การเตรียมตัวเข้าสู่วัยสูงอายุของพยาบาล: การศึกษาแบบตัดขวาง ในโรงพยาบาลมหาวิทยาลัย จังหวัดนครนายก
Preparing for Ageing among Nurses: A Cross-sectional Study in a University Hospital in Nakhon Nayok Province

นิพนธ์ต้นฉบับ

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วารสารไทยเภสัชศาสตร์และวิทยาการสุขภาพ2563;15(4):266-275.

Original Article

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาระดับการเตรียมตัวเข้าสู่วัยสูงอายุและปัจจัยที่สัมพันธ์กับการเตรียมตัวเข้าสู่วัยสูงอายุของพยาบาลตามหลัก 3 เสาแนวคิดพฤฒพลัง **วิธีการศึกษา:** การวิจัยแบบตัดขวางในพยาบาลที่ปฏิบัติงานโรงพยาบาลมหาวิทยาลัยในจังหวัดนครนายก เมื่อปีพ.ศ. 2560 โดยใช้แบบสอบถามที่ประกอบด้วยตัวแปร เพศ อายุ สถานภาพสมรส การศึกษา หน่วยงาน ประสบการณ์ทำงาน ที่อยู่อาศัย โรคประจำตัว และรายได้ รวมถึงการเตรียมตัวเข้าสู่วัยสูงอายุตามกรอบแนวคิดพฤฒพลัง ด้านสุขภาพ ด้านการมีส่วนร่วมและด้านหลักประกัน **ผลการศึกษา:** แบบสอบถามได้รับการตอบกลับจำนวน 303 ฉบับ จาก 342 ฉบับ อายุเฉลี่ย 29.9 ปี (SD = 6.3) เป็นเพศหญิงร้อยละ 97.7 พบว่าการเตรียมตัวเข้าสู่วัยสูงอายุด้านสุขภาพและด้านการมีส่วนร่วมอยู่ในระดับมาก และด้านหลักประกันอยู่ในระดับปานกลาง ส่วนปัจจัยที่ส่งผลต่อการเตรียมตัวเสาหลักด้านสุขภาพและด้านการมีส่วนร่วมมีลักษณะคล้ายกันคือ กลุ่มอายุ 31 - 59 ปี สถานภาพสมรส การศึกษาปริญญาโท แผนกห้องตรวจโรค ห้องคลอด และหน่วยไตเทียม หน่วยสวนหัวใจ ประสบการณ์การทำงาน 10 ปีขึ้นไป และที่อยู่อาศัยมีบ้านตนเอง ส่วนปัจจัยที่ส่งผลต่อการเตรียมตัวด้านหลักประกันคือการมีรายได้เสริม **สรุป:** การศึกษานี้ชี้ให้เห็นถึงความจำเป็นในการเตรียมความพร้อมด้านหลักประกันให้กับพยาบาล เช่น การวางแผนด้านการเงิน การสร้างรายได้ รวมถึงการตระหนักถึงการสมดุลงานกับการเตรียมชีวิตสู่วัยสูงอายุในอนาคต

คำสำคัญ: เตรียมสูงอายุ, พยาบาล, พฤฒพลัง

Editorial note
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Abstract

Objective: To examine the level of ageing preparation of nurses working in a university hospital according to the three pillars of the Active Ageing Framework and explore factors related to their preparation. **Methods:** With the cross-sectional study design, the sample consisted of nurses working in a university hospital in Nakhon Nayok province in 2017. Data were collected through questionnaires that included such variables as gender, age, marital status, education level, working units, length of work experience, housing, underlying diseases and income as well as the ageing preparation according to the Active Ageing Framework's three pillars, namely health, participation and security. **Results:** A total of 303 out of 342 questionnaires were returned. Participants average age was 29.9 years (SD = 6.3) and 97.7% of them were female. The ageing preparation of the health and participation pillars were at a high level, while that of the security pillar was at a medium level. The preparation of the health and participation pillars was more likely found in those aged between 31 and 59 years old and those who were married, obtained a Master's degree, worked at the outpatient unit, the labor room, the kidney dialysis unit and cardiac care unit, had gained over 10 years' experience and lived in their own homes. The factor that affected the preparation of security was supplemental income. **Conclusion:** There is a need for preparation of the security pillar in financial planning, income improvement, awareness of work-life balance and ageing preparation.

