	≥ more than 4 times	3	18.8	6	37.5	2	12.5	5	31.3	16	100.0
$\chi^2(p)$.707									
Smoking cessation attempts	No	0	0.0	0	0.0	2	33.3	4	66.7	6	100.0
	Yes	6	20.0	12	40.0	2	6.7	10	33.3	30	100.0
$\chi^2(p)$		8.229*									

Note: *p<.05

4. Conclusion

As a result of analysis of the relationship between general characteristics and reasons for E-cigarette selection, the average no. of cigarettes smoked per day and smoking cessation were statistically significant ($p < .05$ for each) factors contributing to the selection of E-cigarettes.

In this study, we confirmed that people recognize E-cigarette as helpful to quit smoking because they do not have exact facts about E-cigarette but only distorted information. Efficacy and positive perceptions of E-cigarette on smoking cessation attitudes of college students increase E-cigarette choice and smoking behavior. Despite the lack of objective and reliable grounds for the safety of E-cigarette, advocacy and promotion of E-cigarette use with a relatively high emphasis on the risks of cigarette is relatively undesirable for health reasons. E-cigarette should not adversely affect the health of college students with only limited publicity that the rate of successful smoking cessation was good when human carcinogens such as formaldehyde and benzene are detected in E-cigarette similar to regular cigarettes.

Based on the results of this study, policy recommendations are as follows. Smoking education is needed through various activities and educational channels for college students. Particularly, regular health education and steady promotion should be done to spread the right awareness about E-cigarette.

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