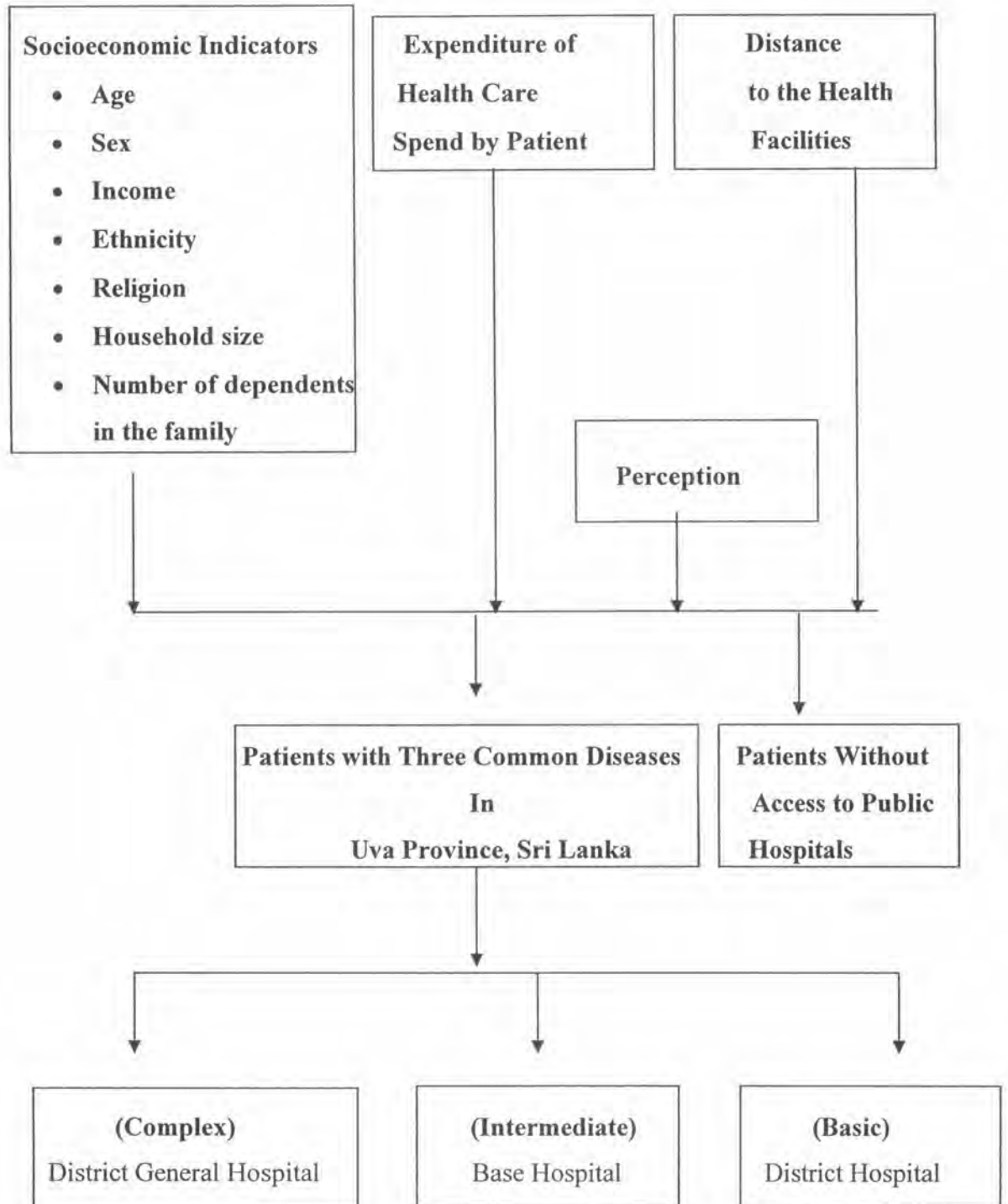




CHAPTER III

REASERCH METHODOLOGY

3.1 Conceptual Framework:



3.2 Research Design:

This is a descriptive cross sectional study based on questionnaire in patient's perspective.

Because of the time and resource limitation data was collected during certain time period and analyzed with the characteristics of the sample.

3.3 Selection of Diseases:

In deciding the number and type of diseases, I decided to look into the first three leading diseases of hospitalization.

