CHAPTER III

MATERIALS AND METHODS

This chapter covers the contents of study designs of the study, population and sample, inclusion and exclusion criteria for selected subjects, data collection, and data analysis.

1. Study designs

The designs of this research consisted of a prospective study from the service provider's point of view commencing from January 1, 2004 to December 31, 2005, for a total of 24 months. Before the study, it needed preoperating process which consists of three major tasks: literature review, proposal of research structure, and coordination assessment and selection of pilot hospitals.

Literature review was to study and review relevant and related issues from various sources both local and aboard e.g. budget allocation systems, mental health classification for funding, grouping techniques. Proposal of research structure was to pass from both advisory committees of The Center of Research and Health Equity and Dissertation Committee of Naresuan University. Coordination assessment and selection of pilot hospitals was to contact, coordinate, assess, and select pilot potential hospitals. After targeting the pilot hospitals, I sign memorandum of understanding with targeted hospitals, and then recieve a permission license from the Institution Review Board and Institution Ethics Commitee.

After finishing preoperating process, the study comprises of four major parts as shows below. The overall study design can be illustrated as shown in figure 8 below.

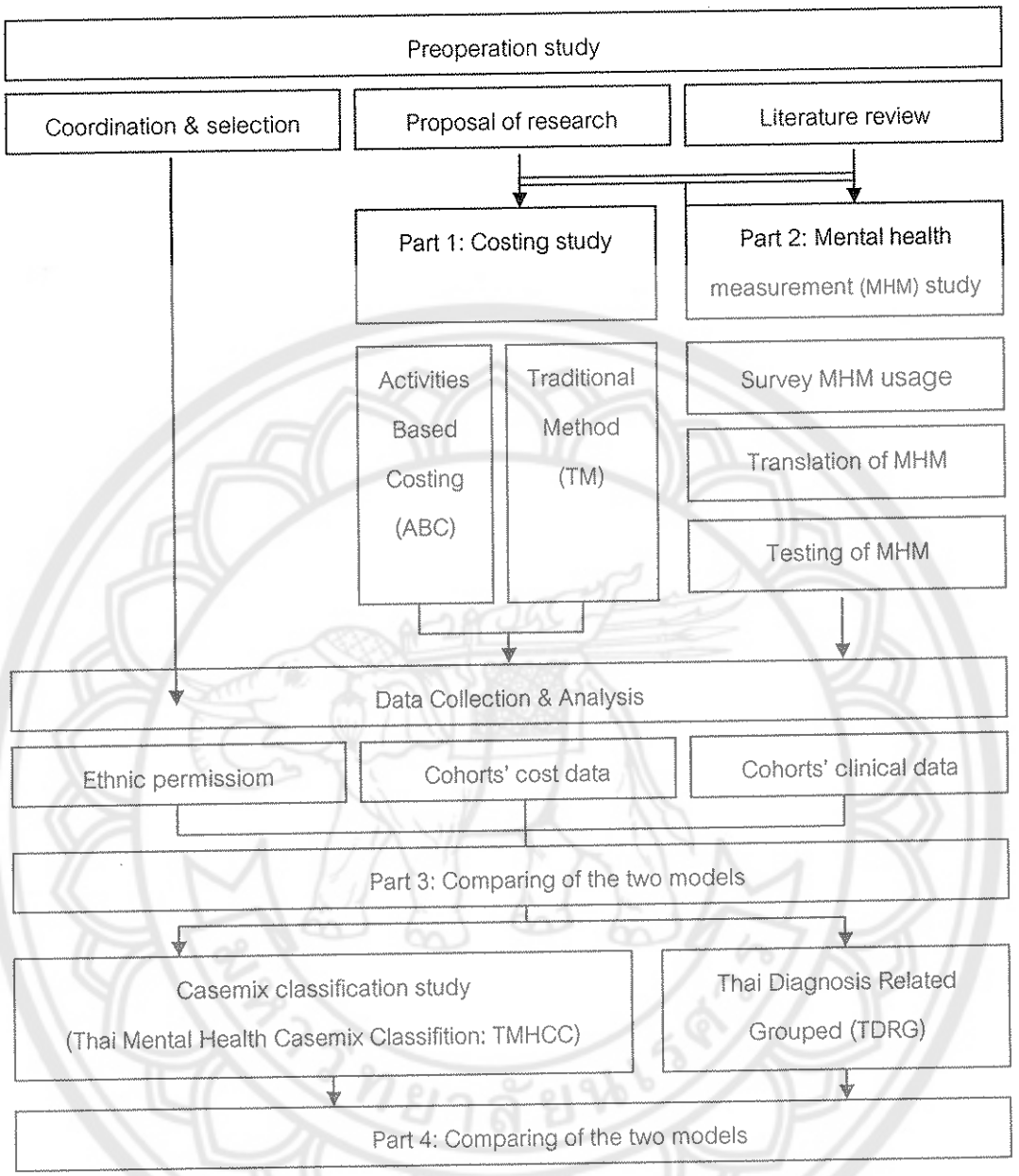

Figure 8 Overview of the study designs

Part 1: Costing study

This part was to study cost of inpatient services at pilot hospitals by both activity based costing (ABC) and traditional method (TM) methods. At this stage, primary data analysis was derived from staff activities, service utilizations, and relevant financial data from daily individual inpatient service costs. To get primary data, hospitals' data base was collected, collated and recorded in an appropriate way. Should data were inappropriately recorded, it needed to revise and develop tools, train collecting staffs, record field data, and finally analyze costs.

Part 2: Development of mental health measurements

To develop mental health measurement, three development steps were:

1. Survey of employing of mental health measurements: At the first step, it needed to survey the possibility for using mental health measurement to assess patient's severity and capability. Also, this part was used for mental health patient's classification for budget allocation.

2. Translation of target mental health measurement into Thai: At this stage, it needed to identify general mental health measurements which were globally accepted. And then, selected measurement was needed to receive authorized permission for translating the original version into Thai. After that it was translated and back-translated by bilanguage specialists. Translations would also be tested with target hosital's officials.

