Relationship of Smoking with Self-perceived Health and Selected Health Behaviors

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Ⅰ. Introduction

Smoking is a major risk factor for chronic diseases such as lung cancer, cerebrovascular disease, heart disease, etc. In South Korea, death rates caused by those chronic diseases have been greatly increased during the last 10 years(Korea National Statistical Office, 2000).

Self-perceived health is one of the indications of the health status. Physical conditions and socio-economic status are related to self-perceived health in many cases. Some health related behaviors such as heavy smoking, irregular exercise and overweight were significantly related to poor/fair self-perceived health status rather than good/excellent health(Shields & Shooshtari, 2001). Another study examined the association of self-reported health with health behaviors. Daily smoking, regular leisure-time physical activity, alcohol use, consumption of fresh vegetables were related to self-assessed health status in some European countries(Kasmel et al, 2004),

Health behaviors related to each other. This means smoking behavior is related to other unhealthy behaviors such as heavy drinking, calory intake and overweight

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(Rouillier, et al, 2004). In examining behavioral and psycho-social determinants of health, Denton et al.(2004) pointed out gender difference in health behavior was an indication of gender inequalities in health.

As the trans-theoretical model of change has been introduced in 80s, many health professionals applied this to health education field(Prochaska & Diclemente, 1983). The general theoretical model of behavioral change stages uses change stages in order to integrate the change process and principles from various behavioral change theories related to intervention. The self-perceived pros and cons toward a health behavior construct reflects a person's relative weighing of the pros and cons of changing. this is called decisional balance. Two factors, pros and cons have been proven to be empirically meaningful. From pre-contemplation to action stages, the pros of smoking will decrease and cons of smoking will increase (Plummer et al, 2001).

Many studies have shown the relationship of smoking and chronic diseases since the Lalonde's report on the impact of smoe factors on a person's health(Lalonde, 1976). However few studies have examined the relationship of the health behaviors with smoking behavior. For example, smoking behavior is closely related to alcoholism, and other mental illnesses. The association among the health behaviors are frequently ignored and one can easily see this happens in public health programs. This study examined the relationships of health behaviors and smoking behavior and drew some health education implications out of the results.

1. Purpose

The purpose of this study was to analyze association of smoking and selected behaviors. This study also focused on relative characteristics of smoking behavior and its association of self perceived health status.

Detailed objectives of the study were as follows;

A. To identify smoking behavior's association with selected health behaviors.

This was to identify characteristics of smoking behaviors and people's intention to adopt a desired behavior, which means quitting smoking. The trans-theoretical model of behavior change has been applied to investigate the stages of adopting and practicing the non-smoking behavior.

B. To analyse association between self-perceived health status and selected health behaviors. This was to compare the degree of self-perceived health status and other selected health practice variables.

II. Method of the Study

To investigate the smoking and related health behaviors of Koreans, a telephone interview survey was conducted The content of the survey instrument was based on demographic features, intentions of quitting smoking and stages of change on related health variables.

1. Sample population

About 1,500 adult population aged 20 and over were selected from different regions using the telephone book. The number of the sample in different regions of the nation was decided by the national population estimation by the National Statistical Office. Age of the subjects ranged from 20 to 86. There is a limitation in the representative of the sample population because those who denied the telephone call or were not at home at the time of the survey were not selected.

2. Survey instrument

The survey questionnaire included variables such as self-perceived health status, smoking behavior, and selected health promoting behaviors(See Table 1). Selected health promoting behaviors included physical activities, eating habit, weight control, alcohol consumption, stress management, and cancer exam. The selected health behaviors' items are

based on the general health survey presented by the Cancer Prevention Research Center affiliated with the US Rhode Island University, was used for a questionnaire survey tool[1]. A translated questionnaire in Korean has been formally developed by Kim(2004), and was modified for this study. The structure of the health related variables were based on the stages of change, trans theoretical model. They have been classified into five stages, and the item instances of fitness exercise life practice are as follows:

Process of Change	
Precontemplation	Not ready to start a healthy behavior.
Contemplation	Has a thought of starting healthy behavior.
Preparation	Has an idea to adopt a health behavior within a month.
Action (Practice)	Although adopted a healthy behavior, it did not last 6 months yet.
Maintenance	It lasted at least 6 months, since started the health behavior.

