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The relationship of Smoking Knowledge, Smoking Attitude and Stigma among Health-related College Students

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Abstract

Active participation of health workers is essential for effective anti-smoking campaigns. This study was conducted to investigate the knowledge, attitude, and stigma level of smoking among health-related college students.This study is a descriptive research study to figure out the knowledge, attitudes, and stigma of smoking according to gender and grade of health care college students and the findings were verified from 143 health college students. SPSS25 was used to analyze the independent sample T-Test and one way ANOVA method, and Pearson coefficient correlation was used to see the correlation between variables.Smoking knowledge did not significantly affect smoking attitude and stigma, but there were differences in smoking knowledge scores in the lower and upper grades. Also, contrary to the hypothesis that the degree of stigma for smoking among female students is high, there was no difference in the degree of stigma perceived by female students and male students for smoking. However, people with high stigma for smoking appeared to have a negative attitude toward smoking. As such, men who smoked tended to take a more positive attitude toward smoking, and tended to be close to them, and there was no gender difference in the degree of stigma to accept smoking. Moreover, health care workers' stigma for smoking was found to be higher than that for general smoking.It is necessary to develop a framework for the research of smoking cessation based on the research result of this effect of stigma for smoking to negative smoking behavior.

Keywords: Smoking Knowledge, Smoking Attitude, Social Stigma, Smoking Cessation, Healthcare Workers

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Introduction

Smoking is currently one of the major risk factors for the health of the Korean people and is the most important cause of premature death worldwide. In addition, it is not too much to emphasize because smoking is the greatest risk factor contributing to cancer, cerebrovascular disease, and cardiovascular disease, and it is a cause that can be sufficiently corrected and prevented according to one's own efforts(Paik et al., 2001).

In order to reduce the health risk factors of smoking, it is necessary for health care workers themselves to be exemplary in smoking cessation education and actively engage in enlightenment activities for cessation(McEwen and West, 2001). The smoking rate cannot be drastically lowered without the health care practitioners' active participation in the smoking cessation movement. The sufficient education on smoking cessation is required to be provided from the undergraduate course and in order for health care practitioners to become advisors and information providers related to smoking in the future.

In addition, the smoking rate of female college students in health and medical sciences has increased recently(Patkar et al., 2003) and women's smoking is on a dramatic increase in the 20th century(Amos and Haglund, 2000). Even women's smoking is spreading further as the idea that women's smoking is individual freedom is widespread(Park et al., 2014). Therefore, it will be important to examine the current status of smoking and related knowledge and attitudes of health-related college students who will be prospective health care professionals.

In particular, in Korea, the smoking rate of doctors, pharmacists, and nurses is lower than that of the general population, but it is higher than that of doctors in major developed countries(Seo et al., 2007). In addition, in general, women are less effective in nicotine replacement therapy, and women's attempts to quit smoking are low and failure rates are high(Smith et al., 2016) and recently, the smoking rate of female college students in health care is increasing(Patkar et al., 2003) (Ananda and Mythri, 2014). Therefore, it is necessary to understand the smoking status of health care students including women at the present time.

Currently, smoking is generally considered an abnormal behavior in the atmosphere where smoking cessation is spreading around the world, and smokers are excluded from social acceptance(Kim and Shanahan, 2003). This distinction between me and others, negative evaluations, or markings that differentiate specific groups differently and expressing negative emotions, attitudes, and behaviors to them is called stigma(Goffman, 2003) (Brown et al., 2003). In Korea, since smoking women or health care workers are viewed as more negatively, this negative view leads to unique smoking and smoking cessation behaviors(Park, 2014). For this reason, they often do not have a close supporter of smoking cessation(Zwar et al., 2011), and the smoking rate they report is estimated to be underestimated(Jung-Choi et al., 2012). As such,

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smoking of health care workers and women may be more negative in Asia because of social pressure and stigma(Zwar et al., 2011). In general, they tend to underreport their smoking status due to social stigma(Jung-Choi et al., 2012) and it is not easy to quit smoking because there are many cases where people do not recognize the fact of smoking(Zwar et al., 2011).

Therefore, it will be very important to figure out the current status of smoking, including the level of knowledge and attitude about smoking, and the degree of stigma about smoking for college students enrolled in the health care field who will be prospective health care professionals. In addition, it is necessary to lay the groundwork for the establishment of health care policies based on the research results and to establish proper smoking cessation education from undergraduate course to reduce their own smoking rate when they become health care workers in the future, and to actively participate in smoking cessation recommendations and smoking cessation campaigns.