The 10 leading diseases for hospitalization in Uva province. (2006)

1. Traumatic injuries
2. Bronchial asthma.
3. Viral diseases
4. Diseases of the gastrointestinal tract
5. Symptoms, signs and abnormal clinical and laboratory findings
6. Intestinal infectious diseases
7. Diseases of the urinary system
8. Diseases of the musculoskeletal system and connective tissue
9. Direct and indirect obstetric causes
10. Hypertensive diseases

Source- Annual health report Sri Lanka 2006

The selection procedure as follows:-

The leading cause of hospitalization during 1996 to 2006 is traumatic injury. It contains combination of two types of injuries.

Superficial injuries

Open wounds and injuries to blood vessels.

According to the ICD Traumatic injury contains more than 50 sub types.

Because of this complex traumatic injury I decide to exclude it from my study.

The second leading cause is Asthma. Thus Asthma is select as a first common disease for the study.

The next higher number of hospitalization cases was reported for viral disease, including viral fever. Since viral fever is the main component of this disease category, it is selected as the second common disease for the study

According to the trends displayed, the next leading cause of hospitalization is Diseases of the gastrointestinal tract. But after reviewing literature, it was pointed out that the disease selection criterion could be biased if it is based only on hospital morbidity pattern and, there for, the leading cause of hospital mortality (Table 3.1), namely ischemic heart disease is also taken as one common disease for the study. By that way Diseases of the gastrointestinal tract is replaced by ischemic heart disease.

Table 3.1 Leading Hospital Mortality Causes.

Disease	2002	2003	2004	2005	2006
Ischemic heart disease	9.9	12.5	11.6	11.4	12.6
Pulmonary heart disease and diseases of the pulmonary circulation	7.6	9.1	8.4	15.4	10
Diseases of the gastro-intestinal tract	9.1	10.8	9.4	8.5	9.93
Neoplasm	6.1	4.4	9.5	83	8.86
Cerebrovascular disease	7.4	9.1	8.9	7.7	6.92

Source- Annual health blatant Sri Lanka 2006

At last three diseases selected with two chronic diseases and one acute disease

- 1) Bronchial asthma
- 2) Ischemic heart disease
- 3) Viral fever

3.4 Research Population:

3.4.1 Target Population:

People who have access to the public hospital facilities according to hospital catchments area and the people who have no access to Public hospitals at Uva province

3.4.2 Sample Population:

- Patients come to general OPD treatment for acute diseases and Patients come to OPD clinic for respective chronic diseases in public hospital facilities at Monaragala District.

- 1) 1)Bronchial asthma
- 2) Ischemic heart disease
- 3) Viral fever

Sample of patients was drawn from the catchment are of each health care facility. All these three institutions belong to the government and involved in the delivery of modern health/medical care services. This leaves out institutions which delivered Ayurvedic services and institutions which deliver any type of private health/medical care services.

- Patients who have no access to the public hospital in Monaragala District.

3.5 Study Location:

The Monaragala District is the one of district in Sri Lanka, with a land area of 7,133 square kilometers. It is one of the two districts of the Uva Province. The total population of the District is approximately 420,000. The district population comprises 94% Sinhala, 2% Tamil, and 4% Muslim and other. Bibila, Monaragala, Madulla, Medagama,

Siyambalanduwa Badalkumbura, Wellawaya are the main towns in the district. In the Monaragala District, the majority of people depend on agriculture. Paddy is the main agricultural product, followed by vegetables and grain. The Monaragala District also grows and processes large quantities of cane sugar, notably in the Pelwatta area. The Pelwatta Sugar factory is providing many employment opportunities in the district. Additionally, the Department of Agriculture supports people working in plantations in marketing their agriculture products at reasonable prices which enable them to sustain their livelihoods. Timber is one of the main natural resources in the district. Unfortunately, majority of the timber – such as teak – is directly transported to Colombo, and consequently industries like furniture-making, which are further down the value chain, are limited and undeveloped. Tourism is not a significant source of income generation in the district. Other than in agriculture, the workforce is employed in carpentry and masonry, often on construction sites in Colombo. The district also has a considerable number of people who have joined either the Sri Lankan Army or Navy. Although opportunities for employment in the private sector are negligible, considerable amount of people in the district are self-employed running various types of cottage industries. Finally, there are a significant number of people employing in the public sector.

