

# Predictive Factors of Health Conservation of Middle-Aged Women

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## Abstract

**Objectives:** The objective of this research is to identify the relationship among health promoting behavior, perceived health status, depression, wisdom, and health conservation, clarify the factors that influence on health conservation, and provide fundamental resources for improvement of life and maintenance of health status of middle-aged women. **Methods/Statistical Analysis:** As for research design, it is the secondary data analysis research in the use of data of middle-aged women among resources collected for the influencing factors on health conservation of middle-aged adults by Lee & Kim. Subjects were 84 middle-aged women residing in the city of C or D. Data were analyzed by descriptive statistics, t-test, ANOVA, Pearson's correlation coefficient, and stepwise multiple regression. **Findings:** there was a statistically significant correlation on health promoting behaviors and health conservation, perceived health status and health conservation, depression and health conservation, and wisdom and health preservation of middle-aged women. As for factors that influenced on health conservation, wisdom was 42.7% followed by 8.4% for health promoting behaviors, 3.4% for depression, and 2.8% for perceived health status. Total explanatory power on health conservation of them was 57.3%. **Applications/Improvements:** Considering wisdom, health promoting behaviors, perceived health status, and depression that were known as predictive factors for health conservation of middle-aged women, it is suggested to develop the nursing mediation for improving health conservation. Especially, wisdom of those in middle age was closely related to health. Depression was confirmed to be a variable to be dealt with for women unlike men. It is suggested to repeat the research about health conservation of middle-aged women to clarify predictive variables other than what was revealed in the results of this study. It is also recommended that nurses utilize results of this study in the practice in local community and help improve health conservation of middle-aged women.

**Keywords:** Depression, Health Conservation, Health Promoting Behavior, Middle-Aged Women, Statistical Analysis, Wisdom

## 1. Introduction

Middle years of life ranging from 40 – 60 years are of a period when people tend to experience the limitation of human existence including the finitude of life and inevitability of death and aging. In the middle ages, people tend to enjoy a prime in their lives by acquiring economic stability and psychological satisfaction unlike the early period of adulthood and hence to have wisdom and time to reflect themselves. However, they also experience deteriorated physical strength and degraded self-esteem, listless feeling, depression, anxiety, and confusion of identity as well as perplexed moment due to disease, aging, and death of those around them<sup>1</sup>.

Such a crisis in the development phase requires a course of preventive preparation that guarantees the successful later years<sup>2</sup>. As for the related concept, the term, health conservation, has newly emerged that humans maintain physical, psychological, and social wellbeing or well-balanced physical, psychological, and social integration<sup>3</sup>. Therefore, nurses are required to seek for a measure to improve health conservation of middle-aged women and serve them. As for measures in improving health conservation, related terms have been confirmed in the previous studies. As a result, relevant measures might be to perform health promoting behaviors in daily lives and behave in wisdom<sup>4,5</sup>, recognize the condition while managing their health status<sup>6</sup>, and make an effort to maintain mental health status<sup>4</sup>.

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I, as a researcher, have proceeded the study relate to health conservation influential factors<sup>7</sup> of middle-age adults. In the meantime, I have realized that the degree of health conservation was different depending on the gender, and factors highly related to or influencing on health conservation of middle-aged adults were different according to gender and also how there was a need to prepare for fundamental resources for finalizing the measures in maintaining and improving the health of women in daily lives by separating and proceeding the study only on women even if middle-aged women were in a situation with degraded physical status such as changes in hormone due to menopause compared to middle-aged men.

According to the result of reviewing the previous studies in the elderly citizens and middle-aged adults and also to the result of analyzing the factors that influenced on health conservation on 113 elderly citizens, it was confirmed that there was a need to research by separating women and men<sup>8</sup>. In addition, wisdom turned out to be the most important influential factor on health conservation of elderly citizens who suffered from chronic illness<sup>9</sup>. In the health conservation study on 132 middle-aged adults, wisdom was confirmed to be the most important predictive factor. In addition, health promoting behavior, perceived health status, and depression were highly correlated with each other and also turned out to be the most influential variables<sup>7,10,11</sup>. Considering aforementioned matters, identifying the correlation among health conservation, health promoting behaviors, perceived health status, depression, and wisdom on middle-aged women and also major influential variables seems to be of a major concern of nurses for managing the health status of women.

