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Analysis of Health Behaviors of Selected Health Professionals in South Korea

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CONTENT

I. Introduction

Over the half of the leading causes of death for adults are preventable through changes in lifestyle. According to the National Bureau of Statistics Economic Planning Board in South Korea (1992), the leading causes of death in modern Korean society are circulatory disease and cancer which are closely related risk behavioral factors such as drinking alcohol, smoking cigarettes, lack of exercise, and excessive eating. These problems can be reduced if people pay close attention to their health behaviors and lifestyles.

Health professionals encourage people to enhance health behaviors that influence peoples lifestyles and they are perceived by the general public as healthy people with positive health knowledge, attitudes, beliefs, and healthy behaviors. Without an understanding of health behaviors and practices of health professionals, the positive influence of health professionals behaviors on the general public might not be realized.

As the society becomes more diversified, the role of health professionals is more important than before. Health professionals in school settings are needed to provide the knowledge students need to change to their attitudes and to improve their health behaviors. Also, health professionals in worksite settings are required to

develop programs that support health practices of employees and assess health behaviors of the employees. After all, the ultimate role of health professionals is to empower people to modify undesirable behavior patterns.

In South Korea, no specific study of the health behaviors of health professionals has been undertaken. Assessment of health behaviors of health professionals can provide empirical information about whether health professionals as health promoters practice positive health behaviors. In addition, understanding patterns and interrelationships of health behaviors of health professionals can provide insights for public health programs that encourage people to modify undesirable behavior patterns.

The purpose of this study was to examine (1) interrelationships of health behaviors of health professionals and (2) how sociodemographic characteristics of health professionals are related to their health behaviors in South Korea.

Ⅱ. Methods

Subjects

To accomplish the purpose of this study, health professionals who were members of The Korean Society for Health Education (KSHE) (N = 277) or The Korean Society for Health Nursing (KSHN) (N = 155) were selected. Both societies are included in The Korean Health Association. Because of unknown or wrong address, affiliation with both organizations, retirement, death, or being out of country, a total of 336 subjects (KSHE, N=212; KSHN, N=124) were finally included in this study.

Instrument

An instrument was developed to allow health professionals in South Korea to self-report their health behaviors and practices. Items designed to assess health behaviors and practices were initially considered based upon a study of the health behaviors of health educators conducted by Jenkins and Olsen (1994) in the United States. The health behavior indicators were also selected based upon other studies in which health behaviors were assessed (Dittmar et al., 1989; Laffrey, 1990; Bortz, 1992; Sobal et al., 1992; Pratt et al., 1994). Additional preliminary items related to the health behaviors and practices of Korean health professionals were

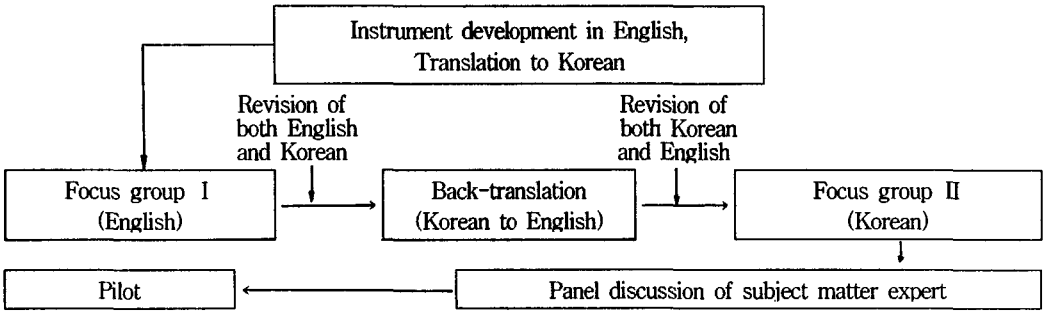

Figure 1. Procedure of Instrument Development

developed. In addition, the items related to health behaviors were added or deleted based upon the results of focus group discussions, back-translation, panel discussions of subject matter experts, and pilot testing of the preliminary survey instrument (see Figure 1).

The survey instrument consisted of 39 health behaviors including physical activity, diet and nutrition, safety and self-care, substance use, and relaxation. Selected sociodemographic characteristics such as age, gender, highest educational degree, college major, family income level, current marital status, place of employment, and years of employment in current job were included in this study.

