CHAPTER III
RESEARCH METHODOLOGY

This chapter provides information of the methodology which was used to develop the mental health assessment tool in Thai older adults. The chapter describes research design, protection of human subjects and research procedures phase I: Identifying domains of mental health for Thai older adults, Phase II: developing a scale and phase III: testing psychometric properties.

3.1 Research Design

This study addressed the development of a mental health assessment tool for Thai older adults based on postpositivism. Using postpositivism, the qualitative study employed a scientific approach to conduct the research, posing that nature is not singular and that the elements are capable of being reduced. The investigator was concerned with multiple-perspectives from participants rather than forming a singular reality, and focused on logical, empirical data collection, identifying probable causes and effects and deterministic in nature based on theory (Denzin, & Lincoln, 2003).

Creswell and Clark (2007) explained that an exploratory sequential mixed method design arises as to what information is most useful for the study design in developing an assessment instrument because qualitative data analysis quotes from individuals, and themes emerge that consist of groups of codes. Each of the codes is turned into a questionnaire item, variables are measured by multiple items and an instrument is tested by psychometric properties.

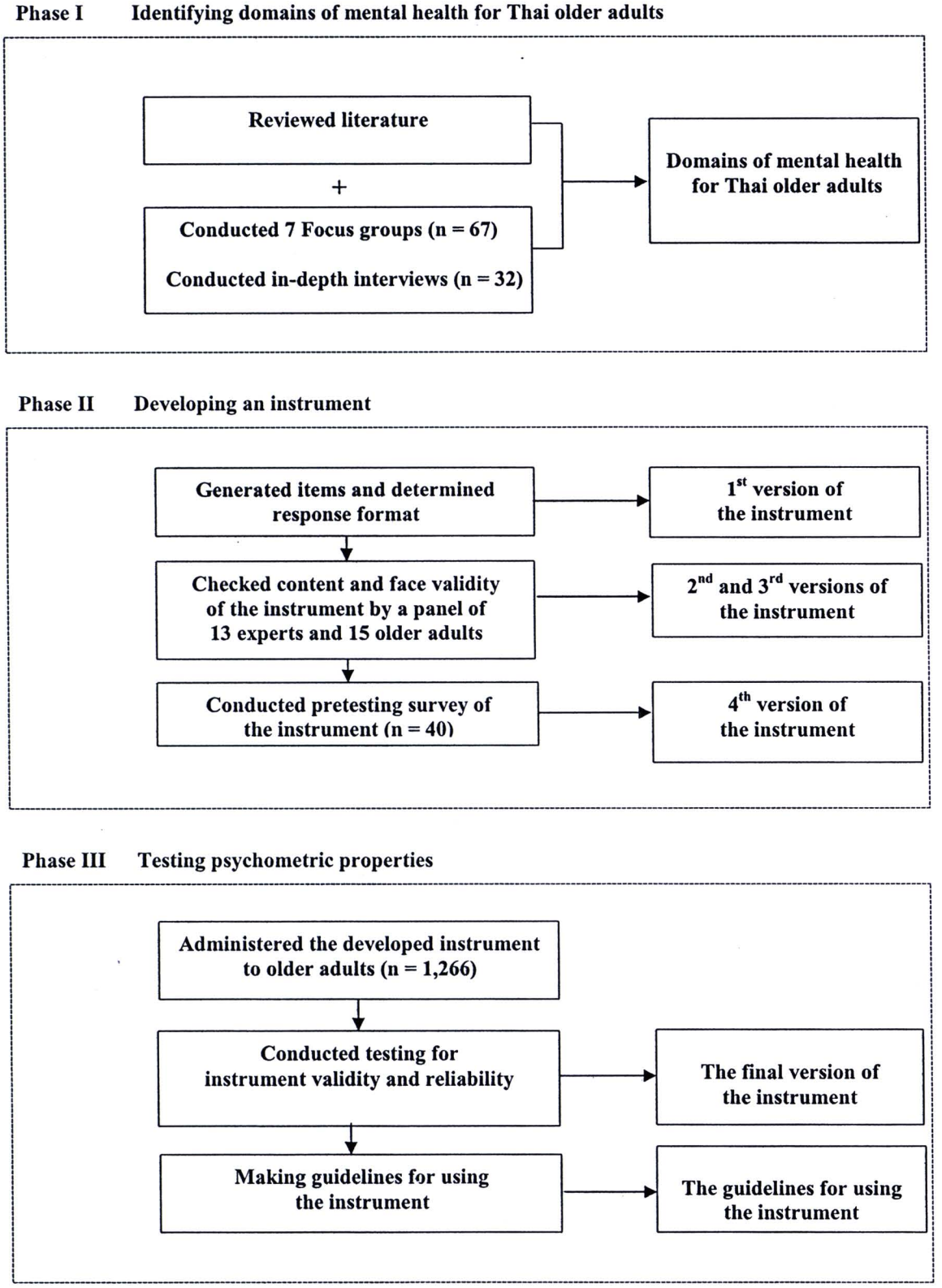
This study used an exploratory sequential mixed methods design wherein the results of the first method (qualitative) were used to develop a mental health assessment tool for Thai older adults. This study was conducted in three phases. The first phase identified domains of mental health for Thai older adults by literature reviews, focus group discussions, and in-depth interviews. Using these approaches,