In addition to the health behavior variables, 5 items were used to examine attitudes toward smoking, which were the degrees of decisional balance(Table 1). The adopted instrument's test of reliability was .54(Alpha). Possibility of the low reliability of the aged cases' reponses may not have to

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1) http://www.uri.edu/research/cprc/Measures/GHS 1991.htm

<Table 1> Description of Questionnaire Items for the survey

Variable	Content
demographic information	Gender, age, education level, marriage status, number of children, occupation, religion, monthly household income
subjective Health status	Subjective health state, feeling of stress
smoking behavior	length of smoking habit amount of cigarette consumption per day intention of quitting smoking cessation service attitudes towards smoking
health behaviors	physical activities eating habit weight control alcohol consumption stress management early detection of cancer
Perception/attitude	Pros and cons on smoking(5 likert scale items) - smoking is nicotine addiction - smoking increases social harm - smoking hurts myself and other's health - smokers do better in social life - smoking is a right for an individual

be considered here, because trained telephone interviewers conducted the study and unreliable reponses were not counted in this study.

3. Data collection and statistical analysis

The data was collected using a telephone interview survey on 18-26, March, 2004. Trained interviewers conducted the survey, and data was encoded using the SPSS 10.1. Descriptive statistics, chi-square analysis, tests of correlation among variables, and scheffe's tests were conducted.

III. Results of the Study

1. Demographic information

Average age of the study population was about 44 years. For adult males, about 37.50% were full time employees. About 42.87% did not have any religion. Among the respondents, 72.70%were living with their spouses. About 25.59% were middle school graduates. Approximately 19.42% had monthly household income less than 1 million won.

<Table 2> Demographic Characteristics of the Sample Population

	Male	Female	Total[1]
Age			
20-29	22.80	21.10	21.93
30-39	24.69	23.20	23.93
40-49	23.61	22.41	23.00
50-59	13.70	13.76	13.73
60 and older	15.20	19.53	17.40
	100.00	100.00	100.00
Education			
Middle school	17.71	33.20	25.59
High school	46.59	39.39	42.93
college and higher	35.69	27.40	31.48
	100.00	100.00	100.00
Occupation			
Fulltime employee	37.50	15.33	26.22
Student	10.33	4.46	7.34
Housewife	0.27	68.02	34.76
Other[2]	51.90	12.19	31.69
	100.00	100.00	100.00
Household income(month)			
less than 1million won	18.01	20.77	19.42
1-2 million won	25.48	27.43	26.48
2-2.5 million won	19.67	21.04	20.37
over 2.5 million won	36.84	30.76	33.74
	100.00	100.00	100.00
Religion			
Protestant	18.86	24.38	21.67
Catholic	8.14	9.17	8.67
Buddhism	21.30	29.75	25.60
None	50.34	35.65	42.87
other	1.36	1.05	1.20
	100.00	100.00	100.00
Spouse			
no spouse	30.98	23.75	27.30
spouse	69.02	76.25	72.70
	100.00	100.00	100.00

[1] n= 1,500

[2] The category "other" included those with no job, working part-time and owners of small business.

2. Characteristics of smoking behavior

Overall, about 27.6% of the study population were smoking cigarettes. Males (52.37%) were more likely than females

(3.54%) to smoke cigarettes. Males in their 30s were more likely to smoke cigarettes than the males in other age groups(Table 3). The females aged over 60 years were smoked cigarettes more likely than the females in other age groups. Controling for gender, age is significantly associated with smoking prevalence(chi square test; p<.001). Marriage status was significantly associated with smoking for females(p< .05), but was not significantly related to smoking for males. Employment status was significantly related to smoking. Students and housewives are less likely to smoke cigarettes. In the study population, household income was not significantly associated with smoking status.

Smokers responded that they were thinking about quitting in one month (16.58%), and quitting in 6months(40.84%). About 42.58% of the smokers were not interested in quitting smoking at all. The stages of non-smoking was closely related to decisional balance variables which is pros and cons toward a behavior, and this decisional balance scheme was applied to 5 scale items for this study. The researcher tested the significance of the means according to the stages of non-smoking behavior. Both smokers and non smokers tend to think smoking is an individual right, and less likely think that smoking causes social harm and nicotine addiction(table 4).

<Table 3> Characteristics of the Population with Smoking by Age

		male			female		
		smoking	non smoking	Total	smoking	nonsmoking	Total
20-29	n	89	79	168	6	154	160
	%	52.98	47.02	100	3.75	96.25	100
30-39	n	115	67	182	4	173	177
	%	63.19	36.81	100	2.26	97.74	100
40-49	n	101.00	73.00	174	3	168	171
	%	58.05	41.95	100	1.75	98.25	100
50-59	n	41	60	101	1	104	105
	%	40.59	59.41	100	0.952	99.048	100
over 59	n	40	72	112	13	136	149
	%	35.71	64.29	100	8.72	91.28	100
Total	n	386	351	737	27	735	762
	%	52.37	47.63	100	3.54	96.46	100

note : Chi square analyses on age and smoking status showed the significant differences at .0001 for males and at .005 for females.