Therefore, this study is intended to clarify the correlation among health promoting behaviors, perceived health status, depression, wisdom, and health conservation, and predictive variables of health conservation in consideration of studies proceeded without separation of genders in the past.

**Particular research purposes are as follows:**

- Identify the degree of health promoting behaviors, perceived health status, depression, wisdom, and health conservation of middle-aged women,
- Identify the difference of degree of health conservation according to general characteristics of middle-aged women,
- Identify the relationship among health promoting behaviors, perceived health status, depression,

wisdom, and health conservation of middle-aged women, and

- Identify predictive factors that influence on health conservation of middle-aged women.

## 2. Methods

### 2.1 Research Design

This study is the secondary data analysis research in the use of resources of health conservation influential factors<sup>7</sup> to clarify the influence of health promoting behaviors, perceived health status, depression, and wisdom on health conservation of middle-aged women.

### 2.2 Subjects and Ethical Consideration

This study has selected 84 middle-aged women from data of health conservation influential factors<sup>7</sup> of middle-aged women as subjects. Subjects were middle-aged women residing in the city C and D in the preliminary study. We have explained the objective of study prior to collecting data from them and also how they were able to withdraw or suspend the research if they did not want. In addition, we have made them fill out the written agreement for guaranteeing the anonymity and autonomy of subjects and also how collected data were used only for the research purpose prior to distributing survey copies. After obtaining the approval from life ethical deliberative committee at University K (IRB No. KNU\_IRB\_2016-20) in terms of contents and methods of this study, research ethical instructions have been followed during the research period.

### 2.3 Instruments

Tools used in the preliminary research<sup>7</sup> are as follows.

#### 2.3.1 Health Promoting Behavior

Tool was modified by Suh<sup>12</sup> from Health Promoting Lifestyle Profile (HPLP) developed by Walker et.al.<sup>13</sup> and was comprised of 42 questions in 5 score criteria. Each of the questions was from score 1 for 'strongly disagree' to score 5 for 'strongly agree.' The higher the score is, the higher the degree of practicing health promoting behaviors is. In this study, Cronbach's  $\alpha = .91$  was derived.

#### 2.3.2 Perceived Health Status

This tool<sup>14</sup> was developed by Speake et.al. with three

questions that are comprised of recognition of current health status, health status a year ago, and health status in comparison with others in the same age. Each of the questions ranges from 'very bad' for score 1 to 'very good' for score 5. The higher the score is, the better the health condition is. In this study, Cronbach's  $\alpha=.83$  was derived.

### 2.3.3 Depression

Integrated Korean version by CES-D (Center for Epidemiologic Studied Depression Scale), was used<sup>15</sup>. This was comprised of 18 questions ranging from 'less than one day' for score 0 to 'more than five days' for score 3 in Likert criteria. The higher the score is, the higher the depression is. In this study, Cronbach's  $\alpha=.68$  was derived.

### 2.3.4 Wisdom

It is the 'criteria of wisdom of Korean elderly citizens'<sup>16</sup> developed by each of the questions is in 4-score criteria ranging from 'strongly disagree' for score 1 to 'strongly agree' for score 4. The higher the score is, the higher the wisdom is. In this study, Cronbach's  $\alpha=.89$  was derived.

### 2.3.5 Health Conservation

It is the health conservation criterion developed by Sungand is comprised of 37 questions<sup>17</sup>. Each of the questions is worth 4 points including 'strongly disagree' as point 1 to 'strongly agree' as point 4. The higher the score, the higher the level of health conservation is. In this study, Cronbach's  $\alpha=.84$  was derived.