According to provider level, three public institutions were selected

1. Complex - District general hospital Monaragala
2. Intermediate - Base hospital Siyambalanduwa
3. Basic - District hospital Dambagalla

Deciding study location taken accounts that population able to access all three different kind of health care facilities. According past statistics disease pattern is similar in all areas in Sri Lanka and treatment protocol is used to treat patients is same in whole island.

Clearly it would have been worthwhile to survey many locations in the public and private sector in order to understand the working of the health system in the context of utilization. Limited time and resources dictated the strategy adopted.

This methodology while not providing generalized results is yet capable of highlighting issues that can in turn form the basis of future in-depth studies.

3.6 Sampling Technique:

Sample size calculated using following formula, L. Yamane (1967)

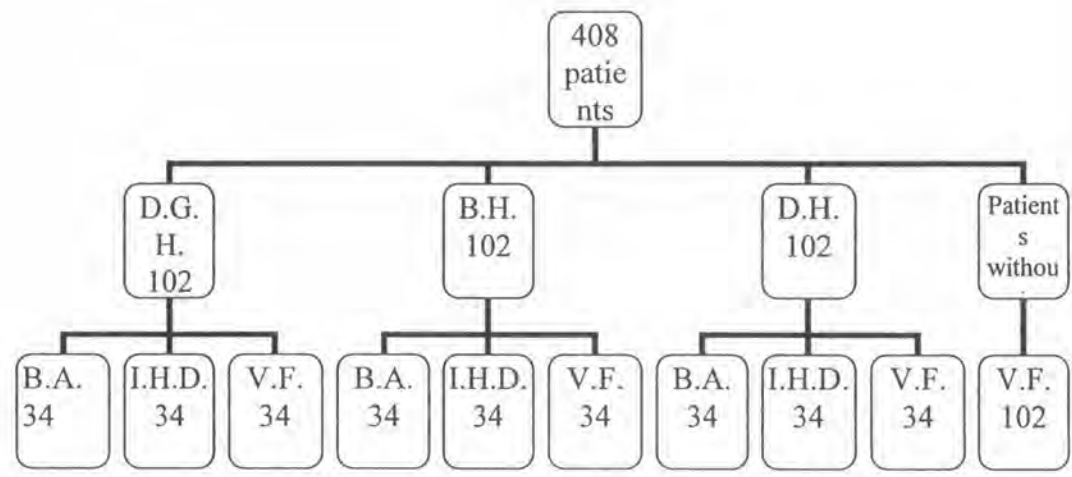
$$n = N / 1 + (e)^2$$

n= desired sample size. N=Population size. Total population in Monaragala District will take as a population. It is approximately 420 000 people. e = this is the maximum error for the sample. This is the largest acceptable percentage of difference between the estimated value from the sample and the true population value. In this study will be 5%

$$n = 420\ 000 / 1 + 420\ 000(0.05)^2$$

Sample size =399

3.7 Sample Selection:



According to sample size calculation, 408 select as a total sample size. Total sample divided by health care facility levels and people who cannot access to public health care facility by 102. According to Sri Lankan annual health bulletin (2006)

there are no much different between numbers of public hospital visits for each three selected diseases. There for 102 samples from each facility divided in to three according to disease giving equal weight for each sample.

3.8 Eligibility Criteria:

3.8.1 Inclusion Criteria:

1. Patients with common three diseases come for treatment to the public hospital.
2. Patients who cannot access to the public health provider facility.

3.8.2 Exclusion Criteria:

1. Patients reside other than Monaragala district.
2. Patients who cannot communicate.
3. Patients that refused to participate.
4. Patients with multiple diseases.

Data Collection:

A structured questioner was used for the primary data collection of this study. Patients were questioned and the information regarding the utilization of health care services during the last three months including the present visit were gathered. Data obtained from patients including their socioeconomic background, disease, perception, behavioral pattern in seeking care and expenditure incurred by seeking care.

The main objectives of the patient interview by questioner:-

- I. To determine the behavior patterns of the population in utilizing available health resources within the study area.
- II. To identify the socioeconomic factors which determine the utilization pattern for each type of health care facility.
- III. To determine perception of population with respect to the services.

- IV. To determine the cost incurred by the patients in seeking health care from each type of health care facility.

The questioner contains three sections:

Part A- Socioeconomic factors

Part B- Information about episodes of illness during last three months

Part C- Information about current visit

3.10 Operational Definitions:

3.10.1 Utilization of Health Care Services:

Number of hospital visits during period of time.

