Development and Psychometric Testing of the Healthy Aging Instrument

Ladda Thiamwong, Wantana Maneesriwongul, Porntip Malathum, Sutthichai Jitapunkul,

Thavatchai Vorapongsathorn, Anita L. Stewart

Abstract: The purpose of this study was to develop, refine, and evaluate the psychometric properties of the Healthy Aging Instrument (HAI). The HAI is a multidimensional instrument that attempts to measure the process of healthy aging in a Thai context. Themes emerged from focus groups and in-depth interviews, which were used to develop an item pool. The HAI was reviewed for content format by five experts and for clarity and readability by 10 older adults. The content validity index among the experts was high. After the pretest, the HAI consisted of 46 items.

   To test construct validity and internal consistency, the HAI was completed by 403 Thai older adults in a Province of Southern Thailand. Evaluation of construct validity through principal component factor analysis with varimax rotation and using factor loading greater than .40 yielded 9 factors and 35 items: 1) Being Self-Sufficient and Living Simply, 2) Managing Stress, 3) Having Social Relationships and Support, 4) Making Merit and Good Deeds, 5) Practicing Self-Care and Self-Awareness, 6) Staying Physically Active, 7) Staying Cognitively Active, 8) Having Social Participation, and 9) Accepting Aging, which jointly explained 62% of the variance in the process of healthy aging. Cronbach's alpha for each of the subscales ranged from .69 to .80 and the overall HAI was .88.

   The HAI demonstrated adequate internal consistency reliability and showed evidence of content and construct validity. The instrument requires less than 15 minutes on average to administer and had no item-level missing data rates. These findings suggest that the HAI adequately captures a newly identified construct and should be useful for investigators to measure healthy aging in a Thai context. However, the HAI was developed from older adults only in a province of Southern Thailand, thus, the issue of culture and context should be considered for implication of this instrument.

Key words: Thai older adults, healthy aging, development, instrument, psychometric testing

Background and Significance

   The well-recognized increase in the aged population and increases in chronic disease and disability within this population have imposed unavoidable burdens on the family, community, and government. The most important challenge for the aging population is how to increase quality and years of healthy life. Therefore, healthy aging is a vital concept. This concept promotes healthy lifestyle choices and preventive health measures.[1]

Correspondence to Ladda Thiamwong, PhD Candidate, Mahidol University, Bangkok, Thailand. E-mail: thladda@yahoo.com
Wantana Maneesriwongul, DNSc, MPH, RN. Assistant Professor, Department of Nursing, Faculty of Medicine, Mahidol University, Bangkok, Thailand.
Porntip Malathum, PhD, RN. Assistant Professor, Department of Nursing, Faculty of Medicine, Mahidol University, Bangkok, Thailand.
Sutthichai Jitapunkul, MD. Professor, Chulalongkorn University, Bangkok, Thailand.
Thavatchai Vorapongsathorn, PhD. Associate Professor, Mahidol University, Bangkok, Thailand.
Anita L. Stewart, PhD. Professor, University of California, San Francisco, USA.

Healthy aging is described as a lifelong process optimizing opportunities for improving and preserving health, independence, quality of life and enhancing successful life-course transitions.[2] Healthy aging has had a variety of definitions and has been used in a variety of instruments. In addition, the concept of healthy aging in the literature is inconsistent. There is no consensus in the literature as to the meaning of healthy aging for older adults, making it difficult to measure the intent and outcome of healthy aging programs. Peel and colleagues[3] conducted a systematic review of the measurement of healthy aging. They concluded that the measurement of healthy aging comprised three domains: physical, mental and social functioning. This study showed that the measurement of healthy aging needs to be age- and culture-specific to be able to discriminate it in a heterogeneous group.[3]

There is no instrument, which directly neither evaluates healthy aging nor covers all dimensions of healthy aging. A literature review also suggests that healthy aging is influenced by historical and cultural factors, as well as physical, cognitive, psychological, social, spiritual, and economic resources. Thus, there is a need to clarify dimensions of healthy aging within the Thai older adults' cultural context. It is an essential preliminary step towards achieving attributes for use in scale development. In addition, a standard and culturally sensitive instrument, which covers diverse dimensions of Thai healthy aging, needs to be established, and to allow this information to be used as the scientific basis for systematic assessment and interventions designed to enhance the health of Thai older people.

