

# Association between Smoking Cessation Attempts and Perceived Stress Level: the Korea National Health and Nutrition Examination Survey 2015

Yejin Lee<sup>1</sup>, Ji-yeon Kim<sup>2</sup>, Ju Hyun Lee<sup>3</sup>, Ki-Bong Yoo<sup>4</sup>, Jin-Won Noh<sup>5\*</sup>

<sup>1</sup>the Master's Course, Department of Healthcare Management, Eulji University

<sup>2</sup>Undergraduate Course, Department of Healthcare Management, Eulji University

<sup>3</sup>Researcher, National Institute of Dementia,

<sup>4</sup>Assistant Professor, Department of Health Administration, Department of Information & Statistics, Yonsei University

<sup>5</sup>Associate Professor, Department of Healthcare Management, Eulji University

## 금연 시도와 인지된 스트레스 정도와 연관성: 2015년 국민건강영양조사를 바탕으로

이예진<sup>1</sup>, 김지연<sup>2</sup>, 이주현<sup>3</sup>, 유기봉<sup>4</sup>, 노진원<sup>5\*</sup>

<sup>1</sup>울지대학교 의료경영학과 석사과정, <sup>2</sup>울지대학교 의료경영학과 학사과정, <sup>3</sup>중앙치매센터 연구원,  
<sup>4</sup>연세대학교 보건과학대학 보건행정학과 및 정보통계학과 조교수, <sup>5</sup>울지대학교 의료경영학과 부교수

**Abstract** The purpose of this study is to analyze the association of smoking cessation attempts and the perceived stress level and to identify the factors affecting the perceived stress level of quit smoking. The study utilized the 2015 Korean National Health and Nutrition Examination Survey, and was applied an Ordinal Logistic Regression to examine the association of smoking cessation attempts and perceived stress level. The current smoker those who experience failure in smoking cessation, were more stressful than those who experience success in smoking cessation (OR=1.72, CI;1.41-2.08). This study identified smoking cessation failure as a major psychiatric factor associated with high perceived stress level, and suggests high stress after smoking cessation failure as one of the reasons why smokers do not reach complete smoking cessation. Also, in order to promote smoking cessation, it is needed to have political approach in reducing the psychiatric hurdle like high stress after smoking cessation failure.

**Key Words** : Perceived stress, Non-smoking policy, Smoking cessation attempts, Smoking cessation success, Smoking cessation failure, Psychiatric factors

요 약 본 연구는 금연 시도와 인지된 스트레스 정도와의 연관성을 규명하고 금연을 시도함에 있어 인지된 스트레스에 영향을 미치는 요인을 확인하고자 한다. 본 연구에서는 2015 국민건강영양조사 대상자 중 만 19세 이상인 참여자를 대상으로 하였으며, 금연시도 및 성공 여부와 인지된 스트레스 정도의 연관성을 파악하기 위해 순서형 로지스틱 회귀분석을 수행하였다. 금연 시도에 실패한 흡연자가 금연시도에 성공한 흡연자보다 더 높은 스트레스와 연관성이 있는 것으로 나타났으며(OR=1.72, 95% CI: 1.41-2.08) 금연시도를 하지 않은 흡연자(OR=1.05, 95% CI: 0.71-1.55)에 대해서는 유의한 차이가 없었다. 본 연구는 금연 실패와 흡연자들의 높은 스트레스 정도 간의 연관성을 확인하였으며, 흡연자가 완전한 금연 성공에 도달하지 못하는 원인 중 하나로 금연 실패 후 겪는 높은 스트레스를 제시한다. 또한 흡연자들의 금연 시도를 증진하기 위하여 금연 실패 후 겪는 스트레스와 같은 정신과학적 장벽을 낮추기 위한 정책적 접근이 요구된다.

주제어 : 인지된 스트레스, 금연 정책, 금연 시도, 금연 성공, 금연 실패, 정신과학적 요인

\*This paper was supported by Eulji University in 2016 (EJBS-16-04).

