

## The Association between Health Behaviors and Mental Health in Middle Aged

Mi-Kyoung Choi

*Department of Nursing, College of Medicine, Kwandong University*

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### I . Introduction

In the rapidly changing circumstances of today, mental health problems such as stress or depression have brought about a number of diseases or problems. In this context, several studies have reported side effects of mental health problems among modern people, for example, cardiovascular diseases(Matthews 1987), abnormal hormone release(Axelrod and Reisine 1984), increased mortality(Stroebe et al. 1982), chronic fatigue syndrome(Watanabe and Watanabe 1998), reduced immunity(Koh 2001; Reiche, Nunes, and Morimoto 2003), etc.

Such the problems emerging in the modern society are worse in the middle aged who usually suffer from more severe social or financial stresses in their daily life, compared to other age groups. Accordingly, in fact, not a few studies(Han et al. 2002; Hong and Song 1991; Kim et al. 1997; Lambert et al. 2003) have addressed depression or stress in the middle aged as an important issue.

Also in their physical aspect, the middle aged show the distinct symptoms of aging, and unless their health habits are good, they will be attacked immediately with a life-style disease and a chronic disease. From this point, it can be considered that their good health

Corresponding author: Mi-Kyoung Choi, Department of Nursing, College of Medicine, Kwandong University, 522, Naegok-dong, Gangneung-si, Gangwon-do 210-701, Korea  
 Tel: 82-33-649-7615, E-mail: mkchoi@home.kwandong.ac.kr

habits contribute greatly to their physical health(Ahn 1993; Kawada 2004; Kim 1998), and even to their mental health. In fact, some studies(Kim 2004; Sohn and Cho 2004; Sørensen et al. 1999) present the relation between the practice of exercises and mental health regarding stress or depression. However, there are few studies targeted on the middle-aged population residing in a community and even if the interrelation between mental health and health behaviors is covered, they discuss primarily differences in stress level depending upon the details of health behaviors, or are limited to a certain single category of health behaviors - e.g. exercise - or to a few health habits.

Meanwhile, social support serves as an important factor in the light that it can relieve a variety of social or psychical conflicts: Cobb(1976) reported that many mental/physical problems may arise when social support from family, colleagues or friends gets weaker. Such the social support probably implies a more valuable meaning for the middle-aged population suffering from several social or mental conflicts.

Based on these backgrounds, this study aimed at investigating the relationship between mental health and health behavior in the middle aged, by applying different measuring scales covering a wider range of health behaviors including diet, drinking/smoking, air-refreshing and fatigue,

to the middle-aged people living in a local city. Furthermore, the relations between mental health and social support, and between mental health and socio-demographic factors were examined.

## **II. Subjects and Method**

### **1. Subject and data collection**

The survey with questionnaire was carried out for the subjects of the residents in two communities of a local city located in Gangwon-do, Korea from September 3 to 15, 2003. The subjects were 36~59 years old assuming a favorable attitude towards this questionnaire and the number of them was 203 in total. The contents of the questionnaire included the presence or absence of health problem at present, socio-demographic variables such as gender, education and economic status, social support consisting of 5-items, mental health of 14-items, and the scale on health behavior of 20-items.

### **2. Measurements**

#### **1) Mental health**

Nakagawa(Department of Health Sociology, Tokyo University 1996)'s GHQ(General Health Questionnaire) abbreviated edition was used. Although it is primarily intended for general survey on health, it is frequently used as a measuring

tool to quantify neuropsychotic symptoms and screen patients with such the symptoms. Of the twenty questions in total, fourteen ones - except for six ones with almost redundant meanings - were used in this study. In addition, the questionnaire puts questions on the matters during the last three or two weeks, while this study did during the last month. One to four points were given to each question in 4-likert scale; the higher the score is acquired by a respondent, the better is the condition of his or her mental health(The total score ranges from 14 to 56). The Cronbach's alpha reliability coefficient was .776 in this study.

## 2) Health behavior

Health behavior scale developed by Munakata(1996) was used. The responses to the question, 'At ordinary times, what do you do for your health?', were composed of the twenty items including 'I have regular meals every day.', 'I avoid pungent or salty food if possible.', 'I have a sufficient sleep.', 'I avoid overnight work.', 'I practice regular exercise.', 'I avoid drinking or smoking if possible', and so on. For the response to each item, 1 point was given for 'yes' and 0 point for 'no'. The mean of the accumulated points was used in the analysis for this study (The score ranges from 0 to 20.). The higher the score was, the more subjects practiced health behavior. The Cronbach's alpha reliability

coefficient was .742 in this study.