Conceptual Framework

The conceptual framework of this study was synthesized from knowledge about healthy aging obtained by an extensive literature review and a qualitative methodology conducted by the researchers. The qualitative methodology aimed to obtain information grounded in Thai older adults about their perception of healthy aging. In this study, an instrument for measuring healthy aging was developed by an integration of deductive reasoning through a literature review and inductive reasoning through focus groups and in-depth interviews.

In order to develop this instrument, it is necessary first of all to define and operationalize the concept. Therefore, a literature review was conducted. Twenty-four empirical studies examining healthy aging were found in the MEDLINE and CINAHL database, as well as by a manual search of reference lists. Despite an extensive literature review, there is little consensus regarding the meaning of healthy aging. Thus, focus groups and in-depth interviews were carried out to explore the definitions, characteristics, factors, and methods to achieve healthy aging within the Thai context. These results would help further development of the Healthy Aging Instrument (HAI).

Research Questions

1. What are the structures of the Healthy Aging Instrument (HAI)?

2. How valid (content, construct, and criterion-related validity) and reliable (internal consistency and test-retest reliability) is the HAI in measuring a process of healthy aging?

Method

Sampling

Participants of this study were Thai people aged 60 years and older living in a Province of Southern Thailand. Five groups of participants were recruited into the study at different steps as follows: 1) Fourteen participants were purposively selected for two focus groups; 2) Ten participants were purposively selected for individual in-depth interviews; 3) Ten participants were purposively selected for clarity and readability; 4) Thirty participants were purposively selected for pre-testing; and 5) Four hundreds and three participants were randomly

selected for psychometric testing of a final draft. Prior to the data collection, the study proposal and a consent form were approved by the Committee on Human Rights Related to Human Experimentation, Mahidol University.

Instrument Development

The three steps of development of the Healthy Aging Instrument (HAI) were as follows.

Step 1 Constructing Definition and Content Domain

In the first step, the concept of 'healthy aging' was explored by conducting focus groups first and followed by in-depth interviews with different participants. We separated groups of older adults by gender to increase the likelihood that participants would feel comfortable participating in the discussion. One of the investigators conducted two focus groups: one with seven men, and one with seven women. Focus groups may not be appropriate for topics considered too personal to share among strangers. For example, participants believed that it was inappropriate to talk about preparation of their death/dying in public. Then, in-depth interviews were also carried out with 10 participants.

Step 2 Generating and Judging Measurement Items

The investigators generated items for each theme based on findings from focus groups and in-depth interviews. To test content validity, the first draft was submitted to five experts. A panel of experts consisted of three experts in geriatric nursing, one expert in sociology, and another expert working in non government organization in the fields of health promotion. A subsequent revision was made and re-evaluated by the experts. To test the face validity, the second draft version was examined by 10 participants recruited by convenience sampling using a general debriefing pretest and cognitive interviewing with probe questions. Finally, the third draft was pre-tested with a convenience sample of 30 Thai older adults who were drawn from Hat Yai District, Songkhla Province, in the southern Thailand.

Step 3 Testing Psychometric Properties

A multi-stage sampling was used to select the participants for testing psychometric properties. Psychometric testing of the fourth draft was conducted by either self administration or face-to-face interview with 403 participants. One investigator administered three instruments as follows: First, the participant was asked to complete the fourth draft of the HAI followed by the demographic data. Finally, the participant was requested to complete SF-36 version 2.0 in which the HAI can be tested for its concurrent validity. Two weeks later, the fourth draft of the HAI was retested in a random subgroup of 30 participants from Muang District, Songkhla Province, in southern Thailand.