3.10.2 Average Household Monthly Income:

Average household monthly income was calculated. Then it divided in to five income groups to compare their perception about health services. Income groups are -

- I. Average monthly income less than 5,000 Rupees
- II. Average monthly income between 5,000 to 10,000 Rupees
- III. Average monthly income between 10,000 to 15,000 Rupees
- IV. Average monthly income between 15,000 to 20,000 Rupee
- V. Average monthly income more than 20,000 Rupee

3.10.3 Distance:

The distance from patient's home to health care services, in Kilometers

3.10.4 Total Expenditure for Medical Care Spend by Patient:

As a total expenditure spend by patient for health care. Including,

- I. Travel cost
- II. Treatment cost
- III. Expenditure for medical care prior to the hospital visit.

3.10.5 Perception:

Patients believe for consumed services. To evaluate patient perception, five criteria selected. These are quality of treatment, quality of service, quality of hospital environment, pharmacy section and waiting time. For each criterion from questioner ask patient to rank their satisfaction from 1 to 5. Again ask to weight each criteria out of 100. Then weighted score was calculated. Then it was compared with different income groups.

3.10.6 Household Size:

It is the number of members in the patient's family.

3.10.7 Number of Dependents in the Household:

It is the number of dependents in the family.

- I. Age less than 16 years.
- II. Age more than 60 years.
- III. Unemployed.

3.10.8 Period of the Study:

It is the duration of episodes of illness during last three months including present visit to the public hospital.

3.11 Reasons for Including Variables as Socioeconomic Indicators:

3.11.1 Average Monthly Income:

The past studies found that families with higher income spent on medical care decline as income increases. Other studies found that, when family income increases, patient prefer using better quality of health services. If so, health care is a normal good if people consume more medical care when their income increases, or it is an inferior good if they reduce use of health services when their income increases.

3.11.2 Age:

Age is the one of important characteristic that can affect people's health seeking behavior. People with a higher experience in the life usually have better knowledge about their health. In contrast, for hospital admission rate and average length of stay, it is lower for children and then rise with age, in general (Anderson, 1973)

3.11.3 Gender:

Gender deference's depend on their culture. Usually in Sri Lanka male people mainly concern about productive activities and decision making, female concern about their family. Many study found that female more prone to seek health care than male. One study (Oslan 1993) showed that women are willing to pay significantly more for hip replacement program than men. But relationship may depend on type of disease. It will be the same for utilization of services.

3.11.4 Distance:

The distance will calculate as a distance from patient's home to health care services, in Kilometers. Usually in developing countries like Sri Lanka transportation is the main concern when accessing any kind of facility. It mainly

depend on that time consume for transportation. It will reflect patient's utilization of health services with distance to these facilities.

3.11.4 Perception:

Perception of population with respect to the services is important to analyze utilization pattern among different people with different socioeconomic status. Peoples with higher belief about the health facility are more prone to utilize frequently. Eventually it will reflect the quality of services that facility provides.

3.11.5 Expenditure:

Expenditure incurred by patients for seeking health care at the services will affect the utilization of services. If the cost incurred by patients is high, utilization of health care services will reduce under assumption with other things are constant. Furthermore, the poor will more sensitive to cost in utilization than the rich. If the cost is too high for them, they will postpone the use of services until the desperate condition of severity of disease.

Traveling cost is higher for health care institutions at the higher end of the scale. Utilizing health care outside the surveyed area results in the highest cost. (De Silva and Attanayake, 1992).

3.11.7 Ethnicity:

Past studies show that different people with different ethnic groups behave differently. The reason for this is that differences between their cultural diversity. Example, some ethnic groups are prone to get ritual treatments than others.

3.11.8 Religion:

People with deferent religion behave differently. The studies show most of the time people behave according their religion. Study about utilization pattern among different religion groups will help to identify separate belief among them.

3.11.9 Household Size:

The household size will be reflecting the patient's health seeking behavior. Past studies show that, family with large household size may decrease health seeking behavior, because of the cost for health care.

3.11.10 Number of Dependents in the Household:

The number of dependents in the family is another important factor effects for patients health seeking behavior. Usually people with more dependents in the family have to keep look after all of them from their income. So when family with more dependents will be decrease their health seeking behavior.

3.12 Source of Data:

It is primary data from the interview, using structured questioner.

3.13 Data Collecting Period:

This study was done during February and March 2009.

3.14 Data Analysis:

Descriptive statistics and regression analysis was used to analyze data.

