

College Students' Attitudes toward Cigarette Advertisement and Smoking Perception: Focusing on Sexual Difference

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Abstract

Background/Objectives: Previous studies have shown that college students are exposed to smoking products and the dangers of smoking. However, little is known about the differences in smoking behavior by sex differences. Therefore, this study investigated the sex difference in smoking perceptions among college students.

Methods/Statistical analysis: The sample group (N=1,500) was selected from 50 domestic colleges with equal quotas, taking account the size and region of the colleges based on the number of enrolled students. Multivariable binary logistic regression analysis was conducted to identify factors associated with smoking status by sex. The threshold for statistical significance was 0.05 (two-tailed). The GFI (Goodness of Fit Index) of the study model was evaluated by "Hosmer & Lemeshow χ^2 ".

Findings: Male showed a negative attitude toward cigarette advertising in universities, but women were not significant. This is judged to be because most advertisements are focused on male non-smoker. Female non-smokers were in favor of the ban on cigarette sales in universities, but the male was not significant. This seems to be a negative reaction to the selling cigarette in cigarette stores and smoking in campus, as women have a low smoking rate and their peers rarely smoke. On the other hand, men are frequently exposed to the environment of smoking due to the large number of smokers around them. females were more aware of the danger and harmfulness of smoking more than men, which means the focus of banning-smoking policy should be put on male consumers rather than females. females lacked the awareness of smoking addiction. Current graphic images on cigarette packs warn against the diseases caused by smoking, yet it puts little stress on addiction warning as it is written in small letters. So, it is necessary to improve the graphic warnings on cigarette packages.

Improvements/Applications: Policymakers should come up with measures to prevent female from second-hand smoking, improve the graphic warnings on cigarette packs to raise men's awareness of the dangers of smoking and female's awareness of cigarette addiction.

Keywords: Sex difference, Smoking perception, Multivariable binary logistic Regression, Graphic

warnings on cigarette packages, Second-hand smoking

1. Introduction

Although many banning-smoking policies are being promoted around the world [1-4]; smoking is still ranked as one of the leading five risk factors and is in charge of 12% of disability-adjusted life years lost (15.4% in men; 8.5% in female) in 109 countries [5]. Thus, smoking is a main cause of illnesses and deaths. This is not limited to specific countries, but a global health issue.

Theories of social and health psychology have shown the effectiveness of using pictures and images than text-only messages during health communication, which evoke a “fear appeals” that motivates a change in health behavior (e.g. quitting) [6]. Therefore, many countries including Thailand, Australia and South Korea started printing graphic warnings on cigarette packages indicating the possibilities of disease inducement as a warning to smokers. This has brought a decrease in cigarette consumptions, and thus banning-smoking policies put a negative implicit attitude toward cigarette products [7]. In Korea, since the National Health Promotion Act in 1995, various banning-smoking policies have been implemented such as expanding non-smoking areas (2004, 2011), recording carcinogens on its packages (2007), raising cigarette prices (2015), and using graphic warnings (2016). As a result, the average of male smoking rate was showing an overall decrease from 1995 (66.3%) to 2018 (36.7%). However, female smoking rate remains its degree between 6% to 7% and showed a slight increase in 2018 (7.5%) compared to 2017 (6.0%).

According to the previous studies, global female smoking is highly complex, implying various products and factors including cigarette marketing, globalization, and change of female's status in society [8]. Also, cigarette controls are blind in gender singularity, with a few recognitions of the importance in identifying the context and challenges of female's smoking and the exposure to secondhand smoke [9]. However, little is known about the differences in smoking behavior by sex among young adults. This study has investigated the sexual differences by smoking status associated with participants' sociodemographic characteristics, their recognition on smoking prevalence and its addictiveness, and their opinion on banning-smoking policies in college.

Above all, attention should be placed on young adult' smoking status. Entrance into college may be associated with raised risk of progression in smoking [10], and excessive marketing and advertisements aiming college students are still prevalent including social media such like YouTube [11, 12]. Those efforts can cause students to make moves from occasional smoking to daily smoking or, for non-smokers, to transfer to occasional smoking. Also, most cigarette product use is initiated during youth and young adulthoods [13], and this long-term use of cigarette can be led to serious diseases [14, 15]. The established factors of use and initiation of cigarette, including its flavors, marketing exposure, curiosity and susceptibility, and misperceptions about its harmfulness, remained prevalent and continue promoting cigarette consumption among the youths [16]. In addition, elders consider health as high priority among their values, showing more health-conscious than the youngsters do [17], e.g. it can be interpreted that the youngsters seem to lack the recognitions on dangers of smoking. This can lead their cigarette consumption be established as a smoking habit among youth [18, 19]. However, it is clear, without simultaneously implementing an effective strategy, smoke-free policy in college can be failed to make a change in smoking custom [20]. Thus, new efforts are needed in order to prevent students from being addicted to cigarette and its exposure in campus.