## 3) Social support

This scale developed by Munakata(1996) consists of five items including 'I have an acquaintance who makes me feel comfortable and relief', and 'I have an acquaintance whom I keep nothing from'. For the response to each item, 1 point was given for 'yes' and 0 point for 'no', and the mean of the accumulated points was calculated (The scores ranged from 0 to 5). The higher the score was, the more the social support was provided. The Cronbach's alpha reliability coefficient was .810 in this study.

## 3. Data analysis

The SAS/PC(version 8.2) was used for analyzing data in this investigation. The data analysis procedure included frequency, t-test, ANOVA, Pearson Correlation Coefficient. And stepwise multiple regression analysis was conducted to examine factors influencing the mental health.

## III. Results

### 1. General characteristics of the subjects(Table 1)

For gender of the subjects, the male and the female accounted for 37.4% and 62.6%, respectively, and the proportion of female

was higher. For birth place, 88.7% of them came from the current residential region, i.e., Gangwon-do. 68.7% answered that they had a religion. For the number of family members, 「4 or less」 accounted for 72.4% and 「5 or more」 for 27.6%. For education, 48.3% answered 「high school graduated or lower」 and 51.7% 「junior collage graduated or higher」. For subjective economic status, 83.0% answered 「middle」. For occupation, jobless persons accounted for 24.1%, 「office workers」 for 21.2%, 「commercial」 for

29.6%, 「professional」 for 6.4% and 「others」 for 18.7%. In the response to the question, 「Do you have currently any health problem?」, 28.9% answered "yes" and 71.1% "no".

**2. The means of mental health, health behavior and social support**

The mean of mental health scores among the subjects was 37.247(±8.896), a bit higher than the mid mean score(35.0). The mean of health behavior was 8.493(±4.415); it was found that about 8.5 items were practiced by the subjects as ordinary health behaviors. The mean of social support was 3.889(±1.381), higher than the mid mean score(2.5).

**3. Mental health, health behaviors, and social support in accordance with general characteristics (Table 2)**

The bivariate relationships between sociodemographic variables and mental health, health behaviors, and social support are shown in Table 2. Mental health showed significant differences in birth place (t=-1.67, p<0.10), religion (t=2.27, p<0.05) and subjective economic status(F=2.99, p<0.10). Health behaviors had significant differences in gender (t=-4.07, p<0.01) and education (t=2.14, p<0.05), whereas social support had significant different in gender (t=-2.55, p<0.05), religion (t=2.60, p<0.01), education (t=-2.13, p<0.05), and occupation (F=2.90, p<0.05).

<Table 1> General characteristics of study subjects(N=203)

	Category	N(%)
Gender	male	76(37.4)
	female	127(62.6)
Birth place	city	23(11.3)
	province	180(88.7)
Religion	yes	138(68.7)
	no	63(31.3)
Number of family member	-4	147(72.4)
	5-	56(27.6)
Education	-high school	98(48.3)
	college-	105(51.7)
Economic status	high	19( 9.5)
	middle	166(83.0)
	low	15( 7.5)
Occupation	no	49(24.1)
	office worker	43(21.2)
	commercial	60(29.6)
	professional	13( 6.4)
	others	38(18.7)
Health problem	yes	58(28.9)
	no	143(71.1)

**4. Correlations among mental health, health behavior and social support (Table 3)**

As mental health showed significant positive correlations with both health

behavior ( $r=0.462$ ,  $p<0.001$ ) and social support ( $r=0.142$ ,  $p<0.05$ ), the better the health behaviors were practiced and the more the social supports were provided, the better the mental health maintained. Social support

<Table 2> General characteristics and score of mental health, health behaviors, and social support