concepts were synthesized from existing phenomena. The second phase involved developing an instrument. It was conducted in three steps: generating an item and determining response format, determining content validity and face validity of the initial draft of the instrument and pretesting.

The third phase employed quantitative methods for psychometric properties. It was conducted with 1,266 Thai older adults (aged 60 years and over). The participants comprised Buddhists, Muslims, and Catholics in the northeastern, central, and southern regions, and the Bangkok Metropolitan Area in Thailand.

The present study was divided into three phases to achieve the objectives of the study as shown in Figure 3-1.

Figure 3-1 Research Procedures of the Study



3.2 Protection of Human Subjects

To protect the participants as research subjects, the proposed study was approved by the Institutional Review Board of Mahidol University (Appendix A), and human research committee of Srithanya Hospital before the data collection began.

Participants were informed with a complete explanation and written description of the purpose, method, the potential risks and the benefit of participants in this study. Moreover, the protection of confidentiality and the right of participants as subjects were reviewed. The office address and telephone number of the investigator were given to the participants. Therefore, written consent was a result of the informed decision of each participant.

In the qualitative study, the tape recorded interviews were transcribed by the investigator. The participant's name and personal information were kept in a locked safe cabinet. All papers and tapes containing data were kept at the investigator's locker at the office. When the study was completed, participant personal information and tapes were destroyed.

In the quantitative study, consent forms were kept in an envelope while the questionnaires were secured separately in a locked cabinet. All questionnaires were destroyed when the data were not needed for the purpose of this study.

Furthermore, the investigator and research assistants provided counseling to participants who felt suffering from depression, anxiety and stress. In cases where participants experienced high depression, anxiety and stress, the investigator and research assistants helped them to manage problems and referred them to professional officers.

3.3 Research procedure

An exploratory instrument employing mixed methods was separated into three phases: phase I: Identifying domains of mental health for Thai older adults, Phase II: developing an instrument and phase III: testing psychometric properties. The steps in each phase were described by descriptive content, participants, instrument, data collection, and data analysis.

3.3.1 Phase I: Identifying Domains of Mental Health for Thai Older Adults

The first phase was conducted to identify domains and its content of mental health in older adults. Three methods were conducted including 1) literature review, 2) focus group discussions, and 3) in-depth interviews. This phase helped the investigator clarify and narrow the meaning, theoretical framework and factors related to mental health in Thai older adults that were used to identify the domains and content of the research study. The information obtained from literature reviews, focus group discussions and in-depth interviews were used for item development. The details of this phase are illustrated below.

3.3.1.1 Literature review

Literature review helped the investigator understand the concepts of mental health and determine significant themes. The sources of literature were databases from electronic databases: CINAHL, PsycINFO, PubMed, Social Science Index and manual reference lists.

