MENTAL HEALTH ASSESSMENT TOOL FOR OLDER THAI ADULTS: DEVELOPMENT AND PSYCHOMETRIC TESTING

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Abstract. The purpose of this study was to develop and test the psychometric properties of the Mental Health Assessment Tool for Older Thai Adults (MHAT-T), a 32-item self-report questionnaire. Development of the MHAT-T was based on an exploratory sequential mixed methods design, where the results of the first method (qualitative) were used to develop the mental health assessment tool for older Thai adults. The initial questionnaire was composed of 100 items and carried out among 1,266 older Thai adults (aged 60 years and over), including Buddhists, Muslims, and Catholics in the northeastern, northern, central, and southern Thailand, and the Bangkok Metropolitan Area. The exploratory factor analysis, with an acceptable factor structure model, yielded 32 items aligned with five factors: family attachment, mental quality, community dignity and support, mental status, mental capacity. The preliminary psychometric properties demonstrated the internal consistency of the MHAT-T was at a high range of 0.76 to 0.87 and acceptable for a new instrument. The MHAT-T had an excellent content validity index score of 0.99. Test-retest reliability at two weeks was fair (0.54 to 1.00, p >0.001). A score of 92 of 106 points was classified as normal mental health. The MHAT-T served adequately as a newly captured construct and should be offered as a tool for assessing mental health among older Thai adults in the community.

Keywords: mental health, older Thai adults, assessment tool, development and psychometric testing

INTRODUCTION

Mental health with older age is of international concern. The World Health Organization (WHO, 2001b) stated, "mental health is defined as a state of well-being in which the individual realizes his or her own abilities, coping with the normal stress of life, working productively and fruitfully, and being able to make a contribution to his or her community." These capacities are complex processes of adaptive physical and psychological factors for contributing to society with aging (Campton, 2005).

Mental health is important in older people because they face difficulties with their physical health, functional impairment, personal loss, and social changes

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such as retirement, insufficient income, and social isolation (Ding, 2004; Elisha *et al*, 2006; Weaver *et al*, 2006). Being healthy and happy is considered a way for older adults to obtain benefits, such as work ability, family service (Baltes and Carstensen, 1996; Cornwell *et al*, 2008), reducing stress (Pressman and Cohen, 2006; Fredrickson, 2009), and reducing cost of care for mental disorders (Chou and Chi, 2004; Lee, 2006).

However, understanding mental health is difficult and is complicated to define. According to the WHO (1996), "health is defined as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." This statement creates a lack of understanding among health care providers (Herrman, 2001). For instance, health systems often fail to incorporate mental health into health promotion programs (Sturgeon, 2007). The negative aspects related to mental illness and the negative instruments used to evaluate mental health add more confusion (WHO, 2001a; MaClure *et al*, 2005). Culture and religion influence older people's mental health. According to a "western view", mental wellness emphasizes self, and contributes to autonomy and differentiation from others (Mann *et al*, 2004). In contrast, the "Asian view" does not focus on self, but focuses on interdependence on people in the community (Neff *et al*, 2008). Buddhist philosophy has influenced Asian thoughts, words and actions, including mental health (Ekman *et al*, 2005).

The idea of mental health has deviated from concentrating on mental illness during the past ten years to include both affective (*eg*, pleasure and pain), and cognitive (*eg*, mental capacity) domains. Many papers have concentrated on cultural and religious factors. Existing instruments of mental health are more likely to focus on the emotional than mental capacity, such as the Positive and Negative Affect Schedule (PANAS) (Crawford and Henry, 2004), the Affect scale (ABS) (Bradburn, 1969), the Index of Well-being and the Index of General Affect (Campbell *et al*, 1976).

In Thailand, the demand for mental health services is seen in public health. Mental health practitioners need effective mental health assessment instruments because the focus has changed from hospital care to community care. These instruments must evaluate and monitor public mental health. Only 19 papers from Thailand have evaluated mental health promotion programs; most aimed at reducing depression, and loneliness (Sutthilet, 2008). Currently, only two instruments assessing mental health in older Thai adults do not focus on either emotional or cognitive domains. No instrument integrates culture and religion in a mental health assessment.

