



CHAPTER 3

RESEARCH FRAMEWORK

3.1 Conceptual Framework

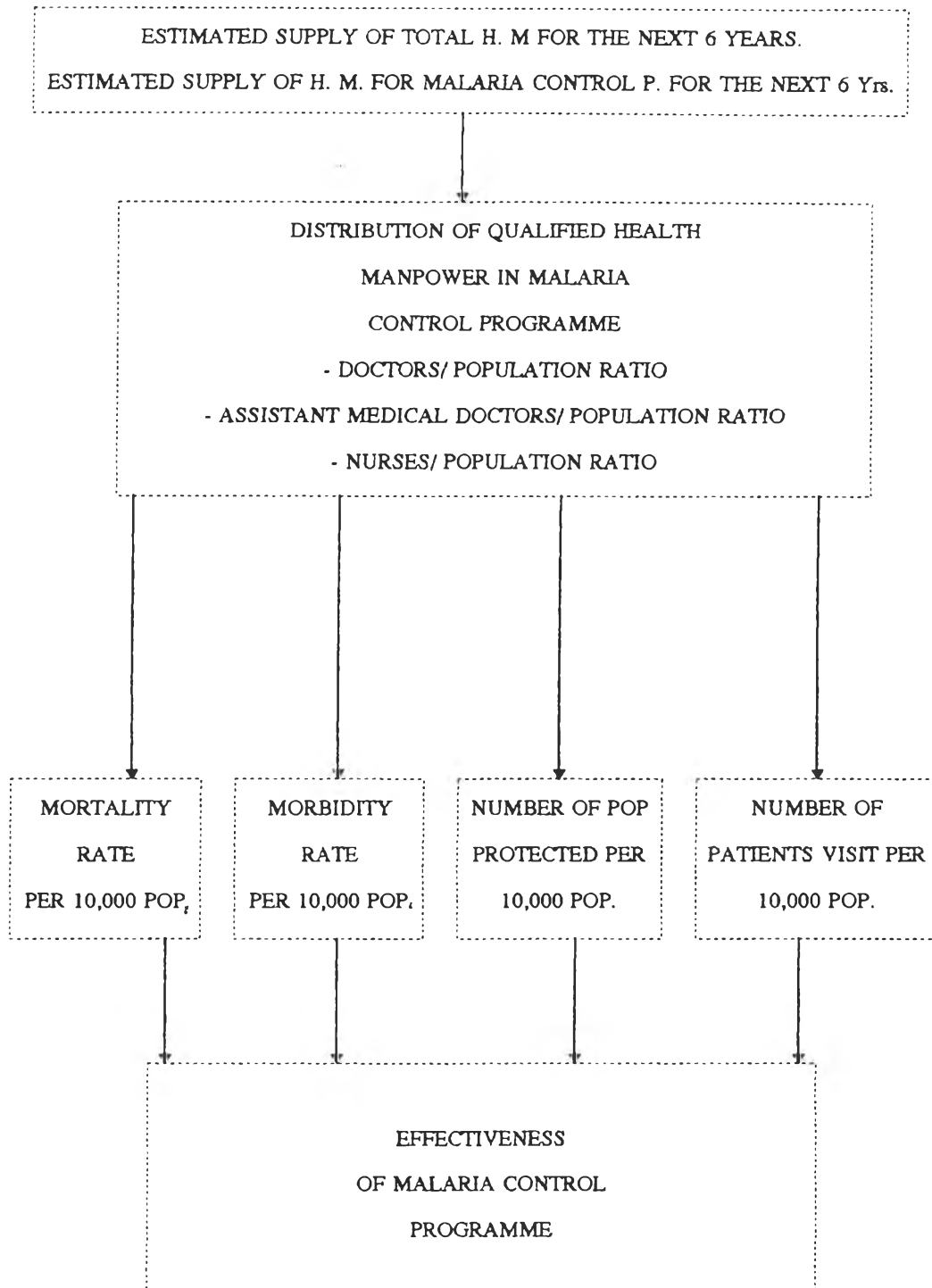
The first part of the study is to estimate the supply of doctors for total health manpower and supply of doctors for the malaria control programme for the next six years in order to analyze the different trends between them, to see whether the supply of doctors for total health manpower and for malaria control programme are in proportion.