3.3.1.2 Focus group discussions and In-depth Interviews

Participants

Ninety-nine elderly individuals (67 for focus group discussions and 32 for in-depth interviews) were selected from health care providers at Primary Care Units (PCUs) with the inclusion criteria described below.

Inclusion criteria

1. Older adults aged 60 years and above
2. Having ability to hear and speak
3. Having ability to verbally communicate in Thai
4. Willingness to participate in this study

Exclusion Criteria

1. Withdrawal during discussion or requested withdrawal from this study.
2. Unable to participate through the whole process.
3. Treated by cognitive impairment, dementia or mental illness during the process in this research.

Instruments

Open-ended questions served as guidelines for interviews and discussions in groups. The questions were developed from literature review and research questions. The guidelines or open-end questions were approved by three experts in the following fields: gerontological nursing, mental health nursing, and psychology. It contained open-ended questions in which participants were asked to express: "What is the meaning of mental health?"; "How do you define mental health for older adults?"; "What is the meaning of mentally healthy conditions for older adults?"; "What is the meaning of negative mental healthy conditions for older adults?"; "What promotes mental health?"; "How do you stay mentally healthy?"; and "How specific should the measure be?" (Appendix B).

Data collection

Literature review

Literature review identified the concepts of mental health for older adults. Key terms including mental health, psychological well-being, and quality of life were searched for in the literature published between 1961 to 2008 in databases, namely, CINAHL, PsycINFO, PubMed, Social Science Index and manual reference lists. The total was 36 papers.

Focus groups

This step was undertaken between July to December 2009. Seven focus groups were conducted. Four focus groups were conducted with 67 older adults (aged 60 to 79 years) who were Buddhists from five regions in Thailand and two focus groups were conducted separately with Muslims and Catholics for sensitive issues and their different ways of expression (e.g., religious belief, stigma, and words "*ploi wang,*" "*tam jai,*" and "*happiness*"). Each focus group was conducted with 8 to 12 older people. Before starting each focus group, older adults gave their informed consent, and completed brief demographic questionnaires. The discussion took approximately 30 minutes. To supplement the data generated by the older people, approximately 15 minutes before the end of the focus group, the moderator asked whether there was any other information regarding mental health in older adults that had not come up. The interviews were recorded. Each time a participant spoke, the researcher wrote the speaker's first name into field notes. The first assistant researcher

recorded the facial expressions, the tone of voice, and the mannerisms of participants while the second assistant researcher checked what questions the researcher asked clearly and which unclearly, the facial expressions, tone of voice, and mannerisms of participants to help the investigator.

In-depth interviews

In-depth interviews were carried out in January 2010. Thirty-two older adults (aged 80 years and over) were thoroughly interviewed at their homes in Nakhon Sawan, Chachoengsao, Phetchabun, and Ranong Provinces, and the Bangkok Metropolitan Area, Thailand. To protect the participants as research subjects, each older adult was provided an oral explanation and written consent form. All of the participants signed two participants' informed consent forms to confirm each subject's agreement to participate and one copy was given to the participants. Another copy was duplicated for research records. Oral consent for the interview and audiotape recording were requested from informants before the interview. Each of them was interviewed, for approximately 45 minutes. After the interview, background information of each older adult was collected.

Data Analysis

The content analysis method was conducted in five steps: 1) the investigator recorded the statements from all participants, read over and over and transcribed, 2) the meanings of information of each statement were extracted line by line, 3) the raw data was read several times to covert meaningful statements into universal and abstract statements. For step 4), the investigator constructed the meaning accurately presented in the original statements identified themes that were written down, grouped themes into categories, and 5) explored the descriptive phenomena accurately to reveal the essential structure in order to confirm the final statement.

3.3.2 Phase II: Developing an Instrument

The second phase was conducted to develop the assessment instrument and provided an initial test of the psychometrics. To meet the validity criteria, a panel of experts and key informants was organized to determine the content and face validity of the developed instrument. A small group of older adults were represented in a pretest study to evaluate the usability and item analysis of the developed instrument.