Category		Mental Health		Health Behavior		Social Support	
		Mean( $\pm$ SD)	t or F	Mean( $\pm$ SD)	t or F	Mean( $\pm$ SD)	t or F
Gender	male	37.04( $\pm$ 7.84)		6.92( $\pm$ 4.12)		3.57( $\pm$ 1.64)	
	female	37.37( $\pm$ 9.48)	-0.25	9.43( $\pm$ 4.33)	-4.07***	4.08( $\pm$ 1.17)	-2.55**
Birth place	city	34.27( $\pm$ 6.58)		7.35( $\pm$ 3.98)		3.70( $\pm$ 1.40)	
	province	37.62( $\pm$ 9.09)	-1.67*	8.64( $\pm$ 4.46)	-1.44	3.91( $\pm$ 1.38)	-0.71
Religion	yes	38.33( $\pm$ 8.87)		8.65( $\pm$ 4.36)		4.07( $\pm$ 1.28)	
	no	35.05( $\pm$ 8.71)	2.42**	8.27( $\pm$ 4.12)	0.55	3.52( $\pm$ 1.54)	2.60***
Number of family member	-4	37.74( $\pm$ 9.32)		8.56( $\pm$ 4.66)		3.88( $\pm$ 1.39)	
	5-	35.96( $\pm$ 7.63)	1.26	8.32( $\pm$ 3.72)	0.83	3.91( $\pm$ 1.36)	-0.11
Education	-high school	37.79( $\pm$ 9.29)		9.17( $\pm$ 4.66)		3.67( $\pm$ 1.54)	
	college-	36.74( $\pm$ 8.53)	0.83	7.86( $\pm$ 4.09)	2.14**	4.09( $\pm$ 1.19)	-2.13**
Economic status	high	41.44( $\pm$ 9.32)		8.79( $\pm$ 5.94)		4.31( $\pm$ 0.82)	
	middle	37.16( $\pm$ 9.00)		8.71( $\pm$ 4.20)		3.81( $\pm$ 1.43)	
	low	34.07( $\pm$ 6.08)	2.99*	5.73( $\pm$ 4.27)	3.19**	4.14( $\pm$ 1.51)	1.40
Occupation	no	36.47( $\pm$ 8.77)		9.29( $\pm$ 4.03)		4.02( $\pm$ 1.11)	
	office worker	36.95( $\pm$ 8.71)		7.95( $\pm$ 4.36)		3.86( $\pm$ 1.59)	
	commercial	37.49( $\pm$ 8.54)		7.62( $\pm$ 4.62)		3.46( $\pm$ 1.62)	
	professional	39.33( $\pm$ 11.44)		8.69( $\pm$ 5.69)		4.54( $\pm$ 0.66)	
	others	37.54( $\pm$ 9.28)	0.29	9.40( $\pm$ 3.99)	1.57	4.22( $\pm$ 0.98)	2.90***
Health problem	yes	35.84( $\pm$ 8.21)		8.31( $\pm$ 3.88)		4.09( $\pm$ 1.20)	
	no	37.71( $\pm$ 9.16)	-1.33	8.56( $\pm$ 4.64)	-0.39	3.79( $\pm$ 1.45)	1.37

\*  $p<0.1$  \*\*  $p<0.05$  \*\*\*  $p<0.01$

<Table 3> Correlations among mental health, health behavior, and social support

	Ment hlth	Hlth behv	Soc sup
Ment hlth	1.000		
Hlth behv	0.462***	1.000	
Soc sup	0.142*	0.177*	1.000

Pearson correlations, \*  $p<0.05$  \*\*\*  $p<0.001$

Ment hlth : Mental health

Hlth behv : Health behavior

Soc sup : Social support

showed significant positive correlation with health behavior ( $r=0.177$ ,  $p<0.05$ ), so the more the social supports were provided, the better the health behaviors were practiced.

**5. The results of multiple regression analysis of health behaviors on mental health (Table 4)**

In order to identify factors affecting mental health, a stepwise multiple regression analysis was performed with considering mental health as a dependent variable, and the factors such as birth place, religion, subjective economic status, health behavior and social support, which showed statistically significant differences in bivariate analysis, as independent variables. As the result, health behavior ( $\beta=0.453$ ,  $p<0.001$ ) and religion ( $\beta=-0.147$ ,  $p<0.05$ ) were extracted as significant factors. Health behavior explained 22% of the variance.

**IV. Discussion**

The mean of mental health scores among the subjects was  $37.247(\pm 8.897)$  indicating

the middle level, which was similar to the result of other study (Choi and Kim 2001) performed with the subject of 30-year-old or older people.

For the practice of health behavior among the subjects, average 8.5 of 20 items in total were answered positively. From the view that the contents of health behaviors examined in this study have a close relationship with daily life involving 'regular meal', 'sufficient sleep' and 'regular exercise' and it is relatively easy to practice them, it wasn't considered that generally the subjects practiced health behaviors well. In general, it is regarded that the middle-aged people tend to practice health behaviors well, owing to their keen need caused by considerable changes in physical conditions and consequently, the result of this study may be considered less than the commonly expected level. Thus, it is required to motivate them to practice health behaviors positively.

Among the general characteristics, birth place, religion and subjective economic status were the variables which showed significant difference in mental health. Religious subjects showed better mental health, compared to

<Table 4> Stepwise multiple regression on mental health

Variables	R	R <sup>2</sup>	F	$\beta$
Health behavior	0.214	0.214	51.26***	0.453***
Religion	0.022	0.236	5.49*	-0.147*

\*  $p<0.05$  \*\*\*  $p<0.001$   
(Religion: 0...yes, 1...no)

irreligious ones, which was interpreted that emotional support based on religion has an influence upon mental health of the believers. However, as some studies have reported negative effects of religion on mental health (Han 2000), it is thought that it is necessary to perform further studies on the relation with the degree of devotion to a religion rather than the difference derived from the presence or absence of religion. In addition, the finding that the better the subjective economic status was, the better the mental health was is supported by some previous studies; Rautio et al. (2001) suggested the correlation between the economic status and mental health of individuals, and Munakata (1996) reported that poor socio-economic status itself may function as a stress-initiating factor and have a negative influence upon mental health.