3. Psychometric properties test of mental health measurement: The authorized measurement was needed to be tested in terms of reliability, constructive validity and discrimination index. If appropriate, the measurement was needed to be adjusted before using as a tool to collect information data in the next step.

Part 3: Construction of mental health casemix classification model

The mental health casemix classification model was developed by mainly using service care costs and clinical chatrateristics for allocation. The objective of this step was to group patients into an appropriate casemix subclass by their characteristics.

Part 4: Comparing the casemix classification models

Individual service cost/charge and individual profile data (including severity and capability) would be used for classification by two major techniques: DRG and Thai mental health casemix classification (TMHCC). In this step, the two models were compared in different issues e.g. statistic performance, expert opinions, etc.

2. Subjects, sites and preparation

2.1 Subjects

The study had many parts, so there were many subjects for each parts. The subjects of the first part, survey of employing mental health measurements for budget allocation purpose, included 250 psychiatrists and 1,500 nurses from Thai public psychiatric hospitals. The second part, translation of mental health measurements into Thai, had targeted general mental health measurements already translated into Thai that would be employed by psychiatrists and nurses at Suan Prung psychiatric hospital in testing process. The third till the final part, had the same subjects that were inpatients from the two co-research hospital during six months of data collection.

2.2 Sites

Based upon the above inclusion criteria, the following two pilot hospitals have been targeted.

1. Suan Prung Psychiatric Hospital: Amphur Muang, Chiang Mai Province – 700 bed capacity (IPD~ 6,000 cases/year)

2. Nakhon Ratchasima Psychiatric Hospital, Muang District, Nakron Ratchasima Province. – 300 bed capacity (IPD~ 2,500 cases/year)

They possessed the following qualifications by mean of inclusion criteria as follows:

1. Tertiary hospital under the Mental Health Department which was directly responsible in servicing psychiatric patient

2. Psychiatric hospital for adult which was responsible for many provinces and had ample in-patients and out-patients, and hospital network

3. High potential hospital covering all kinds of psychiatric procedures and also countrywide-accepted for standard practice

4. Hospital with good patient and financial databases; or database in amendable level

5. Hospital with good management and human resource e.g. hospital management supports this research, clinician was ready to expand capability in treatment standard by using mental health assessment for all patient, finance officers are able to correctly collect and collate research data.