To address this problem, a mental health assessment tool for older adults was developed based on formative research. We attempted to develop an assessment tool that fits within the Thai socio-cultural context for people, aged 60 years and over. In this study, qualitative methods were used to identifying domains of mental health important for older Thai adults and quantitative methods were used to develop and test the quality of the instrument. This study was able to identify normal values for older people living in the community.

MATERIALS AND METHODS

Study design and procedures

An exploratory sequential mixed design was employed where the results

of the qualitative method were used to develop a mental health assessment tool for older Thai adults.

This study was conducted in three phases. The first phase identified domains of mental health among older Thai adults using a literature review, focus group discussions, and in-depth interviews. Using these approaches, the concepts were synthesized to fit the existing situation. The second phase was to develop an instrument. This was conducted in three steps: generation of an item pool, determination of content and face validity of the initial draft of the instrument and pre-testing. The third phase was quantitative testing of psychometric properties. The study was conducted by survey among 1,266 Thai adults aged 60 years and over. The participants included Buddhists, Muslims, and Christians in northeastern, northern, central, and southern Thailand, and the Bangkok Metropolitan Area.

This study was approved by the Mahidol University Institutional Review Board (MUPH 2009-099).

The first phase: identifying domains of mental health among older Thai adults

The process of constructing the assessment tool started with a broad review of the literature about mental health, psychological well-being, and quality of life. A qualitative approach was used to obtain the mental health opinions of older Thai adults using four focus groups conducted with 67 older Buddhist adults aged 60 to 79 years from five regions in Thailand. Two focus groups were conducted among older Muslims and Christians. Thirty-two older adults aged 80 years and over were interviewed at their houses in the provinces of Nakhon Sawan, Chachoengsao, Phetchabun, Ranong, and Bangkok, Thailand. Each focus group was conducted with 8 to 12 older adults. Before starting each focus group, older adults gave their informed consent, and were completely briefed regarding the demographic questionnaires. Approximately 30 minutes was required to perform each interview. To supplement the data generated by the older adults, approximately 15 minutes before the end of each focus group the moderator asked if there was any other information regarding mental well-being in older adults that had not come up.

To protect the participants as research subjects, each older adult was provided with an oral explanation and a written consent form. They were interviewed for approximately 45 minutes. After the interview, background information regarding the older adults was collected.

The second phase: developing the instrument

Generation of an item pool. Generation of an item pool was started by reviewing the literature to determine the existing knowledge relevant to the operational definitions of four mental health factors. The approach was the same for each of the four factors, but some categories, such as purpose in life and autonomy, differed from the existing literature.

The theme of mental quality held the same meaning among the participants as kindness, altruism, faith and transcendence, but the calm and peacefulness categories were less consistent among participants because they perceived calmness and peace as feelings. Information from the literature review and the participants were integrated to construct statements for the initial item pool, a total of 100 items.

Determination of content validity and face validity. All 100 statements were reviewed by 13 experts. They stated this version was

too long and needed to be reduced by half. After modification, a second MHAT-T was constructed and again evaluated by experts. Each expert was asked to evaluate the content of the 46-item scale by rating each item for relevance with a 4-point scale (1 = not relevant, 2 = somewhat relevant, 3 = quite relevant, and 4 = very relevant) and clarity using a 4-point scale (1 = not clear, 2 = somewhat clear, 3 = quite clear, and 4 = very clear). The second draft of the MHAT-T consisted of 46 items with 4 themes, and the CVI was 0.99. During this second evaluation, the experts stated 4 items should be dropped; two items (item f6 and item f7) were revised, and the semantics of two items (item m21 and item m46) were improved to provide a clearer meaning.

Fifteen older persons were recruited to determine the clarity and adequacy of items. They commented on problems relating to regional wording and levels of feelings. The third draft of the instrument consisted of 42 items with a 4-point scale response format.