\*Corresponding Author : Jin-Won Noh (jinwon.noh@gmail.com)

Received June 25, 2018

Revised September 4, 2018

Accepted September 20, 2018

Published September 28, 2018

## 1. Introduction

Smoking is not only the biggest harmful factor for personal health, but also a negative factor for public health and sanitation issues as well as indirect damage to non-smokers. Smoking continues to increase the relative and absolute risks of death from lung cancer, chronic obstructive pulmonary disease, ischemic heart disease, and any type of stroke [1]. It also has various other adverse health effects, such as causing inflammation and impairing immune function [2].

In addition to direct smoking, indirect smoking as exposure to secondhand smoke is causally linked to cancers, respiratory diseases, and cardiovascular diseases. Exposure to secondhand smoke have adverse health effects especially to infants and children [2]. Although the relative risk of indirect smoking is smaller than of the direct smoking, the absolute excess deaths caused by exposure to secondhand smoke is important because the exposed group is in large size [3].

In developed countries, strong anti-smoking policies are adopted by early recognizing malaise of smoking decades ago. Because of strict polices, smoking rates decreased around 20% and the death caused by smoking and lung cancer mortality is decreasing recently in U.K and U.S.A [4]. Therefore, national health care policy is the most important goal to decrease smoking rates and induce anti-smoking perception of smokers [5].

Smoking is country's major leading cause of death, being responsible for 58,000 deaths each year [6]. It constitutes an enormous threat to the health and well-being of South Korea, accounting for 41% of all cancers for males and 5% of all cancers for females [7]. Both direct cost (medical expenses) and indirect cost (income and productivity) attributed to smoking was 7,126 billion Korean Won (KRW) in 2013, compared with 409 billion KRW in 2005 [7]. To improve the health problems caused by smoking, the Korean government has strengthened tobacco control

regulations and perused the National Health Plan 2020 (HP 2020). HP 2020 put forward an objective of reducing the smoking prevalence among adult males to 29% and among adult females to 6% by the year 2020 [8]. It established a path for significant advances in tobacco control.

Nevertheless the efforts, the smoking rates in South Korea are almost the highest level in the world, which are approximately 23% of all people aged 15 years and over, and over 30% among male adults [9]. Smoking rate of South Korea are decreasing lately, but the rates are still high, which is almost 2-3 times compared to developed countries' rate. Instead, the total cigarette consumptions are increasing [4].

Smoking cessation attempts cause extreme stress to smokers and the stress level determines the success and failure of smoking cessation. Smokers accounted for the difficulties in smoking cessation and was counted their smoking as an addiction. For instance, smokers reported that smoking cessation is like attempting to quit heroin, because cigarette is such a strong drug in a way. By situating smoking within a wider drug discourse, the smokers can take up a position as an addict, and can account for smokers' continuous smoking [10].

Numerous studies have addressed factors associated with making a smoking cessation attempt or success. Previous studies have examined such associative factors as age, gender, marital status, income level, educational accomplishment, and smoking habit differences among adults who attempted to quit smoking [11]. Smoking cessation causes a series of unpleasant physical symptoms such as sweating, restlessness, chest tightness, and heart palpitations, as well as mental and psychological symptoms such as stress, difficulty concentrating, sadness, anxiety, anger, aggression, irritability and insomnia [12]. Stress level is inversely related to the duration of smoking cessation, and continuous smoker reported higher stress level [13]. Another study reported perceived stress level as the only factor that prospectively predicted smoking

cessation success, with lower levels associated with higher quit rates [14].

Nevertheless, stress relief is commonly perceived as an advantage of smoking. In addition, smokers have prevalent belief about smoking as a stress reducing agent, even years after having quit [15]. The relieving nicotine withdrawal by smoking may be mistaken for general stress reduction, because the sensation of nicotine withdrawal is resemble with the experience of stress. [16]. Therefore, it is necessary to study the relationship between smoking attempts and stress level to improve awareness of smoking attempts.

The study aims to analyze the association between smoking cessation attempts and perceived stress level and identify the factors affecting the perceived stress level of quitting smoking. It aims to provide a comprehensive understanding of current smokers' smoking cessation attempts, and provide a scientific basis to support effective smoking cessation policies to promote current smokers' smoking cessation attempts.

## 2. Materials and Methods

### 2.1 Data and subjects

In this study, the Korea National Health and Nutrition Examination Surveys (KNHANES) data were used to identify the association between smoking cessation attempts and perceived stress level. The KNHANES data is a nationwide, cross-sectional survey of Korean population that assesses the health and nutritional status, monitors trends in health risk factors and the prevalence of major chronic diseases, and provides information for the development and evaluation of Korean health policies and programs [17].