6. Comparable hospital and a good representative of tertiary hospitals under mental health department by the following consideration e.g. have unit cost (from former study) in the level of average unit cost of the Mental Health Department, have officer workload close to the average of the Mental Health Department, have hospital structure and service cost structure close to the average of the Mental Health Department.

The study site was mainly be undertaken and monitored at the Centre for Health Equity Monitoring, Faculty of Medicine, Naresuan University, Phitsanulok Province.

2.3 Preparation

Althouth the two hospitals passed inclusion criteria, this study need to coroperate the site deeply considering on the detail such as objectives, design, working process.

They needed training involving training to rate patients' symptoms and functions by the Thai Health of the Nation Outcome Scale (HoNOS), collecting cost data and calculating costs, and collect patients' characteristic. This study passed the ethnic committee of the two sites and the Narasuan University.

3. Instruments

The instruments of this study were divided into three groups. First, costing instruments were the ones which were designed to collect inpatient input, output, and all expense for inpatients service care. Second, mental health measurement was the ones which was developed to collect clinical symptoms and functioning of each inpatient during the study time. Third, instruments were the casemix classification ones which were developed to collect information of each inpatient.

3.1 Costing instruments

Costing study instruments were record forms: labour cost form, material cost form, capital cost form, inpatient activities and service form (see Appendix).

3.2 Mental Health Measurement Instruments

3.2.1 Using survey of mental health measurements: Questionnaires were be used as a tool to assess opinion of psychiatrists and nurses (see Appendix).

3.2.2 Translation of the target mental health measurement into Thai: The Health of the Nation Outcome Scales (HoNOS) is used to measure individual inpatients' clinical rating of severity of function and functioning (see Appendix).

3.2.3 Psychometric properties test of the target measurement: Mental health measurement in Thai version are used as tools in this step (see Appendix).

3.3 Casemix classification model instruments

This step had 4 instruments as follows:

3.3.1 Record form of patient characteristic (see Appendix)

3.3.2 Record form of the Thai HoNOS (see Appendix)

3.3.3 Record forms of costing study: labour cost, material cost, capital cost, inpatient activities and service (see Appendix)

3.3.4.Software programs for classification composed of program Microsoft Excel for window and program SPSS version 13.

4. Data collections

The data collections of the study were divided into 4 parts. Their details were presented in Table 12 below.

Table 12 Overview of data collections

Topic	Data to be collected
Part 1: Costing analysis	
	(1) staff activity data (2) service utilization data (3) financial data
Part 2: Mental health measurements analysis	
- Survey of mental health measurements for allocation - Psychometric properties test	(1) questionnaire (2) draft of Thai version
Part 3: Casemix classification analysis	(1) score of measurements (2) staff activity data (3) service utilization data (4) financial data (5) patient attribute data

5. Statistic analysis

In this study, data analysis of this study were grouped into 3 parts as presented in Table 13 below.

Table 13 Overview of data analysis

The part of the study	Data analysis
Part 1: Costing analysis	- statistic calculations e.g. percentage, ratio, rate etc. - average e.g. arithmetic mean, median, etc. - function math and trigonometric, narrative statistic analysis comprises
Part 2: Mental health measurements analysis	
- Survey of mental health measurements for allocation	- statistic calculations e.g. percentage, ratio, rate etc. - average e.g. arithmetic mean, median, etc. data distribution e.g. range, standard deviation, variance, coefficient of variation, etc.
- Psychometric properties test	- statistic calculations e.g. percentage, ratio, rate etc. - average e.g. arithmetic mean, median, etc. - data distribution e.g. range, standard deviation, variance, coefficient of variation, etc. - Reliability and validity analysis including item analysis
Part 3: Casemix classification analysis	- statistic calculations e.g. percentage, ratio, rate etc. - average e.g. arithmetic mean, median, etc. - data distribution e.g. range, standard deviation, variance, coefficient of variation, etc. - function math & trigonometric Narrative statistic analysis comprises - use variance, coefficient of variation by Excel program
Part 4: Comparing the alternative models	- statistic calculations e.g. percentage, ratio, rate etc. - average e.g. arithmetic mean, median, etc. - data distribution e.g. range, standard deviation, variance, coefficient of variation, etc. - use variance, coefficient of variation by Excel program