The existing situation is that the supply of doctors within the total health manpower is increasing every year whereas in some health programmes which are in "difficult" sections, there are still shortages of doctors. The malaria control programme is one of those sections. By using time series models, the number of doctors to be supplied for total health manpower and for malaria control programme for the next six years will be forecasted.

The second part is analysis of the relationship between the allocation of health manpower and the effectiveness of the malaria control programme. By using regression analysis, the process is to identify the relationship between the doctors and assistant medical doctors/ population ratio in relation to mortality, morbidity, number of population protected and number of patients' visits.

For the malaria control programme in the North Mountain region, assistant medical doctors can substitute for medical doctors so the third part of the study is to analyze the cost of supplying medical doctors in comparison with the cost of supplying assistant medical doctors, in order to see the cost saving for the programme and how to use the cost saved to make the malaria control programme more effective. The following Figure 3.1 shows the conceptual framework of the study.

Figure 3.1 Conceptual framework of the study



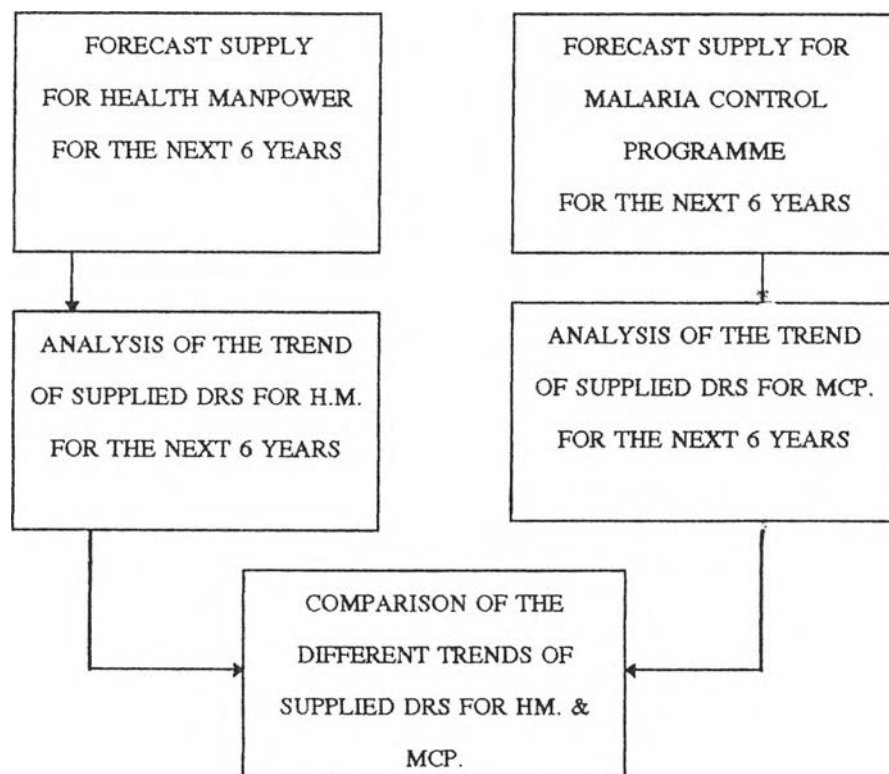
3.1.1 Forecasting the supply of overall health manpower and health manpower for the malaria control programme

The processing of the first research question of the study, is as follow

Forecast the supply of doctors for total health manpower and the supply of doctors for the malaria control programme for the next six years, then to analyze the different trends of the supply of doctors for total health manpower and malaria control programme for the next six years.

Figure 3.2 shows the process of supply forecasting and analysis of the different trends.