<Table 4> Pros and Cons about smoking cigarettes

(Unit : %, score)

	smoking is nicotine addiction	it increases social harm	it hurts myself and others health.	smokers do better in social life.	Smoking is a right for a individual.
strongly agree	16.94	6.01	12.54	0.33	1.74
agree	58.97	53.64	80.39	12.14	79.83
neutral	9.21	12.83	2.07	12.21	6.15
disagree	8.87	18.17	2.80	55.24	9.62
strongly disagree	0.67	0.73	0.13	5.14	1.00
don't know	5.34	8.62	2.07	14.94	1.67
Total	100.00	100.00	100.00	100.00	100.00
mean[1] & S.D. Sig.[2]	2.33 (±1.19) ***	2.80 (±1.31) ***	2.04 (±0.77) ***	3.98 (±1.13) ***	2.33 (±0.84) ***

[1] Lower mean scores represents that respondents strongly agreed to the item.
[2] One sample t-test, *** sig at .0001 level

Scheffe's tests showed that there were significant differences among means according to the stages of change. Smokers in the pre-contemplation stage is much more likely than non smokers to have positive attitudes toward smoking(table 5). For the attitude variable that says 'smoking is nicotine addiction', those with no intention of quitting smoking were significantly less likely than non-smoking(Action and Maintenance) and contemplation people to consider smoking behavior as nicotine addiction. For the variable,'smoking increases social harm', those with non intention of quitting smoking were significantly less likely than those in

action and maintenance to think smoking increases social harm. Those who did not have intention of quitting smoking were significantly less likely to think smoking may hurt themselves than those in action and maintenance stage. The smokers with no intention of quitting smoking and those in preparation stage were significantly more likely than non smokers to think smokers do better in social life. The smokers with no intention of quitting smoking were significantly more likely than those non smokers to consider smoking as a human right.

<Table 5> Non- Smoking stages of change and mean scores of pros and cons

	PC (Precontemplation)		C (Contemplation)		P (preparation)		AM (Action and maintnance[1])		Sheffe test result
n	67		164		170		1,096		
	Mean[2]±S.D.		Mean±S.D.		Mean±S.D.		Mean±S.D.		
smoking is nicotine addiction*	2.61	1.28	.88	.07	2.54	1.34	2.29	1.2	PC>AM*, C*
it increases social harm**	3.48	1.44	3.02	1.19	2.69	1.03	2.67	1.29	PC>AM, P** PC>C* C>AM. P*
it hurts myself and others health**	2.39	1.05	2.16	0.85	2.12	0.69	1.96	0.69	PC>AM**
smokers do better in social life**	3.60	1.37	3.72	1.08	3.88	0.96	4.08	1.09	PC<AM** P<AM*
Smoking is a right for a individual**	2.08	0.56	2.15	0.72	2.4	1.07	2.40	0.87	PC<AM**

[1] The non smokers who were in action stage were just 17 people, and we combined the action stage and maintenance stage
[2] Lower mean scores represents that respondents strongly agreed to the item.
[3] * p<.05,   ** p<.001

3. Stages of selected health behaviors

The subjects intention of adopting selected health behaviors and degree of continuing the health behaviors were categorized into 5 stages, which were based on the trans-theoretical model. In table 6, stress management, avoiding fat on meals, and regular physical activity were the least adopted behaviors among the respondents, but theses variables were confounded by gender and age. The variable non-smoking was highly adopted behavior in this survey, but this was confounded by gender and age,

too. Chi-square analysis showed that age and gender were significantly associated with stages of selected health behaviors. Those over age 30 were more likely than those in their 20s to adopt health related behaviors.

4. Subjective health status and engaging in selected health behaviors

Pearson correlation tests showed that subjective health status was significantly associated with a few health related variables. Engaging in physical activities was positively and significantly related to

positive health status. However, avoiding fat on meals and intention of getting cancer exam were negatively and significantly associated with positive health status(p<.05). This result was because this study's data were drawn from a cross-sectional survey.

People feeling unhealthy may be more likely engaging in healthy diet and getting a cancer exam(Table 7).