Keywords: ageing preparation, nurses, active ageing

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Introduction

The ageing society situation is emerging all over the world, which has consequently resulted in awareness and preparation for this crisis. The World Health Organization (WHO) predicts that the world population of the elderly or people aged 60 will increase to two trillion by 2050.[1] In Thailand, the ageing society situation is becoming more complex as the ageing rate increases at a very high acceleration. That is, the proportion of the ageing population soared from 6.8% in 1994 to 14.9%, 20.0% and 28.0% in 2014, 2021 and 2031, respectively.[2,3] Therefore, Thailand's policy has focused on taking more care of the elderly because they are considered a vulnerable group given their physical and mental conditions. Preparation before entering old age is expected to effectively promote people's understanding and physical, mental, social, and spiritual readiness for this final stage of human life. Given the significance of preparing the world population for understanding and entering the ageing society, WHO has proposed a guideline for responding to the ageing society situation known as the Active Ageing

Framework consisting of three principal pillars namely health, participation, and security.[4]

With regard to the first pillar, health, its aims are to promote people's excellent physical, mental, social and spiritual conditions, prevention and control of risk factors of diseases probably caused by environment and their behaviors, management of their own health as well as access to all health and social services that meet their rights and needs as they age. The second pillar, participation, aims to engage people in both paid and unpaid activities, including economic, social and cultural ones, with their families, community and society in accordance with basic human rights, individual potential, needs and preferences. These activities are expected to encourage them to do good things to themselves, others and the public. The third pillar, security, aims to bring about physical, social and financial security, access to essential services as well as appropriate care and environment according to the needs and rights of elderly people.[4] The faster the preparation for the ageing society situation begins, the more effective it will help them to step into a more effective old age.[5]

In preparation for old age, it is essential that relevant individuals have knowledge and understanding of elderly people, guidance and advice are constantly available, and excellent models promote effective learning and practice. As for medical staff, nurses are health workers who can be role models in preparing elderly people for the ageing process – in other words, their roles cover patient care and health promotion, prevention and rehabilitation. Based on their roles, however, there are many factors involved in this preparation process. Research studies about nurses at hospitals at tertiary level indicate that the nurses defined ageing preparation as consisting of health care, financial management, occupational security, housing, community and social engagement as well as wills and retirement arrangements.[6]

According to the Act on the Elderly, B.E. 2546, elderly persons are those who have attained the age of 60 or over, the age criteria for retirement. As the elderly enter retirement, they will experience considerable changes. The study on "Preretirement Preparation of Professional Nurses, Hospitals, Regional Medical Centers under the Jurisdiction of the Ministry of Public Health" by Rattana-umpa revealed that nurses obtained a good level of health preparation, while their preparation in relation to finance, housing, family and time spent was at a medium level.[7] Her results were interestingly in line with those of several studies in which nurses were found to have an effective preparation for their health due to their knowledge of health and sense of age change. Furthermore, married nurses who have children were more prepared for retirement than childless nurses, and nurses with underlying diseases were significantly more prepared before retirement than those without underlying diseases. Other studies conducted at private hospitals additionally pointed out that nurses' ageing preparation was related to the quality level of life[8], whereas the studies conducted at community hospitals revealed nurses' preparation, including spiritual, psychological, social and physical preparation[9], in descending order.

Based on the literature review, it is confirmed that nurses are health personnel who care for people of all ages and are aware of the current situation of the ageing society and readiness to be prepared for the ageing process. Despite that, they however lack application of the Active Ageing Framework to the ageing preparation. The framework, on the other hand, can point to the relationship between activities and health as well as between health and participation and wellness. It is additionally believed that the framework will lead to an excellent quality of life and physical and mental well-being for quality ageing.

Preparing for the ageing process may involve personal factors. A person's age can influence his awareness of middle age and preparation to stop working, single persons may be better at socio-economic preparation than those with families, those who have a higher education level may know how to maintain good health, and those with income, supplemental income, or a good financial status will have more opportunities to save money to prepare for old age.[10-13] Additionally, organizations can influence one's participation in social and family activities. That is, any organizations in which workdays and vacations are officially announced will enable their staff to enjoy more time with their families and participate in social activities. It is also found that nurses with more than 10 years of work experience become more prepared for health and have increased participation in social activities.[7] Housing, one of the four requisites of life according to Buddhism, should be prepared before one's retirement date or at the beginning of his middle age, otherwise there may be negative consequences if it is prepared in his old age.[14] Illnesses, underlying diseases, participation and social activities are also found to contribute to ageing preparation. Security guanrantees as well as primary and supplemental income are

also significant factors of economic and security preparation.[7] In other words, they can affect money savings or financial planning when one's reaches his retirement age.[15]

It would therefore be necessary to see at what level nurses' ageing preparation is according to the Active Ageing Framework and how nursing groups with different demographic factors prepare themselves for the ageing society situation. The main objective of this research was to examine nurses' ageing preparation by employing the three pillars of the Active Ageing Framework. The selected area of the study is a university hospital in Nakhon Nayok province, Thailand. The results of this study will expectantly lead to a quality approach to preparing for the ageing process and can be formed into an excellent model for health personnel and the general public.