Materials and Methods

Research Design

This study is a descriptive research study to understand the knowledge, attitudes, and stigma of smoking in health care college students, and 143 students participated in the study through the online survey method. A structured questionnaire on smoking knowledge, attitudes, and stigma was divided and analyzed by independent sample T-Test and one-way ANOVA method to check smoking knowledge, attitude, and stigma according to gender and grade using SPSS 25. Pearson coefficient correlation was used to see the correlation between variables.

Measurement Tool

Smoking Knowledge

To measure the smoking knowledge of health-related college students, a smoking knowledge measurement tool for clinical nurses by Yoon (2002) (Yun et al., 2002) was used. As the tool for measuring the knowledge of smoking among the general public is composed of general and plain contents to test the knowledge of health care students, it was judged that the Yoon's tool for clinical nurses was more appropriate to measure their smoking knowledge. The Likert 3-point scale was used for a total of 8 questions, and was measured with 3 points for 'can do well', 2 points for 'can do a little' and 1 point for 'cannot do'. In Yoon's study, the reliability of knowledge related to smoking was Cronbach's alpha .88.

Smoking Attitude

The modified smoking attitude tool by Moon's(2005) was used for testing smoking attitude of this subjects. This tool was developed by the Korea Smoking Cessation Association and Youth Protection Committee first(Lee and Jung, 2011). This scale consists of a total of 16 questions, and the measurement of smoking attitude consists of a 3-point scale of 'yes, no, don't know'. In

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other words, it is composed of a question that positively thinks about smoking behavior, that is, 3 points for 'That's it,' 2 points for 'I don't know,' and 1 point for 'Nothing'. The lower the score, the more positive it is to regard smoking as a bad behavior and the lower your score, the more likely you are to get closer to smoking behavior. Among the questions 3, 5, 8, 14 and 16 were inverted and Cronbach's alpha was .90.

Stigma of Smoking

Social stigma refers to the perception that an individual with certain characteristics is undesirable or socially unacceptable(Vogel et al., 2006). As a stigma measurement tool for smoking, the stigma scale was used to be proposed by Harvey (2001)(Harvey, 2001) and to be modified and supplemented by Lee(2016) (Lee, 2016). It consisted of a total of 18 questions. The higher the score, the higher the degree of stigma for smoking, and in this study, Cronbach's alpha was .755.Table 1 shows the reliability of each tool used in this study.

Table 1. The Composition of Measurement Tools for Each Variable

Variables	Number of items	Cronbach's α
Smoking Knowledge	8	.911
Smoking Attitude	16	.847
Smoking Stigma	18	.918
Smoking Stigma about healthcare provider	18	.939

Results and Discussion

The General Characteristics of the Participants

The average age of the students who participated in this study was 22.78 years, of which 143 participants were 59 male students (41.3%) and 84 female students (58.7%). Looking at the distribution by grade, 40 students in the first grade (28%), 39 students in the second grade (27.3%), 34 students in the third grade (23.8%), and 30 students in the fourth grade (21%). Of these, 32 (22.4%) smoked, and the rest were non-smokers.

Smoking-related knowledge was 18.92 points, smoking attitude was 21.39, smoking-related stigma was 46.06, and medical personnel's smoking-related stigma was 48.27 in Table 2.

Table 2. The General Characteristics of the Participants (n=143)

Variables	Category	N(%)	M(SD)
Age			22.78(3.02)
Gender	Male	59(41.3)	
	Female	84(58.7)	

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Grade	Freshman	40(28)	
	2nd Grade	39(27.3)	
	3rd Grade	34(23.8)	
	4th Grade	30(21.0)	
Smoking	Yes	32(22.4)	
	No	111(77.6)	
Stress Knowledge			18.92(3.79)
Smoking Attitude			21.39(5.48)
Smoking-related Stigma			46.06(11.50)
Smoking-related Stigma of Healthcare Provider			48.27(13.21)

The Correlation among Smoking Knowledge, Smoking Attitude and Smoking Stigma

Table 3 shows the correlations between health care students' knowledge of smoking, attitudes toward smoking, stigma toward smoking, and health care professionals' stigma toward smoking. The correlation coefficient between attitude toward smoking and stigma toward smoking was 0.288, showing a rather low correlation, but it was found to have a significant relationship under the 0.01 significance level. In other words, it was found that people with a high degree of stigma toward smoking considered smoking behavioral smoking as a bad behavior in their attitude toward smoking. The correlation coefficient between the attitude toward smoking and the stigma of smoking among health care workers was also .258, indicating that a somewhat low correlation was significant under the 0.01 significance level. In other words, those with a high degree of stigma about smoking among health care workers perceived smoking behavior as bad behavior in their attitude toward smoking. Those with a high degree of stigma about smoking were found to have a high degree of stigma of smoking among health care workers (γ=.699, $p<0.01$), and showed a somewhat higher degree of correlation under the statistical significance level.On the other hand, the higher the knowledge about smoking, the closer it was to smoking, but there was no significant correlation (γ=-.054).

