



## Chapter 4

### Research Methodology

This chapter deals with methodologies to answer research questions which are related to research objectives. This chapter also includes the important terms and operational definitions, conceptual framework, tools, and data and data collection. Tools include questionnaire, database electronic, and other forms.

#### 4.1 Terms and Operational Definitions

**Financial sustainability:** Financial situation that the cost recovery ratios equal to 100 percent or more.

**Cost recovery ratios:** The results obtained from total revenue dividing by total cost and multiplying with 100 ( $\text{revenue} \times 100 / \text{costs}$ ).

**Total cost:** Total direct cost of evening clinic including: 1) capital cost; 2) material cost; and 3) labor cost.

**Capital cost:** Capital cost of evening clinic including: 1) building to be defined as opportunity cost as well as the rental of urban health centres; 2) equipment to be defined as medical and non-medical equipment which is allocated from the outpatient department to the evening clinic.

**Material cost:** Material cost of the evening clinic including: 1) drugs and other medical materials to be defined as price; 2) non-medical material and other supplies such as facilities and maintenance allocated to the evening clinic from the outpatient department; 3) other services to be defined as price such as laboratory, radiology, and other service.

**Labor cost:** This kind of cost will be defined as an additional cost, including remuneration paid to physicians, nurses, patient-aids, not including

the remuneration for other supportive staff in another department such units as medical record, laboratory, and radiology.

**Total revenue:** Total aggregated revenues from all sources of finance.

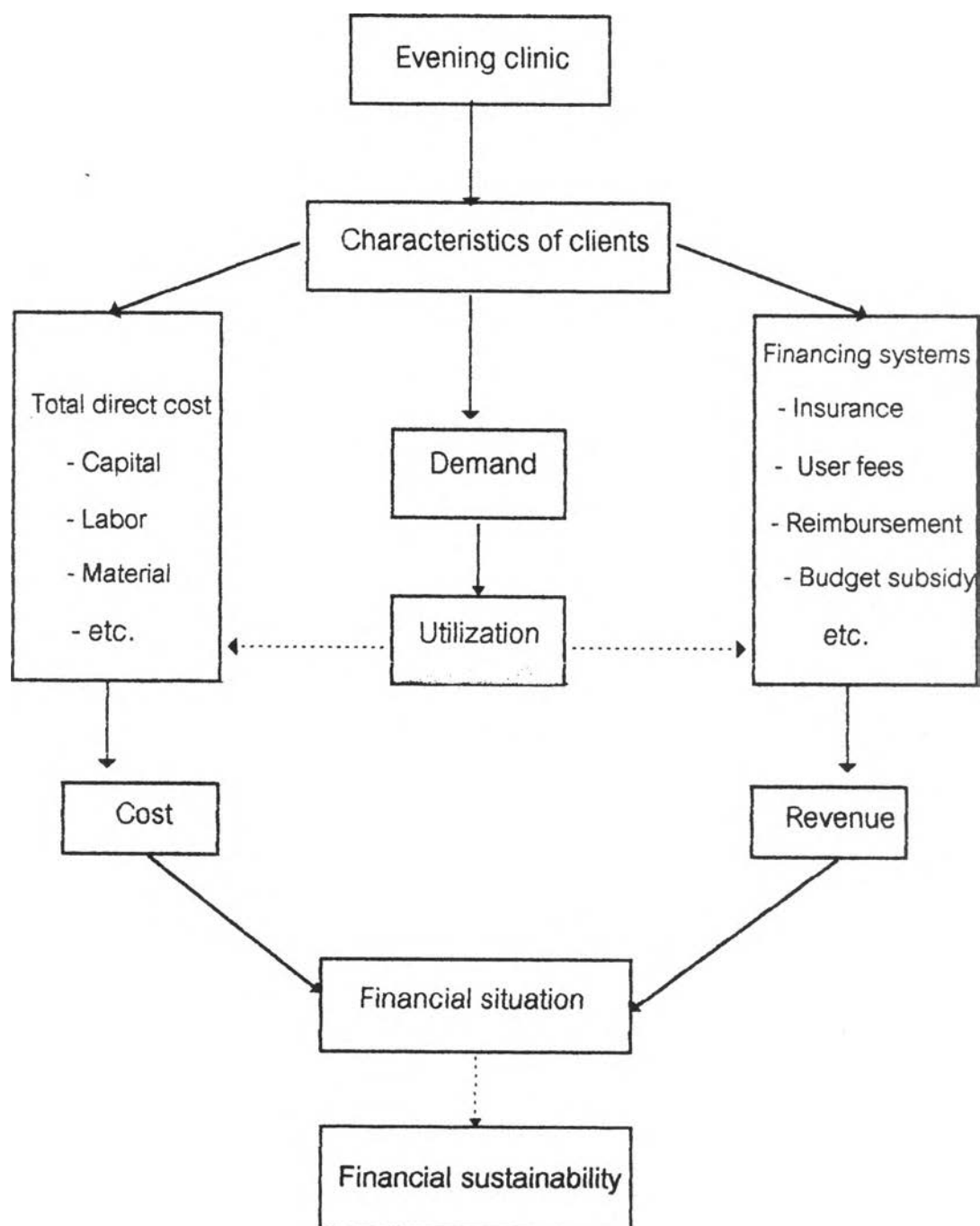
**Client satisfaction:** The perception of clients who have contact with the evening clinic have higher preference, compared to the day-time clinic.