Specific objectives were to examine the level of ageing preparation of nurses working in a university hospital in Nakhon Nayok Province and to explore factors related to the ageing preparation of the nurses working in the university hospital. It was hypothesized that gender, age, marital status, education level, working units, length of work experience, housing, underlying diseases and income affected the nurses' ageing preparation according to the Active Ageing Framework (Figure 1).

The Active Ageing Framework is defined by WHO as the process of effectively increasing chances for health participation and security guarantee to enhance the quality of life of elderly people.[4] The framework consists of three key pillars specifically health, participation and security. Health, the first pillar, is intended to promote one's excellent health through the prevention of diseases, risk factor reduction, health system development as well as the provision of training and education that enables the elderly to rely on themselves. Participation, the second pillar, is intended to create economic, political, social and cultural participation, career opportunities, access to education as well as participation with families and the society, all of which promotes a person's self-esteem. Security, the third pillar, is intended to ensure one's stability in life, housing and social security as well as physical, mental and property protection.[16]

The Active Ageing Framework, therefore, emphasizes the significance of the relationship between activities and health as well as between health and participation and wellness. This framework is expected to bring about an excellent quality of life as well as physical and mental well-being.[17] To achieve these, ageing preparation should begin when one is in his working age or middle age considered a healthy age, and he shows readiness in various fields. Personal factors are, however, crucial for ageing preparation – in other words, while some factors can help promote it, others may unfortunately delay it.

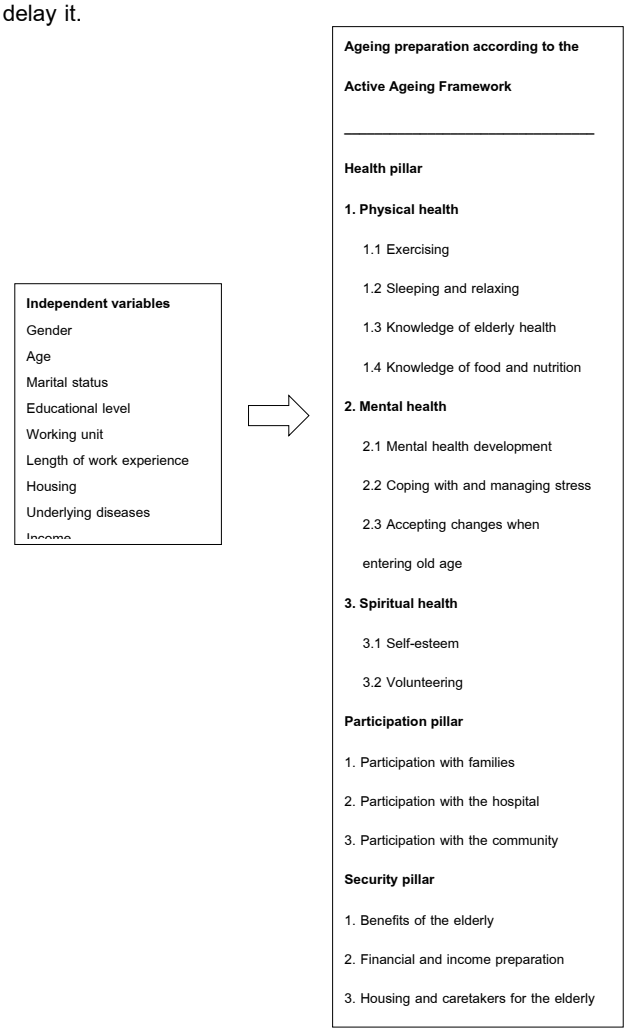

Figure 1 Conceptual framework of this study.

Methods

In this cross-sectional survey, the study population was nurses under the age of 60. The sample consisted of 342 nurses aged between 21 and 59 working in a university hospital in Nakhon Nayok province, Thailand. The data were collected in March 2017. This study was approved by the Human Research Ethics Committee of the Strategic Wisdom and Research Institute, Srinakharinwirot University (approval certificate: SWUEC/E-412/2016, issued on March 7, 2017).

Research instrument

The research instrument was a questionnaire on the ageing preparation according to the Active Ageing Conceptual

Framework consisting of two parts. Part 1 was concerned with personal factors of the respondents including gender, age, weight, height, marital status, education level, working units, age, length of work experience, income, housing and underlying diseases. In this part, there are both multiple choice and fill-in-the-blank questions.