The Knowledge, attitudes and stigma of smoking, stigma toward health care professionals according to gender and smoking status

The knowledge of smoking, attitudes, stigma, and degree of stigma toward health care professionals according to gender and smoking status are shown in Table 4. The knowledge of smoking according to gender was t=3.363($p<0.1$), indicating that men's smoking knowledge was higher than that of women. The attitude toward smoking was t=.306 ($p<0.1$), indicating that

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men wanted to approach smoking behavior more closely than women.

Table 3. The Correlation among Smoking Knowledge, Smoking Attitude and Smoking Stigma

Variables	Mean	SD	Inter-Construct Correlations			
			1	2	3	4
1. Smoking Knowledge	18.92	3.79	1.00			
2.Smoking Attitude	21.39	5.48	-.054	1.00		
3.Smoking Stigma	46.06	11.49	.065	.288**	1.00	
4.Smoking Stigma about Healthcare Provider	48.27	13.22	.113	.258**	.699**	1.00

Table 4. The Knowledge, Attitude and Stigma of Smoking, Stigma of Healthcare Provider by Gender and Smoking Status

Variables	Mean(SD)		t-value	p-value	Mean(SD)		t-value	p- value
	Male (n=59)	Female (n=84)			Yes (n=32)	No (n=111)		
Smoking Knowledge	20.15 (3.49)	18.06 (3.78)	3.363	.001	18.94 (4.07)	18.92 (3.73)	.024	.776
Smoking Attitude	23.02 (5.36)	20.25 (5.29)	3.060	.003	28.03 (5.64)	19.48 (3.64)	10.242	.000***
Smoking Stigma	46.47 (13.21)	45.76 (10.19)	.364	.716	48.06 (13.87)	45.48 (10.71)	1.122	.264
Smoking Stigma of Healthcare Provider	49.15 (14.44)	47.65 (12.33)	.666	.057	53.06 (14.99)	46.89 (12.39)	2.364	.019*

On the other hand, under the assumption that women would have a higher stigma for smoking, there was no difference in the mean and statistically insignificant when looking at the stigma of smoking between sexes and health care workers (t=. 364, p=.716/ t=.666, p=.057).

When looking at the differences in knowledge, attitudes, stigma about smoking, and the degree of stigma of smoking among health care workers according to the presence or absence of smoking, the attitude toward smoking (t=10.242, p<.001) according to the presence or absence of smoking was determined by smoking. Those who did smoke showed a tendency to get closer to smoking behavior and were statistically significant. In other words, those with a high stigma score had a negative effect on their attitude toward smoking, and those with a high score on

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their attitude toward smoking actually smoked higher.

The Comparison of the Stigma of Smoking and the Stigma of Smoking among Healthcare Workers

In order to find out whether the stigma of smoking among health care workers is greater than that of smoking to the general population, the difference was investigated with the paired t-test. Although the stigma of smoking among health care workers was higher, there was a difference under the statistical significance level in Table 5. In other words, it was found that health care workers perceived smoking as a greater stigma.

Table 5. The Comparison of the stigma of Smoking and the Stigma of smoking of healthcare providers

Variables	Mean	SD	t-value	p-value
Smoking Stigma	46.06	11.49	-2.726	.007**
Smoking Stigma about Healthcare Provider	48.27	13.21		

The Comparison of Knowledge about Smoking by Grade

According to the grades of students enrolled in health care, there was a statistically significant difference with a significance probability of .001 in the knowledge related to smoking in Table 6. In detail, there was no difference in the mean between the 3rd and 4th graders, but the 3rd and 4th graders showed higher knowledge related to smoking, and the lower graders showed lower knowledge score. In particular, as a result of conducting the Scheffe analysis, which is a post-test to confirm the significant difference between groups, there was a significant difference between the 3rd, 4th and 1st grade groups. It is thought that it was possible to acquire knowledge of smoking about the impact.

