Original Article

Using the Readiness Concept and Pender's Health Promotion Model to Predict the Preparation Behavior towards Healthy Aging of Menopausal Women in the Northern Region of Thailand

Mujjalin Pangsiri Mph[1], Civilaiz Wanaratwichit DrPh[1], Prayoon Khamja MD[2]

[1] Faculty of Public Health, Naresuan University, Phitsanulok, Thailand

[2] Sanpatong Hospital, Chiang Mai, Thailand

Objective: To predict the effects of the preparation behavior toward healthy aging for menopausal women in the northern region of Thailand.

Materials and Methods: Three hundred three menopausal women, aged 45 to 59 years old domiciled in the northern region of Thailand, were included in this study. The prediction research design methodology is used to describe the collection and analysis of the quantitative data. The questionnaire is based on the readiness of postmenopausal women toward healthy aging and includes physical, mental, social, and environmental health. After being selected, the relational variables and quantitative data of the menopausal women was analyzed with the power to predict factors resulted using multiple stepwise regression analysis.

Results: Using multiple regression coefficients, factors affecting the preparation of menopausal women toward healthy aging were found to have variables that contributed to predicting the readiness behaviors of menopausal women. They were sorted according to the ability to explain the predictive power of health preparedness behavior from the selected variables into the descending analysis as family support, community support, income, self-efficacy, good attitudes for aging, medical and public health services, marital status as widowed or abandoned, and leadership roles. The variables were able to predict the preparation for healthy aging behaviors of menopausal women at 63.9%.

Conclusion: Menopausal women need support and assistance in the preparation process toward healthy aging according to predictable variables, which is a concrete form of activity.

Keywords: Menopausal women; The preparation behavior; Healthy aging; The readiness concept

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Healthy aging, based on the concept of well-being, is described as "the process of developing and maintaining the ability to conduct activities for the well-being of the elderly" (WHO 2015). The goal is the ability to perform activities manually, described as functional ability. Thailand is an aging society since 2005[(1)]. It is expected to become a "Complete aged society" in 2021 and projected to become a "Super aged society" by 2031. Having too many elderly people is seen as a problem for the elderly. Nowadays, elderly people are facing various problems in addition to deteriorating body systems. Major problems include 1) physical health problems such as acute brain symptoms, cardiovascular disease such as high blood pressure, and diabetes mellitus type 2, 2) mental health problems that are often about changing social roles or problems with offspring, which could cause depression leading to severe mental disorders resulting to poor quality of life, and 3) problems with family members and society. The prevailing health problems of the elderly reflect inappropriate pre-aging behaviors, which can also be caused by the kind of society surrounding them. Health problems of the elderly are due to bad health habits that have been practiced in the past. If the elderlies are not prepared for the changes in society or if they do not accept social changes, it will cause physical health problems and may also affect their minds. At this stage, elderly people may experience depression or show some indications of suicidal behavior.

Correspondence to:

Pangsiri M.

Faculty of Public Health, Naresuan University, 99 Moo 9, Phitsanulok 65000, Thailand.

Phone: +66-55-967444, **Fax**: +66-55-967333

Email: mujjalinp60@nu.ac.th

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Between 2010 and 2017, the demographics, or the ratio of the pre-aging population from 40 to 59 years old continued to increase from 2013, 2015, and 2017 at 23.1, 23.3, and 23.5 percent[2], respectively. It is important to note that this population group will be entering into the elderly group shortly. More importantly, the data indicate that if the 40 to 59 years old age group were not prepared, elderly health problems may significantly increase and would create huge trouble for the aging society in the future. Therefore, prioritizing the preparation of people who are nearly becoming elderly is essential. At the national level, it was found that Thailand's preparation has not yet focused on a concrete policy. Thailand's policy for elderly care is still focused on strategy 2 in the national elderly development plan 2002 to 2021. Strategy 2 includes a health promotion policy to prevent illness and making the elderly able to take care of themselves. The strategy also includes empowering the elderly organization and help provide a sustainable adequate income for the elderly, and support and access to media and information. The policy does not focus on the preparation of pre-aging. It is just a policy that raises awareness of being an elderly person and continues to focus on the activities to promote operating businesses for the elderly for local agencies[3].