Part 2 was concerned with the ageing preparation. This questionnaire was developed by the investigators as guided by to the Active Ageing Conceptual Framework. This part of the questionnaire included 34 items on the following sub-scales: (1) the ageing preparation based on the health pillar consisting of six items on the physical aspect, five items on the mental aspect, and three items on the spiritual aspect; (2) the ageing preparation based on the participation pillar consisting of four items on participation in family activities, four items on participation in hospital activities, and four items on participation in community activities; and (3) the ageing preparation based on the security pillar consisting of one item on benefits, three items on finance and income, and three items on housing and caretakers.

Response format of the ageing preparation questionnaire was a 5-point Likert-type scale ranging from 1-the lowest, 2-low, 3-moderate, 4-high, and 5-the highest for positive behavior and in a reversed order for the negative ones. Total and sub-total scores ranged from 1 to 5 where higher scores indicate higher ageing preparation. Levels of ageing preparation was also categorized as lowest, low, moderate, high, and the highest corresponding to the total and sub-total scores of 1.00 – 1.80, 1.81 – 2.60, 2.61 – 3.40, 3.41 – 4.20, 4.21 – 5.00 points, respectively, according to Fisher's method.[18]

At the completion of the questionnaire development, the researcher requested three experts for validation. It was found to have excellent validity with a Content Validity Index (CVI) of one. Based on the validation, word usage was adjusted according to the content. The questionnaire was pilot tested with 39 nurses, the total number of nurses in a community hospital in the same study area. The questionnaire was found to obtain a high internal consistency reliability with a Cronbach's alpha coefficient of 0.91.

Upon receiving feedback from the pilot test, certain words and sentences in the questionnaire were revised to be more suitable. At the completion of the revision, the researcher sent a letter to the Director of the target hospital to request a permission for data collection and contacted the chief of nursing staff to clarify research objectives with nursing heads of various departments and wards. When the permission was granted, the researcher delivered copies of the questionnaire to prospective participants in each department and made an appointment with them to request the answered questionnaires back within two to four weeks.

Statistical analysis

Descriptive statistics including frequency with percentage and mean with standard deviation (± SD) were used for demographic, dependent and independent variables. The associations were tested using t-test and ANOVA. Statistical significance was set at a type I error of 5% (*P*-value < 0.05). Data were analyzed using the IBM SPSS Statistics Desktop V22.0 software program (License D0EJ9LL).

Results

Out of the 342 questionnaires delivered, 303 questionnaires were returned, hence representing 88.6% of the total study population (Table 1). According to the general information of the population, 97.7% of them were female with an age range of 26 to 30 (35.6%) and 31 to 59 (34.7%) with a mean age of 29.9 years old (SD = 6.3). Most of them were single (71.6%), obtained a Bachelor's degree (95.7%), had had more than five years' work experience (50.5%), and had no underlying diseases (80.2%). Most of them lived in provided welfare dormitories (66.0%), and their income ranged from 30,000 to 35,000 Baht (28.1%) (Table 1).

Levels of ageing preparation of the nurses according to the Active Ageing Framework

The results showed that the nurses' overall ageing preparation according to the Active Ageing Framework was between a medium and a high level (Table 2). Their ageing preparation based on the health pillar was at a high level, with the physical health aspect at a medium level, and the mental and spiritual aspects at a high level. Their ageing preparation was at a high level, with the participation in family activities and hospital activities at a high level, and the participation in community activities at a medium level. Finally, their ageing preparation was at a medium level. Specifically, their preparation of benefits, finance and income was at a medium level and of housing and caretakers was at a high level (Table 2).

Table 1 General characteristics of the participants (N = 303).

General information	Number	Percent
Gender		
Female	296	97.7
Male	7	2.3
Age (in Years)		
21 – 25	90	29.7
26 – 30	108	35.6
> 31	105	34.7
$\bar{X}$ = 29.9, SD = 6.3		
Marital status		
Single	217	71.6
Married	82	27.1
Widowed/ Divorced/ Separated	4	1.3
Education level		
Bachelor's degree	290	95.7
Master's degree	13	4.3
Working units		
Examination room	29	9.6
Patient wards	240	79.2
Others	34	11.2
Length of work experience (in Years)		
< 5	150	49.5
> 5	153	50.5
Housing		
Homes	103	34.0
Welfare dormitories	200	66.0
Underlying diseases		
No	243	80.2
Yes	60	19.8
Income (THB/month)		
15,000 – 20,000	54	17.8
20,001 – 25,000	38	12.5
25,001 – 30,000	57	18.8
30,001 – 35,000	85	28.1
35,001+	61	20.1
Not specified	8	2.6
Supplemental income		
Yes	49	16.2
No	224	73.9
Not specified	30	9.9

Table 2 The level of ageing preparation of the nurses according to the Active Ageing Framework (N = 303).