Table 6. The Comparison of Knowledge about Smoking by grade

Dependent Variables	Grade	Mean	SD	F/Significance	Scheffe/Dunnett T3
Smoking Knowledge	1st Grade(n=49) (a)	17.53	3.47	5.617(.001)	Dunnett T3
	2nd Grade(n=39) (b)	18.13	4.38		c, d > a
	3rd Grade(n=34) (c)	20.32	3.24		
	4th Grade(n=30) (d)	20.23	3.08		

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Discussion

This study was attempted to examine the current status of smoking, knowledge, attitudes, and stigma about smoking among 143 students enrolled in health care. As a result of the study, 32 smokers (22.4%) of the total subjects were smokers, and the knowledge related to smoking was statistically significantly higher in the 3rd and 4th grades, but the knowledge related to smoking did not affect negative smoking attitudes. This is contrary to the results of previous studies(Ott et al., 2005), which support that knowledge is a factor induces smoking cessation or synchronizes smoking reduction, specific knowledge of the harmfulness of smoking is important. In other words, it is said that the lower the smoking knowledge level of adult smokers, the higher the smoking rate, and the learning result of the accumulation of smoking knowledge leads to negative smoking attitude. However, the research results speak of contradictory results from the previous results, suggesting that factors other than knowledge are acting on the influence of smoking attitudes. In particular, even if you have knowledge about smoking, if you have smoking experience, you may have undesirable smoking attitudes(Hwang, 2007). This is due to the existence of inconsistency between other beliefs, attitudes, and actions that are not consistent with acquired knowledge, and further research on factors other than knowledge is required.

Smoking attitude is an important factor in decision-making to quit smoking as it represents the target's attitude and belief about the possibility of smoking in the future, the desire to smoke, and the advantages and disadvantages of smoking(Rhodes and Courneya, 2005). In this study, it was found that students who had smoking experience or who smoked had undesirable smoking attitudes compared to those who did not, which is consistent with the results of previous studies(Haddad and Malak, 2002). Therefore, it is necessary to discuss more on how to establish a correct smoking attitude in order to induce smoking cessation and make it less close to smoking.

On the other hand, in the results of this study, it was found that the degree of stigma toward smoking had a significant effect on negative smoking attitudes. In particular, it was found that the degree of stigma of health care workers was higher than that of the general public. Society tends to stigmatize people with traits that pose a threat to the effective functioning of groups(Neuberg et al., 2000) and the domestic anti-smoking campaigns and policies have mainly been stigmatizing the smokers and inducing them to quit smoking by “de-mainstreaming” the smokers. This is consistent with studies showing that the perception of negative social norms is effective in causing smoking cessation(Alamar and Glantz, 2006, Kim and Shanahan, 2003). This suggests that it is necessary to look at the factors that can affect the degree of stigma of smoking among prospective health care workers. On the other hand, some studies have shown that subjects who experience stigma for certain health behaviors are more likely to avoid or conceal such facts because the individual fears social isolation or exclusion(Daftary et al., 2007) and since this may result in

smokers refusing to seek professional help, it is necessary to be more cautious in focusing on the awareness improvement of the level of stigma unconditionally.

Conclusion

This study was conducted to investigate the smoking status, knowledge about smoking, attitude toward smoking, and the degree to which smoking is related, among prospective health care professionals who play a key role in cessation activities. As a result of the study, the more positive smoking attitudes were, the higher the rate of connection to actual smoking and it was found that the knowledge related to smoking did not substantially affect smoking attitudes. In addition, it was found that the greater the degree of stigma toward smoking, the more negative smoking attitudes were.

Therefore, it is necessary to establish correct awareness of smoking through education on smoking cessation by prospective health care workers. Along with this awareness improvement, further studies are required on the factors that influence the degree of stigma in smoking.

References

1. Alamar, B. &Glantz, S. A. 2006. Effect of increased social unacceptability of cigarette sm oking on reduction in cigarette consumption. *American journal of public health,* 96**,** 1359-1363.
2. Amos, A. &Haglund, M. 2000. From social taboo to "torch of freedom": the marketing of cigarettes to women. *Tob Control,* 9**,** 3-8.
3. Ananda, S. &Mythri, H. 2014. Prevalence & comparison of Cigarette smoking habits amo ng health care professional students. *Indian Journal of Research in Pharmacy and Biotech nology,* 2**,** 1366.
4. Brown, L., Macintyre, K. & Trujillo, L. 2003. Interventions to reduce HIV/AIDS stigma: what have we learned? *AIDS education and prevention,* 15**,** 49-69.
5. Daftary, A., Padayatchi, N. & Padilla, M. 2007. HIV testing and disclosure: a qualitative a nalysis of TB patients in South Africa. *AIDS care,* 19**,** 572-577.
6. Goffman, E. 2003. Stigma. *Praha: Sociologickénakladatelství (SLON)*
7. Haddad, L. G. &Malak, M. Z. 2002. Smoking habits and attitudes towards smoking among university students in Jordan. International journal of nursing studies, 39, 793-802.
8. Harvey, R. D. 2001. Individual differences in the phenomenological impact of social stigm a. *The Journal of Social Psychology,* 141**,** 174-189.
9. Hwang, B.D. 2007. Knowledge, attitude and factors for smoking behavior in high school s tudents. *Korean Journal of Health Education and Promotion,* 24**,** 45-61.https://www.korea