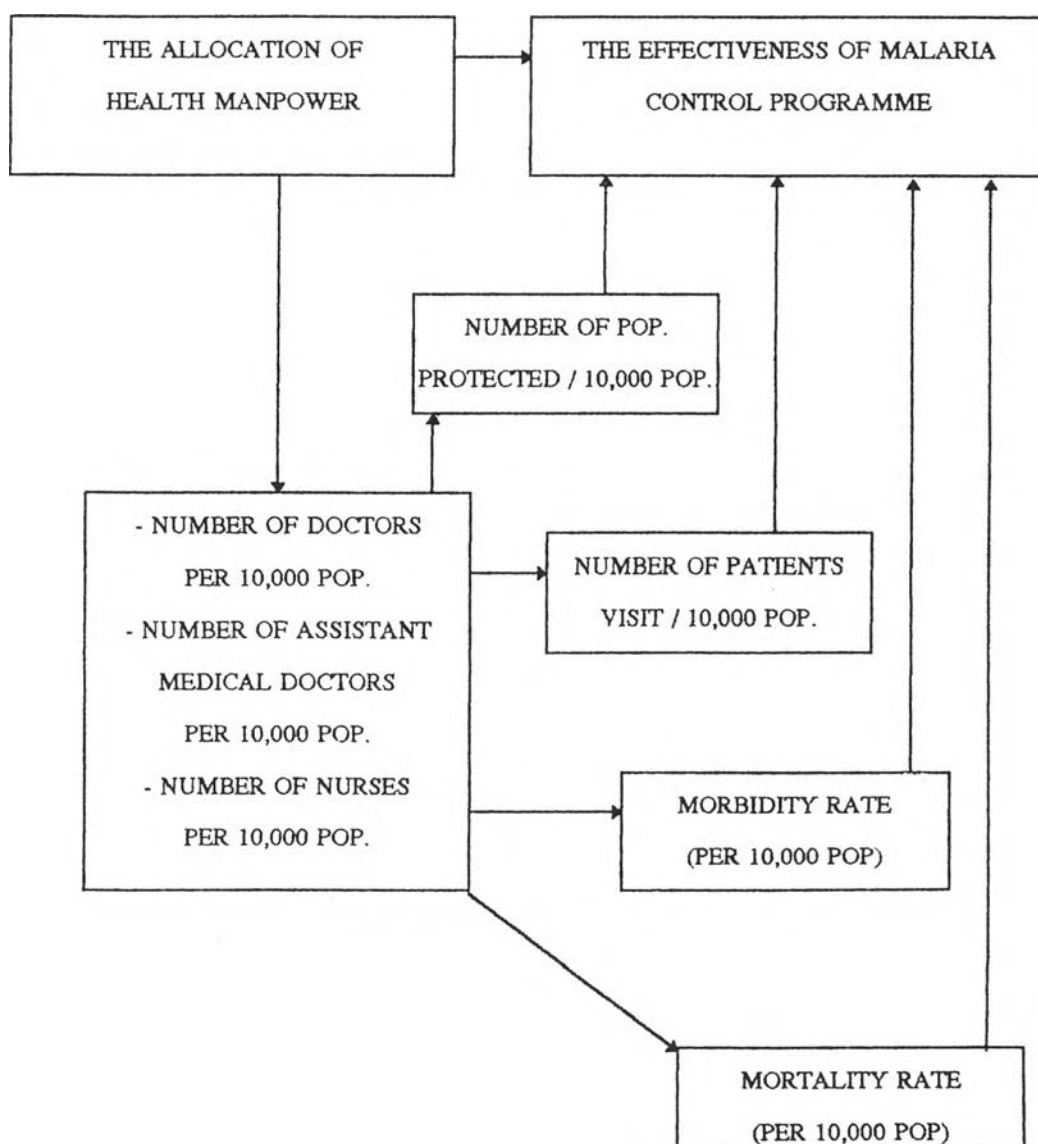
Figure 3.2 Forecast supply of doctors for health manpower and malaria control programme



3.1.2 Relationship between the allocation of health manpower and the effectiveness of the malaria control programme

The second part of the study is to analyze the relationship between the allocation of health manpower (number of doctors per 10,000 population, number of assistant medical doctors per 10,000 population, number of nurses per 10,000 population) and the effectiveness of the malaria control programme (mortality, morbidity rates, number of population protected by vector control activities, number of patients' visits per 10,000 population). This part will be done by using regression analysis (Figure 3.3):