Results

Step 1 Constructing Definition and Content Domain

The content analysis was used to identify major themes of the healthy aging concept from focus groups and in-depth interview data. Eight dimensions were identified, as shown in **Table 1.**

Table 1 Dimensions of healthy aging in Thai older adults

Dimension	Description
Staying Physically Active	Keep doing things such as work, hobbies, exercise and find strength in his/her life by doing things
Staying Cognitively Active	Staying interested in following news, planning, and calculating
Staying Socially Active	Continue participating in community activities, and having a good support and relationship with family and neighbors
Practicing Self-Care and Self-Awareness	Having positive perception towards aging and maintaining activities to take care of oneself
Accepting Aging and Dying	Accepting degenerations for what they are rather than the way they want them to be, and preparing for dying
Being Self-Sufficient and Living Simply	Having enough to live on and a reason to live for, reducing the complexity of life, and refraining from leading a luxurious and extravagant life
Making Merit and Good Deeds	Continue doing good things as mentioned in religious beliefs.
Managing Stress and Making a Peaceful Mind	Staying away from stress and remaining calm when facing with difficulties

Step 2 Generating and Judging Measurement Items

The investigators generated items following eight dimensions. There were 5 to 11 items generated for each dimension. The first draft contained a total of 60 items for eight dimensions. For the content validity, the experts suggested possible improvements in rephrasing of some items. Nineteen items were dropped; fifteen items were revised further so that they were easier to understand by Thai older adults, and a few items were rewritten to improve their semantic meaning. In addition, five new items based on qualitative data were added. A subsequent revision (the second draft) was made and re-evaluated by the experts. Each expert was asked to evaluate the content of the remaining 46-items scale by rating each item on a 3-point scale: 3 = "Agree", 2 = "No Opinion" and 1 = "Disagree." As a result of this second evaluation, the experts indicated the need for minor revisions to three items. Finally, the experts approved the item clarity and content validity. The content validity index (CVI) of the second draft for the relevant items was .95.

For the face validity, participants indicated that some words or phrases of the second draft were difficult to understand such as "train your mind to calm down" or "depend on each other." They suggested wording revisions. Some similar words were perceived as being redundant. They also noted that some questions were too long. After the third draft was pre-tested, the results showed that most of the sub-scales in this study achieved good reliability coefficients, with the Cronbach's alpha coefficient between .49 and .85. Then, the fourth draft version consisted of 8 themes with 46 items.

Step 3 Testing Psychometric Properties

Psychometric properties of the fourth draft of HAI were tested among 403 participants. Their mean age was 70.33 (SD = 7.39) years, ranging from 60-95 years. About two-thirds were female and 63.3% were married. They were fairly well educated; two-thirds of them had a primary school education, which was the highest grade completed by the majority of older Thai people. Almost half of the participants had financial problem sometimes.

Approximately, one-third of the participants reported that they were living with their spouse and children.

Item Analysis: Corrected item-total correlation identified two items (Item 29 and 45) that did not contribute to the internal consistency of the overall scale. Thus, these two items were eliminated from the scale. Of the remaining 44 items, no item correlation above .70 was found; therefore multicollinearity was not a problem.

Construct Validity: The first factor analytic solution was generated for the 44-item scale. A principal component analysis (PCA) using the axis factoring method with orthogonal varimax rotation was performed to provide descriptive information about the subfactors of a single factor. The PCA revealed that the first 11 factors accounted for 61.31% of the variance in health aging. From the first factor analytic result, nine items (Item 7, 10, 22, 23, 24, 26, 28, 30, and 40) were eliminated because they did not load strongly on a single factor. The remaining 35 items were entered into the second factor analysis. All items loaded on expected factors. Factor analysis of the final 35-item scale yielded a nine-factor solution with an explained variance in healthy aging of 62.09%. Factor 1, namely "Being Self-Sufficient and Simple Living" consisted of five items, with factor loadings ranging from .61 to .83. This is the strongest factor, explaining the greatest percentage of variance in the HAI. The other subscales from Factor 2 to 9 are shown in **Table 2.** They consisted of 2-4 items with factor loadings ranging from .47 to .83.