There were 7,380 individuals included in the 2015 KNHANES data. We excluded 5,459 individuals who were younger than 19 years of age and had incomplete records. Finally, 1,921 individuals were included in the analysis.

### 2.2 Variables and measurements

In the independent variables, perceived stress level is divided with 4 categories such as 'I feel very much', 'I feel much', 'I feel little' and 'I feel very little', on a self-registration questionnaire 'How much do you feel stress in daily life'[18].

In the dependent variables, smoking cessation attempts is grouped as that the non-smoker among those who have tried a cessation and succeeded in it, smoker among those who have tried a cessation and failed in it, smoker those who have not tried a cessation.

Demographic factors, socioeconomic status, and number of chronic diseases were included to identify the factors associated with perceived stress level. Gender was classified into female and male, and Age was classified into 19-39, 40-59, and over 60. Marital status was classified into married and unmarried (divorced, widowed, and separated). Education level was classified into elementary, middle school, high school, and over college. Household income was classified into low(under 761,200 KRW), average-low(1,575,900 - 761,200 KRW), average-high(1,575,900 - 2,687,700 KRW), and high(over 2,687,700 won). Economic activity was classified into working, and not working. Number of chronic diseases was classified into none, 1, 2, and over 3, by adding all chronic diseases of patients. Chronic Diseases were including hypertension, dyslipidemia, cerebral stroke, myocardial infarction, angina, osteoarthritis, rheumatoid arthritis, tuberculosis, asthma, diabetes, thyroid disease, atopy dermatitis, allergic rhinitis, renal insufficiency, hepatitis B, hepatitis C, fatty cirrhosis, in case of cancer, and cancers diagnosed[5].

### 2.3 Statistical analysis

The descriptive statistics was conducted to identify the general characteristics and distribution of the study subjects. To investigate the gender differences in smoking attempts, the general characteristics were classified into male and female.

The chi-square test was conducted to identify the difference in the distribution characteristics of the normal perceived level per factor.

The ordinal logistic regression was performed to examine the association between smoking cessation attempts and perceived stress level. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated. All statistical analysis was conducted by SPSS software version 24.0[19].

### 3. Results and Discussion

The general characteristics of the study subjects are presented in Table 1. In study subjects, men were 40.3 % in age group from 40 to 59 years old, and the women were 40.4% among 19 to 39 years old. Married was higher than unmarried in both male(75.2%) and female(52.5%). The education level was 37.0% for male and 41.8% for female with the highest for a high school graduate. The household income was 27.5% in males and 29.1% in females with the highest for the average-high level. In economic activity, males more participate in economical active as 73.1%, but females showed lower participate in economical active as 57.4%. None chronic disease was the highest as 48.0% in males and 49.3% as females. In smoking cessation attempts, the rate of non-smoker was the highest who have tried a cessation and succeed in it with 56.3%, and among female, the rate of non-smoker was also was highest who have tried a cessation and succeeded in it with 56.0%. In perceived stress level, both male and women answered they felt a little stress with each 54.9% in male and the 47.2% in female. Table 1

Table 1. General characteristics of study subjects by sex

Variable	Total		Male		Female		χ <sup>2</sup>	p
	N	%	N	%	N	%		
Age							176.998	<0.001
	19-39	480	25.0	366	22.3	114	40.4	
	40-59	765	39.8	660	40.3	105	37.2	
	Over 60	676	35.2	613	37.4	63	22.3	