3.3.2.1 Generating items and determining response format

To generate an item, the investigator made a blueprint of the dimensions of the domain of mental health for Thai older adults. The items were written. These items were considered and selected using five criteria: a) items reflected content and construct of mental health for older adults, b) each item expressed one and only one idea, c) the language was kept as simple as possible, avoiding colloquialisms and jargon, d) reading level and vocabulary were kept appropriate and d) the use of negatives to reverse item wording was avoided. In all, 100 items were generated for the first draft.

Next, a Likert scale was selected for item formats. Four scales were used in each item: 1= strongly disagree, 2= disagree, 3= agree and 4= strongly agree.

3.3.2.2 Determine content validity and face validity

The content validity was checked using the expert's judgment on the items, and face validity was checked by a key older adult. After that, the items were revised.

Participants

In this step, participants were organized in two groups: a) the penal of experts and b) key older adults.

a) The panel of 13 experts had experiences in mental health, gerontology and public health areas and consisted of three psychologists, three psychiatrists, three psychiatric nurses, one gerontology nursing instructor, and three psychiatric nursing instructors.

b) Key people consisted of 15 older adults comprising Buddhists, Muslims, and Catholics from Nakon Sawan, Chachoengsao, Petchabun, and Ranong Provinces and the Bangkok Metropolitan Area in Thailand. The older adults were purposively selected with the inclusion criteria: 1) aged 60 years and above, 2) able to read Thai, 3) not having impairment or dementia, and 4) willing to participate to consider the second draft questionnaire.

Instruments

In this step, the instruments consisted of two assessment tools: an expert's opinion, and an older adult opinion from (Appendix D).

Data Collection

A panel of 13 experts evaluated each item and total instrument for content validity. A cover letter, describing the purpose of the instrument, and an expert's opinion form was provided to all experts. Each expert was asked to evaluate the content with a four point rating scale:

a) relevance of item based on content and construct domains using the four point scale: 1 = not relevant, 2 = somewhat relevant, 3 = quite relevant, and 4 = very relevant and

b) clarity of item using the four point scale: 1 = not clear, 2 = somewhat clear, 3 = quite clear, and 4 = very clear.

Moreover, the experts could give any other comments and recommendations.

Next, 15 older adults evaluated each item for face validity. They were asked to evaluate clarity and readability of the second draft. This technique was designed to obtain feedback on question suitability, wording, and comprehension and on overall scale design, and to help the researcher understand how older adults interpreted the questionnaire and response choices. Moreover, the researcher asked the participants to explain problems with particular questions and to suggest a solution for the problems by completing an older adult opinion form.

Data Analysis

The content validity index [CVI] was used to determine the items on a 1to 4 scale (1 = not relevant and 4 = very relevant). A CVI of $\geq$ .80 was recommended (Polit & Beck, 2006; Waltz, Strickland, & Lenz, 2005; Grant & Davis, 1997). Results of the CVI and recommendations of the panel of experts and older adult's opinions were used to revise the draft questionnaire. The researcher paid careful attention to all suggestions, and made carefully modified informed decisions about older adults' advice.

3.3.2.3 Pretest

A pretest survey was conducted to identify the usability and item analysis using internal consistency.

Participants

Forty older adults aged 60 years and over living in Chachoengsao Province among Buddhists, Muslim, and Catholics were selected by the criteria below.

Inclusion criteria

1. Older adults aged 60 years and above
2. Having ability to hear and speak
3. Having ability to verbally communicate in Thai
4. Willing to participate in this study
5. Having a passing score at least score 24 from the Thai Mini Mental Examination [TMSE]
6. Having a passing score at least three from the Chula-ADL
7. Having a score of 0 to 12 points on the Thai Geriatric Depression Scale [TGDS]

Exclusion Criteria

1. Withdrawal during discussion or request withdrawal from this study.
2. Unable to participate through the world process
3. To be treated by cognitive impairment, dementia and/or mental illness during the process in this research

Instrument:

1. The third version of the instrument
2. Thai Mini Mental Examination [TMSE]
3. Chula-ADL
4. TGDS

Data collection

The investigator trained research assistants to allocate the initial questionnaire. Older adults signed consent forms after knowing their rights and their benefits from the study. If data was not complete or missing, older adults would

be asked to complete the questionnaire before they left. In addition, older adults were offered snacks.