**Equity of service provision:** The average cost of curative care for the most common disease of a client who is covered by different health insurance schemes is not significantly different .

## 4.2 Conceptual framework

To achieve the research objectives, the study began with a description of the characteristics of clients of the evening clinic in terms of age, sex, occupation, residence, disease profile, and insurance coverage in order to know the trend of their utilization, as well as their demand. Then the study estimated the costs and the revenues of the evening clinic that might affect the utilization of the clients and examined the financial sustainability regarding to the situation of total cost and total revenue. The conceptual framework is shown in Figure 4.1. In addition, the satisfaction of clients of day-time clinics and the evening clinic at a specific period was examined in order to compare clients' satisfaction of both types of clinics.

Figure 4.1 Conceptual Framework



### **4.3 Study Designs**

This is a cross-sectional, descriptive study of financial sustainability of evening clinic. Its financial sustainability is measured in terms of the cost-recovery ratios and would illustrate in various possible scenarios due to the utilization, costs, and revenues. This study is designed to retrieve individual records of the clients from the Medical Information System of Khon Kaen Hospital in the fiscal year 1997. The hospital database was also used to examine the average cost and revenue related to the clients' characteristics.

In addition, the study was also designed to collect data from the clients at the day-time clinics and the evening clinic during a two-week period in order to compare the clients satisfaction of both types of clinics.

### **4.4 Study Methods**

The study methods were based on the conceptual framework as shown in Figure 4.1, and the outcome variables were chosen for further analysis. The methods for measurement of these outcome variables including sources of necessary information are presented in Table 4.1. The brief descriptions of the methods for measurement are provided as follows.

Table 4.1 Methods of outcome measurement of the study

Outcome variable	Method of Measurement	Source of Data
A. Financial sustainability	<ol style="list-style-type: none"> <li>1. Calculation of total revenue from various sources of evening clinic;</li> <li>2. Calculation of additional costs of evening clinic and urban health centre;</li> <li>3. Breakdown of revenues by source;</li> <li>4. Calculation cost recovery (%) of total revenues and total costs of clinic;</li> <li>5. Simulation of cost recovery ratios under various scenarios.</li> </ol>	<ol style="list-style-type: none"> <li>1. Various hospital accounts and financial reports</li> <li>2. Urban health centres</li> <li>3. Staff of Khon Kaen hospital and Urban health centres.</li> <li>4. Statistical report of Khon Kaen Hospital 1996-1997.</li> </ol>
B. Utilization and characteristics of the clients	<ol style="list-style-type: none"> <li>1. Retrieval individual database of clinic and links with their drug prescription</li> <li>2. Descriptive analysis of clients characteristics and their utilization.</li> <li>3. Analysis of the utilization related to their characteristics.</li> </ol>	<ol style="list-style-type: none"> <li>1. Individual database of evening clinic in Khon Kaen Hospital.</li> <li>2. Receipts and prescriptions of some records.</li> </ol>
C. Clients satisfaction	<ol style="list-style-type: none"> <li>1. Adjustment of questionnaire for evaluating; clients satisfaction, including: general information (demographic and geographic); service impression and essential information given; clients perception about infrastructure, personnel behavior and supportive information.</li> <li>2. Interview of the clients based on the questionnaire, and entry of data.</li> <li>3. Analysis of data in order to compare the satisfaction of both kinds of clinics.</li> </ol>	<ol style="list-style-type: none"> <li>1. The clients who contact with day-time clinics and the evening clinic.</li> </ol>
D. Equity of service provision	<ol style="list-style-type: none"> <li>1. Selection the most commonly disease from individual database and compare among different insurance coverage</li> </ol>	<ol style="list-style-type: none"> <li>1. Individual database of evening clinic and receipts and prescriptions.</li> </ol>