2. Materials and Methods

This study was conducted based on the data of the task "Monitoring the Present Condition of Cigarette Marketing Exposure in Colleges" conducted by the Korea Health Promotion Development Institute. The research was conducted for six months from June 18 to November 29, 2019 and surveyed 1,500 students who have been exposed to smoking advertisements. The sample group (N=1,500) was selected as 50 domestic colleges with equal quotas method, taking account of the size and region of the colleges based on the number of registered students. The field interview survey was conducted by college students using TAPI (Tablet Aided Personal Interview), and the survey tables were verified by the first survey manager, and 10% conducted follow-up verification. After the survey was completed, the final raw data was organized through the editing process to check the valid samples for errors and omissions, coding work for classification of subjective and open questions, and data cleaning process to search for errors in response data.

2.1. Variable

The dependent variable, smoking status, was assessed using one question (How many cigarettes have you smoked in your lifetime), measured on the three scale: “five packs or more”, “five packs under”, and “never have smoked”. “five packs over”, “five packs under” is classified as “smoker”, “have never smoked” is classified as “nonsmoker”. Sociodemographic characteristics (sex, grade level, college type, college scale, self-rated health, monthly pocket money, the number of household members, convenience store or cigarette advertising nearby the place of residence), awareness of harmful effects of cigarette (recognition on cigarette addiction, recognition on its disease inducement), attitudes toward smoking policies in campus (no smoking, ban on cigarette sales, ban on cigarette display in cigarette shops, ban on cigarette advertisements and promotions of cigarette companies) were included in the study model.

Grades level were divided into “first grade”, “second grade”, “third grade” and, “fourth grade”. Monthly pocket money was categorized into “USD 0~259 (KRW 0~299,999)”, “USD 260~432 (KRW 300,000~499,999)” and “USD 433~ (KRW 500,000~)” (The exchange rate applied to the above amount was used at the end of 2019). In addition, the one pack of cigarette price is approximately 3.7 (USD) in Korea. University types were categorized as “university”, “college”, and “university of education”. The number of household members was categorized into “less than three people” and “three or more people”. Self-rated health was measured using five-point Likert scale of “very bad”, “bad”, “normal”, “good”, and “very good”. In this research study “very bad” and “bad” were categorized as “bad”, “normal” was categorized as “normal”, “good” and “very good” were categorized as “good”. Availability of convenience store or cigarette advertising near the place of residence was classified as “yes” or “no”. Cigarette addictive cognition and recognition of cigarette disease inducement were measured on the five-point Likert scale of “very disagree”, “disagree”, “normal”, “agree”, and “very agree”. “Very disagree”, “disagree”, and “normal” were categorized as “disagree”, “agree” and “very agree” were categorized as “agree”. Smoking ban, ban on cigarette sales, cigarette display ban in cigarette shops, ban on cigarette advertisements and promotions in cigarette companies were measured on the five-point Likert scale of “very disagree”, “disagree”, “normal”, “agree” and “very agree”. “Very disagree” and “disagree” were categorized as “disagree”, “normal” was categorized as “normal”, “agree” and “very agree” were categorized as “agree”.

2.2. Statistical Analysis

Descriptive analysis was conducted in order to describe the sociodemographic characteristics and sexual differences in perception towards smoking and cigarette advertisements according to one’s smoking status. In addition, a Chi-squared test was performed in order to identify the sexual difference. Multivariable binary logistic regression analysis was conducted to identify factors associated with smoking status by sex. The GFI (goodness of fit index) of the study model was evaluated by “Hosmer & Lemeshow χ^2 ” and was statistically significant with 0.316 for men and 0.517 for females. If the value of “Hosmer & Lemeshow χ^2 ” is greater than 0.05, the regression model can be judged to be suitable. Adjusted odds ratio (aOR) or coefficient from each model with a 95% confidence interval (CI) estimates were reported by applying sampling design from study data to ensure the reliability. The collected data were analyzed using the statistical program IBM SPSS software (Version 23.0, Chicago, IL, USA). The threshold for statistical significance was 0.05 (two-tailed).