Marital Status							28.686	<0.001
Married	1380	71.8	1232	75.2	148	52.5		
Unmarried	541	28.2	407	24.8	134	47.5		
Education Level							46.201	<0.001
Over college	616	32.1	545	33.3	71	25.2		
High School	724	37.7	606	37.0	118	41.8		
Middle School	214	11.1	189	11.5	25	8.9		
Elementary	367	19.1	299	18.2	68	24.1		
Household Income							36.036	<0.001
Low	371	19.3	300	18.3	71	25.2		
Average-low	474	24.7	395	24.1	79	28.0		
Average-high	533	27.7	451	27.5	82	29.1		
High	543	28.3	493	30.1	50	17.7		
Economic Activity							41.882	<0.001
Working	603	31.4	441	26.9	50	17.7		
Not working	1318	68.6	1198	73.1	120	42.6		
Number of chronic diseases							35.570	<0.001
0	925	48.2	786	48.0	139	49.3		
1	520	27.1	450	27.5	70	24.8		
2	260	13.5	226	13.8	34	12.1		
Over 3	216	11.2	177	10.8	39	13.8		
Smoking cessation attempts							75.928	<0.001
Smokers who have succeeded in a cessation	1080	56.2	922	56.3	158	56.0		
Smokers who have tried a cessation	734	38.2	622	37.9	112	9.7		
Smokers who have not tried a cessation	107	5.6	95	5.8	12	4.3		
Perceived stress level	1,921	100.0	1,639	54.9	282	47.2		

Table 2 summarizes the ordinal logistic regression analysis for perceived stress level after control the gender, age, marital status, education level, household income, economic activity, number of chronic disease, and smoking cessation attempt.

Woman over 19 years of age was under a lot of stress compared to the man (OR=1.63, CI:1.26-2.11). By age, in order the over 60 ages were less stressed (OR=0.22, CI:0.16-0.30), rather than younger groups including 40-59 ages (OR=0.59, CI:0.47-0.76) compared to 19-39 ages. The economically active population was more stressed compared to the non-economically active population (OR=1.30, CI:1.05-1.61). According to the number of chronic diseases, the 3 or more chronic diseases group were more stressful compared to those

who without chronic diseases (OR = 1.98, CI: 1.45–2.72) and the smoker those who have tried a cessation and failed in it, were more stressful than those who have tried a cessation and succeeded in it (OR=1.72, CI:1.41-2.08). Table 2

Table 2. Factor associated with the perceived stress level

Variable	Crude		Adjusted	
	OR	95% CI	OR	95% CI
Gender				
Male	ref		ref	
Female	1.90	(1.50-2.42)***	1.63	(1.26-2.11)***
Age				
19-39	ref		ref	
40-59	0.60	(0.48-0.75)***	0.59	(0.47-0.76)***
Over 60	0.23	(0.18-0.29)***	0.22	(0.16-0.30)***
Marital Status				
Married	ref		ref	
Unmarried	1.63	(1.35-1.97)***	1.03	(0.83-1.28)
Education Level				
Over college	ref		ref	
High School	0.95	(0.78-1.17)	1.02	(0.82-1.26)
Middle Scholl	0.75	(0.56-1.01)	1.18	(0.85-1.64)
Elementary	0.65	(0.51-0.84)**	1.24	(0.91-1.69)
Household Income				
Low	ref		ref	
Average-low	0.89	(0.68-1.15)	0.70	(0.53-0.93)*
Average-high	1.24	(0.96-1.60)	0.82	(0.62-1.10)
High	1.17	(0.91-1.50)	0.83	(0.62-1.12)
Economic Activity				
No	ref		ref	
Yes	1.42	(1.18-1.71)***	1.30	(1.05-1.61)*
Number of chronic diseases				
0	ref		ref	
1	0.89	(0.72-1.09)	1.19	(0.97-1.48)
2	0.71	(0.54-0.92)**	1.20	(0.91-1.59)
Over 3	0.90	(0.67-1.19)	1.98	(1.45-2.72)***
Smoking cessation attempts				
Smokers who have succeeded in a cessation	ref		ref	
Smokers who have tried a cessation	2.21	(1.84-2.65)***	1.72	(1.41-2.08)***
Smokers who have not tried a cessation	1.24	(0.85-1.82)	1.05	(0.71-1.55)

\*p<0.05, \*\*p<0.01 \*\*\*p<0.001, ref(reference), OR(odds ratio), CI(confidence interval)

association between smoking cessation attempts and perceived stress level and identify the factors affecting the perceived stress level of quitting smoking. Based on the results, we aim to provide a comprehensive understanding of current smokers’ smoking cessation attempts, and provide a scientific basis to support effective smoking cessation policies to promote current smokers’ smoking cessation attempts.