Ageing preparations	N	mean	SD	Level
Health pillar	**303**	**3.58**	**0.53**	**High**
Physical health	303	3.30	0.65	Medium
Mental health	303	3.73	0.69	High
Spiritual health	303	3.71	0.58	High
Participation pillar	**303**	**3.54**	**0.64**	**High**
Participation with families	303	4.01	0.67	High
Participation with the hospital	303	3.62	0.70	High
Participation with the community	303	3.00	0.94	Medium
Security pillar	**302**	**3.33**	**0.65**	**Medium**
Benefits	303	3.24	0.93	Medium
Finance and income	303	3.35	0.79	Medium
Housing and caretakers	302	3.41	0.78	High

Factors related to the ageing preparation of the nurses according to the Active Ageing Framework

Ageing preparation based on the HEALTH pillar

The results revealed that factors including age, marital status, education level, working units, length of work experience and housing, were correlated with the ageing preparation based on the health pillar. Nurses aged between 31 and 59 obtained a higher level of health pillar preparation (mean = 3.71 ± 0.59) than those aged between 21 and 30 (mean = 3.51 ± 0.49). Statistical test indicated a significant difference (*P*-value = 0.004). The married participants obtained a higher level of health pillar preparation (mean = 3.71 ± 0.53) than the single counterpart (mean = 3.53 ± 0.52). Statistical test indicated a significant difference (*P*-value = 0.007). Participants with a Master's degree obtained a statistically significant higher level of health pillar preparation (mean = 3.96 ± 0.65) than those with a Bachelor's degree (mean = 3.56 ± 0.52) (*P*-value = 0.007).

The nurses working in the kidney dialysis unit / cardiac care unit and examination room obtained a higher level of health pillar preparation (mean = 3.77 ± 0.50 and 3.69 ± 0.55, prespectively) than those working in the emergency room and the intensive care unit (ICU) (mean = 3.37 ± 0.45 and 3.40 ± 0.53, respectively). Statistical test indicated a significant difference (*P*-value = 0.046). In addition, the nurses who had worked for 10 years or more obtained a statistically significant higher level of health pillar preparation (mean = 3.71 ± 0.56) than those who had worked less than 10 years (*P*-value = 0.037). The nurses who lived at home obtained a statistically significant health pillar preparation level than those living in the provided welfare dormitories (mean = 3.68 ± 0.56 and mean = 3.52 ± 0.51, respectively) (*P*-value = 0.013).

Ageing preparation based on the PARTICIPATION pillar

The results revealed that factors including age, marital status, education level, working units, length of work experience and housing, were correlated with the ageing preparation based on the participation pillar. In other words, the nurses aged between 31 and 59 obtained a higher level of participation pillar preparation (mean = 3.75 ± 0.60) than those aged between 21 and 30 (mean = 3.43 ± 0.60). Statistical test indicated a significant difference (*P*-value < 0.001). The married participants obtained a statistically

significant higher level of participation pillar preparation (mean = 3.80 ± 0.60) than their single counterpart (mean = 3.45 ± 0.63) (*P*-value < 0.001). Participants with a Master's degree obtained a higher level of participation pillar preparation (mean = 4.08 ± 0.57) than those with a Bachelor's degree (mean = 3.52 ± 0.63), with a statistical significance (*P*-value = 0.002). The nurses working at the labor and examination rooms obtained a higher level of participation pillar preparation (mean = 3.78 ± 0.49 and 3.72 ± 0.62, respectively) than those working at the emergency and operating rooms (mean = 3.19 ± 0.37 and 3.35 ± 0.48, respectively). Statistical test indicated a significant difference (*P*-value = 0.047). The nurses who had worked for 10 years or more obtained a statistically significant higher level of participation pillar preparation (mean = 3.75 ± 0.63) than those who had worked less than 10 years (*P*-value = 0.002.). The nurses who lived at home obtained a statistically significant higher level of preparation for the participation pillar (mean = 3.66 ± 0.70) than those living in the welfare dormitories (mean = 3.49 ± 0.60) (*P*-value = 0.037).

Ageing preparation based on the SECURITY pillar

The results showed that the nurses with supplemental income obtained a statistically significant higher level of health pillar preparation (mean = 3.52 ± 0.59) than those without supplemental income (mean = 3.29 ± 0.65) (*P*-value = 0.022).

Discussions and Conclusion

The objectives of this study were to examine nurses' ageing preparation level and explore factors related to the preparation. The aforementioned results are discussed as follows.

Table 3 Factors related to the ageing preparation of the nurses according to the Active Ageing Framework (N = 303).