A study on the awareness and preparation towards aging for Thai people before reaching the age of 50 to 59 years showed that there were preparations for the elderly. Though, most of them were at the moderate level[4]. The pre-aging group was found to have the same health problems according to "The Health Problems as Determinants of Retirement statistics"[5], where 20% of the sample had very poor health conditions before retirement. The study also discovered that high blood pressure is the most common chronic diseases in adulthood. Men are more likely to suffer from cardiovascular diseases. At the same time, women commonly suffer from high blood pressure or other chronic conditions, such as diabetes[6]. Therefore, the female population approaching the aging stage and experiencing natural changes is determined to be the pre-aging preparation target.

Foreign research has found that health risk behaviors such as drinking, smoking, lack of exercise or inactivity, and nutritional problems had a more significant influence on the illness and the cause of age-related disability in women than in men[7]. A study on the specific problems of menopausal women revealed that they could not practice healthy self-living behaviors[8], they lack self-esteem skills, they need nutritional support, they need to do physical activities to cope with stress, and they need to learn and participate in self-management of health services. Those are consistent with reducing the health problems of pre-aging and pre-retirement people[5,6]. Those studies indicated that there was not much preparation done for adults entering the elderly stage. Elderly people having hypertension or other chronic diseases may also suffer other health problems due to unhealthy behaviors. If these poor health habits went on, future senior citizens' or elderly people's self-care lifestyle might be difficult. Therefore, people should be suitably prepared for the elderly stage. The research showed that the optimal preparation period must be at least ten years as it is about forming and developing a healthy behavior of an individual. Good health habits take time to develop and require commitment before a behavior change could happen. Therefore, the present research determined that the population that needs most preparation into entering the elderly stage are females at their menopausal stage as they are experiencing a natural change. In the study from the causes or factors affecting self-care behavior from the meta-analysis research on health-promoting behaviors of Pender's Health Promotion model concept[9], it was found that most variables in the model affect the healthy behavior practice, whether it is a personal feature cognition of related behaviors or interpersonal influence.

Accordingly, the present study predicted the preparation behavior toward healthy aging of menopausal women in the northern region of Thailand, using the readiness concept and Pender's health promotion model. The present study results would help predict factors that influence the preparation of menopausal women and could be used for further study in promoting readiness behaviors for healthy aging in the future.

Materials and Methods

Research design

The present quantitative research with prediction research design methodology was employed for data collection between May and June 2020 to predict the effects of the preparation behavior toward healthy aging for 303 menopausal women aged between 45 and 59, in the northern region of Thailand. The readiness concept[10] includes three elements of readiness and are personal maturity, training and preparation interest or motivation, and Pender's health promotion model[9]. This study is using the

readiness concept because it focuses on the individual characteristics, experiences, behavioral, specific cognitions and affect, and behavioral outcome. It would be helpful to predict and design activities to support the preparedness behavior in the present and effect in the future.

Participants (sample size)

The study population was the menopausal women, aged 45 to 59 years old, domiciled in Sanpatong district, Chiangmai province. The number of samples determined was 303 menopausal women from the study population of 8,173 menopausal women by selecting from the sample size calculation using the population mean estimation formula[11].

Research instrument

A questionnaire was used to measure preparedness behaviors of menopausal women towards healthy aging and included physical, mental, social, and environmental health and spirituality. The Pender's Health Promotion Theory, 2006 revision[9] was utilized to study the factors involved to promote the practice of health behaviors. Both personal and behavioral factors related to the preparation and the social support factors were used as the framework. The factors obtained from the literature review were used as study variables consisting of independent and dependent variables.

The independent variables studied were personal, behavioral, and social support factors. The personal factors included age, religion, marital status, education level, primary occupation, income and sufficiency for family expenditures, number of family members, number of years in menopause period, medical illness or congenital disease, annual health check, menopausal symptoms, and role in the society. The behavioral factors related to preparation comprised perceived benefits of the practice, perceived barriers to practice, self-efficacy, health perceptions of aging, and positive attitude towards healthy aging. The social support factors include beliefs and culture, family support, community support, environmental support, and medical and public health service systems.