Table 2 Principal component analysis with varimax rotation: Factor loading and communalities of the HAI (n = 403)

Item	Statement	Factor loading	Communalities (h^2)
	Factor 1 Being Self-Sufficient and Living Simply		
	Eigenvalue = 7.413, Percent of Variance = 21.181		
32	I am careful with my money	.827	.715
35	I spend money only on essentials	.741	.598
34	I live simply	.660	.596
33	I have enough money to support myself	.636	.614
31	Everything I have is sufficient for me	.611	.483
	Factor 2 Managing Stress		
	Eigenvalue = 3.235, Percent of Variance = 9.243		
43	I do not worry about the future	.777	.685
44	I do not worry about problems that I can't solve	.747	.619
42	I talk with someone when I have a problem	.735	.577
41	I do not worry without reason	.622	.514
46	I am able to let go when something bothers me	.566	.503
	Factor 3 Having Social Relationships and Support		
	Eigenvalue = 2.305, Percent of Variance = 6.586		
15	My family and I talk everyday	.796	.732
16	My neighbors and I help each other	.734	.713
14	My family and I help each other	.703	.694
17	My neighbors and I talk frequently	.657	.643

Table 2 (continued)

Item	Statement	Factor loading	Communalities (h^2)
	Factor 4 Making Merit and Good Deeds		
	Eigenvalue = 1.910, Percent of Variance = 5.458		
38	I always do good deeds	.732	.659
39	I help other people without expecting anything in return.	.714	.600
37	I always make a merit and give to others when I have a chance	.688	.586
36	I make a merit whenever I can	.631	.622
	Factor 5 Practicing Self-Care and Self-Awareness		
	Eigenvalue = 1.697, Percent of Variance = 4.848		
21	I take care of my health	.698	.657
20	I am careful about my daily diet and living	.697	.693
19	I continue to take care of myself when I am sick	.696	.670
18	I am not worried that I am older	.520	.538
	Factor 6 Staying Physically Active		
	Eigenvalue = 1.546, Percent of Variance = 4.417		
2	If I don't do anything, I feel bored	.721	.653
3	I feel weak if I don't do anything	.693	.611
5	I feel good when I am doing daily activities	.620	.600
4	I do many things each day	.474	.476
	Factor 7 Staying Cognitively Active		
	Eigenvalue = 1.400, Percent of Variance = 4.000		
8	I stay mentally active to prevent forgetfulness	.774	.670
9	I stay mentally active by working with numbers	.567	.472
1	Each day, I try to do plenty of activities	.548	.594
6	I like to think of things to do	.545	.482
	Factor 8 Having Social Participation		
	Eigenvalue = 1.179, Percent of Variance = 3.367		
12	I enjoy helping my community with events	.832	.722
13	I convince my neighbors to get involved in community events	.734	.655
11	I participate in community activities	.724	.644
	Factor 9 Accepting Aging		
	Eigenvalue = 1.047, Percent of Variance = 2.992		
25	I accept that I am getting older	832	.749
27	I accept that I am not able to do things that I used to	.778	.694

Concurrent Criterion-Related Validity: The concurrent criterion-related validity was tested by computing Pearson's correlation between the HAI score and the SF-36 version 2.0 score. The analysis revealed that the overall HAI had a low correlation coefficient with the overall score of the SF-36 version 2.0 ($r = .263$, p < .01). Two dimensions of the SF-36 version 2.0 (Bodily Pain dimension and Role Limitations due to Emotional Problems dimension) had a low correlation coefficient with

the HAI (r = .23 and r =.28, p < .01, respectively). HAI had moderate correlation coefficients with all six dimensions of the SF-36 version 2.0 as follow; with Physical Functioning (r = .42, p < .01), with Role Limitations due to Physical Health (r = .43, p < .01), with General Health (r = .50, p < .01), with Energy/ Fatigue (r = .48, p < .01), and with Social Functioning; and Emotional Well-Being (r = .56, p < .01).

