การตรวจสอบคุณสมบัติเชิงจิตวิทยาของแบบวัดผู้สูงอายุที่ประสบความสำเร็จ ฉบับภาษาไทย ในผู้สูงอายุที่มีภาวะการทำงานของไตลดลง
Psychometric Validation on Successful Aging Inventory Thai Version in Older Adults with Kidney Function Decline

นิพนธ์ต้นฉบับ

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บทคัดย่อ

วัตถุประสงค์: เพื่อตรวจสอบความตรงเชิงโครงสร้างและความเที่ยงของแบบวัดผู้สูงอายุที่ประสบความสำเร็จฉบับภาษาไทย ในผู้สูงอายุที่มีภาวะการทำงานของไตลดลง **วิธีการศึกษา:** การศึกษาเชิงพรรณนาแบบตัดขวางนี้ ดำเนินการขั้นที่ 1 โดยแปลแบบวัดต้นฉบับภาษาอังกฤษเป็นภาษาไทยโดยผู้เชี่ยวชาญสองภาษาคนที่หนึ่งและการแปลย้อนกลับจากภาษาไทยเป็นภาษาอังกฤษโดยผู้เชี่ยวชาญสองภาษาคนที่สอง หลังจากนั้นเปรียบเทียบโดยผู้ทรงคุณวุฒิ 3 ท่าน ในประเด็นความเหมือน ความแตกต่าง ความคลาดเคลื่อน แล้วปรับปรุงเป็นแบบวัดฉบับภาษาไทยให้มีเนื้อหาเท่าเทียมต้นฉบับและสอดคล้องกับวัฒนธรรมไทย ขั้นที่ 2 นำแบบวัดฉบับภาษาไทยให้ผู้สูงอายุที่มีการทำงานของไตลดลงที่มารับการรักษา ณ แผนกผู้ป่วยนอก 350 ราย ตอบแบบสอบถาม วิเคราะห์ข้อมูลโดยการวิเคราะห์องค์ประกอบเชิงยืนยันด้วยโปรแกรม AMOS และวิเคราะห์ความเชื่อมั่นโดยใช้สัมประสิทธิ์แอลฟาของครอนบาค **ผลการศึกษา:** พบว่าแบบจำลองที่ดีที่สุดของแบบวัดผู้สูงอายุที่ประสบความสำเร็จฉบับภาษาไทยประกอบด้วย 4 องค์ประกอบย่อยที่มีข้อคำถามทั้งหมด 20 ข้อ (CMIN = 132.91, *df* = 116, *P*-value = 0.14, CMIN/*df* = 1.15, GFI = 0.96, AGFI = 0.93, NFI = 0.97, CFI = 1.00 และ RMSEA = 0.02) มีค่าสัมประสิทธิ์แอลฟาครอนบาคของแบบวัดทั้งฉบับเท่ากับ 0.89 และของงค์ประกอบย่อยอยู่ระหว่าง 0.64 - 0.84 **สรุป:** แบบวัดผู้สูงอายุที่ประสบความสำเร็จฉบับภาษาไทยที่พัฒนาจากการแปลย้อนมีความตรงเชิงโครงสร้างที่ดีและความเชื่อมั่นที่น่าพอใจ สามารถนำแบบวัดนี้ไปใช้กับผู้สูงอายุชาวไทย และควรศึกษาเพิ่มในกลุ่มผู้สูงอายุที่มีความหลากหลายมากขึ้น

คำสำคัญ: แบบวัดผู้สูงอายุที่ประสบความสำเร็จ, ฉบับภาษาไทย, การแปลย้อนกลับ, การวิเคราะห์องค์ประกอบเชิงยืนยัน, ผู้สูงอายุที่มีภาวการณ์ทำงานของไตลดลง