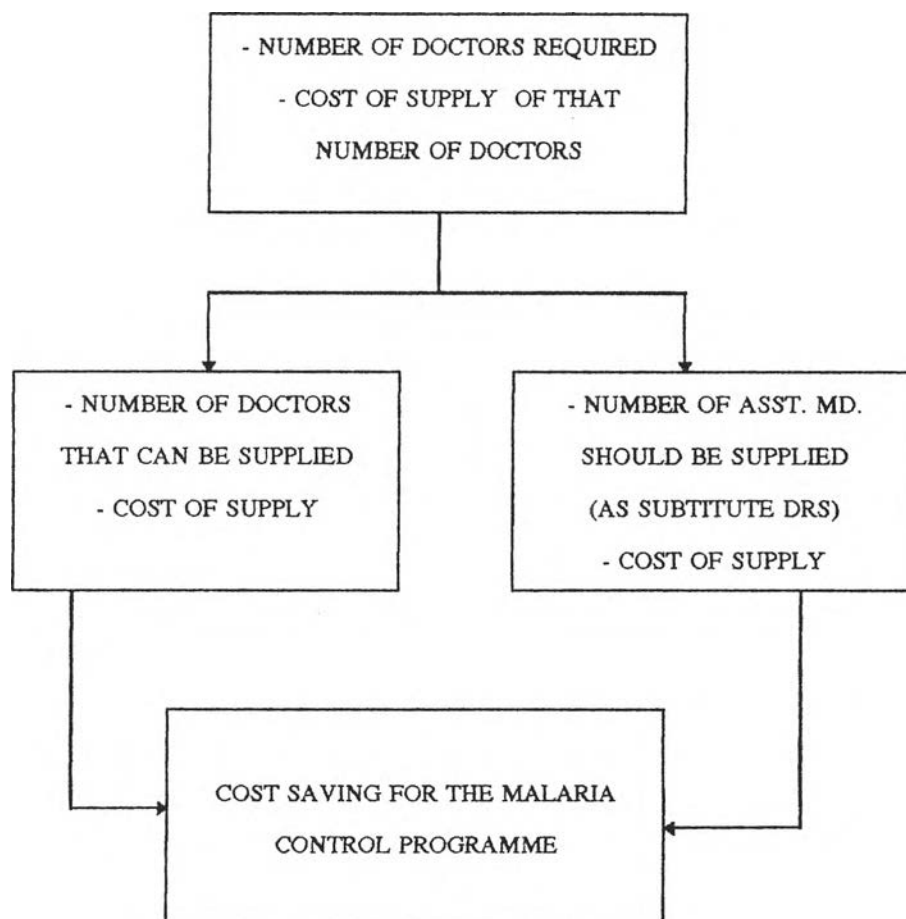
Figure 3.3 Regression analysis between the allocation of health manpower and effectiveness of the malaria control programme.



3.1.3 Cost analysis of supply of doctors and assistant medical doctors (substitute for doctors) for the malaria control programme

The third part of the study is to analyze the cost of supply of medical doctors and the cost of supply of assistant medical doctors, then compare the costs in order to estimate cost saving if assistant medical doctors are substituted for medical doctors, and how to use the savings to make the malaria control programme more effective (Figure 3.4)

Figure 3.4 Cost analysis of supplied doctors and assistant medical doctors.



3.2 General Assumption

- The labour productivity in all categories of health manpower is comparable.

- All the other factors which can affect the effectiveness of the programme remain the same such as: health care seeking behavior of patients; the severity of disease when patients come to those health facilities to get services; parasites; frequency of malaria epidemics; education of population.

- Equipment for malaria diagnosis is the same.

- Drugs for malaria treatment are available.

- Chemicals for malaria vector control are available.

3.3. Operational Definitions

- *Health manpower* refers to human resources in the health sector.

Human resources are skill, knowledge and capacities of all human beings actually or potentially available for economic and social development in a community (Chira Hongladarom, 1987).