Pretest. Item analysis was used to determine the clarity of the wording for each item in the third draft, a total of 42 items. This draft was reviewed by 40 older Thai adults selected by purposive sampling. The MHAT-T was used to test construction validity using item-total correlation and reliability testing. Using the above criteria, two items were deleted. Ryff *et al* (2006) reported dimensions of mental health and mental maladjustment are mirrored in biology. A barrier of constructs occurs when the category of the construct does not focus on the reflection of scale (DeVellis, 2003). Because of this, 12 items were deleted. The internal consistency for the scale was good, above 0.7 and the alpha coefficient of the 32 items was 0.91; the MHAT-T was well above standard for a new instrument (Nunnally and Berstein; 1994).

The third phase: quantitative methods for testing psychometric properties

This phase consisted of two steps: testing of construct validity and internal consistency reliability.

The sample size was dependent on the number of items: a ratio of 10 subjects per item was recommended to perform adequate sampling (DeVellis, 2003). The MHAT-T had 32 items, thus, 320 subjects were needed. This survey administration was conducted among five regions and one province in Thailand: northern, northeastern, and central, the southern Thailand and the Bangkok Metropolitan Area. Nine provinces were selected by simple random sampling with subjects from three religions: Buddhism, Islam, and Catholicism. For each province, 10 districts and 16 subdistricts were selected by simple random sampling. In each of the 16 subdistricts, 1,266 older adults were selected using criteria such as having the ability to hear and speak, understand the Thai language, being able to respond appropriately to the interview and willingness to participate in this study. The questionnaire was self-reporting, and the response rate was 100%.

The exploratory factor (EFA) was analyzed by the principle component extraction method with promax rotation using the computer program SPSS. An Eigen value of 1.0 was used as a criterion to extract the number of components. An item-factor loading of 0.45, claimed as having significance, were used (Hair *et al*, 2006).

The sample size of contrasting group for validity testing included older adults with depression who were diagnosed by a doctor (n = 43) and older adults in the

community (n = 1,266). To estimate the construct validity, an independent t-test was used to determine differences in validity.

RESULTS

The results are divided into the characteristics of the samples, testing validity, testing reliability, and the norm value of the MHAT-T.

The characteristics of the sample population

The study population was comprised of 1,266 older persons, 60.3% females. The mean age was 68.9 (SD=6.67) years and the age range was 60 to 97 years. Most of the subjects were Buddhists (76.5%), married (58.1%), completed primary school (63.9%), worked in the agricultural sector (29.0%), had sufficient income without savings (57.3 %), and had chronic illnesses (63.3%) (Table 1).

Testing validity

Content validity. All statements were revised by 13 experts and 15 older key contributers using the content validity index (CVI). The results of this study showed a CVI score of 0.99.

Testing construct validity by factor analysis. Exploratory factor analysis was established to determine construct validity. Before analysis, the statistic assumptions concerning normality of data and the correlation matrix for the 32 items revealed low to moderate correlations (r = 0.085 to 0.627). The results of the measure of sampling adequacy (MSA) in the Anti-image correlation matrix ranged from 0.852 to 0.960, reaching the criterion of 0.70. The Kaiser-Myer-Olkin Measure (KMO) = 0.925 and the Bartlett's test of sphericity (χ^2 = 17,131.539, $p < 0.001$) revealed variables had multivariate normal distribution and the correlation matrix was suitable and appropriate to conduct factor analysis.

Table 1
Selected demographic characteristics of older adults.

Characteristics	Number	Percentage
Living areas		
North	251	19.8
Northeast	409	32.3
Central	290	23.0
South	187	14.7
Bangkok	129	10.2
Sex		
Female	764	60.3
Male	502	39.7
Age (years)		
60-74	997	78.8
75-84	243	19.2
85-94	24	1.9
≥95	2	0.2
Religion		
Buddhist	969	76.5
Christian	80	6.3
Muslim	217	17.1
Marital status		
Single	47	3.7
Married/partnered	736	58.1
Married/separated	39	3.1
Divorced/separated	19	1.5
Widowed	425	33.6
Income sufficient		
Sufficient, without savings	721	57.0
Insufficient, with debt	545	43.0
Health status		
Healthy	464	36.7
Illness	802	63.3
Education		
Literate	335	26.5
Primary school	809	63.9
Secondary school	55	4.3
Diploma/College	10	0.8
Bachelor's degree	23	1.8
Postgraduate study	34	2.7
Current employment status		
Unemployed	318	25.1
Employed	114	9.0
Merchant	104	8.2
Agricultural worker	367	29.0
Housework	363	28.7

Table 2
Factor analysis of the MHAT-T.