Abstract

Objective: To examine construct validity and reliability of the Successful Aging Inventory Thai (SAI) version in older adults with kidney function decline. **Method:** This cross-sectional descriptive study was conducted in two steps. In the back-translation process, a bilingual expert translated the original Successful Aging Inventory English language to Thai language, and the other bilingual expert translated back to English language. The other three bilingual experts checked similarity and differences, discrepancies, and assured equivalence with cultural justification. The final Thai version was administered to 350 older adults with kidney function decline at the outpatient department. Data were analyzed using confirmatory factor analysis by AMOS and Cronbach' alpha coefficients. **Results:** It was found that the fit model contained 4 subscales with 20 items (CMIN = 132.91, *df* = 116, *P*-value = 0.14, CMIN/*df* = 1.15, GFI = 0.96, AGFI = 0.93, NFI = 0.97, CFI = 1.00 and RMSEA = 0.02). Cronbach's alpha coefficients for the total scale was 0.89 and for subscales were 0.64 to 0.84. **Conclusion:** The SAI-Thai version showed good construct validity and acceptable reliability. It could be used in Thai elderly and should tested in a wider Thai elderly population.

Keywords: Successful Aging Inventory, Thai version, back-translation, confirmatory factor analysis, older adults with kidney function decline

Introduction

The profligate increasing rates of older adults become a vital concern of healthcare systems globally. As in World Health Organization Report, global people 60 years old and over were expected from 12.0% in 2015 to 22.0% in 2050.[1] Many countries also reported the increasing trend of older adults and health care concerns,[1,2] meanwhile Ministry of Public Health reported that 17.5% of Thai people are 60 years

or above.[3] Several studies reported that older adults are more likely prone to have physical changes, health problems, chronic illnesses,[2] limits of self-care, losing one's autonomy, and the low ability for activity daily living.[4] Aging stage is a progressive or irreversible decline and gradually loss of capabilities. Furthermore, more social and healthcare services are needed in supporting older adults to live independently

with dignity, high quality of life, and security.[5] The goal of taking care older people is focused on maintaining optimal health, including physical, mental, social, and spiritual aspects, and maintaining their independence. Health promotion strategies and programs are needed to improve the physical health, mental health, and cognitive performance of older people.[6] The concept of successful aging was found to complement health promotion activities, and motivate older adults for independent living and improve their quality of life and happiness.[6-8]

As in gerontological science, successful aging played an important role in stimulated older people to maintain and promote health.[6] Successful aging refers to an individual's perception of a favorable outcome in adapting to the cumulative physiologic and functional alterations associated with the passage of time, while experiencing spiritual connectedness, and a sense of meaning and purpose in life.[9] Not only is the physical being exposed to the passage of time, but one's mental and spiritual being is subject to inevitable change. Flood approaches successful aging as part of holistic care toward older adults and recognizes that, although they may have functional limitations or chronic disease, older adults may experience satisfaction with their ability to cope and adapt and find meaning in their lives.[7,9]

Currently, most health reports indicate that many older adults tend to develop kidney function decline (KFD) as they are growing age. It is estimated that after the age of 30 years, the glomerular filtration rate (GFR) progressively declines at an average rate of 8 ml/min/1.73 m^2/ decade.[10] KFD often develops slowly with few symptoms, and many people do not realize its occurrence until the disease has advanced. About half of the population over 70 years old has an estimated GFR (eGFR) < 60 ml/min/1.73 m^2.[11] Older age is a key predictor of KFD, and 11% of individuals over 65 years have creatinine levels that fall in stage 3 or worse.[12] This is considered a significant age-related decline in kidney function.[13] Successful aging has not been explored from the perspective of older people living with kidney function decline.

The successful aging concept was developed by Troutman et al,[14] based on their theory development related to nursing science.[7] Successful aging is perceived by older adults themselves.[7,9] It is helpful to understand the adaptation of older people as holism of physical, biological, mental, and spiritual health. It is also useful for practitioners to taking care older people.[7] However, effective measurement is required to evaluate successful aging in any situation such as screening, care taking, and measuring outcomes. Based on a theoretical definition, successful aging is a multi-dimension and does not exclude physical limitation of individuals from being considered.[14] It is multidimensional and may vary depending on the individual and his/her interpretation of life circumstances. However, culture, race, gender, and lifestyle may appear to play roles in delineating the characteristics of successful aging.