Health manpower here refers specially to medical doctors, assistant medical doctors, nurses, who were trained to provide health care services for society.

- *The distribution of qualified health manpower* is the allocation of different types of health manpower such as medical doctor, assistant medical doctor, nurse.

- *Medical personnel* here means doctors, assistant medical doctors, nurses.

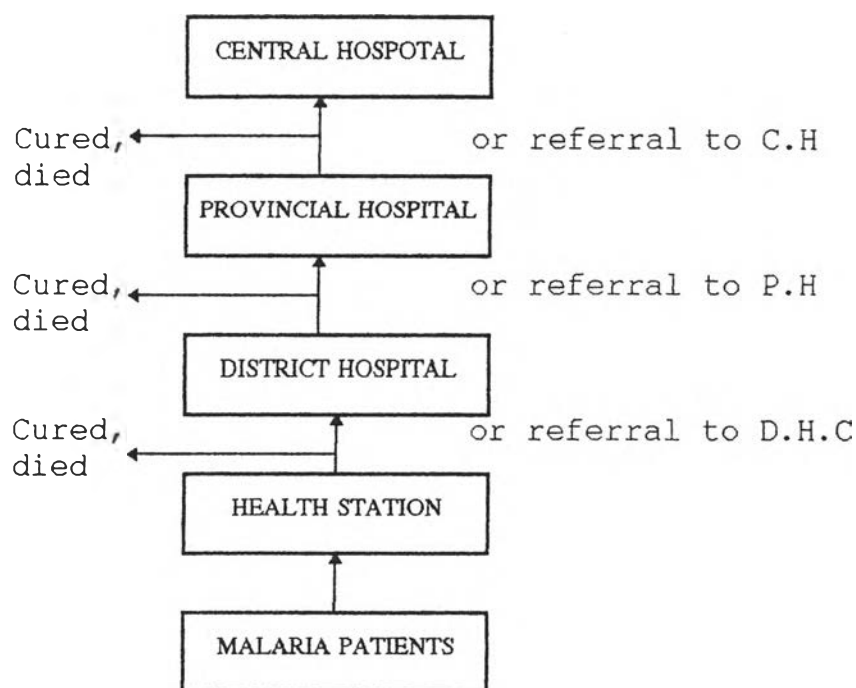
- *Doctor* is a person who is trained at medical college for six years and can provide health care services at normal and high technical health services.

- *Assistant medical doctor* is a person who is trained at medical secondary school for three years, and can substitute for a doctor to provide health care services at normal technical but is not allowed to

perform some high technical health services such as surgery.

- *Malaria*: Malaria is an infectious disease caused by protozoan parasites of the genus Plasmodium and transmitted by female mosquitos of the genus Anopheles in which a part of parasite's development takes place (Kaewsonthi, 1984).

Figure 3.5 Chart of malaria patients referral system



- *The malaria control programme* covers long term and short term planning for preventive and curative activities to reduce mortality and morbidity rate of the disease.

- *Cost of supply of doctors and assistant medical doctors* here refers to the average cost of training doctors or assistant medical doctors and average salary per month for doctors or assistant medical doctors.

- *Cost analysis of supply of medical doctors and assistant medical doctors* here means the comparison between cost of supply of medical doctors and assistant medical doctors (as mentioned above).

- *The effectiveness* of the malaria control programme here can be measured by four indicators namely the number of patient visits at public health facilities;

the number of population protected from mosquito bites in the region, mortality, and morbidity rates.

- *The indicators of the effectiveness of the malaria control programme here are four in number:*

- 1) No. of patient visits

The number of patients attending the malaria care at public health facilities in North Mountain region.

- 2) No. of population protected

The number of population protected by vector control activities such as indoor residual spraying (IRS), permethrin impregnated bednets (PIB) in the region.

- 3) Morbidity

The disease specific morbidity rate is defined over a period of time as the number of disease cases per population.

- 4) Mortality

The specific mortality rate is the number of deaths per population caused by the disease (Pornchaiwiseskul, 1993).