## 2.4 Data Collection

Primary analysis data were used. Primary analysis data have been collected from September 1<sup>st</sup> to October 30<sup>th</sup>, 2015. Visiting the parks and physical education facilities located in the city of C in Chungbuk and city of K in Chungnam, we have explained the objective of this study to appropriate subjects for qualification, asked for their agreement, distributed structured survey copies, and had subjects filled them.

## 2.5 Data Analysis

SPSS Win 21.0 program was used for statistical process. General characteristics have been analyzed by using descriptive statistics including real number, percentage, average, and standard deviation. Health enhancing behaviors perceived health status, depression, wisdom,

and degree of health conservation of subjects have been analyzed in the use of descriptive statistics with average and standard deviation. The difference of health conservation according to general characteristics was analyzed with Pearson's Correlation Coefficient. Identification of factors that influenced on the health conservation of middle-aged women was analyzed in the use of stepwise multiple regression analysis.

## 3. Results

This study used some of the data used in study<sup>7</sup>. The secondary analysis that used the foregoing data for the purpose of this study was as follows.

### 3.1 General Characteristics of Subjects

Average age of middle-aged women was 46( $\pm 5.60$ ), and 81.4% (71) of them had spouses. 72.6% (61) of them were college graduate or above, and 81.0% (68) of them had job. 66.7% (56) of them had religion, and 73.8% (62) had religion. In addition, 79.7% (67) of them exercised (Table 1).

**Table 1.** General characteristics of middle-aged women. (N=84)

Characteristics	Classification	N(%)	M $\pm$ SD
Age	40-49	58(69.0)	46.7 $\pm$ 5.60
	50-59	26(31.0)	
Spouse	Yes	71(81.4)	
	No	13(15.5)	
Academic background	College graduates or less	23(27.4)	
	College graduate of above	61(72.6)	
Career	Yes	68(81.0)	
	No	16(19.0)	
Career type	Professionals	30(35.7)	
	Office workers	5(6.0)	
	Teachers	10(11.9)	
	Self-owned business	7(8.3)	
	Public servants	3(3.6)	
	Sales and service	4(4.8)	
	Others	9(10.7)	
	No	16(19.0)	
Religion	Yes	56(66.7)	
	No	28(33.3)	
Number of disease	No	62(73.8)	
	1	17(20.2)	
	2 or above	5(6.0)	
Whether to exercise	Yes	67(79.7)	
	No	17(20.3)	

### 3.2 Degree of Health Promoting behaviors, Perceived Health Status, Depression, Wisdom, and Health Conservation of Middle-Aged Women

Health promoting behavior of middle age was 3.41 (1~5) that was higher than the average, and perceived health condition was 3.23 (1~5) that was higher than the average. Depression of middle-aged women was 0.49 (0~3), and wisdom was 2.98 (1~4) that was higher than the average. Health conservation was 2.86 (1~4) that was higher than the average (Table 2).

**Table 2.** Degree of health promoting behavior, perceived health status, depression, wisdom, and health conservation of middle-aged women. (N=84)

Variables	M±SD	Range
Health promoting behaviors	3.41±0.46	1~5
Perceived health status	3.23±0.70	1~5
Depression	0.49±0.70	0~3
Wisdom	2.98±0.31	1~4
Health conservation	2.86±0.29	1~4

### 3.3 Difference of Health Conservation from General Characteristics of Middle-Aged Women

There was no statistically significant difference on health conservation of middle-aged women in the age, spouse, and academic background, whether to have religion, and exercise (Table 3).

**Table 4.** Correlation among health promoting behaviors, perceived health status, depression, wisdom, and health conservation of middle-aged women

	Health promoting behavior	Perceived health status	Depression	Wisdom	Health conservation
	r(p)	r(p)	r(p)	r(p)	r(p)
Health promoting behaviors	1				
Perceived health status	.36(.001)	1			
Depression	-.32(.003)	-.09(.434)	1		
Wisdom	.61(<.001)	.28(.009)	-.19(.078)	1	
Health preservation	.63(<.001)	.43(<.001)	-.35(.001)	.65(<.001)	1

represented statistically significant correlation. In other words, the more they participate in health promoting behavior, the higher they perceived their health status. The lower the depression was, and the higher the wisdom was, the higher the health conservation of middle-aged women was (Table 4).