3.14.1 Descriptive Statistics:

This method used to describe situation of utilization in District General Hospital, Base Hospital and District Hospital. Calculate the proportion of patients using different kind of health services and compare the utilization with characteristics of patients: age, gender, income groups and patient's perception. Mathematical analysis such as percentage, mean and frequency with graphs and tables will use to demonstrate to compare characteristics.

3.14.2 Regression Analysis:

Linear regression model and Logistic regression models used to analyze correlation between patient's socioeconomic characteristics, perception and total expenditure of health care spend by patient and utilization of healthcare services

3.14.2.1 Dependent Variable:

The number of visits to the health care facility during the last three months, including current visit.

3.14.2.2 Independent Variables:

1. Gender -Female and male
2. Age - Patients age
3. Income -The monthly average household income
- 4.Distance - The distance from patient's home to health care services, in Kilometers.
5. Expenditure - Expenditure of health care spend by patients
6. Household size- Number of members in the family.
7. Number of dependents in the household-Numbers of dependents in the family.
8. Ethnicity
9. Religion
10. Perception

3.14.3 Linear Regression Model for Factors Affecting Utilization of Healthcare Services

$$\hat{Y} = \beta_0 + \beta_1 \text{AGE} + \beta_2 \text{EXPEN} + \beta_3 \text{INCOME} + \beta_4 \text{DISTEN} + \beta_5 \text{PERC} + \beta_6 \text{HOUSEHOLD} + \beta_7 \text{DEPEN} + \beta_8 \text{D1} + \beta_9 \text{D2} + e$$

Where,

- 1) \hat{Y} =The number of visits to public health care facility during last three month

- 2) AGE = Patient's age
- 3) EXPEN = Expenditure of medical care in patients perspective
- 4) INCOME = Average monthly income in Sri Lankan Rupee
- 5) DISTEN = The distance from patient's home to health care services, in Kilometers
- 6) PERC = Perception, Weighted score.
- 7) HOUSEHOLD= Number of members in the family
- 8) DEPEN = Number of dependents in the family
- 9) D1 = 1 for male, 0 for female
- 10) D2 = 1 for Sinhala and Buddhist , other wise 0

If the value of F test is greater than critical value or P value less than 0.05 that means we reject null-hypothesis and accept alternative hypothesis. It implies that there is relationship between that variable and dependent variable. In this case all coefficients are not equal to zero simultaneously, then using T test and P values to test the significance of each coefficient. If the coefficients are significant meaning that independent variables can affect dependent variable.

If the value of F test is less than critical value or P value more than 0.05 that means we have to accept null hypothesis or in other word coefficients are equal to zero simultaneously. In this case we can conclude that independent variables are not affected to dependent variable.

Purpose of this equation is to determine factors affecting the patient to use in kind of service. Thirteen equations were run for this study. That means, equations run for all three diseases and all facilities, then each facility for all three diseases and each disease for separate health facility.

Table 3.2 Expected Signs of Independent Variables

Variable	Expected sign
AGE	+
EXPEN	-
INCOME	+
DISTEN	-
PERC	+
HOUSEHOLD	-
DEPEN	-

According to table 3.2 as age increases patients experience will increase, so this will reflect their choice of healthcare services. According to cost bared by patients, if they increase people may reduce their pattern of utilization of health services. When people's income increases, they prone to seek health care than poor people. Distance is the other factor affecting people's choice for health services. Because of transportation problem they may have not much choice for health services. According to perception about health facility, people have choice for their health service provider. Usually people with good perception they prone to seek health in that facility according to their belief. Family with large household size may decrease health seeking behavior. Usually people with more dependents in the family have to keep look after all of them from their income. So when family with more dependents will be decrease their health seeking behavior.

3.15 Identify the Source of Finance that Patient Spend for Health Care.

Sources will be: - household savings, borrow money, sell asset etc. From the questioner will ask about patient's source of finance for last three visit and current visit.

3.16 Possible Benefit of this Study

1. This study will give information to Ministry of Public Health, about utilization of health of health care services among patients with different socioeconomic status; this result may use to implement a redesigning health coverage plan created to improve the accessibility and quality of government health care services.
2. This study will give information to Ministry of Public Health, about how patients finance their health services, so that will help future policy making process to provide accessible service for poor people.
3. This study will give information to public hospitals about accessibility and affordability of outpatients for the public facilities and then to introduce some measures that can be implemented, for them to obtain the essential clinical care.