As a result of surveying the practice of health behaviors by the general characteristics, it was found that the subjects corresponding to female, high-school or lower graduate and higher subjective economic status put the behaviors in practice better, which is consistent with the results of the previous studies (Kim, Jung, and Han 2002; Saito et al. 1997) reporting that women and persons with better economic status generally show higher performance in the practice of health behaviors. However, in relation to education, high-school or lower graduates

presented higher scores in the practice of health behaviors, which is inconsistent with the results of the previous studies (Chun and Kim 1996; Kim 2000). Thus, it seems that it is needed to conduct further studies focused on the educational level among the middle-aged people, using various health behavior scales.

For social support, the subjects corresponding to female, religious person, college or higher graduate or professional career showed higher scores. Female subjects show higher cognition of social support compared to male ones (Jeong 2003). Religious persons had more opportunities to gain the effect of emotional support, same as mental health, and better-educated subjects could utilize supporting network based on more abundant information.

For the correlations among mental health, health behavior and social support, mental health showed positive correlations with health behavior and social support, whereas health behavior did with social support. The result related to the correlation between mental health and social support was consistent with that of previous study which reported that generally, the more the social support was given, the better the mental health was. Gore (1978) reported that the less ones were supported by their families, relatives or friends, the more severe their depressive symptoms were. It's considered that social

support is a important factor to individuals in keeping their mental health good, from a viewpoint that when an individual confronts a crisis, social support often plays a role of defense mechanism capable of buffering the crisis. Likewise, the result related to the correlation between health behavior and social support was also consistent with that of previous study(Jeong 2003; Lee 1999; Munakata 1982) which suggested that the more the social support was provided, the better the health behavior was practiced. Munakata (1996) reported that the influence of social support on the practice of health behaviors was identified in surveying patients with a disease such as renal failure, chronic hepatitis, hypertension, angina pectoris, schizophrenia as well as healthy persons. These results on social support probably indicate that a sense of relief and trust - implemented through forming close relationship with family members and others - promote the maintenance of good mental health and the practice of desirable health behaviors.

Since in this study, it was revealed that health behavior was the most significant factor affecting mental health in multiple regression analysis as well as in correlation analysis, it was suggested that the middle-aged people corresponding to the subjects of this study should practice desirable health behaviors for their mental health. This

result is consistent with those of previous studies which report the correlations between exercise and stress (Kim 2004), between health-related life style and stress (Sohn and Cho 2004), and between exercise/diet and mental health (Sørensen et al. 1999). However, this study is meaningful from a standpoint that it used the scale covering a wider range of health behaviors such as diet, exercise, fatigue and air-refreshing. Following this study, it's required to conduct the relevant studies repeatedly using tools covering more various health behaviors for the subjects of the middle aged.

At the end, the relationship between mental health and health behavior in the middle aged, and several factors including socio-demographic factors, the presence or absence of health problem and emotional support were considered and examined in this study, however, it is necessary to perform the studies covering wider range of factors in future.

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## ABSTRACT

This study was conducted to examine factors influencing mental health of middle-aged adults(N=203) in relation to sociodemographic variables, health behaviors, and social support.

The survey with questionnaire was carried out for the subjects of the residents in two communities of a local city located in Gangwon-do, Korea from September 3 to 15, 2003. Data analysis procedure included stepwise multiple regression using mental health as the dependent variable, and sociodemographic variables, health behaviors, and social support as independent variables.

There were significant differences in the mental health by birth place( $t=-1.67$ ,  $p<0.10$ ), religion ( $t=2.27$ ,  $p<0.05$ ) and subjective economic status( $F=2.29$ ,  $p<0.10$ ). Mental health showed significant positive correlations with both health behavior ( $r=0.462$ ,  $p<0.001$ ) and social support ( $r=0.142$ ,  $p<0.05$ ). Stepwise multiple regression analysis for mental health revealed that the most powerful predictor was health behavior( $\beta=0.453$ ,  $p<0.001$ ). Health behavior and religion explained 24% of the variance.

The results suggest the necessity of a intervention that considers the health behaviors should be included in middle-aged adults so as to promote mental health.

**Key Words:** Mental Health, Health Behavior, Middle Aged