The Successful Aging Inventory (SAI) was developed by Troutman et al.[14] It was developed originally in English and has been used to measure the concept of successful aging in various older populations since 2008. The SAI has four dimensions. First, functional performance mechanisms refer to a coping process that encompasses the ways that a person responds to the cumulative physiologic and functional changes that occur over time. Second, intrapsychic factors refer to the innate and enduring features of an individual's character that either enhance or impair one's ability to adapt to change or solve problems. Third, spirituality describes the person's views and behaviors that convey a sense of relatedness to a greater power or being. Exchanges occur among each of the foundational coping processes. Output processes can influence each other, in turn, affecting the next step. Fourth, gerotranscendence is a shift to a person's meta-perspective involving perception and information-processing, learning, judgment, and emotion.[7,14] The SAI has been translated into Persian,[15] Korean,[16] and Spanish language.[17] It was also administered and validated in several samples such as retirement,[18] older adults (chronological age),[16] chronic illness, low-income, and racially diverse older adults.[19] In previous studies, it was confirmed with good psychometric properties and reliabilities; however, no Thai version was found. Therefore, the objective of this study was to determine construct validity and reliabilities of the Successful Aging Inventory Thai version in older adults with kidney function decline. This tool would benefit nurses and health care providers to have a standard tool to measure successful aging for Thai older adults in many circumstances taking care of older people.

In this study, the researchers used Brislin's back-translation method to translate the SAI.[20] This translation method offers a guideline to modify the new target version to achieve cross-cultural conceptual, semantic, and content equivalences for the constructs of the interesting tool.[20] The

comprehensive process of instrument translation should include not only translation of the instrument, but also a cultural adaption of each item to the target culture while retaining the meaning and intent of the original items. The method guides translation of the instruments from source language to another target language and make it to meet the equivalences, similarities, or differences between the two languages and offer the opportunity to justify culture.[21,22] This method helps warrant the terms and meanings of the concept or constructs being studied that may differ in languages, cultures, and countries.[22,23]

Methods

A simple random sampling technique was used to recruit sample from internal medicine clinics at a tertiary hospital in the Eastern region of Thailand. The hospital's clinics were selected because of their high percentage of patients with chronic kidney disease. In 2018, the number of chronic kidney disease patients seen in outpatient clinics was 7,588. Eligible participants were older adults with chronic kidney disease aged $\geq$ 60 years, estimated glomerular filtration rate between 15 - 60 ml/min/ 1.73 m^2 for at least three months, no cognitive impairment as determined by the Mini-Cog[24] (normal cognitive function determined by a score of 3 - 5), ability to communicate in the Thai language, and absence of symptoms that could interfere with the person's ability to respond to questions, such as tiredness, headaches, dizziness, nausea, or vomiting. The sample size was calculated according to factor analysis, which needs 10 - 20 participants per variable.[25] As the SAI consisted of 20 items, the target sample should 200 - 400 participants. Therefore, 350 participants were recruited.

Measurements

This study used only SAI to measure the successful aging of older adults with KFD. This instrument was developed by Troutman et al,[14] and widely used globally.[7] It is a 20-item questionnaire with four dimensions, including functional performance mechanisms (items 1 and 2), intrapsychic factors (7 items: items 3-9), spirituality (items 11 and 15), and gerotranscendence (9 items: items 10, 12, 13, 14, 16, 17, 18, 19, and 20). Participants rated on a 5-point Likert-type scale ranging from 0 "hardly ever/strongly disagree" to 4 "almost always/strongly agree." A summed scored can range from 0 to 80. The higher scores indicate the more successful aging.