3. Results and Discussion

Participants’ sociodemographic characteristics are shown in Table 1. A total of 1,500 university students participated in the survey. Of these, 674 (45.0%) were male and 826 (55.0%) were female. Among them, 573 (38.2%) male and 757 (50.5%) female respondents answered smoking is addictive, while 594 (39.6%) male and 764 (50.9%) female respondents answered smoking does induce diseases. In cigarette marketing, 426 male (28.4%) and 630 female (42.0%) participants answered that cigarette display should be prohibited in campus. Whether to designate campus as a non-smoking area, 434 male (28.9%) and 682 female (45.5%) participants agreed. Also, 401 male (26.7%) and 622 female (41.5%) participants were negative about cigarette ads and promotions in campus and this was similar to the question of cigarettes sales in campus

Among the socio-demographic characteristics, the higher the economic level, non-smokers were appeared in common sex. In awareness, male non-smokers were aware of its addiction, but did not consider its disease inducement. Previous studies of migrant, smokers have a positive attitude toward smoking for non-smokers [9] [21]. While female non-smokers disagreed with addiction of cigarette, but they are highly aware of its disease inducement. The results are in line with a prior study that females were more willing to quit smoking within 30 days than men, and the reason for quitting is that female think cigarettes are more harmful to their health than men [22]. In attitude toward cigarette advertising, all non-smokers agreed with banning on smoking in campus. Female non-smokers have a strong attitude of banning the sale of cigarettes, while male non-smokers value individual choices in purchasing cigarettes. Both were shown to be negative about cigarette display ads towards non-smokers.

Table 1. Participants' sociodemographic characteristics

Variable	Category	Male (N=674, 45%)		Female (N=826, 55%)		Total (N=1,500)		Fisher's Exact Test	P value
		N	%	N	%	N	%		
Grade	1st grade	212	14.1%	247	16.5%	459	31%	1.536	.673
	2nd grade	212	14.1%	247	16.5%	459	31%		
	3rd grade	133	8.9%	174	11.6%	307	20%		
	4th grade	117	7.8%	158	10.5%	275	18%		
College scale (Number of students)	Less than 5,000	258	17.2%	342	22.8%	600	40%	25.931	.000
	And more 5,000 and under 15,000	104	6.9%	196	13.1%	300	20%		
	And more 15,000 and less than 20,000	52	3.5%	48	3.2%	100	7%		
	20,000 or more	260	17.3%	240	16.0%	500	33%		
College type	University (4 years)	416	27.7%	584	38.9%	207	14%	13.456	.001
	College (2 years)	206	13.7%	194	12.9%	744	50%		
	University of Education	52	3.5%	48	3.2%	549	37%		
Self-rated health	Bad	22	1.5%	50	3.3%	72	5%	6.656	.036
	Normal	94	6.3%	117	7.8%	211	14%		
	Good	558	37.2%	659	43.9%	1217	81%		
Monthly pocket money	USD 0~259	96	6.4%	111	7.4%	1000	67%	.295	.864
	USD 260~432	330	22.0%	414	27.6%	400	27%		
	USD 433~	248	16.5%	301	20.1%	100	7%		
Households	One to two persons	42	2.8%	102	6.8%	144	10%	16.596	.000
	Three or more persons	632	42.1%	724	48.3%	1356	90%		
Is smoking addictive	No	101	6.7%	69	4.6%	170	11%	16.168	.000
	Yes	573	38.2%	757	50.5%	1330	89%		
Does smoking cause diseases	No	80	5.3%	62	4.1%	142	9%	8.196	.004
	Yes	594	39.6%	764	50.9%	1358	91%		
Convenience store or cigarette ads around residence	Yes	416	27.7%	477	31.8%	893	60%	2.435	.119
	No	258	17.2%	349	23.3%	607	40%		
Cigarette display prohibition in campus	Disagree	90	6.0%	54	3.6%	144	10%	57.307	.000
	Normal	158	10.5%	142	9.5%	300	20%		
	Agree	426	28.4%	630	42.0%	1056	70%		
No smoking in campus	Disagree	109	7.3%	42	2.8%	151	10%	74.306	.000
	Normal	131	8.7%	102	6.8%	233	16%		
	Agree	434	28.9%	682	45.5%	1116	74%		
Prohibiting cigarette ads and promotions of companies in campus	Disagree	117	7.8%	53	3.5%	170	11%	34.110	.000
	Normal	156	10.4%	151	10.1%	307	20%		
	Agree	401	26.7%	622	41.5%	1023	68%		
Ban on cigarette sales in campus	Disagree	119	7.9%	55	3.7%	174	12%	55.922	.000
	Normal	132	8.8%	123	8.2%	255	17%		
	Agree	423	28.2%	648	43.2%	1071	71%		