Factors		Health pillar		Participation pillar		Security pillar	
		Mean (SD)	*P*-value*	Mean (SD)	*P*-value*	Mean (SD)	*P*-value*
Gender	Female	3.57 (0.53)	0.102	3.54 (0.63)	0.607	3.33 (0.65)	0.945
	Male	3.90 (0.55)		3.75(1.03)		3.35 (0.59)	
Age (in Years)	21 - 30	3.51 (0.49)	0.004	3.43 (0.60)	< 0.001	3.31 (0.62)	0.436
	31 - 59	3.71 (0.59)		3.75 (0.67)		3.37 (0.69)	
Marital status	Single	3.53 (0.52)	0.007	3.45 (0.63)	< 0.001	3.31 (0.65)	0.236
	Married	3.71 (0.53)		3.80 (0.60)		3.41 (0.65)	
Education level	Bachelor's degree	3.56 (0.52)	0.007	3.52 (0.63)	0.002	3.32 (0.63)	0.173
	Master's degree	3.96 (0.65)		4.08 (0.57)		3.57 (0.93)	
Working units	Examination room	3.69(0.55)	0.046	3.72 (0.62)	0.047	3.29 (0.68)	0.890
	Patient wards	3.60 (0.53)		3.55 (0.68)		3.38 (0.63)	
	Operating room	3.62 (0.39)		3.35 (0.48)		3.36 (0.56)	
	Labor room	3.54 (0.45)		3.78 (0.49)		3.42 (0.73)	
	ICU	3.40 (0.53)		3.53(0.63)		3.27 (0.74)	
	Emergency room	3.37 (0.45)		3.19(0.37)		3.16 (0.59)	
	Kidney dialysis unit / Cardiac care unit	3.77 (0.50)		3.58(0.62)		3.25 (0.59)	
	Others	3.73 (0.65)		3.68(0.78)		3.39 (0.66)	
Length of work experience (in Years)	< 1	3.49 (0.45)	0.037	3.13(0.54)	0.002	3.13 (0.69)	0.451
	1 - 5	3.50 (0.51)		3.49 (0.60)		3.34 (0.61)	
	6 - 10	3.60 (0.52)		3.50 (0.69)		3.28 (0.66)	
	> 10	3.71 (0.56)		3.75 (0.63)		3.40 (0.69)	
Housing	Homes	3.68 (0.56)	0.013	3.66 (0.70)	0.037	3.35 (0.64)	0.713
	Welfare dormitories	3.52 (0.51)		3.49 (0.60)		3.32 (0.65)	
Underlying diseases	Yes	3.67 (0.43)	0.072	3.64 (0.64)	0.176	3.42 (0.63)	0.252
	No	3.56 (0.55)		3.52 (0.64)		3.31 (0.65)	
Income (THB/Month)	15,000 - 20,000	3.49 (0.49)	0.669	3.46 (0.63)	0.493	3.23 (0.60)	0.731
	20,001 - 25,000	3.64 (0.51)		3.60 (0.70)		3.40 (0.68)	
	25,001 - 30,000	3.55 (0.60)		3.59 (0.65)		3.31 (0.70)	
	30,001 - 35,000	3.59 (0.48)		3.57 (0.55)		3.30 (0.59)	
	35,001+	3.61 (0.57)		3.45 (0.69)		3.37 (0.67)	
Supplemental income	No	3.58 (0.53)	0.975	3.54 (0.65)	0.928	3.29 (0.65)	0.022
	Yes	3.58 (0.53)		3.53 (0.62)		3.52 (0.59)	

* Independent t-test for factors with two levels and ANOVA for factors with more than two levels.

The level of ageing preparation

The results of the study showed that the overall preparation of the nurses for the ageing process was between a medium and a high level. Although the nurses obtained a high level of ageing preparation regarding the health pillar, when considering each preparation aspect, the health aspect in particular was found to lie at a medium level. This result is surprisingly in line with that of Pattrapakdikul et al[19] that revealed that the respondents obtained a medium level of the health aspect, whereas the mental and spiritual aspects were at a high level. In our study, the health aspect was at a medium level is because nurses are naturally required to work in rotating shifts to provide care for their patients, consequently causing them to have insufficient rest and lack time to exercise regularly. In addition, although nurses are considered health staff, their working conditions make them unable to find time to make the right food choices, thereby resulting in a medium level of ageing preparation.[19] With regard to the mental and spiritual aspects, since nurses are health staff who have studied physical and mental changes in the elderly, provided nursing practice for elderly patients to understand and learn about their psychological changes, worked together or participated in conversations with elderly patients for the preparation of the mind and exchanged opinions with them, the participant's mental health and spiritual preparation was at a high level.[19]

In connection with the participation pillar, it was discovered that the nurses' community participation was at a medium level although their participation in family and hospital activities was at a high level. This result is consistent with that of numerous studies in which the respondents gave the highest priority to family activities[19] and consequently obtained a medium level of community activities and participation. Due to the nature of their work which requires them to work in rotating shifts, in this study, the nurses were found to have less time to participate with their communities. In addition, as most of them are not working in their own communities, they insufficiently participate with them.