Based on Brislin's method of back-translation, the translation for the SAI was conducted as follows. After receiving permission from the developer, the translation and cultural adaption of the SAI was conducted following translation protocol by Brislin.[20] Two bilingual experts were invited to translate the original English (E1) to Thai (T1) and back-translated from Thai to English (E2) versions as described.[20] The first bilingual translator with a background of gerontological nursing and was familiar with the concept of successful aging was selected to translate the original English version into the Thai language. Then, the second bilingual translator, who was a physician and grew up in the United States of America, worked in gerontology in Thailand and had never seen the original English translated the Thai version into the English language (E2). Later, three bilingual experts with background in gerontological nursing, psychiatric nursing, and community nursing, compared the original (E1) and back-translated (E2) version to identify discrepancies for justifying the Thai version (T1). Any discrepancies between the original English (E1) and the back-translated version (E2) were examined for revision in the Thai version until (E2) was equivalent to the original English (E1). After confirmation of content equivalences was done, the appropriateness of language and cultural sensitivity was adapted for Thai version. The expert panel worked until reaching the equivalences between the original version and the Thai version (T2). Then, the final SAI (T2) version was done, and a pilot study was planned to implement SAI (T2) to 30 Thai older adults with KFD similar to the target population at the outpatient department.

Ethical considerations

Data collection started after ethical approval was granted by the institutional review boards of Burapha University and a selected tertiary care hospital (IRB# 04-08-2562 and 042/2562). The protection of human subjects was still concerned on confidentiality using code numbers on questionnaires, security of data, no identification obtained, and data destruction after study completion.

Data collection procedure

Data collection took place from October 2019 to January 2020. During follow-up visits, the researcher met older adults

with KFD at the hospital's outpatient clinics. After being introduced by staff nurses, the researcher invited the older adults (identified from a simple randomized list of names) to participate in the study and explained the objective of the study. Questions from the prospective participants were clarified prior to obtaining consent. The process took about 45 - 60 minutes. For participants who could not read, the questions were read to them. After completing the interview, measurement instruments were checked for possible missing items. If participants chose not to respond to any item, data collection ended.

Data analysis

Descriptive statistics were used to assess the participants' characteristics and measured variables. Pearson's correlation coefficient (r) was used to measure the association among subscales of the SAI Thai version. Confirmatory factor analysis was performed to evaluate the construct validity. The model fit was based on the following multiple criteria: CMIN (P-value > 0.05), Model Chi-square value (CMIN/df ≤ 2), Goodness of Fit Index (GFI ≥ 0.90), Adjusted Goodness of Fit Index (AGFI ≥ 0.90), Normed Fit Index (NFI ≥ 0.90), Comparative Fit Index (CFI ≥ 0.95), Root Mean Square Error of Approximation (RMSEA < 0.05)[25,26], Average Variance Extracted (AVE) ≥ 0.5.[26] Cronbach's alpha coefficients were used to assess the internal consistency reliability of the subscale and the total scale. The cut-off of 0.70 was considered acceptable.[25]

Table 1 Demographic characteristics and health status of the older adults with KFD (N = 350).

Demographic Characteristics	n	%
Gender		
Female	206	58.9
Male	144	41.1
Age (years) (*M* = 74.68, *SD* = 7.79)		
60 - 69	91	26.0
70 - 79	160	45.7
≥ 80	99	28.3
Education level		
No formal education	24	6.9
Primary school	213	60.8
High school	65	18.6
Diploma	15	4.3
Bachelor's degree or higher	33	9.4
Marital status		
Married	181	51.7
Divorced/separated/widowed	157	44.9
Single	12	3.4
Income (Baht per month)		
< 5,000	174	49.7
5,001 - 10,000	70	20.0
10,001 - 20,000	51	14.6
20,001 or higher	55	15.7
Income sufficiency		
Insufficient income	146	41.7
Sufficient income with savings	110	31.4
Sufficient income but with no savings	94	26.9
Experience with a life crisis or a traumatizing event in the past two years (more than one answer if applicable)		
Own illness	349	99.7
Illness of the beloved one	153	43.7
Loss of the beloved one	141	40.3
Stage of kidney function decline		
Stage 2 (eGFR > 60)	26	7.4
Stage 3 (eGFR 30 - 59)	241	68.9
Stage 4 (eGFR 15 - 29)	83	23.7
Comorbidity conditions (more than one answer)		
Hypertension	295	84.3
Diabetes mellitus	277	79.1
Dyslipidemia	170	48.6
Other (e.g., congestive heart failure, gout, cancer, etc.)	162	46.3