Internal Consistency Reliability: The HAI is considered reliable since the internal consistency reliability for the overall HAI was .88 and for the subscales was higher than .70, with the exception of the "Practicing Self-Care and Self-Awareness" subscale, and the "Accept Aging" subscale, which had an alpha of .69. The alpha coefficients of most of the subscales ranged from .71 to .80, indicating a slightly high degree of homogeneity. Corrected item-to-total correlations were all acceptable at the criterion level of .30.[4] No item was considered redundant because the majority of the items had inter-item correlations between .30 and .70.[4] Inter-item correlations ranged from .24 to .69. Inter-item correlations showed acceptable correlations (r = .30-.70), with other items on the subscale, except Factor 2 ("Managing Stress"), Factor 5 ("Practicing Self-Care and Self- Awareness") and Factor 8 ("Having Social Participation"). However, statistics did not suggest deletion of any items based solely on reliability statistics.

Test-Retest Reliability: The temporal stability of the HAI was examined. The second measure of the reliability of the HAI with 35 items was evaluated with the test-retest reliability. The 2 week test-retest reliability using Pearson's coefficient ranged from .20 to .80. Six factors had moderate reliabilities (.40 to .70) and the factor "Accepting Aging" had a high reliability (r > .70) as presented in **Table 3.** The summary index of the HAI demonstrated a modest level of .31 (p < .01), signifying its instability over a short time period.

A Summary of the HAI Score: The Likert approach was used to develop and collapse questions,

Table 3 Measures of reliability coefficients of the HAI (n = 403)

Factor	No. of item	Inter-item correlation	Corrected Item-total correlation	Standard-ized Alpha	2 weeks test-retest
Factor 1: Being Self-Sufficient and Living Simply	5	.34-.58	.47-.67	.80	.59
Factor 2: Managing Stress	5	.28-.53	.46-.65	.77	.39
Factor 3: Having Social Relationships and Support	4	.31-.69	.52-.70	.80	.20
Factor 4: Making Merit & Good Deeds	4	.36-.51	.50-.58	.75	.49
Factor 5: Practicing Self-Care & Self-Awareness	4	.24-.55	.37-.55	.69	.26
Factor 6: Staying Physically Active	4	.33-.60	.45-.64	.77	.52
Factor 7: Staying Cognitively Active	4	.43-.54	.52-.61	.74	.67
Factor 8: Having Social Participation	3	.28-.49	.43-.57	.71	.58
Factor 9: Accepting Aging	2	.53	.53	.69	.80
Summary index	35	-.1-.69	.18-.54	.88	.31

and provide a summary index of the HAI. Scores were assigned to each of the responses to reflect the strength and direction that the individual expressed in a particular statement. For example, a code of 1 was used to indicate that participants chose "Absolutely Not" with a statement and 5 when they chose "Absolutely Yes." The scores that participants obtained on each question were then be added up to make a total summary score representing the strength and direction of the topic of healthy aging, with a higher score indicating a healthier older person. The following codes were used to reflect responses to such statements: 1 = "Absolutely Not", 2 = "Less Likely", 3 = "Not sure", 4 = "More Likely", 5 = "Absolutely Yes." In the Thai context, it is difficult for Thai older adults to understand negatively-worded questions. Although, the Likert scale was used, the HAI has no negative statements. Therefore, there is no need to convert the scores of any items. With the Likert scale, the investigators combined all of the final 35 items in the HAI and summarized them to arrive at the total scaled score, namely, the "HAI summary index."

Discussion

The HAI has demonstrated promise as an instrument for measuring the process of healthy aging in Thai older adults. These findings provide initial support for the validity of the HAI. In the literature, healthy aging is found to be a multidimensional concept that includes physical, cognitive, social, and spiritual health. However, in this study, nine dimensions of the HAI immerged including: 1) Being Self-Sufficient and Living Simply, 2) Managing Stress, 3) Having Social Relationships and Support, 4) Making Merit and Doing Good Deeds, 5) Practicing Self-Care and Self-Awareness, 6) Staying Physically Active, 7) Staying Cognitively Active, 8) Having Social Participation, and 9) Accepting Aging. They jointly explained 62% of

the variance in healthy aging, which was greater than 50% of the expected value.[5]