With regard to the security pillar, it was discovered that the nurses' participation was at a medium level. However, when considering each aspect of it, the housing and caretaker aspects were at a high level. Since most of the nurses live in provided welfare dormitories until retirement age, they have to focus on housing preparation before losing the right to stay at the dormitories at retirement age. This result is interestingly in line with that of many studies in which the participants put the first priority on housing preparation before retirement age[20,21], when their contact regarding housing preparation and acquisition of budgets for their accommodation construction or renovation can easily be done.

As for the nurses' preparation regarding benefits, finance and income, it was found that the preparation in these aspects all lied at a medium level. Their preparation regarding investment planning for higher income was, however, at a high level because the nurses are already preparing for future financial planning considered as an excellent preparation. Unlike the previous aspect of preparation, the preparation concerning budget planning after entering old age was at a medium level because the nurses still lack knowledge and understanding in budgeting.[22] On the other hand, effective financial management should comprise careful financial planning, e.g. preparation of income and expenses throughout the year. If expenses are greater than income, they should be cut down to avoid debt. A financial planning model for ageing preparation should additionally be developed as part of effective financial management.

Factors related to ageing preparation

Our results confirmed that gender was not associated with ageing preparation. This may be because the sample in this study consisted of very few males. The age factor was, however, found to be positively correlated with health preparation. According to the results, the nurses between the ages of 31 and 59 obtained a significantly higher level of preparation than the nurses aged between 21 and 30. This may be because the older nurses have more work experience, responsibilities regarding their positions and income. As they get older, it is likely they become more aware of changes in their bodies than those who are at a very young age, hence causing them to adjust their lifestyles and recognize the significance of ageing preparation. This result is interestingly consistent with that of many studies revealing that older individuals had more pre-retirement behaviors than younger ones.[9,10,23] Moreover, in this study, older age was found to have a statistically significant relationship with the participation pillar. This result is in line with that of Ubolrat Pengsatid who reported that people aged 35 - 50 and over enjoyed more social activities related to family relationships, and at the age of 50, they had more free time. Older age is, therefore, considered a successful age for professional careers and

enables older people to participate more in social activities.[13] Therefore, as people get older, they tend to acquire more participation preparation. On the other hand, age was not found to be significantly correlated with the security pillar. This may be because most of the nurses receive a relatively high income of between 30,001 and 35,000 baht per month, and some still gain supplemental income from their own businesses, which are doubtlessly sufficient for their living. Furthermore, since they have prepared themselves with respect to the security pillar since the start of their career, age was not found to be significantly correlated with the security pillar. This result is in accordance with that of Yommana's study stating that people with savings were more prepared for health care than those without savings or low income.[12]

In this study, the married nurses were found to be more prepared as regards the health pillar than the single ones, hence being statistically significant. This result is in line with the work of Kaewsumalee as well as the work of Chuenwattana and Beadnok who reported that married nurses were physically more prepared for old age than they were mentally and were more prepared than the single and widowed nurses. In their studies, the married individuals were also found to obtain a statistically significant higher level of preparation than the single ones[23,24], and marriage was found to lead people to creating their families and future to ensure the security of their families in the future.[17]

According to education, the nurses with a Master's degree obtained a higher level of preparation than those with a Bachelor's degree. Education level was positively correlated with the participation pillar participation with a statistical significance. These results are in line with those of Panjapol's study in which education level was found to affect the ageing preparation of the civil servants of the Office of the Permanent Secretary, Ministry of Public Health[25] and those of Sukchot and Hongwityakorn's study in which the level of preparation for being potential elderly of those aged 50 and older was related to education level.[26] In the meantime, the study on the elderly by Thanakwang and Soonthorndhada discovered that higher education in the elderly was associated with healthy ageing[27], and the study by Saengprachaksakula yielded a similar result when the Thai active ageing level in 2011 was confirmed to be related to education level.[28] With regard to the educational factor, WHO explains that youth education, combined with life-long learning opportunities, help improves significantly the skills and confidence needed for self-adjustment and independent living as we age.[4]

Nurses working in different settings had different levels of preparation. Based on the results, the nurses working in the kidney dialysis unit, cardiac care unit and examination room obtained a significantly higher level of health pillar preparation than those working in the emergency room and ICU. The results additionally revealed that the nurses working in the labor room and examination room obtained a statistically significant higher level of participation pillar preparation than those working in the emergency room and operating room. This may be because the nurses working in the kidney dialysis unit, cardiac care unit and examination room have a prearranged working time during the day, without having to go on a duty, hence enabling them to have a life outside of work that is consistent with other people in their families and communities. Their working time makes it possible for them to plan a vacation, an exercise as well as participation in various activities; unlike those working in a duty-based unit that have unfixed working time inconsistent with others in their families, communities and society.