Data Collection and Analysis

The data for this study were collected through a series of three mailings to 336 health professionals who were members of KSHE (N = 212) or KSHN (N = 124). The overall response rate was 64.3% (N = 216). This included 207 subjects who returned the completed survey instruments and 9 subjects who declined to participate in this study (see Figure 2).

To analyze the collected data, descriptive statistics were obtained for demographic characteristics. Factor analysis was used to develop appropriate measures, to obtain several meaningful components, and to examine interrelationships of health behaviors of the respondents. The principal component method was used as the factor extraction method and a scree plot test was conducted in order to decide the appropriate number of constructs with the examination of the eigenvalues. Finally, Analysis of Variance (ANOVA) was used to determine the relationships between demographic characteristics and health behaviors of the respondents.

Ⅲ. Results

Description of the Respondents

Of the 207 respondents, 66.2% (N = 137) were females and 33.8% (N = 70) were males (see Table 1). The average age of the respondents was 46 years. Regarding their current marital status, 83.0% of the respondents reported they were married. The respondents in this study were highly educated: 80.3% possessed a masters

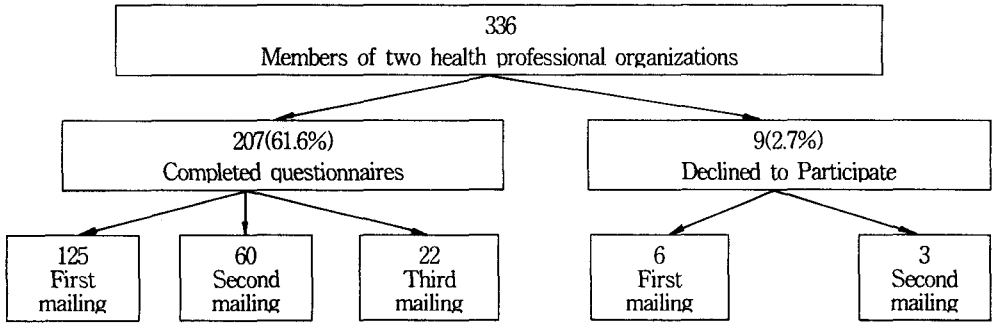

Figure 2. Data Collection by A Series of Three Mailings

or doctoral degree. The academic majors reported by the respondents were diverse: health education, nursing, medical science, health administration, public health, and other majors. Overall, nursing (36.3%) and public health (24.4%) were the most commonly reported academic majors of the respondents. More than half of the respondents (58.0%) reported that they were employed at a university or two-year college, followed by government research institutes (11.6%). Because of the small number of the respondents in some employment categories, the place of employment category was reclassified into four groups for analytical purposes: school settings, hospital settings, governmental settings, and other. High school, 2-year college, or university were included in the school settings; health centers and hospitals were included in the hospital settings; governmental offices and research institutes were included in the governmental settings; and the occupations related to industries, newspaper publishing companies, and self- employment were included in other category. In general, the majority of the respondents who had their degrees in health education, nursing, medical science, or public health were employed in school settings. The average number of years of employment reported was 14 years. The place of residence of the respondents included 15 provinces in South Korea. More than half of the respondents (54.6%) reported living in Seoul, and 14.0% reported living in Kyunggi-Do, which is near Seoul.

Table 1. Age and Academic Majors of the Respondents by Gend Unit: No (%)

Characteristics	Males	Females	Total
Tota[1]	70(100.0)	137(100.0)	207(100.0)
Agea			
≤ 39	9(13.0)	43(31.4)	52(25.3)
40-49	15(21.7)	58(42.3)	73(35.4)
50 ≤	45(65.2)	36(26.2)	81(39.3)
Academic majors[b]			
Health Education	2(2.9)	13(9.8)	15(7.5)
Nursing	1(1.4)	72(54.5)	73(36.3)
Medical science	18(26.1)	4(3.0)	2(10.9)
Health Administration	8(11.6)	9(6.8)	7(8.5)
Public Health	3(33.3)	6(19.7)	9(24.4)
Other	7(24.6)	8(6.1)	5(12.4)

[a] Number of missing observations: 1
[b] Number of missing observations: 6

Development of Health Behavior Constructs

A total of 39 health behavior variables were included in the survey instrument. Among these variables, several health behavior variables were combined or excluded for further data analyses. The following three health behavior variables were excluded because of the extremely small number of respondents who indicated to engage in the behaviors: taking medication for hypertension, using smokeless tobacco, and taking medication for their relaxation. In addition, a variable, having a PAP test, was excluded as it was applicable only to female respondents.