Results

The participants' ages ranged from 60 to 103 years old, averaging 74.7 years (±7.79). The majority were married (51.7%) and female (58.9%). More than half (60.8%) had completed elementary education, and a majority (51.7%) were married. Over two-thirds (68.9%) of the older adults were in stage 3 of their chronic kidney disease with comorbidities of hypertension (84.3%), diabetes mellitus (79.1%), and dyslipidemia (48.6%) (Table 1).

Confirmatory factor analyses

The original model consisted of four subscales, including functional performance mechanisms, spirituality, intrapsychic factor, and gerotranscendence. All subscales had positive standardized factor loadings ranging from 0.40 to 0.93. Twenty indicators had positive standardized factor loadings ranging from 0.18 to 0.96. However, the original model did not fit the empirical data well based on the following findings: CMIN = 1048.27, df = 167, P-value < 0.001, CMIN/df = 6.28, GFI = 0.73, AGFI = 0.66, NFI = 0.76, CFI = 0.86, and RMSEA = 0.06. The model modification was used to improve model fit based on conceptualization and modification indices.[25,26] The modification indices suggested change paths of item 19 to
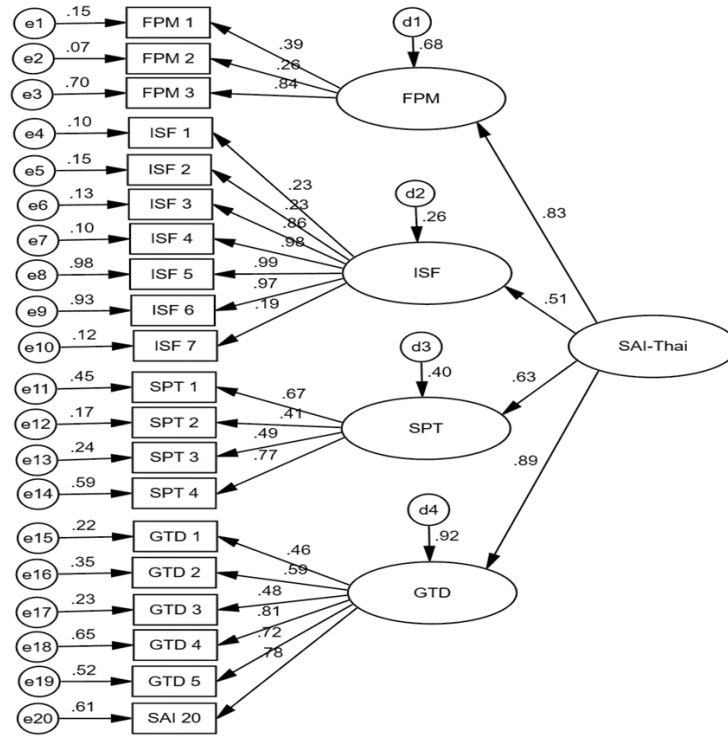
Figure 1 Confirmatory factor analysis for the SAI-Thai.

Confirmatory factor analysis of the SAI-Thai version. Single-headed arrows indicate direct relationships. The number on each path represents standardized factor loading ranging from 1.0 to -1.0. Squares represent measured variables (items on the questionnaire) and ovals represent latent factors.

SAI-Thai = Thai Version of Successful Aging Inventory, FPM = Functional Performance Mechanism, ISF = Intrapsychic Factors, SPT = Spirituality, GTD = Gerotranscendence

functional performance mechanisms, items 10 and 12 to spirituality. After the modified model had this confirmation of the factor structure, four subscales had positive standardized factor loadings ranging from 0.51 to 0.89. Twenty indicators had positive standardized factor loadings ranging from 0.19 to 0.99. The final measurement model fit the data well: CMIN = 132.91, *df* = 116, *P*-value = 0.14, CMIN/*df* = 1.15, GFI = 0.96, AGFI = 0.93, NFI = 0.97, CFI = 1.00, and RMSEA = 0.02 (Figure 1).