Data Analysis

Data analysis in this step was concerned with internal consistency reliability. Cronbach's alpha coefficient and item total correlation to test the intercorrelation among items and to determine scale consistency were used. (Nunnally & Bernstein, 1994) explained that a minimum Cronbach's alpha reliability score should be at least 0.7 in a new tool and item-total correlation should be at least 0.30. Burn and Grove (2005) described that a reliability coefficient should have a score above 0.5 (strong relationship), score of 0.3 to 0.5 (moderate relationship), and score of 0.29 to 0.1 (weak relationship). In this case, weak correlations tended to be disregarded (Strieiner & Norman, 1995). In this study, a score with Cronbach's alpha coefficients used at least 0.7 and item-total correlation was at least 0.30.

3.3.3 Phase III: Testing the psychometric properties

To test the instrument quality, this study conducted a cross-sectional survey. The details are illustrated as follows;

3.3.3.1 Cross-Sectional Survey

This step described the direct experiences of mental health for Thai older adults and presented the quality of the instrument. This step consisted of sample procedure: sample size, and selective sampling, instrument, data collection and data analysis as follows:

Population and sample size

The population of this study was composed of Thai older adults. According to Mahidol University Institute for Population and Social Research, the total elderly population was 7,274,000 persons in 2009 (Gazette, 2009). Within the total elderly population, the proportion of older people living in each region of Thailand is 20.9, 33.6, 23.6, 12.7 and 9.2 percent in the northern, northeastern, central, and southern regions, and the Bangkok Metropolitan Area Thailand, respectively (Office Statistics, Thailand, 2007). Moreover, 28.6 and 71.4 percent of the elderly are living in municipal and rural areas, respectively (Knodel & Chayovan, 2008). The

proportion and number of the elderly population in Thailand are illustrated in Table 3-1

Table 3-1 The proportion and number of the elderly in Thailand

Parts of Part of Thailand	The proportion (%)	The population in municipal area (28.6 %)	The population in rural area (71.4%)	Total number
Northern	20.9	434,796.076	1,085,469.924	1,520,266
Northeastern	33.6	669,002.304	1,745,061.6924	2,444,064
Central	23.6	490,965.904	1,225,698.096	1,716,664
Southern	12.7	264,206.228	659,591.772	923,798
Bangkok	9.2	-	-	669,208
Total	**100**			**7,274,000**

Population and Religion

Furthermore, within the proportion of the elderly population in Thailand, believing in religion: 93.6, 5.4, 0.9, and 0.1 percentage were Buddhist, Muslim, Catholic, and other beliefs in religion, respectively (Foreign Office, Thailand, 2009).

Estimating within the proportion of Thais, the number of Thai older adults believing in religion are 6,808,464 Buddhists, 392,796 Muslims, 65,466 Catholics, and 7,274 others.

Based on the above data, the size of the elderly population and the number of older adults believing in religion, the sample size was calculated and procedures were developed.

Sample size

Levy and Lemeshow (1999) have indicated an adequate sample size for prevalence can be computed by the following formula:

Equation, $n_o = \frac{Z^2 a/2\ pq}{d^2}$

Where, n_o = Sample size

$Z^2_{\alpha/2}$ = The standard estimating under normal curve at α 0.05, α/2 =0.025, Z=1.96

p = prevalence of mental depression in older population, 35.1% (Tubmanee, 2001)

q = 1-p

d = acceptable of error at 4.55 % of prevalence of mental depression in older population (Thongtang and colleagues, 2002)

The size of the elderly population has been recorded by different reports. The elderly population is a large population but the researcher did not know the variability in the proportion adopted with the practice; therefore, a p-value of p= 0.5 (maximum variability) was assumed. Furthermore, we desired a 95% confidence level and acceptable error 8% of prevalence. The resulting sample size was:

$$n_o = \frac{(1.96)^2 \times (0.35)\ (1-0.35)}{(0.0455)^2}$$

= 436.98 subjects, ~440 subjects

Regarding scale development, Nunnally and Bernstein (1994) suggested a sufficient number of 300 people. Using the glide sample size for factor analysis, the sample size of 300 cases was good, and 500 cases were very good (Comrey & Lee, 1992 cited in (Tabachnick & Fidell, 2001). The sample size needed for statistical analysis was dependent on the number of items, and was recommended to be at least ten subjects for each item being tested (Tabachnick & Fidell, 2001). According to Hair and colleagues (2006) a minimum of 20 cases were used for each variable and missing data was remedied.