Nine variables that measured the frequency of different physical activities per week were combined into one variable that represented intensity of the physical activities per week with consideration of energy expenditure. It is well known that physical activities vary widely in terms of intensity. The number of kilocalories expended by individuals varies widely based

upon the kinds of physical activities being done. For example, hiking, swimming, or playing tennis requires greater expenditure of energy than does golfing. Several researchers have stated that the impact of various physical activities on health status was determined by the energy expenditure of the activity (Olsen et al., 1983; Greenberg & Pargman, 1986; Paffenbarger et al., 1986; Kusinitz & Fine, 1991; Grayson, 1993). According to Paffenbarger et al. (1986), the intensity of physical activity was classified as light (5 kcal/minute), moderate (7.5 kcal/minute), or heavy (10 kcal/minute).

Since the respondents in this study reported a wide range of physical activity, there was a need to estimate the intensity of each physical activity. In this study, an energy expenditure scale (kcal/minute) for physical activity developed by Kusinitz and Fine (1991) was used to determine the intensity of physical activities reported in this study. Based upon the classification of the intensity of physical activity determined by Paffenbarger et al. (1986), the intensity of physical activities reported in this study was categorized into 3 groups: light (1 to 5 kcal/minute), moderate (6 to 10 kcal/minute), and heavy (over 10 kcal/minute). In addition, to obtain a more adequate indicator to measure the intensity of physical activity, physical activities reported in this study were weighted by energy expenditure. Heavily intensive physical activities (over 10 kcal/minute) such as hiking, swimming, tennis, and jogging/running were assigned a weight of 3. Moderately intensive physical activities (6 to 10 kcal/minute) such as aerobic dancing, table tennis, and walking were assigned a weight of 2. Finally, lightly intensive physical activities (1 to 5 kcal/minute) such as stretching and golfing were assigned a weight of 1. Table 2 displays the approximate energy expenditure and the intensity of physical activities reported in this study. The intensity for each physical activity was then computed by multiplying the frequency of reported engagement in a specified physical activity per week by the respective weight assigned to that particular physical activity, and then the obtained score of the intensity for each physical activity was summed.

Table 2. Estimated Energy Expenditure (kcal/minute) and Intensity of Reported Physical Activities

Physical activities	Estimated energy expenditure* (kcal/minute)	Intensity of physical activity
Hiking	10.95	
Swimming	13.20	Heavy
Jogging/Running	15.60	
Tennis	10.65	
Aerobic dancing	9.30	
Table tennis	6.75	Moderate
Walking	7.20	
Stretching	NA	
Golfing	4.16	Light

* Source: Kusinitz, I. & Fine, M. (1991)

A total of 27 remaining health behavior variables were included in the initial factor analysis (see Table 3). According to Comrey and Lee (1992), one of purposes for using factor analysis is to gain some idea about the constructs that might be used to explain intercorrelations among the variables. Raw scores of the variables in this study were

standardized into Z scores for the factor analysis since they were measured on different scales. The principal component method was used as the factor extraction method. Before the initial factor analysis, Bartletts Test of Sphericity was conducted. The Bartletts Test of Sphericity (630.37, $p < .00$) indicated that the correlation matrix of the variables was not an identity matrix and a factor analysis was applicable to the data.

The initial factor analysis indicated that there were 11 constructs with eigenvalues larger than 1. These 11 constructs explained 63.6% of the total variance of the data. In order to decide an appropriate and manageable number of constructs, a scree plot was conducted by examining the eigenvalues. The scree plot test showed four constructs as the most appropriate solution as the fifth factor and the later factors fell on a straght line with an almost horizontal slope. Comrey and Lee (1992) stated that a point is sought where there is a break in the eigenvalues. The eigenvalues can be plotted and a straight line can be drawn through the later, smaller values. The earlier, larger values will not fall on this straght line, giving an indication of how many major factors there are.

Another factor analysis, restricting the number of constructs to four, was conducted. The results indicated that nine variables had very low communalities (less than 0.20): wearing a seat belt, having regular dental check-ups, having regular medical

check-ups, taking ginseng, taking deer antler, taking herbal medicines, taking any vitamins, flossing teeth, and practicing breast or testicular self-exams.