The internal consistency reliability of the final version of SAI for Thai older adults with KFD was re-evaluated. The results revealed that the scale had a high internal consistency reliability with a Cronbach's alpha coefficient of 0.89. The Cronbach's alpha coefficients for the four subscales, including functional performance mechanisms, intrapsychic factor, spirituality, and gerotranscendence were 0.64, 0.84, 0.73 and 0.81, respectively (Table 2).

Further, subscales were analyzed for subscale correlations. The results showed that Pearson's correlations among subscales ranged from 0.30 to 0.69, indicating moderate to high correlations (Table 3).

Table 2 Cronbach's alpha coefficients of the SAI Thai version (N = 350).

Subscales	Variable name	Item numbers	Corrected item-total correlations	Cronbach's alpha coefficient	Mean	Standard deviation
Functional performance mechanisms (FPM)				0.64	10.73	1.35
	FPM 1	1	0.35		3.84	0.46
	FPM 2	2	0.39		3.57	0.70
	FPM 3	19	0.66		3.31	0.80
Intrapsychic factor (ISF)				0.84	20.83	4.58
	ISF 1	3	0.39		2.59	1.03
	ISF 2	4	0.62		3.51	0.74
	ISF 3	5	0.56		3.30	0.83
	ISF 4	6	0.55		3.06	0.87
	ISF 5	7	0.64		2.47	1.07
	ISF 6	8	0.62		2.47	1.07
	ISF 7	9	0.57		3.44	0.73
Spirituality (SPT)				0.73	12.33	3.01
	SPT 1	10	0.32		2.68	1.33
	SPT 2	11	0.46		3.15	0.99
	SPT 3	12	0.58		3.41	0.78
	SPT 4	15	0.34		3.09	1.09
Gerotranscendence (GTD)				0.81	19.79	3.40
	GTD 1	13	0.46		3.17	0.84
	GTD 2	14	0.61		3.03	0.75
	GTD 3	16	0.42		3.13	0.97
	GTD 4	17	0.71		3.49	0.71
	GTD 5	18	0.69		3.44	0.77
	GTD 6	20	0.72		3.53	0.68
Successful Aging Inventory Thai version				0.89	63.69	9.86

Table 3 Pearson's correlation coefficient among subscales of SAI Thai version (N = 350).

Subscales	1	2	3	4
1. Functional performance mechanisms	1.00			
2. Spirituality	0.32*	1.00		
3. Intrapsychic factor	0.60*	0.30*	1.00	
4. Gerotranscendence	0.67*	0.44*	0.69*	1.00

*Correlation is significant at the 0.01 level (2-tailed).

Discussions and Conclusion

The purpose of this study was to back-translate and undertake psychometric testing of the SAI-Thai version. Overall, the SAI-Thai was a valid and reliable instrument for measuring successful aging in older Thai people with KFD. The SAI was translated and adapted into the Thai context in terms of both semantic and cultural aspects. While the translation process worked well, there were some challenges encountered during the project that was solved. This study checked content validity and appropriateness of language by comparing the original English (E1), Thai version, and back-translated version (E2). During this step, the forward translators had difficulty finding an appropriate match for English sentences in the Thai language. For example, researchers noted that the sentences "I am in a positive, pleasant mood" and "I feel that I serve a purpose in this world" were translated into different Thai words. The translator used Thai sentences with meaning to "My life is happy and pleasant" and "I feel I have a goal to live in this world." The committees reviewed and compare three versions to enhance conceptual, semantic, and content equivalence. The experts' panel worked until they reached a consensus that the Thai version was equivalent to the original version. Then, the pre-final SAI (Thai) version was established. Our experience is congruent with results from previous research related to both instrument translations and the translation and cross-cultural adaptation of the SAI.[15-17]