Factors	Eigen value	Percentage of variance	Attributions	Factor loading
1	9.855	32.769	Family attachment (7 items)	0.568-0.772
2	2.468	7.703	Mental quality (8 items)	0.640-0.730
3	1.786	5.581	Mental status (7 items)	0.565-0.742
4	1.598	4.995	Community dignity and support (5 items)	0.674-0.761
5	1.215	3.797	Mental quality(6 items)	0.471-0.800

Table 3
Mental health among older adults with contrasting groups.

Factors	Descriptive statistics		Independent *t*-test: statistics		
	Mean	SD	*t*	df	Asymp Sig (2-tailed)
Family attachment			3.451	43	0.001
Community[1]	22.51	3.50			
ICD-10[2]	20.54	5.39			
Mental quality			3.144	43	0.003
Community[1]	25.40	3.55			
ICD-10[2]	23.57	6.25			
Mental status			3.959	43	0.000
Community[1]	18.18	2.66			
ICD-10[2]	16.00	5.42			
Community support			3.720	43	0.001
Community[1]	15.37	2.37			
ICD-10[2]	13.42	4.23			
Mental capacity			1.473	43	0.148
Community[1]	16.53	2.77			
ICD-10[2]	16.33	4.39			

From the results of factor analysis, five items were dropped from the scale. The final draft of the MHAT-T was composed of 32 items and explained a total of 54.8% variance. The factors were explained as follows: factor 1 labeled "Family attachment," was comprised of family respect and caregiving, harmony in the family and security in the family. Factor 2 named "Mental quality" was related to patience, transcendence and mindfulness. Factor 3 named "Mental status" was related to life-satisfaction, self-esteem, joyfulness and optimism. Factor 4 named "Community dignity and support" was related to community added self-value for

Table 4
Item-total correlation and Cronbach's alpha coefficient.

Scale	No. of items	Item-total correlation	Cronbach's alpha coefficient
Family attachment	7	0.587 - 0.759	0.877
Mental quality	8	0.606 - 0.681	0.848
Mental status	6	0.596 - 0.707	0.822
Community support	5	0.631 - 0.721	0.801
Mental capacity	6	0.513 - 0.685	0.763
Total	32	0.521 - 0.710	0.833

older adults, caregiving, and security. Factor 5 was related to kindness, coping and adaptation and was named the "Mental capacity" (Table 2).

Testing construct validity by contrast group. The independent *t*-test was used to test construct validity comparing older adults in community (n = 43) with older adults diagnosed with depression by a doctor (n = 43). By comparing the scores of the two groups, family attachment, mental quality, mental status, community dignity and support, had significant differences; only mental capacity was not different (Table 3).

Testing reliability

Internal consistency. The MHAT-T score was calculated for all older adults. The internal consistency, as estimated by the Cronbach's alpha coefficient on the total MHAT-T, was 0.915. All the subscales reported a sufficient Cronbach's alpha coefficient, r = (0.701 to 0.876). All item correlations were higher than 0.3 (Table 4).

Test-retest reliability. The test-retest reliability of the scale was calculated among 40 older adults who repeated the MHAT-T two weeks after the first administration. The correlation ranged from 0.54 to 1.00; only mental status had moderate reliability. The total for the MHAT-T demonstrated high reliability ($r \geq 0.70$) indicating stability over a short time period.

The norm value of the MHAT-T

The final version of the MHAT-T consisted of 32 items with a four point Likert scale. The median of the MHAT-T was 98; the 25th and 75th percentiles were 92 and 106 points, respectively and were classified into three groups: 107 - 127 = good mental health, 92 - 106 = average mental health, ≤91 = poor mental health.