Table 3. Health Behavior Variables Included in the Initial Factor Analysis

Health behavior variables
The intensity of physical activity
Walking instead of using a vehicle
Using stairs instead of escalators or elevators
Having planned relaxation
Hours of sleep
Eating whole grains
Eating vegetables
Eating fresh fruits
Eating fried or high cholesterol foods
Eating sweet desserts
Eating whole milk products
Eating at a restaurant
Having breakfast
Drinking caffeinated beverages
Drinking alcohol
Drinking and driving
Smoking cigarettes
Taking ginseng
Taking deer antler
Taking herbal medicines
Taking any vitamins
Having dental check-ups
Brushing teeth
Flossing teeth
Having regular medical check-ups
Practicing breast or testicular self-exams
Wearing a seat belt

The third factor analysis was conducted excluding the nine variables specified above. Factor loadings were considered to judge the potential usefulness of the variables for factor interpretation. According Comrey and Lee (1992), a commonly used cutoff level for orthogonal factor loadings is 0.30; that is, no variable with a factor loading below 0.30 is listed among the variables defining the factor. The results showed that all of the remaining variables loaded into an

exclusive factor. A variable (brushing teeth), however, loaded into a construct that was considered theoretically irrelevant to the contents of the variable. Also, this variable was found to significantly reduce the internal consistency of the variables in the same construct. This variable was subsequently excluded from the final factor analysis.

As a last step, the fourth factor analysis specifying four constructs was conducted for the remaining 17 variables. The orthogonally rotated factor pattern showed that each variable loaded into a respective construct with factor loading of 0.39 and above. Based on the results, each construct was identified as follows: eating healthy food, substance use, eating unhealthy food, and physical activity and relaxation (Table 4).

Table 4. Four Health Behavior Constructs of the Respondents and Factor Loadings

Constructs	Factor loadings			
	1	2	3	4
1. Eating healthy food				
Eating whole grains	0.75			
Eating vegetables	0.70			
Having breakfast	0.61			
Eating fresh fruits	0.60			
2. Substance use				
Drinking alcohol		0.80		
Smoking cigarettes		0.79		
Drinking and driving		0.50		
3. Eating unhealthy food				
Eating fried or high cholesterol foods			0.70	
Eating sweet desserts			0.68	
Eating whole milk products			0.52	
Eating at a restaurant			0.49	
Drinking caffeinated beverages			0.48	
4. Physical activity and relaxation				
Intensity of physical activity				0.65
Walking instead of using a vehicle				0.62
Using stairs instead of escalators or elevators				0.54
Having planned relaxation				0.50
Hours of sleep				0.39

Health Behaviors of the Respondents

From the results of the factor analysis, a total of 17 behaviors were retained under four health behavior constructs. Each construct consisted of three to five relevant variables.

Eating Healthy Food

This construct consisted of four variables: eating breakfast, eating whole grains, eating vegetables, and eating fresh fruits. Specifically, eating breakfast daily was confirmed as a major health behavior related to longevity and overall improvement of health status in previous studies (Belloc & Bleslow, 1972; Dittmar et al., 1989; Sobal et al, 1992; Jenkins & Olsen, 1994).

The average number of times the respondents reported having breakfast was five times per week. More than half of the respondents (56.8%) reported that they ate breakfast daily; and 12% reported that they ate breakfast five or six times per week. Only 7.3% of the respondents reported they never ate breakfast (see Table 5). According to the Korean Institute for Health and Social Affairs (1993), in a study of health behaviors of the general public, nearly two thirds of the respondents (71.9%) reported that they ate breakfast daily. In the present study, only 56.8% of the respondents reported that they atbreakfast daily.

More than one third of the respondents (38.0%) reported that they ate whole grains at

Table 5. Respondents Self Report of Weekly Frequency of Eating Breakfast

Times per week	N[a]	%
None	15	7.3
1-2	25	12.1
3-4	24	11.7
5-6	25	12.1
Daily	117	56.8
Total	206	100.0

[a] Number of missing observations: 1

every meal. Nearly 35% reported that they ate whole grains 14 to 20 times per week. One third of the respondents (33.3%) reported that they ate vegetables 7 to 13 times, and 13% reported that they ate vegetables at every meal. More than half of the respondents (55.9%) reported that they ate fresh fruits 7 to 13 times per week, and 12.4% reported that they ate fresh fruits more than 13 times per week. Only 0.5% of the respondents reported that they have never eaten whole grains, vegetables, or fresh fruits. Overall the majority of the respondents ate whole grains and vegetables at least twice and fresh fruits at least once a day.