#### 4.4.1 Financial Sustainability or Cost Recovery Ratio

The financial study is conducted both total revenues and total costs. The calculation of total revenues is based on source of finance and payment mechanisms of the clients. For the clients who have paid directly to the hospital (user fees or out-of-pocket payment), the calculation was based on receipts and prescriptions. But the revenues collected from third party payments such as the provincial health card fund, the social security fund, and the health welfare scheme were more complicated. In case of the revenue from the social security fund whose payment is made by pre-paid capitation of 900 Baht per registered insured person, such information was available from the Health Insurance Office of Khon Kaen Hospital in 1997, so the proportion of total revenues allocated to outpatient and inpatient services could be estimated. The estimated revenues of outpatient were used to calculate the average revenue per visit by dividing the estimated revenues of outpatient with number of total visits. And this average revenue was used for the individual database of the clients who were identified as social security insured of the evening clinic in that year. The other sources of finance would be calculated, using the same method. Therefore, the total revenues of the evening clinic in 1997 were the aggregate revenues from every source of finance, based on the following formula:

$$TR = TR1 + TR2 + TR3 + TR4$$

where TR = total revenues from all sources of finance

TR1 = total revenue from out of pocket payment

TR2 = no. of visits of social security insured X average revenue of social security fund

TR3 = no. of visits of health card insured X average revenue of provincial health card fund

TR4 = no. of visits of health welfare group X average revenue of welfare budget subsidy

For the total direct cost calculation, the formula is as follows:

$$TC = CC + MC + LC$$

where TC = total direct cost of evening clinic

CC = capital cost as defined

LC = labor costs as defined

MC = material cost as defined in terms of price.

Barnum and Kutzin (1993) reviewed the results of cost recovery ratios which had been studied in many developing countries and found that there was a wide variation of the results due to differences in the the definition of measurement. For example, the denominator of the ratios might be defined differently, in some case, the total government subsidy will be applied rather than total hospital expenditure. In other studies, its might be presented as a partial cost recovery because of those studies had excluded personnel cost from the denominator of ratios. They mentioned that the main reasons comprised of: 1) the explicit goals of some countries were to have hospital recover non-staff recurrent costs through fees or other measures. In those countries, it is often the case that personnel expenditures were disbursed centrally and did not even appear in the hospital budget; 2) in some countries, hospitals could not spend revenues independently on personnel; and 3) in any year, the compensation for hospital staff might be a relatively "fixed" recurrent cost, whereas other recurrent cost items tended to be "variable" (that is, as use of services increased, the total costs of these items tended to increase as well). And after recalculation to provide a consistent measure they also found that, in most developing countries, public hospitals cost recovery was very low, and often went down to zero; and most countries with high cost recovery ratios were usually had high charges.

In general, the formula for measuring the cost recovery ratio is;

$$\text{Cost recovery ratio} = \frac{\text{Total revenues}}{\text{Total cost}} \times 100$$

For this study, total revenue includes all sources of finance: 1) user charge or out-of-pocket; 2) health insurance funds; and 3) budget subsidized for health welfare scheme. The total cost is defined as total direct cost incurred, based on the assumption related to the operational definitions. Besides, determining factors which affected costs and revenues, this study will illustrate various scenarios of financial sustainability.

#### **4.4.2 Utilization and Characteristics of Clients**

The characteristics of clients that were mentioned in the research question and objectives such as age, sex, occupation, residence, health insurance coverage, and disease profile were analyzed by using the descriptive statistical method. Then, the characteristics were summarized in the following aspects: utilization of clients by age group; utilization of clients by sex; utilization of clients by residences; utilization of clients by occupations; utilization of clients by health insurance coverage; and utilization of the clients by diseases profile.

#### **4.4.3 Client Satisfaction**

The satisfaction questionnaire for a survey of day-time and evening clinics in this study was adjusted from “the Patient’s Voice” which was developed by the Health Systems Research Institute (HSRI). This questionnaire is described in Table 4.1. The pre-test of questionnaire would be applied before the actual interviewing process. However, the researcher had also



observed the activities of day-time clinics and the evening clinic for the necessary elaboration and interpretation. The sampling technique was simple random with two inclusion criteria: the clients who used to contact with the General Practitioners (GP) unit for day-time clinics and the evening clinic more than once and were willing to participate with the interviewer. Because of time constraint, the data collection activity took only 2 weeks to complete at Khon Kaen Hospital (during 20 February to 5 March 1998). Data processing and analyses were undertaken by the EPI v. 6 software.

#### **4.4.4 Equity of Services Provision**

The researcher used the most common diseases as a tracer to measure the equity of services provision. The most common diseases were generated from the individual records of the evening clinic to analyze their average costs related to its health insurance coverage. This measurement was based on the concept of equity in health which was defined by Mooney (1983) as "equality of inputs for equal needs". The inclusion criteria for this population was selected the same diagnosis as defined by ICD 10 (International Classification of Diseases).

The hypothesis of the study is that "there is no significant difference of cost per visit of clients with the same diagnosis who have different health insurance coverage".