Non-smoking behavior did not show significant relationship with self perceived health status, but non-smoking status was

<Table 6> Application of Stages of adopting Health Behaviors

	maintenance		action		preparation		contemplation		pre-contemplation		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
non-smoking	1,069	71.7	17	1.1	67	4.5	165	11.0	172	11.5	1,490	100
physical activity	564	37.7	155	10.3	246	16.4	223	14.9	310	20.7	1,498	100
Avoiding fat on meals	783	52.3	95	6.3	73	4.9	47	3.1	500	33.4	1,498	100
weight control	791	52.7	111	7.4	102	6.8	78	5.2	418	27.9	1,500	100
stress management	1,041	69.4	119	7.9	59	3.9	30	2.0	250	16.7	1,499	100
moderate alcohol consumption	1,060	70.8	79	5.3	46	3.1	31	2.1	282	18.8	1,498	100

<Table 7> Correlations among Selected Health Behaviors and self-perceived health status

	S.H.	P.A.	A.F.	W.M.	S.M.	M.A.C.	R.C.	N.S.
S.H.	1	0.08**	-0.07*	-0.03	-0.02	0.01	-0.08**	-0.04
P.A.		1	0.12***	0.33***	0.16***	0.06*	0.12***	0.13***
A.F.			1	0.34***	0.24***	0.17***	0.15***	0.16***
W.M.				1	0.32***	0.14***	0.12***	0.12***
S.M.					1	0.25***	0.13***	0.05*
M.A.C.						1	0.02	0.10***
R.C.							1	0.15***
N.S.								1

[1] Abbreviations : S.H.: self-perceived health; N.S. : non-smoking; P.A. : physical activities; A.F. : Avoiding fat on meals; W.M. : Weight control; S.M. : stress management; M.A.C. : Moderate alcohol consumption; R.C.: Regular checkup for cancer
[2] Significant levels : * p<.05; ** p<.001; *** p<.0001

significantly related to other health related variables. Moderate consumption of alcoholic beverages was significantly associated with other health behaviors but was not significantly related to self-perceived health status.

The variable 'weight control' was closely linked to engaging in physical activities, stress management, moderate consumption of alcohol, non-smoking, cancer exam, and avoiding fat on meals. Regular cancer check up was positively related to other selected health related variables, but the relationship with moderate consumption of alcoholic beverages did not show a statistical significance.

IV. Discussion

The purpose of this study was to analyze the association of smoking behavior and related health behaviors of the Korean adults over 20. A total of 7 health behavior variables were selected for this study; non-smoking, regular engagement in physical activities, avoiding fat on meals, trying to control weight, managing stress, moderate consumption of alcohol, and regular check up for cancer. The theories explaining the elements related to activation of individual's healthy life pattern were based on the trans-theoretical model. The health related

variables's association with self-perceived health status was analysed.

There was some limitations in the current study. The number of sample were drawn from different regions in the nation, but the sample may not be a representative sample of the nation. The survey method was a telephone based interview survey, and interviewers called selected households using household telephone book. Although the survey was conducted both daytime and nighttime, there may still selection bias in the sample. Another limitation of this study was in the nature of the cross-sectional study. So the result of this study may have limitation in showing long term effect of healthy behaviors and self-perceived health status.

1. Smoking and related factors

Smoking behavior was significantly associated with age and gender. Males were more likely than females to smoke cigarettes. Young people tend to smoke cigarettes, and older people tend to quit cigarettes. this trend has been consistent with previous survey results in south Korea(MOHW, 2003). Smokers with no intention of quitting smoking were more likely than non-smokers to lack adequate perception on smoking. Knowledge and attitude was significantly related to smoking behaviors for adolescents(Choi et al, 2003), and this kind of trend was also consistent across adult

population.

2. Smoking behavior with self-perceived health and other related behaviors

In the result of the study there was significant relationships among different health behaviors. Maintenance in non-smoking was significantly related to maintenance in regular physical activities, avoiding fat on diet, weight control, moderate consumption of alcoholic beverages, and regular checkup for cancer. This result was consistent with the findings by Rouillier et al.(2004) who conducted a study on relationship of the drinking patterns with lifestyle variables. In this study, smoking stages of change was closely related to physical activities, although Boudreaux et al (2003) pointed out that exercise and smoking behavior might be an independent construct for each other. On th other hand, Kim(2004)'s study showed that regular physical activity was significantly related to non-smoking behavior. Haddock et al. (2004) examined the tobacco user's perceptions on risk reduction and lifestyle change, and found that diet and exercise were considered the lifestyles that provided health benefits among smokers and non smokers. In addition to health behaviors, household income was related to self-perceived health status in this study, and this was partially consistent with the study conducted by Contoyannis and Jones(2004),