Current smokers who have failed smoking cessation were significantly more likely to report greater level of perceived stress than smokers who have succeed smoking cessation. The overall negative symptoms such as depression, anxiety, and stress has been improved after succeeding in smoking cessation and showed the improvement of the perceived quality of life [20]. This result indicate that smoking cessation is associated with reducing stress and improving positive mood and quality of life compared with continuing to smoke. Another previous study reported that the smoker who tried to quit considered the negative result of the smoking act and the increasing stress caused by disappointment about self who failed in the smoking cessation [21]. This is because smoking is a useful and effective tool for relieving stress, and in fact there are many people smoke to decrease stress, whereas smoking cessation has a negative effect on stress.

The overall late of smoking cessation attempts in this population was 56.2%, in both male and female. This smoking cessation rate is significantly lower than previous rates measured in the preceding studies, which reported 82.0% of smokers had made any quit attempts at recruitment [22]. To reduce the harms social public health and health hygiene, South Korea applied multiple smoking cessation programs, promoted smoking cessation campaigns, increased tobacco price, expanded smoking cessation area, warning picture legislation and so on [23]. Despite these efforts, the percentage of people who quit smoking after one year of smoking cessation was only about 20% [24]. This result shows that the reduction of smoking rate through policy support and efforts is bound to have

#### 4. Conclusion

The purpose of this study is to analyze the

barriers.

Smokers were significantly more likely to report greater level of perceived stress as well as female, lower age, to be younger, higher level of income, to do economic activities, higher number of chronic diseases. Numerous studies have showed negative mental health and high stress level are associated with bad socioeconomic factors and smoking cessation attempts. Individuals of lower socioeconomic status tends to report more stress and greater negative mental health, which relative to those of higher socioeconomic status [25]. Smokers in low socioeconomic status are likely to encounter more stress factors and experience greater negative affect during smoking cessation attempt, compared to smokers of higher socioeconomic status. Therefore, smokers in low socioeconomic status experience greater temptation to reduce negative affect by smoking, leading to smoking cessation failure. Furthermore, the negative affect and high stress level reduces self-efficacy and increases smoking craving, both of which increase the odds of smoking cessation relapse [26, 27].

There are some limitations. First, this study cannot consider all impact factors can associated with perceived stress level. However, this study considered most of the essential and important variables which is highly associated with perceived stress level using large national data. Therefore, future studies should be followed with various consideration of important factors. Secondly, the results of this study cannot be generalized that the definition of smoking cessation attempts, success, and failure precisely not comprise all smoking cessation behaviors. In addition, it is difficult to judge in the degree of smoking cessation behavior on the person. In the future, more detailed studies that considering smoking cessation behaviors are necessary to provide with grounded data on smoking cessation attempts, success, and failure.

Despite these limitations, this study identified that smoking cessation failure definitely associated with current smokers' high level of perceived stress other

than those who success smoking cessation. This result suggests smoking cessation failure as a major psychiatric factor associated with high perceived stress level. Also, it suggests high stress after smoking cessation failure as one of the reasons why smokers do not reach complete smoking cessation. In order to promote smoking cessation, it is needed to have political approach in reducing the psychiatric hurdle like high stress after smoking cessation failure. It is significantly essential to encourage voluntary and autonomous smoking cessation program on smokers and to establish psychological and emotional grounds and standards that can increase the smoking cessation attempts. In other words, the number of smoking cessation attempts can be structurally and significantly improved by directly controlling or managing the psychological caused after smoking cessation failure. As confirmed through several previous studies, the smoking cessation attempts and failures are the main cause of high perceived stress of current smokers even though they have succeeded in temporarily quitting. Therefore, it is emphasized that coping and management of stress after smoking cessation success is more important to maintain smoking cessation success.

In conclusion, this study identified smoking cessation failure as a major psychiatric factor related high perceived stress level, by using national representative data. Indeed, previous high stress experience after smoking cessation failure can operate as a hurdle to re-enroll in smoking cessation attempts. Therefore, we need to provide proper environment for current smoker be successful at the first smoking cessation trial.