Substance Use

Three relevant variables were included in the construct substance use: drinking alcohol, drinking and driving, and smoking cigarettes. Specifically, drinking and smoking behaviors of the respondents were highly correlated. Sobal et al. (1992) reviewed previous studies examining patterns and interrelationships of health behaviors. Their review indicated that many of the previous studies about health behaviors include drinking and smoking together as an important health behavior factor.

In the present study, more than half of the respondents (51.5%) reported that they have never been drunk alcohol; 33.5% reported that they consumed 1 to 4 cups/glasses of alcoholic beverages per week; and 15.0% reported that they consumed more than 4 cups/glasses of alcoholic beverages per week (see Table 6). The majority of the respondents (87.9%) reported that they have never drunk and driven; and 12.5% reported that they had engaged in drinking and driving once or more times in the past year. The majority of the respondents (87.0%) reported that they have never been smoked cigarettes; and 6.3% reported that they smoked 10 cigarettes or fewer per day. Only 6.7% of the respondents reported that they smoked more than 10 cigarettes per day.

According to the National Statistical Office

Table 6. Respondents Self Report of Frequency of Drinking Alcohol and Smoking Cigarettes

Response	N[a]	%
Cups/glasses of drinking alcohol per week		
None	106	51.5
1-4	69	33.5
5-8	13	6.3
9 ≤	18	8.7
Total 207 100.0		
Response	N	%
Number of cigarettes they smoke per day		
None	180	87.0
≤ 10	13	6.3
11-20	10	4.8
21 ≤	4	1.9
Total	207	100.0

[a] Number of missing observations: 1

(1993) in South Korea, 42.1% of the general public never drink alcohol; and 61.5% never smoke cigarettes. The proportions of the general public in South Korea were quite high compared to the proportions of the respondents in terms of drinking and smoking. When drinking and smoking behaviors of the respondents were compared to those same behaviors of health professionals in United States, the proportions of Korean health professionals who did not drink (51.5%) and did not smoke (87.0%) were much higher than those of their U. S. counterparts (not drinking [26.7%] and not smoking [68.0%]) (Jenkins & Olsen, 1994).

Eating Unhealthy Food

For this construct, five relevant variables were included: eating at a restaurant, eating fried or high cholesterol foods, consuming whole milk products, eating sweet desserts, and drinking caffeinated beverages. These eating behaviors are not customary eating behaviors of Koreans, but rather, are considered as snacking behaviors. The majority of the respondents (67.5%) reported that they ate 1 to 3 times per week at a restaurant; 12.5% reported that they ate 4 to 6 times per week at a restaurant; 13.0% reported that they ate more than 6 times per week at a restaurant. Only 7.0% of the respondents reported that they have never eaten at a restaurant on a weekly basis.

The majority of the respondents (70.8%) reported that they ate fried or high cholesterol foods 1 to 3 times per week. Approximately 15.0% of the respondents reported that they never ate fried or high cholesterol foods. Of the respondents, 18.0% reported that they never consumed whole milk products; 43.2% reported that they consumed whole milk products 1 to 3 times per week (see Table 7). Of the respondents, 64.7% reported that they drink two cups/glasses or more of caffeinated coffee, tea, or soda. Only 9.2% of the respondents reported that they never drink caffeinated coffee, tea, or soda.

The results showed that eating at a restaurant, eating fried or high cholesterol foods, consuming whole milk products, and eating sweet desserts were highly correlated. These behaviors, however, did not significantly correlate with the behaviors of eating breakfast, eating whole grains, eating vegetables, or eating fresh fruits.

Table 7. Respondents Self-report of Weekly Frequency of Eating Fried or High Cholesterol Foods, Whole Milk Products, and Sweet Desserts

Times	Eating fried or high cholesterol foods		Consuming whole milk products		Eating sweet desserts	
	N[a]	%	N[b]	%	N[c]	%
None	30	14.9	37	18.0	50	24.5
1-3	143	70.8	89	43.2	123	60.3
4-6	19	9.4	29	14.1	20	9.8
7 ≤	10	5.0	51	24.8	11	5.4
Total	202	100.1*	206	100.1*	204	100.0

* Due to rounding, the total was not 100.0%
[a] Number of missing observations: 5
[b] Number of missing observations: 1
[c] Number of missing observations: 3

Physical Activity and Relaxation

Four variables were included in physical activity and relaxation construct: intensity of physical activity, walking instead of using a

vehicle, using stairs instead of escalators or elevators, and engaging in planned relaxation. Many researchers have found that physical activity is an important health behavior for improving overall health status (Belloc & Breslow, 1972; Nakamura & Lescault, 1983; Dittmar et al., 1989; Sobal et al., 1992; Dengler et al., 1994; Jenkins & Olsen, 1994).