### 3.5 Predictive Factors of Health Conservation of Middle-Aged Women

In order to identify predictive factors that influenced

**Table 3.** Difference of health conservation from general characteristics of middle-aged women

Characteristics	Range	M±SD	t or F	p
Age	40-49	2.84±0.28	-1.01	.317
	50-59	2.91±0.31		
Spouse	Yes	2.86±0.28	0.23	.819
	No	2.84±0.34		
Education	College graduate or below	2.81±0.28	-0.89	.377
	College graduate or above	2.88±0.29		
Career	Yes	2.83±0.25	-0.52	.604
	No	2.87±0.30		
Religion	Yes	2.84±0.33	-0.34	.736
	No	2.87±0.26		
Number of disease at present	No	2.88±0.23	1.10	.299
	More than 1	2.80±0.29		
Exercise	Yes	2.87±0.29	0.69	.407
	No	2.81±0.27		

### Relationship among Health Promoting Behavior, Perceived Health Status, Depression, Wisdom, and Health Conservation of Middle-Aged Women

Health promoting behavior and health conservation (r=.63, p<.001), perceived health status and health conservation (r=.43, p<.001), depression and health conservation (r=-.35, p=.001), and wisdom and health conservation (r=.65, p<.001) of middle-aged women

on health conservation of middle-aged women, major variables of this study; health promoting behavior, perceived health condition, depression, and wisdom have been analyzed according to multiple regressions. According to the result, Durbin-Watson statistical value was 2.202 that fulfilled independence of residuals. According to the result of testing the multi-collinearity among independent variables, tolerance turned out to be .553 ~ .896 that was less than 1.0. Variance Inflation Factor (VIF) turned out to be 1.116 to 1.809 that was less than 10.

Therefore, there was no issue on multi-collinearity among independent variables.

As for variables that influenced on health conservation of middle-aged women, wisdom was 42.7% ( $\beta=.410$ ,  $p<.001$ ) followed by 8.4% ( $\beta=.248$ ,  $p=.014$ ) for health promoting behavior, 3.4% ( $\beta=-.176$ ,  $p=.026$ ) for depression, and 2.8% ( $\beta=.204$ ,  $p=.012$ ) for perceived health status. Therefore, total explanatory power on health conservation was 57.3% (Table 5).

**Table 5.** Predictive factors influencing on health conservation of middle-aged women

Variables	B	SE	$\beta$	t	p
Constant	.981	.219		4.478	<.001
Wisdom	.375	.085	.410	4.411	<.001
Health promoting behavior	.155	.062	.248	2.510	.014
Depression	-.072	.032	-.176	-2.269	.026
Perceived health status	.084	.033	.204	2.578	.012

$R^2=.573$ , Adj  $R^2=.551$ ,  $F=26.460$ ,  $p<.001$

## 4. Discussion

Humans are required to preserve the health requirements in combination of aforementioned factors to maintain healthy status as an existence of structural, individual, social and energy integration. In addition, they are required to well-balance and integrate all four factors<sup>8,18</sup>. This study was intended to identify the degree of health status by middle-aged women as well as health promoting behaviors, perceived health status, and relationship between depression or wisdom and health conservation, analyze the influence of them on the health conservation, and provide fundamental resources for improvement of life quality and healthy later years of middle-aged-women.