DISCUSSION

A total of 1,266 older adults were included in the survey to test the psychometric properties of the MHAT-T. According to Comrey and Lee (cited in Tabachnick and Fidell, 2001), a sample size of 300 cases is sufficient. In this study, the sample was acceptable because Dixon (2001) recommended the number of respondents per item should be 10:1. Thus, the number of participants in this study was sufficient for generalization to the target population and reduced sample size error. Heterogeneity of the sample size was accomplished using multi-stage sampling in both rural and urban areas. The participant characteristics varied by occupation, education, and living arrangements.

Although most of participants had chronic illnesses, the diseases did not influence their mental health because the root definition of successful aging was concerned more with quality of life issues than cognitive, social, and mental capacity (Glass and Balfour, 2003).

The findings of this study indicate the content validity of the MHAT-T was supported by the expert panel. In this study, the content validity index was high because this instrument was based on focus group discussions and in-depth interviews to measure mental health among older Thai adults, which was supported by Wynd *et al* (2003). Polit and Beck (2006) found the degree of CVI showed how well the sample items were appropriately constructed. Therefore, the sample items of the MHAT-T fit the construct measured.

The construct validity of the MHAT-T was examined using the EFA and contrast groups. Testing of construct validity the EFA was conducted by summarizing literature reviews and information provided by participants from focus group discussions and in-depth interviews. The MHAT-T instrument for older Thai adults included five dimensions: family attachment, mental quality, mental status, social dignity and support and mental capacity.

The EFA indicated the MHAT-T was a fit model because the statistical assumptions were tested before conducting factor analysis, such as the Kaiser Meyer Olkin (KMO), since the KMO shows a measure of sampling adequacy (Tabachnick and Fidell, 2001). According to Nunnally and Berstein (1994), factor loading should be less than 0.40, representing the construct of interest. Factor loading of the five factors (range 0.471 to 0.800) was significant; thus, each factor identified constructs for mental health among older Thai adults.

To examine the MHAT-T in clinical practice, a construct group method was used to test construct validity with an interdependent *t*-test. This method was used to determine differences between two groups: older adults with the diagnosis of depression made by a doctor and older adults in the community. The MHAT-T provided a valid scale for measuring significant differences among older people, differentiating normal mental health from depression.

Regarding testing reliability, this instrument as 0.7, acceptable for a newly developed instrument (Nunnally and Bernstein, 1994). The Cronbach's alpha coefficient for the MHAT-T was 0.915, which is considered high for a new instrument. This may have been impacted by the pretest. Brink and Wood (2001) reported using this technique for stability, will cause the result to be stable over time. Our results showed after 2 weeks the results remained stable. All the subscales had acceptable levels of internal consistency verified with Cronbach's alpha values of 0.7 and over, adequately measuring mental health among older Thai adults.

Revision of this instrument using confirm factor analysis is needed to be able to use the MHAT-T as a diagnostic instrument and to determine the sensitivity, specificity and likelihood ratio in classifying older adults as mentally healthy or not healthy. This should be undertaken in future research.

The MHAT-T may contribute significantly to nursing care, research and public health nursing. Since mental health promotion is a public health nursing goal, the MHAT-T may be used as an instrument for assessing mental health outcomes. The MHAT-T has the potential for assessing future health risks for older Thai adults

and for serving as a guide for public health nurses working with individuals, their families and the community, because each dimension of the instrument relates to family attachments and community dignity and support. The MHAT-T can classify older Thai adults into three mental health groups. A score of ≤91 could help public health nurses to discover and identify problems. Public health nurses may assist in treating and preventing these problems before they cause a crisis. The subscales of the MHAT-T showed a significant relationship between families and communities of older adults. Public health nurses should be able to enhance family and community activities to promote better mental health. The MHAT-T may be useful for monitoring changes in older Thai adults after nursing interventions. Public health policy makers need to be aware of the mental health older Thai adults distinct from other demographic groups.

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REFERENCES

Baltes MM, Carstensen LL. The process of successful ageing. *Ageing Soc* 1996; 16: 397-422.

Bradburn NM. The structure of psychological well-being. Chicago: Aldine, 1969.

Brink PJ, Wood MJ. Basic steps in planning nursing research: from question to proposal. 5th ed. Boston: Jones and Bartlett, 2001.