It is interesting that Factor 1, "Being Self-Sufficient and Living Simply" is the strongest factor explaining the greatest percentage of variance in healthy aging. This finding is consistent with Sriruecha's study, which reported that self-sufficient living is an important component of happy life in older adults in Khon Kaen Province, Thailand.[6] Furthermore, self-sufficient living is one of the four components in a model of healthy aging that has emerged from a study of older adults in Denver, USA.[7] The finding of Factor 2, "Managing Stress" is consistent with Perls and colleagues[8] who found that the centenarians seem better at coping with stress than most people. For Factor 3, "Having Social Relationships and Support," Thai older adults revealed that good relationships in their families made them healthy.[9] Also, healthy older women dealt with changes in aging by maintaining relationships with family and friends.[10]

For Factor 4, "Making Merit and Good Deeds," ability to perform merit and to help others were important determinants of happy life of older adults in Khon Kaen province, Thailand.[6] Similarly, merit making is a significant theme of folk care for promoting health of the Thai older adults in Nakorn Sri Thammarat Province.[11] The finding of Factor 5, "Practicing Self-care and Self-Awareness" is consistent with Tin-uan[12] who identified means of promoting healthy aging in older persons in Lumpang province by "Looking after one's body and one's mind." Arcury and colleague[13] also reported that taking care of oneself is frequently expressed as a health behavior for older adults in North Carolina.

For Factor 6, "Staying Physically Active" both Thai and American older adults indicated that exercise and having hobbies made them healthy.[9, 13] For Factor 7, "Staying Cognitively Active," recent research suggests that possessing cognitive ability is an antecedent of successful aging[14] and maintaining

cognitive capacity is a vital characteristic of the centenarians.[15] Similarly, healthy older women dealt with changes in aging by remaining mentally active.[10]

The finding of Factor 8, "Having Social Participation" is consistent with Collins's study,[16] which reported that the most important determinants of successful aging is sociality, which includes connecting with friends and willingness to participate in community life. Similarly, the best predictor of healthy aging of older adults in Hong Kong is contacting friends.[17] The finding of Factor 9, "Accepting Aging", is consistent with Levy and colleagues[18] who suggested that negative attitudes towards aging may contribute to health problems in the older adults without their awareness, which may prevent healthy aging. On the other hand, positive views toward aging have been shown to be positive health, longevity, life satisfaction, and well-being.[18-19]

In terms of concurrent criterion-related validity, the HAI score had a significant, but modest correlation with the score on health-related quality of life, which was measured by the SF-36 version 2.0. A high quality of life was defined as having aged healthily. However, the correlation coefficient between the HAI score and the measure of health-related quality of life was not high. Therefore, it is likely that the HAI is capturing a unique construct that is related to the Thai context, but different from health-related quality of life. From this study, the focus groups, in-depth interviews, and cognitive debriefing interviews provide evidence that the construct of the HAI is a process of healthy aging, not health status per se.

The internal consistency reliability of the HAI is considered quite high since the Cronbach alpha for the overall HAI was .88. Among most of the subscales (except two), the alpha coefficients ranged from .71 to .80, indicating a slightly high degree of homogeneity. Although the alpha coefficients of the "Practicing Self-Care and Self-Awareness" subscale and the "Accepting Aging" subscale were not high

(.69 for each), they were approaching an acceptable level. The alpha coefficient of at least .70 indicates sufficient reliability for a newly developed instrument.[21] However, the relatively low alphas of these two subscales indicate the need for further item revision or the addition of new items to represent these dimensions. Because the "Practicing Self-Care and Self-Awareness" subscale and the "Accepting Aging" subscale are consistently found to be important elements of older adults' health [22-24] and because these themes were expressed in the focus groups, the investigators retained these items despite their relatively low internal consistency reliability. An instrument is said to be internally consistent or homogeneous in so far as all items demonstrate desirable intercorrelations, thus appearing to measure the concept of interest and nothing else[4, 20] and suggesting that the HAI measures a single underlying dimension.