The dependent variable was the readiness behavior of menopausal women towards healthy aging. Personality, behavior, and social factors to predict the preparation behavior's effect on healthy aging were assessed using the 5 Likert scales of agreement. Menopausal women were asked to fill out the five-facet Likert scale agreement questionnaire ranging from 1 as strongly disagree to 5 as strongly agree.

Data collection

Before data collection, a pilot test was carried among 30 menopausal women at a similar district. The findings illustrated that the reliability alpha of Cronbach's coefficient was 0.89 for behavioral and social factors and the preparation behavior for the healthy aging questionnaire. The participants were approached by the researcher to explain the purpose of the study. After the participants gave their written consent, a convenient date appointment was set for data collection.

Data analysis

Pearson correlation coefficient was used to explain the relationship of variables. The multiple regression analysis with stepwise (MRA) was used to explain the power of prediction between independent and dependent variables. The Statistical Package for Social Sciences (SPSS) software was used to analyze the data[12].

The protection of the sample group

After the Human Research Ethics Committee of Naresuan University with IRB number 0016/63 for the protection of the sample group (March 4, 2020 to March 4, 2021 and was renewed until March 4, 2022) was approved, the researchers collected the data following on the objectives and protecting the name of the participant. The data were kept confidential and would not be disclosed. The study did not have any impact for participant. Questionnaires and data were stored only by the researchers and will be destroyed within one year after the research was completed.

Results

The present study involved 303 menopausal women. Most of them were 50 years or older ranging from 45 to 59. Most of the participants were married with primary school education. Their income average per month was about 5,000 to 10,000 Baht and sufficient for spending. Most of the participants' family had four members. Participants had their menopausal period for less than five years. Most of the participants have no menopausal symptoms. Most of them did not have roles in society.

For the behavioral factors related to preparation, the result of the sample group's perception of recognition of practical benefits was at high level (mean 4.15; SD 0.50), the recognition of practical barriers was at Low level (mean 2.22; SD 0.61), and

Table 1. The mean and standard deviation of the social support factors related to preparation

Variables	Mean	Standard deviation	Result
Beliefs and culture	3.41	0.49	High
Family support	3.60	0.57	High
Community support	2.62	0.47	Mid
Environmental support	3.57	0.68	High
Medical and public health service systems	2.32	0.56	Low

the self-efficacy was at high level (mean 3.62; SD 0.71).

For the social support factors related to preparation, the sample group's opinion on beliefs and culture was at high level (mean 3.41; SD 0.49), family support was also at high level (mean 3.60; SD 0.57), community support was at Mid-level (mean 2.62; SD 0.47), environmental support at high level (mean 3.57; SD 0.68), and medical and public health service systems was at the Low level (mean 2.32; SD 0.56) as detailed in Table 1.

The preparedness behaviors of the menopausal women toward healthy aging included physical, mental, social, environmental, and spiritual health. The sample group had opinions on the whole preparedness behaviors at middle level (mean 3.09; SD 0.39).

The factors affecting the preparation of menopausal women toward healthy aging were analyzed by predictions based on personal character factors, behavioral factors related to preparation, social support factor, and the preparation behavior of menopausal women. The analysis of multiple regression coefficients showed that factors affecting the preparation of menopausal women toward healthy aging contained variables that contributed to predicting the readiness behaviors of menopausal women, which was 63.9% statistically significant at the 0.05 level. They were sorted according to the ability to explain the predictive power of health preparedness behavior from the selected variables into the descending analysis. The results interpreted from the regression coefficient were varied. The first variable was the family support, the second variable was community support, the third variable was income, the fourth variable was self-efficacy, the fifth variable was attitude towards being elderly, the sixth variable was medical and public health service system, the seventh variable was marital status as widowed or abandoned, and the last variable was female leadership roles as detailed in Table 2.