science.or.kr/article/JAKO200734515040191.page

10. Jung-Choi, K.H., Khang, Y.H. & Cho, H.J. 2012. Hidden female smokers in Asia: a comparison of self-reported with cotinine-verified smoking prevalence rates in representative national data from an Asian population. *Tobacco Control,* 21**,** 536-542. DOI:10.1136/tobaccocontrol-2011-050012
11. Kim, S.H. & Shanahan, J. 2003. Stigmatizing smokers: Public sentiment toward cigarette smoking and its relationship to smoking behaviors. *Journal of health communication,* 8**,** 343-367.https://doi.org/10.1080/10810730305723
12. Lee, B. & Jung, H.S. 2011. Gender differences in influences of adolescents' smoking on the stress level. *J Korean SocSch Health,* 24**,** 81-88.http://www.jkssh.or.kr/journal/view.html?spage=81&volume=24&number=1
13. Lee, H. 2016. *A Study on the Effect of Social Stigma on Smoker's Psychological Reactance and Cessation Intentions : Focusing on Smokers's SES and Stage of Change.* Master, Ewha Womans University. https://dspace.ewha.ac.kr/handle/2015.oak/214916
14. McEwen, A. & West, R. 2001. Smoking cessation activities by general practitioners and practice nurses. Tobacco Control, 10, 27-32.
15. Neuberg, S. L., Smith, D. M. & Asher, T. 2000. Why people stigmatize: Toward a biocultural framework.
16. Ott, C. H., Cashin, S. E. &Altekruse, M. 2005. Development and validation of the college tobacco survey. *Journal of American College Health,* 53**,** 231-238.
17. Paik, J. J., Seo, H. G. & Kim, C. H. 2001. Health related quality of life of the adult male smokers and nonsmokers in suwon city. *Journal of the Korean Academy of Family Medicine,* 22**,** 859-877.https://www.kjfm.or.kr/journal/view.php?number=947
18. Park, K. Y. (2014). Predictors of intention to quit smoking among woman smokers in Korea. Journal of Korean Academy of Fundamentals of Nursing, 21(3), 253.https://doi.org/10.7739/jkafn.2014.21.3.253
19. Patkar, A. A., Hill, K., Batra, V., Vergare, M. J. & Leone, F. T. 2003. A comparison of smoking habits among medical and nursing students. *Chest*, 124, 1415-1420.
20. Rhodes, R. E. &Courneya, K. S. 2005. Threshold assessment of attitude, subjective norm, and perceived behavioral control for predicting exercise intention and behavior. *Psychology of Sport and Exercise*, 6, 349-361.
21. Seo, H.G., Jee, S.H. &Jhun, H.J. 2007. Smoking Prevalence and Habits of Physicians in Ko

rea: a Mail Questionnaire Survey Conducted in 2000. *J Korean Acad Fam Med*, 28**,** 599-603.https://www.kjfm.or.kr/journal/view.php?number=314

22. Park, M. B., Kim, C. B., Nam, E. W., & Hong, K. S. (2014). Does South Korea have hidden female smokers: discrepancies in smoking rates between self-reports and urinary cotinine level. BMC women's health, 14(1), 156.https://link.springer.com/article/10.1186/s12905-014-0156-z
23. Smith, P. H., Bessette, A. J., Weinberger, A. H., Sheffer, C. E. &Mckee, S. A. 2016. Sex/gender differences in smoking cessation: a review. *Preventive medicine*, 92, 135-140.
24. Vogel, D. L., Wade, N. G. &Haake, S. 2006. Measuring the self-stigma associated with seeking psychological help. *Journal of counseling psychology*, 53, 325.
25. Yun, M. S., Lee, K. S., Lee, J. W., &Meng, K. H. 2002. Clinical Nurses' Knowledge, Attitude and practices for quitting smoking recommendation to smoking patients. *The Korean Society for Preventive Medicine*, 483-484. https://www.koreascience.or.kr/article/CFKO200224717828813.page
26. Zwar, N., Richmond, R., Borland, R., Peters, M., Litt, J., Bell, J., Caldwell, B. &Ferretter, I. 2011. Supporting smoking cessation: a guide for health professionals. *Melbourne: The Royal Australian College of General Practitioners*.