It is important to point out that the 2-week test-retest reliability (n = 30) was not an acceptable Pearson's correlation, indicating a lack of temporal stability for the overall HAI.[4, 20] However, the participants in the test-retest were drawn only from an urban area that did not represent all of the older adults in Songkhla Province, then a repeated test-retest should be conducted in future investigations. Additionally, a non significant test-retest correlation may be indicative of a scale with low reliability, of actual changes in the individual measured, or a combination of both. The point is that in the test-retest model, it is not possible to separate the reliability of a scale from its stability. This is why it is generally suggested that the interval between the two administrations be relatively short (1-2 weeks), with the goal of tapping only random measurement error and not actual changes.[25] It is recommended that using a test-retest procedure to measure this concept has to do with caution. However, a repeated test-retest should be conducted in future investigations before the measure is used to evaluate the longitudinal change over time.

For the feasibility, the HAI is not too long and easy to administer. It might also be considered for research and clinical uses because it involves no administrative burden. In this study, the older persons who received the HAI could complete it in less than 15 minutes. Furthermore, the frequency of missing data was slightly lower when the Likert-type scales were used as compared with the forced choice format.

Conclusions and Implications

The HAI is a new instrument whose purpose is to measure a process of healthy aging in the Thai context. In this field test, among community-dwelling older adults, the HAI demonstrated evidence of the content and construct validity, and adequate internal consistency reliability. The instrument required on average less than 15 minutes to administer and no item-level missing data rates. The possible scores on the 35-item HAI range from 35 to 175. Scores indicate how important the phenomenon of healthy aging is to the older adult, or how well they have manifested healthy aging practices. A higher score indicates a healthier aging person. However, a cutoff point of the HAI will be established in a further study. An individual care plan can be guided by the overall score. Health care providers can evaluate the total score and provide interventions and further re-evaluate scores for planning interventions specific to a certain dimension of healthy aging. Thus, different approaches can be utilized to support individualized health needs.

Although the generalization for implication of this study is limited because the item contents emerged from older adults only in Songkhla Province, the results of two previous studies that were conducted in Lumpang and Khon Kaen Provinces are consistent with those of the HAI in this study. The components of happy life found among older adults in Khon Kaen Province include good health, enough physical vigor, economic self-subsistence, ability to make merit, and ability to help others.[6] In addition,

healthy aging revealed from older persons' perspectives in Lumpang Province is composed of maintaining physical functioning and independence, having a happy mind, and maintaining social engagement.[12] However, the research testing the construct of the HAI in older adults recruited from other regions should be conducted to consider the issue of cultural context. In addition, a known group technique should be used for establishing sensitivity and specificity of the HAI in future studies. Also, confirmatory factor analysis of the nine dimensions of the HAI and an item response theory analysis for establishment of construct validity should be conducted.

Acknowledgment

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การพัฒนาและทดสอบคุณสมบัติของเครื่องมือประเมินการสูงวัยอย่างมีสุขภาวะ

ลัดดา เถียมวงศ์, วันทนา มณีศรีวงศ์กูล, พรทิพย์ มาลาธรรม, สุทธิชัย จิตะพันธ์กุล, ธวัชชัย วรพงศธร, Anita L. Stewart

บทคัดย่อ: การศึกษานี้มีวัตถุประสงค์เพื่อพัฒนาและทดสอบคุณสมบัติของเครื่องมือประเมินการสูงวัยอย่างมีสุขภาวะ ซึ่งเป็นเครื่องมือที่มีองค์ประกอบหลายมิติเพื่อใช้ในการประเมินกระบวนการของการสูงวัยอย่างมีสุขภาวะในบริบทของผู้สูงอายุไทย ข้อคำถามถูกพัฒนามาจากผลการสนทนากลุ่มและสัมภาษณ์รายบุคคล เครื่องมือนี้ผ่านการทดสอบความตรงเชิงเนื้อหาจากผู้เชี่ยวชาญจำนวน 5 ท่าน พบว่า มีค่าดัชนีบ่งชี้ความตรงเชิงเนื้อหาสูง และได้ทดสอบความยากง่ายและความเข้าใจของคำถามในผู้สูงอายุ 10 ราย หลังจาก pretest เครื่องมือนี้ประกอบด้วยคำถาม 46 ข้อ