Health promoting behavior and perceived health condition of middle-aged women turned out to be 3.41 and 3.23, respectively, that were higher than the average. Depression was as low as 0.49, and wisdom was 2.98. In addition, health conservation was 2.86 that were higher than the average. Such results were all higher than the outcome from a study conducted by on 154 old people including 2.83 of perceived health condition, 2.84 of wisdom, and 2.65 of health conservation<sup>19</sup>. Therefore, it was confirmed that age was an important factor for health-related elements. Hereupon, it was revealed that health needed to be managed from the early ages while preparing for later years at least from the middle age. In addition,

according to the result of preliminary study conducted by using the same tools<sup>20</sup>, health promoting behavior turned out to be 3.38 followed by 3.21 for perceived health, 0.44 for depression, 2.95 for wisdom, and 2.85 for health conservation. This represents that health status need to be preserved when one is healthy since middle-aged people tend to have more of health-related issues since middle-aged adults including middle-aged men had higher scores than the elderly citizens.

The level of health conservation of middle-aged women according to general characteristics had no significant difference. According to the result of study conducted by on female office workers about quality of life in terms of health status, there was no difference in the statistically significant level on health-related life quality according to various general characteristics including age, marital status, family type, education level, and the number of son/daughter<sup>20</sup>. Therefore, it turned out to be consistent with the result from this study. According to aforementioned results, health-related management and life quality of women tend to be related with and influenced by physical, mental/psychological, social and cognitive factors including wisdom, health promoting behaviors, depression, and perceived health status as an independent variable over general characteristics regardless of early adulthood or middle age. Assuming that most of the women tend to have their health conservations and life qualities changed by factors related to families or works instead of general and personal characteristics while serving as a leading role at home marrying with their spouses, becoming pregnant, giving a baby birth, and taking care of their family members as they age, there must be more researches for cultivating the factors that can improve health conservation. Therefore, nurses are required to make an effort for application of arbitration in practice by utilizing the factors revealed in the studies.

According to the result of analysis on correlation among health promoting behaviors, perceived health status, depression, wisdom, and health conservation of middle-aged women, the higher the health promoting behaviors, perceived health status, and wisdom, the higher the degree of health preservation was. The lower the depression was, the higher the level of health conservation was. In addition, as for factors that influenced on health conservation, wisdom had the highest explanatory power. If adding depression and perceived health status, they all explained about health conservation for 57.3%.

According to the result of whether there was a difference of wisdom among age groups according to 653 juveniles, middle-aged people, and the elderly citizens, Kim & Min represented that wisdom of the middle-aged people and the elderly citizens turned out to be higher in the statistically significant level, but there was no difference between the middle-aged people and the elderly citizens<sup>21</sup>. In addition, among wisdom of middle-aged and the elderly citizens, sub-areas including moderation, balance, positive life attitude, sympathetic interpersonal relationship, and adjustment were related with each other and regarded as an important factor for leading a life. Therefore, middle-aged adults place high priority on wisdom that is an important factor for well-adjusting in life and enjoying successful later years. Hereupon, it is assumed that women who are more sentimental and emotional tend to put emphasis on wisdom for health management. According to the study by wisdom turned out to serve as a mediating effect in the relationship between health promoting behaviors and health conservation among middle-aged adults and also as a pivotal role in health conservation in the middle ages<sup>7</sup>. Wisdom tends to have a positive aspect that is not restricted on the development in the life journey and is acquired from experience in life while requiring mature thinking process. Therefore, aging helps develop wisdom and serves as an important predictive factor for improvement of health conservation of middle-aged women. Hereupon, it supports the result of this study.

In addition, Sohn indicated that perceived health condition was the factor for predicting the health-related life quality of married female office workers, and health promoting behavior was the significant factor in predicting health-related life quality<sup>22</sup>. Indicated that health promoting behavior and perceived health status significantly influenced on the life satisfaction, and health promoting behavior was the most important influential factor<sup>23</sup>. In<sup>21</sup> and<sup>22</sup> have conducted representing that the most important predictive factor of life quality was health promoting behavior<sup>24-26</sup>. It was similar with the result of this study. This implies that the higher the level of health promoting behavior, the more health is improved. In addition, considering how health promoting behavior serves as an important role in daily lives regardless of gender and middle age, health promoting behavior is more desperately important for middle-aged women in a seemingly dangerous phase of life cycle, and nurses are required to actively utilize plans for enhancing health