While we were able to find translators, the most difficult challenge for researchers using Brislin's back-translation method is finding enough bilingual persons to run the process.[27,28] Hence, an alternative way is to use only two independent bilingual translators, one to translate, and the other to back-translate.[27] However, the back-translation was adequate. This is because a competent translator can achieve semantic and content equivalence between the source and the back-translated versions, even if the translation from the source to the target language is inadequate.[21,29]

Thai older adults preferred to be interviewed rather than self-administering the questionnaire. Based on the researcher's experience and a discussion with the nurse working with Thai older adults, we concluded that some older people had poor eyesight or could not read or might not be familiar with filling out a questionnaire. There was evidence that when older adults had to fill out any health forms, most of them asked nurses or other individuals to read it to them. Researchers anticipated that it would require more time and resource to collect data and had prepared to handle the situation.

The findings from this study confirm the notion of multidimensionality of successful aging. The results supported the evidence of the four subscales structure, which were similar to the original version.[14] Besides, the four subscales were consistent with other translated versions[15,17,18] which supported that the SAI can be used across cultures. However, the number of items included in each subscale was relatively different from the original SAI in which item 19 ("I feel I have a purpose to live in this world.") was loaded in the functional performance subscale instead of the gerotranscendence subscale as presented in the original SAI. Item 10 ("I think of my loved ones who have passed away and feel that they are always close by") and item 12 ("Aging changes how I view the world") were loaded in the spirituality subscale instead of the gerotranscendence subscale, as presented in the original SAI. The four-subscale, 20-item SAI-Thai showed satisfactory reliability and validity with the potential to be an appropriate instrument for measuring successful aging in Thai older adults. The functional performance mechanism subscale included 3 instead of 2 items as presented in the original. This was because item 19 was loaded in functional performance mechanism instead of the gerotranscendence subscale, as found in the original SAI. The spirituality subscale included 4 instead of 2 items as shown in the original version, in which items 10 and 12 were loaded in spirituality instead of the gerotranscendence subscale. The intrapsychic subscale included 7 items comparable to those shown in the original SAI. Gerotranscendence had 6 instead of 9 items as presented in the original SAI. Some indicators had standardized factor loadings of less than 0.50. When considering the Average Variance Extracted (AVE) of each

component which ranged from 0.42 to 0.53, the construct's convergent validity is adequate.[25]

The SAI is based on the definition of successful aging which is a dynamic state affecting an individual who experiences losses in one or more domains of human functioning, including physical, psychological, spiritual, and social functioning. Previous research suggests that SAI is a valid and reliable instrument for measuring successful aging.[7,14] The SAI proved an accurate measure of successful aging in different people. The SAI had good construct validity, reliability, and acceptable internal consistency reliability. In 350 Thai older adults with KFD, Cronbach's alpha coefficient of 0.89 was found which is comparable to 0.86 of the original English version.[14] Other studies also revealed such high internal consistency reliability. McCarthy studied 112 residents of a continuing care retirement community and a Cronbach's alpha coefficient of 0.82.[30] Kim found a Cronbach's alpha coefficient of 0.86 when the Korean version of the Successful Aging Inventory was administered to 200 older adults.[16] Gallardo Peralta et al. reported a Cronbach's alpha coefficient of 0.86 when the SAI was applied to 777 older people living in urban and rural areas of Chile.[17]

In conclusion, our study completed the translation of the SAI into a culturally and semantically appropriate instrument to measure successful aging in Thai older adults with KFD by using Brislin's process. The findings revealed that the SAI-Thai version had cross-cultural conceptual, semantic, and content equivalence with the original SAI, with some minor adaptations. This new Thai version of SAI showed satisfactory psychometric properties and an acceptable level of the instrument stability. The 4-subscale, 20-item SAI-Thai showed satisfactory reliability and validity and had the potential to be an appropriate instrument for measuring successful aging in Thai older adults. Further research with larger sample size and different populations should be done to determine the psychometric properties of the measure, and explore successful aging in a broader range of populations and settings including Thai older adults who have chronic illnesses or functional decline, who live in nursing homes, or community-based settings, and who are hospitalized aging clients in addition to the active older people.

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