Result of the multivariable binomial logistic regression is shown in Table 2. In the case of male non-smokers' "monthly pocket money", the odds ratio of "USD 260~432" recorded 0.413 times of "USD 0~259" (95% CI: 0.214 to 0.800; $p=0.009$; table2). And in "convenience stores or advertisements around resident", the odds of those who answered "no" recorded 1.684 times of those who answered "yes" (95% CI: 1.116 to 2.540; $p=0.013$; table2). And in "is smoking addictive", the odds of "yes" recorded 1.926 times of "no" (95% CI: 1.080 to 3.436; $p=0.026$; table2). And in "no smoking in campus", the odds of "neutral" recorded 6.769 times of "disagree" (95% CI: 3.267 to 14.029; $p=0.000$; table2) while "agree" recorded 2.6 times of it (95% CI: 1.531 to 4.412; $p=0.000$; table2). And in "cigarette display prohibition in campus", the odds of "neutral" recorded 2.317 times of "disagree" (95% CI: 1.005 to 5.345; $p=0.049$; table2) while "agree" recorded 2.224 times of it (95% CI: 1.264 to 3.912; $p=0.006$; table2).

In the case of female non-smokers' "monthly pocket money", the odds ratio of "USD 260~432" recorded 0.112 times of "USD 0~259", (95% CI: 0.029 to 0.432; $p=0.001$; table2) while "USD 433 or more" recorded 0.351 times of it (95% CI: 0.185 to 0.666; $p=0.001$; table2). And in "does smoking cause diseases", the odds of those who answered "yes" recorded 0.331 times of those who answered "no" (95% CI: 0.137 to 0.801; $p=0.014$; table2) while in "no smoking in campus", those who answered "neutral" recorded 5.823 of "disagree" (95% CI: 1.905 to 17.802; $p=0.002$; table2) when "agree" recorded 2.955 times of it (95% CI: 1.282 to 6.813; $p=0.011$; table2). In "ban on cigarette sales in campus", the odds of "agree" recorded 3.747 times of "disagree" (95% CI: 1.413 to 9.934; $p=0.011$; table2).

Table 2: Results of the multivariable binomial logistic regression by sex difference
(N=1,500; male=674, female=826; reference group = smokers)

Variable	Category	Male				Female			
		aOR	p-value	95% CI		aOR	p-value	95% CI	
				LL	UL			LL	UL
Grade	1st grade	(ref)				(ref)			
	2nd grade	.783	.426	.428	1.431	1.108	.823	.450	2.731
	3rd grade	.755	.366	.411	1.387	1.219	.667	.495	2.999
	4th grade	.928	.816	.496	1.737	1.233	.660	.486	3.128
College scale (Number of students)	Less than 5000	(ref)				(ref)			
	Over 5,000 and under 15,000	.996	.988	.564	1.758	1.153	.724	.522	2.546
	More than 15,000 and less than 20,000	2.537	.049	1.004	6.410	.543	.172	.226	1.303
	20,000 or more	.517	.095	.238	1.121	.457	.273	.113	1.850
College type	University (4 years)	(ref)				(ref)			
	College (2 years)	.851	.707	.368	1.969	1.589	.511	.400	6.319
	University of Education	.642	.329	.264	1.563	1.390	.659	.322	5.997
Self-rated health	Not good	(ref)				(ref)			
	Normal	.675	.484	.225	2.027	1.284	.639	.452	3.653
	Good	1.496	.152	.862	2.595	1.111	.792	.509	2.425
Monthly pocket money	USD 0~259	(ref)				(ref)			
	USD 260~432	.413	.009	.214	.800	.112	.001	.029	.432
	USD 433~	.944	.797	.611	1.460	.351	.001	.185	.666
Households	One to two persons	(ref)				(ref)			
	Three or more persons	1.154	.717	.530	2.513	1.249	.606	.537	2.904
Convenience store or cigarettes ads around residence	No	(ref)				(ref)			
	Yes	1.684	.013	1.116	2.540	1.720	.100	.900	3.285
Is smoking addictive	No	(ref)				(ref)			
	Yes	1.926	.026	1.080	3.436	2.149	.093	.880	5.247
Does smoking cause diseases	No	(ref)				(ref)			
	Yes	.715	.321	.368	1.387	.331	.014	.137	.801
No smoking in campus	Disagree	(ref)				(ref)			
	Neutral	6.769	.000	3.267	14.029	5.823	.002	1.905	17.802
	Agree	2.600	.000	1.531	4.412	2.955	.011	1.282	6.813
Ban on cigarette sales in campus	Disagree	(ref)				(ref)			
	Neutral	2.083	.102	.865	5.018	1.861	.366	.484	7.156
	Agree	1.398	.247	.793	2.463	3.747	.008	1.413	9.934