From this idea the initial questionnaire had 47 items, so the sample size from factor analysis should be 20 cases × 46 items, or approximately 920 cases were estimated.

Therefore, the subjects should be for an adequate sample size of about 470 and 920 cases. Approximately 920 subjects should be recruited to obtain complete data for analysis. In this study, the total sample size was 1,266 subjects.

Sampling Procedure

The sampling procedure was conducted using the stratified multistage sampling method which is illustrated as follows:

Step I: Cluster sampling was conducted for parts of Thailand, five regions and one specific province: the northern, northeastern, central, and southern regions, and the Bangkok Metropolitan Area. Results of the Bangkok Metropolitan Area were local administration areas and specific culture; in this study, Bangkok was separated (United Nations Economic and Social Commission for Asia and the Pacific, 1996).

Step II: Random sampling was conducted for provinces which had three religions: Buddhist, Muslim, and Catholic areas. Two provinces of the northern region (Chiang Mai and Petchabun), Two provinces of the northeastern (Khon Kaen and Sakon Nakhon), two provinces of the central region (Nakon Sawan and Chachoengsao), two provinces of the southern region (Ranong and Naratiwat), and two health centers of the Bangkok Metropolitan Area were included.

Step III: Random sampling for districts, the districts samples were proportionally randomized as 2: 1: 1 in relation to the proportion of 3 religions in Thailand. The districts sample consisted of 2 Buddhist, 1 Muslim, and 1 Catholic.

Step IV: Regarding random sampling for subdistricts, the subdistricts were randomized between municipal areas and local areas.

Step V: Criteria sampling was conducted for a total 940 older adults,using the criteria below.

<u>Inclusion criteria</u>

1. Both males and females aged 60 and above.
2. Having ability to hear and speak
3. Understanding Thai and being able to respond to interview questions

4. Willing to participate in this study

Exclusion criteria

1. Having mental disorder

2. Withdrawing from this study

An adequate sample size at each step of the sampling procedure was illustrated with the setting. The detail of an adequate sample size for provinces, and subdistricts were illustrated. Mongkol and Colleague (2003) indicated an adequate sample size by the following formula:

$$\textbf{Equation} = \frac{n_o \times \text{Older adults in each part of Thailand}}{\text{Total older population}}$$

Accordingly, the sample size of older adults in each province is explained in the Table 3-2.

Table 3-2 The sample size of older adults in each province.

Part of Thailand	Equation	Sample size (older persons)
Northern	$\frac{920 \times 1,520,266}{7,274,000}$	192
Northeastern	$\frac{920 \times 2,444,064}{7,274,000}$	309
Central	$\frac{920 \times 1,716,664}{7,274,000}$	217
Southern	$\frac{920 \times 923,798}{7,274,000}$	117
Bangkok	$\frac{920 \times 669,208}{7,274,000}$	85
Total		**920**

After the districts were identified, the subdistricts were separated into municipal and rural areas. Mongkol, et al. (2003) indicated an adequate sample size by the following formula:

$$\textbf{Equation} = \frac{\text{The numbers of older adults in each part of Thailand} \times \text{The population in municipal area}}{\text{Total older adults in each part}}$$

The sample size of older adults in subdistrict is explained in the table 3-3

Table 3-3 The sample size of older adults in subdistrict: municipal and rural areas

Part of Thailand	Equation	Sample size	
		Municipal areas	Rural areas
Northern	$\frac{192 \times 434{,}796.076}{1{,}520{,}266}$	55	192 - 55 = 137
Northeastern	$\frac{309 \times 669{,}002.304}{2{,}444{,}064}$	85	309 - 85 = 224
Central	$\frac{217 \times 490{,}965.904}{1{,}716{,}664}$	62	217 – 62 = 155
Southern	$\frac{117 \times 264{,}206.228}{923{,}798}$	34	117 - 34 = 83
Bangkok		85	-