Campbell A, Coverse PE, Roders W. The quality of the American life. New York: Russell Sage, 1976.

Campton WC. An introduction to positive psychology. New York: Wadsworth, 2005.

Chou KL, Chi I. Prevalence and correlations of depression in Chinese oldest-old. *Int J Geriatr Psychiatr* 2004; 20: 41-50.

Crawford JR, Henry JD. The Positive and Negative Affect Schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *Br J Clin Psychol* 2004; 43: 245-65.

Cornwell B, Laumann EO, Schumm LP. The social connectness of older adults: A national profile. *Am Soc Revis* 2008; 73: 185-203.

DeVellis RF. Scale development: theory and application. 2nd ed. Thousand Oaks: Sage, 2003.

Ding S. The rural elderly support in China and Thailand. *Geriatr Gerontol Int* 2004; 4: s56-9.

Dixon JK. Factor analysis. In: Munro BH, ed. Statistical methods for health care research. 4th ed. Philadelphia: Lippincott, 2001.

Ekman P, Dacidson RJ, Richard M, Wallance BA. Buddhist and psychological perspectives on emotions and well-being. *Am Psychol Soc* 2005; 14: 59-63.

Elisha D, Castle D, Hocking B. Reducting social isolation in people with mental illness: the role of the psychiatrist. *Aust Psychiatr* 2006; 14: 281-4.

Fredrickson BL. Positivity. New York: Crown, 2009.

Glass T, Balfour J. Neighborhoods and health. New York: Oxford University Press, 2003.

Herrman H. The need for mental health promotion. *Aust NZ J Psychiatr* 2001; 35: 709-15.

Hair JF, Anderson RE, Tatham RL, Black WC. Multivariate data analysis. New Jersey: Pearson Education, 2006.

Lee M. Promoting mental health and well-being in later life. London: Age Concern and Mental Health Foundation, 2006.

MaClure R, Turner C, Peel N, Spinks A, Eakin E, Hughes K. Population-based interventions for the prevention of fall-related injuries in older people. The Cochrane Collaboration. *Cochrane Database Sys Rev* 2005; 25:

CD004441.

Mann MM, Hosman CMH, Schaalma HP, DeVries NK. Self-esteem in a board-spectrum approach for mental health promotion. *Health Educ Res* 2004; 19: 357-72.

Neff KD, Pisitsungkagarn K, Hsieh YP. Self-comparison and self-construal in the United States, Thailand, and Taiwan. *J Cross-Cultural Psycholog* 2008; 39: 267-85.

Nunnally JC, Berstein IH. Psychometric theory. 3rd ed. New York: McGraw-Hill, 1994.

Polit DF, Beck DF. The content validity index: are you sure you know what's being reported? critique and recommendations. *Res Nurs Health* 2006; 29: 489-97.

Pressman SD, Cohen S. Does positive affect influence health?*Am Psycholog Assoc* 2006; 31: 925-71.

Ryff CD, Love GD, Urry HL, *et al*. Psychological well-being and ill-being: do they have distinct or mirrored biological correlates? *Psychother Psychosomat* 2006; 75: 85-95.

Sturgeon S. Health promotion challenges: promoting mental health as an essential spect of health promotion. *Health Promot Int* 2007; 21(s1): 36-41.

Suthilet P. A synthesis of research on mental health promotion in older adults. Nakhon Pathom: Mahidol University, 2008. 301 pp. Dissertation.

Tabachnick BG, Fidell LS. Using multivariate analysis. New York: A Pearson Education, 2001.

Weaver AJ, Flannelly K, Larson DB. Mental health issues among clergy and other religious professionals: A review of the research. *J Pastor Care Counsel* 2006; 56: 393-403.

World Health Organization (WHO). Basic document. 36th ed. Geneva: WHO, 1996.

World Health Organization (WHO). Strengthening mental health promotion. Geneva: WHO, 2001a.

World Health Organization (WHO). Mental health: new understanding. Geneva: WHO, 2001b.

Wynd CA, Schmidt B, Schaefer MA. Two quantitative approach for estimating content validity. *Western J Nurs Res* 2003; 25: 508-18.