## REFERENCES

- [1] M. J. Thun, B. D. Carter, D. Feskanich, N. D. Freedman, R. Prentice, A. D. Lopez, ... & S. M. Gapstur. (2013). 50-year trends in smoking-related mortality in the United States. *New England Journal of Medicine*, 368(4),

- 351-364.
- [2] US Department of Health and Human Services. (2014). The health consequences of smoking—50 years of progress: a report of the Surgeon General. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 17.
- [3] T. Hirayama. (1981). Non-smoking wives of heavy smokers have a higher risk of lung cancer: a study from Japan. *Br Med J (Clin Res Ed)*, 282(6259), 183-185.
- [4] Y. M. Lee, N. H. Park & J. M. Seo. (2003). Process of change, self efficacy and decisional balance corresponding to stage of change in smoking cessation in industrial workers. *Journal of Korean Academy of Adult Nursing*, 15(3), 483-492.
- [5] S. Moon. (2017). Factors Influencing Intention to Quit Smoking in Korean Adult Smokers: Using 2014 Korea National Health and Nutrition Examination Survey. *Journal of Korean Biological Nursing Science*, 19(3), 178-190.
- [6] US Department of Health and Human Services. (2006). The health consequences of involuntary exposure to tobacco smoke: a report of the Surgeon General. US Department of Health and Human Services, Centers for Disease Control and Prevention. Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.
- [7] Ministry of Health and Welfare. (2016). Republic of Korea's Party Report on Implementation of WHO FCTC. Ministry of Health and Welfare. [http://apps.who.int/ctc/implementation/database/sites/implementation/files/documents/reports/rok\\_2016\\_report.pdf](http://apps.who.int/ctc/implementation/database/sites/implementation/files/documents/reports/rok_2016_report.pdf)
- [8] Ministry of Health and Welfare. (2011). 3rd National Health Promotion Plan (2011-2020). Ministry of Health and Welfare. <http://www.khealth.or.kr/board/view?pageNum=1&rowCnt=10&no1=3&linkId=559209&menuId=MENU00829&schType=0&schText=&boardStyle=Text&categoryId=&continent=&country=>
- [9] OECD. (2013). Health at a glance 2013: OECD indicators. OECD publishing. [https://doi.org/10.1787/health\\_glance-2013-en2](https://doi.org/10.1787/health_glance-2013-en2)
- [10] Z. Triandafilidis, J. M. Ussher, J. Perz & Huppertz, K. (2018). Young Australian women's accounts of smoking and quitting: a qualitative study using visual methods. *BMC women's health*, 18(1), 5.
- [11] Y. S. Yoon, S. W. Oh, H. W. Baik, H. S. Park & W. Y. Kim. (2004). Alcohol consumption and the metabolic syndrome in Korean adults: the 1998 Korean National Health and Nutrition Examination Survey. *The American journal of clinical nutrition*, 80(1), 217-224.
- [12] A. McEwen, P. Hajek, H. McRobbie & R. West (2008). *Manual of smoking cessation: a guide for counsellors and practitioners*. John Wiley & Sons.
- [13] S. Cohen & E. Lichtenstein. (1990). Perceived stress, quitting smoking, and smoking relapse. *Health Psychology*, 9(4), 466.
- [14] R. E. Glasgow, R. C. Klesges, J. S. Mizes & T. F. Pechacek. (1985). Quitting smoking: strategies used and variables associated with success in a stop-smoking contest. *Journal of consulting and clinical psychology*, 53(6), 905.
- [15] N. Herd & R. Borland. (2009). The natural history of quitting smoking: findings from the International Tobacco Control (ITC) Four Country Survey. *Addiction*, 104(12), 2075-2087.
- [16] K. N. Carter, F. S. van der Deen, N. Wilson & T. Blakely. (2012). Smoking uptake is associated with increased psychological distress: results of a national longitudinal study. *Tobacco control, tobaccocontrol-2012*.
- [17] Korea Centers for Disease Control and Prevention. (2015). The Korea National Health and Nutrition Examination Surveys. Korea Centers for Disease Control and Prevention. <http://www.cdc.go.kr/CDC/contents/CdcKrContentView.jsp?cid=60599&menuIds=HOME001-MNU1130-MNU1639-MNU1640-MNU1642>
- [18] S. Kweon, Y. Kim, M. J. Jang, Y. Kim, K. Kim, S. Choi, ... & K. Oh. (2014). Data resource profile: the Korea national health and nutrition examination survey (KNHANES). *International journal of epidemiology*, 43(1), 69-77.
- [19] SPSS version 24.0 (Statistical Packages for Social Science Inc., Chicago, IL, USA).
- [20] G. Taylor, A. McNeill, A. Girling, A. Farley, N. Lindson-Hawley & P. Aveyard. (2014). Change in mental health after smoking cessation: systematic review and meta-analysis. *Bmj*, 348, g1151.
- [21] H. J. Soh. (2012). Exploring Young Adult Smokers' Cognitive Structure of Smoking Behavior for Effective Anti-smoking Communication Campaign Messages. *The Korean Journal of Advertising*, 23(4), 77-96.
- [22] R. Borland, T. R. Partos, H. H. Yong, K. M. Cummings & A. Hyland. (2012). How much unsuccessful quitting activity is going on among adult smokers? Data from the International Tobacco Control Four Country cohort