เครื่องมือนี้ได้รับการทดสอบความตรงเชิงโครงสร้างและความเชื่อมั่น โดยเก็บข้อมูลในผู้สูงอายุในจังหวัดหนึ่งของภาคใต้ จำนวน 403 ราย ค่าความตรงเชิงโครงสร้างตรวจสอบโดยวิธี Principle Component Analysis หมุนแกนโดยวิธี Varimax และมีค่า Factor loading มากกว่า .40 ขึ้นไป พบว่าได้ 9 ปัจจัย โดยมีข้อคำถาม 35 ข้อ ได้แก่ 1) การใช้ชีวิตเรียบง่ายและพอประมาณ 2) การจัดการกับความเครียด 3) การมีสัมพันธภาพที่ดีและได้รับการสนับสนุนจากคนในครอบครัวและเพื่อนบ้าน 4) การทำบุญและทำความดี 5) การตระหนักรู้และดูแลตนเอง 6) การไม่อยู่นิ่งเฉยด้านกาย 7) การบริหารความคิด 8) การปฏิสัมพันธ์กับสังคม และ 9) การยอมรับการสูงวัย โดยทั้ง 9 ปัจจัยนี้ สามารถร่วมอธิบายความแปรปรวนของการสูงวัยอย่างมีสุขภาวะ ได้ร้อยละ 62 และมีค่าความเชื่อมั่นชนิดสอดคล้องภายในของแต่ละปัจจัย .69 ถึง .80 และความเชื่อมั่นชนิดความสอดคล้องภายในของทั้งเครื่องมือ .88

เครื่องมือนี้มีค่าความตรงเชิงเนื้อหา ความตรงเชิงโครงสร้าง และความเชื่อมั่นชนิดความสอดคล้องภายในที่ดีและยอมรับได้ นอกจากนี้ เป็นเครื่องมือที่ใช้ง่าย สามารถใช้เวลาตอบ 15 นาที เครื่องมือนี้พัฒนาเป็นครั้งแรก คาดว่าจะเป็นประโยชน์ต่อการประเมินกระบวนการสูงวัยอย่างมีสุขภาวะที่มีความเหมาะสมกับผู้สูงอายุไทย เนื่องจากเครื่องมือนี้สร้างในบริบทของผู้สูงอายุในจังหวัดหนึ่งของภาคใต้ ดังนั้น ในการนำไปใช้ควรพิจารณาความเหมาะสมด้านความแตกต่างทางวัฒนธรรมและบริบท

คำสำคัญ : ผู้สูงอายุไทย การสูงวัยอย่างมีสุขภาวะ การพัฒนา เครื่องมือ ทดสอบคุณสมบัติเครื่องมือ

ติดต่อที่ ลัดดา เถียมวงศ์, PhD Candidate, มหาวิทยาลัยมหิดล กรุงเทพฯ ประเทศไทย. อีเมล์: thladda@yahoo.com
วันทนา มณีศรีวงศ์กูล, DNSc, MPH, RN. ผู้ช่วยศาสตราจารย์ ภาควิชาพยาบาลศาสตร์ คณะแพทยศาสตร์โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล กรุงเทพฯ ประเทศไทย.
พรทิพย์ มาลาธรรม, PhD, RN. ผู้ช่วยศาสตราจารย์ ภาควิชาพยาบาลศาสตร์ คณะแพทยศาสตร์โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล กรุงเทพฯ ประเทศไทย.
สุทธิชัย จิตะพันธ์กุล, MD. ศาสตราจารย์ จุฬาลงกรณ์มหาวิทยาลัย กรุงเทพฯ ประเทศไทย
ธวัชชัย วรพงศธร, PhD. รองศาสตราจารย์ มหาวิทยาลัยมหิดล กรุงเทพฯ ประเทศไทย.
Anita L. Stewart, *PhD. Professor, University of California, San Francisco, USA.*