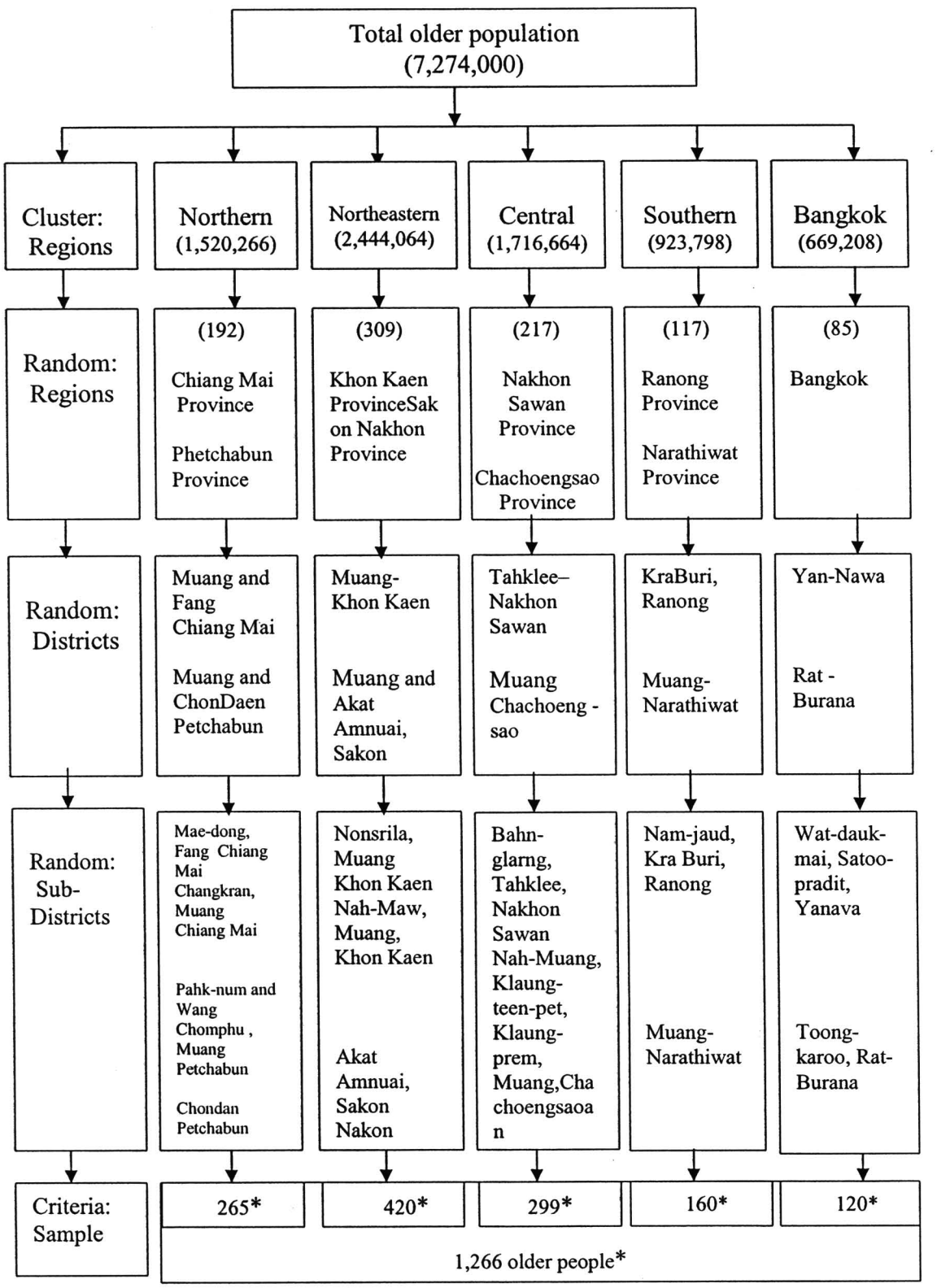
In conclusion, five steps in stratified multistage sampling were used to select the participants and the numbers of older adults for psychometric testing as shown in Table 3-4 and Figure 3-2.