Cigarette display ban in campus	Disagree	(ref)				(ref)			
	Neutral	2.317	.049	1.005	5.345	2.270	.215	.622	8.287
	Agree	2.224	.006	1.264	3.912	.568	.250	.217	1.489
Prohibiting cigarette ads and promotions of companies in campus	Disagree	(ref)				(ref)			
	Neutral	.787	.555	.355	1.743	1.374	.551	.483	3.913
	Agree	.975	.927	.563	1.687	1.034	.936	.457	2.337

aOR: adjusted odds ratios, CI: confidence interval, LL: lower limit, UL: upper limit, ref: reference group

In this study, both male and female were found to have more “Monthly pocket money” for non-smokers than smokers. This is consistent with the results of a prior study in which the higher the income level, the lower the smoking rate.

Male showed a negative attitude toward cigarette advertising in universities, but women were not significant. This is judged to be because most advertisements are focused on male non-smoker [23]. Therefore, it is judged that males, who are the main target of advertising, are sensitive to cigarette advertising, but females are less interested and sympathetic to existing cigarette advertising, so they are not significant about cigarette advertising in universities.

Female non-smokers were in favor of the ban on cigarette sales in universities, but the male was not significant. This seems to be a negative reaction to the selling cigarette in cigarette stores and smoking in campus, as women have a low smoking rate and their peers rarely smoke. On the other hand, men are frequently exposed to the environment of smoking due to the large number of smokers around them, showing their generosity in selling cigarettes in universities as they are familiar with it. According to the conducted study, although 91.9 percent of female were non-smokers, their supports on smoke-free policies in campus can be interpreted that they suffer from second-hand smoking. In addition, females were more aware of the danger and harmfulness of smoking more than men, which means the focus of banning-smoking policy should be put on male consumers rather than females. In Korea, the graphic warning of smoking danger on cigarette packs has been implemented since 2016. However, most of the graphic warnings are about the disease types which are evoked by smoking habits, which makes it difficult to recognize the harmful effects of second-hand smoke. In other words, graphic warnings didn't put much stress on making male smokers to be mindful about the adverse effects of second-hand smoke.

So, it is necessary to improve the graphic warnings on cigarette packages. According to the previous study, graphic warnings on cigarette packs have shown a mediating effect on smokers recognizing the danger of smoking [24]. Also, it turned out that smokers have a negative attitude toward graphic warnings with a picture, compared to only text warnings [25]. In addition, the result of this study females lacked the awareness of smoking addiction. Current graphic images on cigarette packs warn against the diseases caused by smoking, yet it puts little stress on addiction warning as it is written in small letters. Not focusing consumers' attention on smoking addiction is to let them think that smoking can be quit all at once at any time, but in practice, it is difficult to quit if one is addicted to it. Although female smokers didn't make up a large percentage, nevertheless it is necessary to recognize them as potential smokers and to insert pictures onto cigarette packs to alert the risks and its consequences of nicotine addiction through various banning-smoking policies and social media campaigns.

This study has some limitations. First, this study is based on a cross-sectional design, which limits association between “smoking status” and “attitudes toward cigarette advertisement and smoking perception in college”. Second, self-reported data on smoking and attitudes of cigarettes may not provide exact information because of the difficulty in recalling and social desirability biases. Third, income quintile, objective health condition, and those who weren't enrolled in college were not considered in this analysis.

Despite these limitations, this study has several strengths. This study has focused on college students in Korea. In the case of a prior study, a study was conducted on attitudes toward smoking among university students, but there was no research limited to attitudes toward smoking in campus. Their answers are more candid than previous studies because the study focused on their attitudes toward smoking on campus, which is closest to their life, rather than on the entire population of society. In this way, this study has found that college students have different recognition of cigarette according to sex. Thus, this study provides evidence to develop a pilot implementation strategy for banning-smoking education and campaigns in universities considering sexual characteristics by identifying the sexual differences of the population group in campus. This also suggests that Korea's banning-smoking policy can be improved by considering sexual differences and preferences if further research is conducted on the entire population.

4. Conclusion

Using a sample survey (n=1,500), this study has shown that college students' cigarette -related attitudes and perceptions toward cigarette vary by sex. This study has also shown that the students' attitudes toward cigarette advertisements and smoking perception in universities based on

smoking status. Finding suggests that policymakers must make tailed policies by sex. This finding supports that there's a need to reinforce men's recognition on smoking prevalence, and also raise the awareness in smoking addiction aiming female by using graphic warnings which details the risk of nicotine addiction.

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