Intensity of physical activity was determined by combining self-report of daily participation in physical activity with energy expenditure. Participation in physical activity was assessed by self-report of frequency of being engaged in any type of physical activity during the week. Overall, the majority of the respondents (75.9%) reported that they participated in some type of physical activity on a weekly basis. The most popular physical activity was stretching (42.0%), followed by walking (26.6%) and hiking (22.7%). Only five respondents reported that they participated in aerobic dancing (see Table 8). Of the respondents who participated in any physical activity, approximately 80% reported that they participated physical activities specifically to promote their health status. Weight control, recreation, disease prevention, and social activity were also reported as reasons for participation in physical activity.

Respondents considered walking instead of using a vehicle and using stairs instead of escalators or elevators as engagement of physical activity. Of the respondents, 54.4% reported that they sometimes walked instead of using a vehicle; and nearly 22.0% reported that they either often or always walked instead of using a vehicle. Of the respondents, over 53.4% reported that they sometimes used stairs instead of escalators or elevators; and 23.3% reported that they either often or always used stairs instead of escalators or elevators.

Table 8. Respondents Self-report of Weekly Frequency of Participation in Regular Physical Activity

Physical activities*	Days per week							
	0		1		2		3+	
	N	%	N	%	N	%	N	%
Hiking	160	77.3	37	17.9	6	2.9	4	1.9
Stretching	120	58.0	13	6.3	13	6.3	61	29.5
Walking	152	73.4	24	11.6	11	5.3	20	9.7
Swimming	190	91.8	5	2.4	1	0.5	11	5.3
Aerobic dacing	202	97.6	1	0.5	0	0.0	4	1.9
Jogging/running	185	89.4	8	3.9	8	3.9	6	2.8
Table tennis	198	95.7	3	1.4	0	0.0	6	2.8
Tennis	198	95.7	3	1.4	3	1.4	3	1.4
Golfing	183	95.3	8	3.9	1	0.5	5	2.4

* Respondents could choose multiple responses.

In the present study, engaging in planned relaxation was correlated with the intensity of physical activity ($r = .23$, $p < .01$). Even though the respondents did not indicate specific kinds of planned relaxation, the respondents may participate in physical activities as a way of pursuing relaxation. More than half of the respondents (52.7%) reported that they engaged in planned relaxation once per week. Approximately 25.0% of the respondents reported that they engaged in planned relaxation more than once per week. More than 22.0% of the respondents reported that they never engaged in planned relaxation. Of those who reported that they never engaged in planned relaxation, nearly 40.0% reported that they never participated in regular physical activity.

On average, the respondents slept six and half

Table 9. Respondents Self-report of Hours of Sleep per Night

Hours per night	N[a]	%
≤ 4	2	1.0
5-6	91	44.8
7-8	108	53.2
9 ≤	2	1.0
Total	203	100.0

[a] Number of missing observations: 4

hours a night. More than half of the respondents (53.2%) reported that they slept seven to eight hours a night; and 44.8% reported that they slept five to six hours a night (44.8%) (see Table 9). In a pioneering study of health behaviors by Belloc and Breslow (1972), seven to eight hours of sleep a night was identified as one of seven health enhancing practices. When the proportion of、hours of sleep of the respondents was compared to those of the general public in South Korea (Korean Institute for Health and Social Affairs, 1993), a similar proportion was found. More than half of the respondents (53.2%) and the general public (56.4%) in South Korea slept 7 to 8 hours per night.

Relationships between Sociodemographic Characteristics and Health Behavior Constructs of the Respondents

The relationships between sociodemographic variables and the four health behavior constructs that were generated were examined. Sociodemographic variables were considered as predictive variables for the analyses and each health behavior construct was used as criterion variables.

In many health behavior studies, gender was one of the most significant demographic variables that appeared to influence peoples health behaviors. Table 10 displays how gender is related to the four health behavior constructs developed in this study. The results showed that there was a statistically significant difference between male and female respondents regarding substance use ($F = 69.59$, $df = 1, 203$, $p < .05$). Males were more likely to use substances than were females. For the remaining three health behavior constructs, no statistically significant difference ($p < .05$) between males and females was found.