In this study, the nurses who have long work experience were statistically significant more prepared with respect to the health and participation pillars than those with less work experience. This result is surprisingly consistent with that of Rattana-umpa who asserted that respondents who were highly experienced registered nurses based on their length of work experience before retirement had better health, participation and housing preparation than those who were less experienced.[7] In addition, in Pathike and Kuhirunyaratn's study, registered nurses with a higher age range (46 – 59 years versus 30-45 years) were more prepared for health because as they get older, they gain more experience.[9]

Regarding housing arrangement, nurses who live in their homes were statistically significant more prepared for the ageing process in relation to the health and participation pillars than those who live in welfare dormitories. On the contrary, in Panjapon's study, there was no difference between the level of preparation in relation to the three pillars of those living in their homes and those living in welfare dormitories.[25] This could be explained by the fact that people currently living in their homes oftentimes receive sufficient income to afford to buy their own homes. Receiving a higher income is, therefore, associated with better preparation, as explained in the income section. Furthermore, living in their homes signifies their ability

to provide their own homes and increases their opportunities for healthcare management and engagement with the community and society.

For underlying diseases, the results revealed that they were not statistically significant with the ageing preparation in relation to the health, participation and security pillars probably because most of the participants in this study do not suffer from any underlying diseases. While many studies reported diverse results of the health preparation of the samples that suffered from underlying diseases, some pointed out that the samples without underlying diseases were more prepared for old age than those with underlying diseases.[24] These studies, however, contradict Nattaya Rattana-umpa's study[7] in which the nurses with underlying diseases were significantly more prepared before retirement than those without underlying diseases and Sukchot and Hongwityakorn's study in which suffering from a disease was inversely proportional to active ageing.[26] In this study, there was clearly no relationship between suffering from underlying diseases and ageing preparation probably because the participants in this study were at the average age of 29.9, the age at which underlying diseases are rare.

In terms of income, the results did not point to any relationship between income and preparation regarding the three pillars, while in other studies, the relationship between income and ageing preparation was discovered. In Chuenwattana and Beadnok's study, for example, the respondents with the income of between 30,000 and 40,000 baht per month was more prepared for old age than other groups. That is, the groups that had higher income than expenses were more prepared for old age than other groups.[24] In Sukchot and Hongwityakorn's study, increased monthly income was found to be associated with potential ageing preparation[26], and in Meethien and Wongpiriyayothar's study, income sufficiency was able to predict the active ageing of middle-aged adults who lived in semi-urban areas.[29] In the study of Pattrapakdikul et al, income was found to be positively correlated with health preparation but was unassociated with activity participation.[19] In Tipwong's study, however, no relationship between income and preparation was discovered.[8] Many studies reported different results from this study which can be explained by the fact that the salary range of the participants in this study does not differ greatly. Furthermore, because the target hospital has currently been opened and its nurses have no significantly different length of work experience, the relationship between income and ageing preparation might not be located. Despite that, this study discovered that supplemental income was related to the security pillar, which could be explained by the fact that the effort to gain supplemental income is a straightforward expression of one's security guarantee.

On major limitation of this study was that an insufficient number of participants did not allow a subgroup analysis. Another limitation was that related factors as demographic data only allowed bivariate analysis, whereas multivariate analysis was not possible. In addition, as this study only focused on nurses working in a university hospital, it may not make a generalization on a larger population.

In summary, the nurses at the university hospital obtained a high level of ageing preparation regarding the health and participation pillars, while their level of ageing preparation regarding the security pillar was at a medium level. The factors affecting the preparation with respect to the health and participation pillars were the age group of 31-59 years, marital status, master's degree, working units, i.e. the examination room, the labor room, the kidney dialysis unit and the cardiac care unit, 10 years' work experience as well as living in their own homes. The factor that affected the ageing preparation concerning the security pillar was supplemental income.

Based on our conduct and results, recommendations for practical implications are as follows. Since age has an effect on ageing preparation, an appropriate age should be identified to promote faster ageing preparation. The significance of skill development such as financial planning and supplemental income acquiring should be highlighted and promoted to urgently assist nurses in ageing preparation of the security pillar. Research studies for developing a model for financial planning promotion should be conducted to prepare nurses of all age groups for old age. Factors related to numerous variables such as age, marital status and education level are not variable variables. As a result, nursing groups who do not recognize ageing preparation should be encouraged to gain more opportunities for the preparation.

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