who developed an economic model in which self-assessed health is determined by lifestyle, budget and other variables. They found that sleeping well, exercising, and non-smoking was significantly related to self-assessed health status, but their model did not highly estimated the relevance of lifestyle in the socioeconomic status-health relationship. The physical activity's positive relationship with positive feelings of health status was also consistent with the work of Shields & Shooshtari(2001) who examined determinants of self-perceived health and found that physical conditions and regular exercises were positively associated with health perceptions.

V. Conclusion

1. Smoking behavior and attitude on smoking

Intention of quitting smoking was significantly associated with misconception on smoking in this study. Those who did not have intention of quitting smoking were more likely to show positive attitude toward smoking behavior. Perceptions on smoking or decisional balance is positively related to intentions or stages of quitting smoking among adults. Although still many researches focus on adolescent smoking behaviors regarding knowledge or perception, and

attitudes toward smoking, more studies are needed on educational and psychological process of adults' change of intentions on smoking behavior. Lawrie et al(2004) supported that health education efforts to increase awareness of the risks of smoking is an important strategy to promote healthy lifestyles.

Even though health education has been conducted actively for national healthy life practice, since the launch of national health enhancing project in 1998, it has focused on education information diffusion that may motivate people, but national healthy life habits have not greatly improved yet. To change attitudes toward smoking, more in-dept awareness campaign and education should be provided according to different health behavioral status.

2. Self-perceived health status and related health behaviors

There is a limitation in measuring health by the degree of self-reported health status. Some young smokers may not think they have the risk of getting lung cancer and they may think they are very healthy. This may be because of the lack of adequate health knowledge.

Although the self-perceived health status was not significantly related to some variables such as non-smoking status, health related variables were significantly associated with each other and the associations were significant. Among the variables, physical activity was significantly associated with positive health perception and non-smoking behavior. Adopting a health behavior may provide a chance for adopting other positive health behaviors. Therefore, health education programs on specific health subjects has to offer appropriate behavior change method which can be a chance for adopting overall healthy lifestyle.·

In addition, not only diffusing health education information or delivering knowledge information through related programs, an environmental support system that helps an individual maintain his/her action is required. Such a support system means settlement of the health enhancement base of school, workplace and community should be carried out, and the policy level support and regular programs should be provided and spread to different levels of community. Finally, more research effort is needed to develop reliable study instruments and survey method.

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ABSTRACT

The purpose of this study was to analyze variables associated with smoking and selected health behaviors. This study targeted adult men and women over 20 of age. The sample population was drawn from the national sample, and the samples were chosen from the telephone book. A total of 1,500 cases were collected through a telephone based interview survey.

As a tool for this study, a structured questionnaire was developed. the variables included self-perceived health status, and selected 7 health behaviors; smoking behavior, physical activities, eating habit, weight control, alcohol consumption, stress management, and cancer exam. The healthy life practice actions of Trans-theoretical model have been classified into five stages.

Smokers were more likely than non-smokers to positive attitudes toward smoking and the impact of smoking in this study. This means that smokers's awareness toward the impact of smoking is very week. Smoking behavior was significantly related to other health related behaviors based on the correlation analysis. However, gender, engaging in regular physical activities, moderate consumption of alcoholic beverages, and receiving a cancer examination were the variables that can explain and predict a person's stages of adopting a non-smoking behavior.

Self perceived health status was closely related to other health behaviors. Gender, age, and monthly household income were important demographic variables that have significant relationship with the self-perceived health status. Among the health behaviors, regular physical activities and weight control were significant predictable variables. Similar results have been found in the National health and Nutrition examination survey in Korea.

As a result of this study, it was found that among the selected health behaviors, engaging in physical activity was an important variable to increase positive sense of health and non-smoking behaviors. Educational and policy level input is needed to increase awareness and provide chances to participate in fitness activities. To those who maintain exercise, the environmental support and diffusion of knowledge information and education data should be strengthened.

To change attitudes toward smoking, more in-dept awareness campaign and education should be provided according to people's different behavioral status. In addition, not only diffusing health education data and delivering knowledge information through related programs, but also environmental support system that helps an individual maintain his/her action is required. Such a support system means settlement of the health enhancement base of school, workplace and community should be carried out, and the policy level support and regular programs should be provided and spread to the unit of community.