Table 10. One-way Analysis of Variance for Differences in Four Health Behavior Constructs of the Respondents, by Gender

Constructs	Gender		F	(df)
	Male $\bar{X}$	Female $\bar{X}$**		
Eating healthy food	0.22	-0.09	0.55	(1,202)
Substance use	1.53	-0.82	69.59*	(1,203)
Eating unhealthy food	0.03	-0.02	0.02	(1,201)
Physical activity and relaxation	0.50	-0.24	3.80	(1,190)

* $p < .05$

** $\bar{X}$ was resulted from standardization of the scores of each health behavior construct. It applies to the following Tables 11~13.

There was a statistically significant difference among educational levels regarding substance use ($F = 2.87$, $df = 3, 198$, $p < .05$) (see Table 11). Respondents whose highest educational level was a baccalaureate degree, were more likely to use substances than were respondents with either more or less education. However, the influence of educational level on substance use should be interpreted with consideration of gender as high proportion of male respondents relatively possessed a baccalaureate degree compared to

Table 11. One-way Analysis of Variance for Differences in Four HealthBehavior Constructs of the Respondents, by Educational Level

Constructs	Educational level				F	(df)
	Associate	Baccalaureate	Master	Doctorate		
	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$		
Eating healthy food	-0.40	-0.81	-0.28	-0.07	1.11	(3,198)
Substance use	-0.31	1.14	-0.31	0.14	2.87*	(3,198)
Eating unhealthy food	-1.40	-0.72	0.22	0.32	2.22	(3,196)
Physical activity and relaxation	-0.51	-0.66	0.15	0.11	0.81	(3,186)

* $p < .05$

Table 12. One-way Analysis of Variance for Differences in Four Health Behavior Constructs of the Respondents, by Current Workplace

Constructs	Current workplace				F	(df)
	School setting	Hospital setting	Govern-mental setting	Other		
	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$		
Eating healthy food	0.22	-0.62	-0.52	-1.16	0.83	(3,200)
Substance use	0.35	0.12	1.10	-0.13	4.04*	(3,201)
Eating unhealthy food	0.21	-0.70	-0.40	0.85	1.40	(3,199)
Physical activity and relaxation	-0.19	0.50	0.35	-0.11	0.82	(3,188)

* $p < .05$

female respondents.

The results showed that there was a statistically significant difference among current workplaces regarding substance use ($F = 4.04$, $df = 3, 201$, $p < .05$) (see Table 12). Respondents who were employed in governmental settings were more likely to use substances than were respondents employed in other settings. The results showed that the majority of the respondents (52.0%) who were employed in governmental setting majored in other than health-related fields. The influence of current workplace on substance use should be interpreted with the consideration of gender as high proportion of male respondents relatively employed in governmental settings compared to female respondents.

Although the years of employment in their current jobs were linked to their age, different results were noted with regard to health behaviors. There was a statistically significant difference in physical activity and relaxation by years of employment in the respondents current job ($F = 2.39$, $df = 5, 185$, $p < .05$) (see Table 13), while age of the respondents was not significantly related to any four health behavior constructs . Respondents who were employed five or fewer years, or 26 or more years in their current job were more likely to engage in physical activity and relaxation behaviors than were other respondents.

Ⅳ. Discussions and Conclusions

Since the role of health professionals in terms of promoting peoples health behaviors and

Table 13. One-way Analysis of Variance for Differences in Health Behavior Constructs, by Years of Employment

Constructs	Years of employment						F	(df)
	≤5	6-10	11-15	16-20	21-25	26≤		
	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$		
Eating healthy food	-0.06	-0.45	-0.18	0.27	0.42	1.26	1.70	(5,198)
Substance use	0.23	0.28	-0.22	-0.05	-0.08	-0.44	0.46	(5,198)
Eating unhealthy food	-0.06	0.05	0.37	0.08	-0.39	-0.51	0.36	(5,196)
Physical activity and relaxation	0.85	-1.05	-0.15	-0.14	0.05	0.56	2.39*	(5,185)

* $p < .05$

preventing peoples high risk behaviors is very significant, to examine health behaviors of health professionals is worthwhile. The results of this study provided fundamental information about health behaviors and practices of health professionals in South Korea.

An important finding of this study was that the health behaviors of the Korean health professionals were composed of the following four constructs: eating healthy food, substance use, eating unhealthy food, and physical activity and relaxation. These constructs would suggest commonalities between diverse health behaviors of the selected health professionals. The content of the four health behavior constructs was specific, with little inclusion of different types of health behaviors in any one factor.