survey. *Addiction*, 107(3), 673-682.

- [23] Y. H. Khang, S. C. Yun, H. J. Cho & K. Jung-Choi. (2009). The impact of governmental antismoking policy on socioeconomic disparities in cigarette smoking in South Korea. *Nicotine & Tobacco Research*, 11(3), 262-269.
- [24] T. M. Song. (2011). Changes in smoking rates of male adults in Korea and smoking cessation policy: focus on smoking cessation clinics. In *Health Welf Policy Forum* (Vol. 173, pp. 55-63).
- [25] L. C. Gallo & K. A. Matthews. (2003). Understanding the association between socioeconomic status and physical health: do negative emotions play a role?. *Psychological bulletin*, 129(1), 10.
- [26] C. Manfredi, Y. I. Cho, K. S. Crittenden & T. A. Dolecek. (2006). A path model of smoking cessation in women smokers of low socio-economic status. *Health Education Research*, 22(5), 747-756.
- [27] J. D. Kassel, D. P. Evatt, J. E. Greenstein, M. C. Wardle, M. C. Yates & J. C. Veilleux. (2007). The acute effects of nicotine on positive and negative affect in adolescent smokers. *Journal of abnormal psychology*, 116(3), 543.

이 예 진(Lee, Yejin) [학생회원]



- 2013년 3월 ~ 2017년 2월 : 을지대학교 의료경영학과, 보건학사
- 2017년 3월 ~ 현재 : 을지대학교 의료경영학과, 보건학석사
- 관심분야 : 보건통계, 보건정책, 의료경영

· E-Mail : yiye1110@gmail.com

김 지 연(Kim, Ji-yeon) [학생회원]



- 2015년 3월 ~ 현재 : 을지대학교 의료경영학과, 보건학사
- 관심분야 : 보건통계, 보건정책, 의료경영
- E-Mail : arasion12@gmail.com

이 주 현(Lee, Ju Hyun) [학생회원]



- 2015년 2월 : 을지대학교 의료경영학, 보건학사
- 2018년 2월 : 가톨릭대학교 의료경영대학원, 경영학(의료경영) 석사
- 2018년 2월 : 중앙치매센터 연구원

· 관심분야 : 보건정책, 만성질환, 의료이용분석

· E-Mail : jhyun290@gmail.com

유 기 봉(Yoo, Ki-Bong) [정회원]



- 2008년 2월 : 홍익대학교 컴퓨터공학
- 2011년 2월 : 연세대학교 보건정보 석사
- 2014년 8월 : 연세대학교 보건학 박사

· 2018년 2월 : 을지대학교 의료경영학과 조교수

· 2018년 3월 ~ 현재 : 연세대학교 보건과학대학 조교수

· 관심분야 : 보건정책 및 관리

· E-Mail : kb53545@gmail.com

노 진 원(Noh, Jin-Won) [정회원]



- 2002년 2월 : 이화여자대학교 통계학, 경영학
- 2005년 2월 : 이화여자대학교 경영학(생산관리) 석사
- 2008년 8월 : 고려대학교 의과대학 보건학협동과정(보건학박사)

· 2011년 12월 : Johns Hopkins University MPH, MBA

· 2012년 3월 ~ 2018년 8월 : 을지대학교 의료경영학과 조교수

· 2018년 9월 ~ 현재 : 을지대학교 의료경영학과 부교수

· 관심분야 : 병원경영, 의료경제성평가, 병원재무회계

· E-Mail : jinwon.noh@gmail.com