The equation for all the variables to calculate the variables that predict the preparation behaviors of menopausal women toward healthy aging was:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8$$

The preparation behaviors of menopausal women toward healthy aging was 0.956 + 0.344 (family support) + 0.129 (community support) + 0.156 (income) + 0.104 (self-efficacy) + 0.143 (attitude towards being elderly) + 0.103 (medical and public health service system) + 0.146 (widowed/abandoned status) + 0.190 (female leadership role)

Discussion

Menopausal women who are in the pre-

Table 2. The multiple regression analysis (stepwise) between prediction variables and the preparation of menopausal women toward healthy aging

Prediction variables	R square	R square change	b	Beta	SE b	t	p-value
1. Family support	0.482	0.482	0.344	0.494	0.030	11.595	<0.001
2. Community support	0.537	0.054	0.129	0.151	0.039	3.306	0.001
3. Income	0.569	0.032	0.156	0.148	0.000	3.908	<0.001
4. Self-efficacy	0.595	0.026	0.104	0.185	0.022	4.720	<0.001
5. Attitude towards being elderly	0.612	0.017	0.143	0.165	0.033	4.274	<0.001
6. Medical and public health service system	0.625	0.012	0.103	0.145	0.031	3.328	0.001
7. Marital status (widowed/abandoned)	0.634	0.009	0.146	0.101	0.052	2.800	0.005
8. Female leadership role	0.639	0.005	0.190	0.072	0.094	2.012	0.045

Constant (a)=0.956, R square=0.639, Adjust R square=0.629, F=4.048, p<0.001

R square=coefficient of multiple determination; R square change=adjusted R square (adjusted coefficient of multiple determination); b=unstandardized coefficient; Beta=standardized coefficient; SE b=standard error of the predicted variable that fits into the equation; t=it is a statistic used to test, which independent variables can be used to predict the dependent

Variable and p-value=significant value

symptomatic phase during and after menopause. There are many changes in the body due to the changes in hormone levels and affect other areas such as the mind, emotion, and society. Those changes affect their quality of life, personal confidence, facing potential health risks that affect society, and their lifestyle, which will affect the entry into aging without quality. The first variable was the family support to explain the variance of 48.2%. It means that family support positively affects the preparedness behavior of menopausal women. They must be understanding, empathetic, and accepting of the physical and mental health and continued acceptance when entering the elderly, and the family should provide support, stimulation, and encouragement to them too. The second variable was community support to explain the variance increase to 53.7%. It means that the community support can provide support for advice about health information and provide additional career development from municipalities or sub-district administrative organizations in the area. The third variable was income. It explains the variance increase to 56.9%. It means that the income is sufficient for self-efficacy. As a result, they can participate in activities and practice to prepare their behavior with confidence and peace of mind. The fourth variable was self-efficacy, and this could explain the variance increase to 59.5%. It means that the menopausal woman who is confident and believes in her own potential, open-minded to receive information can practice behaviors to prepare for becoming an elderly person and enabling them to develop themselves into strong elder in the future. The fifth variable was attitude towards being elderly. This could explain the variance increase to 61.2%. It means that the menopausal woman who had experienced with the life of an elderly person since she was menopause learned the development and the changing from both the elderly in good and bad health, attitudes or feelings towards becoming an elderly person. They realize that they will be elderly in the future and affects the choice of behavior to prepare for being healthy aging. The sixth variable was medical and public health service system, and this could explain the variance increase to 62.5%. It means that the medical and public health service system has a specific proactive service system in preparing them to become healthy aging, will make them understand, confident, and aware of their own potential and ability. The service is ready and committed to supporting all dimensions of health preparedness for them. The seventh variable was marital status as widowed or abandoned, which had a greater effect on health preparedness behavior than the other. It can explain the variance increase to 63.4%, which means that the menopausal woman who is widowed or abandoned will fear poor health knowing that they cannot help themselves. This makes the menopause women active and alert to take care of themselves and has an intention to prepare for healthy aging behavior. The last variable was female leadership roles. It could explain the variance increase to 63.9%. It means that the women's leadership roles have a positive effect on preparedness behavior because it will give the opportunity to participate in social activities, exchange, and learn how to take care of themself with other menopausal women in different areas, and have the opportunity to learn about the practice of healthy behaviors that are suitable for them.