Another important finding was the relationships between several sociodemographic characteristics and four health behavior constructs. Gender, educational level, and current workplace were significantly related to substance use. Years of employment in current job was significantly related to engage physical activity and relaxation behaviors. The results of this study clearly showed that certain subgroups of the respondents need to change unhealthy behaviors related to the leading causes of death. Since health professionals are perceived as healthy people in the society, the health behaviors that the Korean health professionals should improve need to be considered in further studies so they can identify how those behaviors can be changed.

A limitation of this study is that four health behavior constructs of the respondents may not be appropriate to other groups because the purposes of peoples engaging in health behaviors are different based upon their health knowledge, attitudes, beliefs, or environment /situation. According to Rosenstock et al., (1988) in the Health Belief Model, perceived seriousness and susceptibility to disease, perceived benefits and barriers of health behaviors, and perception of disease threat and exposures to cues about health may interact in a different way for each behavior. The complexity of these interactions can lead to a wide variation in individuals performance of health behaviors.

Another limitation of this study is that it focused on only behaviors of the Korean health professionals. Further studies should include knowledge, attitudes, and beliefs as well as behaviors of health professionals. It would provide information about how the health behaviors of Korean health professionals are

linked to their knowledge, attitudes and beliefs and provide a broader picture of health professionals lifestyles.

As the interest in health promotion programs in community and worksite is increasing in Korea, the health practices and behaviors of health professionals in terms of planning, implementing, and evaluating the health promotion programs are important in providing people with models of health behaviors. Blair (1993) stated that vicarious experience obtained through observation of successful or unsuccessful performance of others accounts for a major part of learning. Further studies should include how health professionals perceive themselves as models of health behaviors to the general public.

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<국문요약>

한국 보건전문가들의 보건행동에 관한 분석

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본 연구는 한국 보건전문가들의 보건행동을 조사하고,보건행동간의 상호 관련 요인과 보건행동에 영향을 미치는 인구학적 요인을 분석하는데 그 목적이 있다. 본 연구 대상으로는 한국보건협회 산하의 8개의 보건 관련 학회 중에서 보건교육과 가장 관련이 있는 한국보건교육학회(212명)와 한국보건간호학회 (124명) 회원 336명이 선정되었다. 본 연구의 도구는 미국에서 이미 실시된 여러 보건행동 연구를 기초로 하여 focus group discussion, back-translation, 전문가들의 panel discussion, 그리고 pilot test(사전조사)를 통하여 한국인의 보건행동 연구를 위해 타당하게 개발되었다.

본 연구를 위하여 1995년 약 두달동안(11월, 12월), 3차에 걸친 우편설문조사를 실시하여 64.3%의 응답회수율을 보였고, 응답자들의 보건행동을 분석하기 위해서 factor analysis(요인분석)와 ANOVA (변량분석) 방법을 사용하였다.

본 연구의 결과는 다음과 같다.

1. 조사응답자의 분포는 남자가 33.8%, 여자가 66.2%였고, 응답자의 80.3%가 석사 이상의 학위를 소유하고 있었다. 응답자들의 전공분야는 다양하였고, 그들 중에서 36.3%가 간호학, 24.4%가 공중보건학을 전공하였다. 응답자 중 과반수 이상이 학교에 근무하였고, 서울에 거주하였으며, 응답자의 평균 직장 근무연수는 14년 이였다.

2. 응답자들의 보건행동에 대한 요인분석 적용의 적합성을 사전검증하기 위하여 Bartlett's Test of Sphericity (630.37, $p<.00$)를 실시하였다. 응답자들의 보건행동을 요인분석한 결과, 17개의 보건행동으로 구성된 네가지 보건행동요인들이 추출되었다. 응답자들의 네가지 보건행동요인들은 다음과 같다:

(1) 규칙적인 식사 및 과일 섭취
(2) 음주 및 흡연
(3) 외식,간식 및 카페인 음료 섭취
(4) 운동 및 휴식

3. 응답자들의 인구학적 요인과 네가지 보건행동요인들과의 관계를 분석한 결과, 성별($F=69.59$, $df=1,203$, $p<.05$), 교육정도($F=3.48$, $df=3,199$, $p<.05$) 그리고 직장($F=4.04$, $df=3,201$, $p<.05$)에 따라 음주 및 흡연 행동에 커다란 차이를 보였다. 또한 응답자의 직장 근무연수($F=2.39$, $df=5,185$, $p<.05$)에 따라 운동 및 휴식 행동에 커다란 차이를 보였다.