Table 3-4 The numbers of older people for psychometric testing

Part of Thailand	Provinces	Districts	Subdistricts	Number of older adults	Religion
Northern	Chiang Mai 100* Petchabun 165*	-Muang 30* -Fang 80* -Muang 100* -ChonDaen 65*	Moo 1 and 3, Changkran Moo 14,Mae-dong Moo 5 and 6, Pahk-num, Wang Chomphu Moo4, ChonDaen	265* (196)	Buddhist = 244* Muslim = 13* Catholic =10*
Northeastern	Khon Kaen 320* Sakon Nakhon 100*	-Muang 18* -Nonsrila 120* -Muang 28* -Tahrae 82*	Moo9, Ni-muang Moo4,Bahn-hun,Nonsrila Moo10,AkatAmnuai Moo7,Tah-rae	420* (316)	Buddhist = 385* Muslim = 21* Catholic = 14*
Central	Nakon Sawan 160* Chachoengsao 139*	-Tahklee 40* -Muang 120* -Muang 139*	Moo8, Municipality Moo6,Bahn-glarng Moo1, Nah-Muang Moo3, Bang-teen-pet	299* (222)	Buddhist = 269* Muslim = 15* Catholic = 15*
Southern	Ranong 110* Narathiwat 50*	-Muang 110* -Muang 50*	Moo2,Num-jeud,KraBuri Moo4,Municiple	160* (120)	Buddhist = 144* Muslim = 8* Catholic = 8*
	Bangkok 120*	Yan Nawa 60* Rat Burana 60*	Moo5,Wat-dauk-mai Moo9,Toong-karoo	120* (86)	Buddhist = 108* Muslim = 6* Catholic = 6*

* Real subjects

( ) Calculation for subjects.



( ) Calculation Subjects. * Real Subjects

Figure 3-2 The sampling procedure

Instrument:

1. The fourth draft of the Mental Health Assessment Tool for Older Adults (MHAT-T)
2. TGDS

Data Collection

The investigator contacted health care providers of ten areas: Chiang Mai, Chachoengsao, Khon Kaen, Phetchabun, Nakhon Sawan, Sakon Nakhon, Ranong, and Narathiwat Provinces, and the Bangkok Metropolitan Area to ask for the name of the key persons (e.g., leaders in each religion) and the addresses of the participants. Before data collecting, informed consent was obtained from each older adult. The MHAT-T and TGDS were -administered to 1,266 older adults.

The investigator conducted the survey using ten research assistants trained for this research about research objectives, content, meanings of the questions, and the purpose of each dimension and item. Research assistants were able to demonstrate their competency and had the opportunity to clear any obstacles occurring during data collection before utilizing the questionnaire.

After two weeks, a retest was conducted by random sampling with 40 older adults in Chachoengsao Province.

In addition, in order to test the construct validity by contrast group, the MHAT-T was administered to older adults with depression, diagnosed by the doctor.

Data Analysis

1. To investigate mental health for Thai older adults. Descriptive statistics was used to examine:

a) the demographic data of older adults in the forms of mean, standard deviation, and percentage.

b) the distribution of mental health for Thai older adult scores in forms of mean, standard deviation, skewness and kurtosis.

2. To develop and test psychometric properties of mental health assessment tool for Thai older adults. Analysis statistics was employed to examine data:

a) Validity

Content validity was analyzed by employing CVI.

Construct validity was analyzed by employing Exploratory Factor analysis and Interdependent T-test.

b) Reliability

Reliability was analyzed by using Cronbach's coefficients alpha internal consistency for items to items, items to subscale, items to total correlation, and standardized alpha for subscale and total scale. In addition, test-retest was analyzed by using Pearson Product Moment Correlation Coefficient.

3.3.3.2 Designing Guidelines for Using the Instrument

The guidelines for using the instrument were prepared including 32 items of the final instrument, scoring and interpreting the result.