Menopausal women in the pre-symptomatic phase during and after menopause experience various changes in their bodies due to the changes in hormone levels. These changes may affect their mind, emotion, and the society they live in and eventually affect their quality of life and personal confidence. They will also face potential health risks that could affect society and their lifestyle, impacting their entry into aging. The existing health service system in Thailand does not have concrete activities that prevent chronic diseases. This lack of concrete activities has resulted in long-term problems, especially in self-care, for middle-aged women approaching the menopausal stage. Their quality of life will continually be affected, particularly when they reach the elderly stage. Therefore, the emphasis is placed on creating activities that can lead to the development of good health behavior practice skills. It will help menopausal women play the role of having to bear the burden of caring for their families and taking part in creating a society for aging women. A study found that the health behaviors of menopausal women are affected by many factors. These factors include personality traits such as gender, education status, and income, related behavioral factors, which include knowledge of menopausal women on self-care behavior, perception of risk of disease, self-care ability, and factors of interpersonal influence or social support, which comprised of community support, family support, and environmental support[13].

There is no clear evidence on preparations for menopausal women. There is health promotion through the health service system that focuses on treating menopausal symptoms at a menopausal clinic model in hospitals at all levels[14]. Menopausal women were found to 1) lack the ability to practice healthy self-

living behaviors[15], 2) lack the knowledge regarding support and understanding of the menopause state, natural fertility, genetics and culture, and screening for future chronic disease risk[15,16], 3) lack the knowledge on self-worth skills, promotion of nutrition, physical activity coping with stress and participation in self-management of healthcare services[17], and 4) lack support and network with community health personnel to advise on the training processes, and proposed policies for sustainable practice[14].

In the current study, the participants gave their opinion on the perception of behavioral factors related to the preparation in health perception of being an elderly and positive attitude towards aging at the high level. This means that they are interested in healthy aging but need support, particularly on the prediction variables. The preparation of menopausal women toward healthy aging showed results about personal character factors such as status, income, and female leadership role, behavioral factors related to preparation that include self-efficacy, attitude towards being elderly, and social support factors that comprised of family support, community support, and medical and public health service system. For that reason, it is imperative time to have a preparation model for menopausal women toward healthy aging, designed to be suitable with the current socioeconomic situations, lifestyles, and cultures.

Conclusion

The present study has found the preparation behaviors of menopausal women toward healthy aging are at the mid-level. They must be provided with more support in preparation for healthy aging. Support for menopausal women include family support, community support, and medical and public health service system. Furthermore, behaviors related to preparation should be stimulated. These behaviors include self-efficacy, perceived benefits of the practice, and perceived barriers to practice. Menopausal women should also receive additional skills and knowledge in health awareness of healthy aging and positive attitudes towards being elderly. Therefore, an appropriate guideline on the preparation model of menopausal women toward healthy aging must be developed.

Limitation and recommendation

The current study showed results among menopausal women in Chiangmai province, Thailand. The situation in other contexts may be different and would be subject to different criteria and results. These results may not be relevant nationwide, as Thailand has different socioeconomic situations, lifestyles, and cultures. Despite these caveats, the findings could serve as a baseline for comparison with future studies, especially in Northern Thailand, where recall bias was also a limitation. The results could be used to contribute to the preparation programs toward aging, especially in primary care cluster centers in the locality.

What is already known on this topic?

Previously, becoming a quality elderly had to include healthy, participation, and security but all three pillars required the competence of the elderly to reach that goal. Therefore, the capability of the elderly has been developed using healthy aging, which the goal is the ability to perform activities manually or functional ability.

It would be too late to generate functional ability until these things happen because the behaviors can be prepared before entering the elderly group.

What this study adds?

This research reveals that the personality, the support of the family and community, and the health service system can help menopausal women prepare before entering in the elderly stage. With proper preparation, they become more confident about healthy aging, by using the readiness concept and Pender's health promotion model, which can predict the result for 63.9%.

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Conflicts of interest

The authors reported no potential conflict of interest.

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