status<sup>27</sup>. In addition, according to the result of study by female office workers represented positive correlation between healths promoting behavior/perceived health status and health-related life quality<sup>20</sup>. Therefore, it turned out that the more one perceived how he/she well managed their health promoting behaviors, the higher the life quality was. The result that health promoting behavior and perceived health condition were important influential factors of life quality was consistent with the result of this study. Since it was the result of study that 66.5% of subjects were middle-aged women even though women in the early adulthood before middle-age were included, it is anticipated for follow-up study in the use of such variables to be conducted only on middle-aged women in the future.

According to the result of study conducted by on 230 middle-aged adults, there was a difference on life quality depending on gender<sup>28</sup>. Life quality was lower on women than men, and there was a negative correlation with depression among middle-aged adults. In addition, depression was the most influential factor on the life quality. This implies that the lower the depression is among middle-aged adults, the higher the life quality is. Therefore, it is feasible to maintain and enhance health status when controlling the depression.

According to the result of study conducted by on 160 adults, life quality was the most related with symptoms of depression<sup>29</sup>. The higher the degree of depression was, the lower the life quality was. Therefore, it supported the result of this study that depression was an influential factor of life conservation. Follow-up study is required in dealing with whether depression is related to the health conservation of middle-aged adults, especially including women.

Middle-aged women tend to realize aging symptoms that come unexpected to their lives and feel inconvenience and loneliness. However, they also regard it as a rewarding period by treating aging as a positive part of their life journey<sup>30</sup>. Therefore, mid-life crisis is a period for self-healing courses requiring changes instead of danger or pathological symptoms. Hereupon, they need to make an effort to form an ego for understanding a deep meaning of their lives, experience internal existence, and have thought and attitude guide their lives in a desirable manner and also to prepare for later years and death<sup>31</sup>. Therefore, there is a need to establish the strategies for improving wisdom of middle-aged women, support for them to participate in health promoting behaviors in daily lives, make them

realize how day-to-day management improves health status, and develop a health conservation program for psychologically reducing the depression and controlling their mind.

This study is meaningful in that it identified predictive factors for health conservation on middle-aged women by classifying the gender against mid-life crisis and provided fundamental resources and the meaning of health conservation. In addition, this study identified that wisdom was an important factor for guiding the life of middle-aged women as it improved with experience in the life<sup>32</sup>. Therefore, it is desirable to apply wisdom on the research and practice. However, it is suggested to be cautious on interpretation and generalization of the result as data from convenient sampling on middle-aged were used in the secondary analysis study.

## 5. Conclusion

According to the result of this study, it turned out that the higher the health promoting behavior, perceived health status and wisdom was, and the lower the depression, the higher the level of health promoting behavior was. According to the result of factors that influenced on health conservation of middle-aged women, wisdom had the highest explanatory power of 42.7% on health conservation. If adding health promoting behavior, depression, and perceived health status, they came up with the explanatory power of 57.3%.

Especially, wisdom is a multi-dimensional constituting concept including the cognitive, relational, character-related, and transcendental aspects. Therefore, it incorporates creative ability, judgmental power, and virtue. In addition, it also includes an understanding of human nature, truth, and world, knowledge, skills, insight, judgmental power, ethical responsibility, reliability, sympathy, positive attitude on relational dimension, interpersonal relationship style, and communication skills such as listening-up. Therefore, middle-aged women are required to understand wisdom factors in the life journey, make an effort to improve them, and help health conservation. Furthermore, they are also required to make an effort to positively recognize health status by continuously performing health promoting behavior and reducing the depression.

It is suggested that nurses develop the nursing mediation program for middle-aged women including variables such as wisdom, health promoting behaviors,

depression, and recognition of health to maintain and improve health and increase life quality of middle-aged women and apply them to the practice and also continue various researches about health conservation of middle-aged women.

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