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# PUBLIC OR PRIVATE: DETERMINANTS OF CHOICE OF HEALTHCARE PROVIDERS IN SRI LANKA

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SUNIMALEE MADURAWALA



INSTITUTE OF POLICY STUDIES OF SRI LANKA

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# 1. Introduction

The decision of choosing a health care service provider is determined by various factors. Individual characteristics, household characteristics, features of the service provider, and level of illness are the main determinants of selecting a health care provider. Income level, age, sex, and education level are some important individual characteristics in selecting a health care provider. Income level and education level of the head of the household, number of household members, geographical location of the household, distance to the service providers and time taken to access the providers are some important household and community characteristics which affect the decision of selecting a healthcare service provider. Likewise, a patient as a consumer considers factual as well as perceived features of the service providers when selecting a health care provider. Accessibility (availability and time), cost of treatments, and quality of treatments are some of the provider attributes considered by the consumers (patients). More importantly, the decision of selecting the service provider may differ according to the nature of the needed treatment and severity of the illness.

Understanding the determinants of health care demand provides a basis upon which governments can reform health policy. This is particularly important in poor countries where large proportions of households are below the poverty line and policy changes, such as

introducing user fees and expanding the hospital network can have a huge impact on demand, and government objectives of recovering cost or increasing allocative efficiency (Lawson, 2004). In Sri Lanka, both the public and private sector operate in providing health care services. The majority of the population has easy access to a reasonable level of healthcare facilities provided by both the state and the private sector through the extensive network of healthcare institutions (Ministry of Health, 2012). It is said that a healthcare facility can be found on an average not further than 1.4 Km from any home and free Western type government health care services are available within 4.8 km of a patient's home (Ministry of Health, 2012). However, the government bears the main responsibility of providing health care services. The government health care sector comprises of a well-established network of health care institutions providing primary, secondary and tertiary health care services. It has been estimated that 95 per cent of the in-patient care and 50 per cent of the out-patient care is provided by the state healthcare system. The remaining 5 percent of the inpatient care and 50 percent of the outpatient care is provided by the private health sector. Although the private health care institutions are highly concentrated in the Western Province, during the past two decades the private sector has grown rapidly with expansions in hospitals, laboratories and clinics. Over 100 private hospitals, with

investments of over Rs. 50 billion, entered the healthcare sector between 1990 and 2013 (Dayaratne, 2013). The demand for private sector healthcare has increased rapidly due to reasons ranging from improvements and investments in health technology in the private sector and poor public sector performance.

In this backdrop, understanding the determining factors of choosing a healthcare provider is also important for Sri Lanka. Thus, this study aims to identify the determinants of choice of health providers and come up with policy implications based on these findings. The first section of this report gives the introduction to the report and it sets the background for the research topic by providing a brief overview of and introduction to the study topic. Research questions and their policy relevance are discussed in the second section, followed by section three which provides the literature review. The literature review mainly covers the health care provision in Sri Lanka and the determinants of choosing a health care provider. The fourth section is on the methodology and data, followed by the fifth section which is on the findings of the data analysis and it is presented under two main headings; findings from the descriptive statistics and findings from the econometric analysis. The sixth section gives the concluding remarks and the policy implications.

## 2. Research Question

The main research questions which are expected to answer from this study are

- i. What are the main determinant factors in selecting a healthcare service provider for in-patient treatments?
- ii. What are the main determinant factors in selecting a healthcare

service provider for out-patient treatments?

- iii. What are the usage preferences of different segments (i.e. age categories, between genders, occupation categories, income groups, and sector)?

From the policy makers' perspective, these findings can be used in fulfilling the objectives of improving the public

health care services utilization aspects. From the private health care providers' point of view, the determining factors in choosing public health care services can be used in promoting and enhancing their service thus attracting more customers.

## 3. Review of Literature

The decision of the usage of health care service providers is a complex behavioural phenomenon and it is determined by various factors such as individual and household characteristics and features of the service provider. Empirical studies of preventive and curative services have often found that use of health services is related to the availability, quality and cost of services, as well as to social structure, health beliefs and personal characteristics of the users. Income levels of the individuals/ households, age, sex, geographical locations are some of the factors that could have an influence on this decision by the individuals/ households. Further, the decision of selecting the service provider may differ according to the nature of the needed treatment (i.e. out-patient treatment or in-patient treatment).

### 3.1 Health Care Provision in Sri Lanka

Western (Allopathic or Modern), Ayurveda, (including Indigenous, Unani and Siddha), Homeopathic and Chinese medicine systems are practised in Sri Lanka (Jayasuriya, 2002). The relative emphasis given to a particular system would depend on the type of illness, the cultural background of the close associates and patient, and their belief systems (Jayasinghe, 2002). By far, the dominant system is the Allopathic (Western) system of care. From the ancient times, government or the state has undertaken the responsibility of providing health care services to the general public. At present, the health system in Sri Lanka consists of public and private health care services with an extensive network of health care institutions. The majority of the population has easy access to a reasonable level of healthcare

facilities provided by both the state and private sector (Ministry of Health Sri Lanka, 2012). Recent data shows that a healthcare facility can be found on an average not further than 1.4 Km from any home and free Western type government health care services are available within 4.8 km of a patient's home (Ministry of Health Sri Lanka, 2012). However, the government plays the major role as the key health care provider where the sole responsibility of preventive care is borne by the government and providing 95 per cent of the in-patient care and 50 per cent of the out-patient care in curative service. The private sector provides services only in curative care by taking care of 5 per cent of the in-patients and 50 per cent of the out-patients (Ministry of Health Sri Lanka, 2012). In the public sector as well as in the private sector, Western medicine is the main system, followed by Ayurveda.

## 3.2 Health Care Provision by the Public Sector

The present structure of the government health care system is a result of the Health Services Act of 1953 and the Provincial Council Act of 1988. The government sector encompasses the entire range of preventive, curative and rehabilitative health care provision. From 1850s until the 1980s, the government health services were managed by a central health department or ministry. By the 13th Amendment in 1987, responsibility for health services was devolved to Provincial Councils, each of which has its own Provincial Health Ministry (Hsiao, 2000). The central ministry is responsible for management of national facilities, medical education, formulation of health policy and bulk purchase of drugs and medical supplies (Hsiao, 2000). The health services of the government functions under a Cabinet Minister and a Deputy Minister appointed by the President. Officials of the administrative and professional cadre, which include four Additional Secretaries, administratively support the

Secretary Health in managing health services (Ministry of Health, 2013) and the nine Provincial Directors of Health Services (PDHS) are totally responsible for management and effective implementation of Health Services in the respective provinces (Ministry of Health Sri Lanka, 2012). The PDHS is responsible for the management of hospitals (Provincial, Base and District Hospitals, Peripheral units, Rural Hospitals and Maternity Homes) and out-patient facilities such as Central Dispensaries and visiting stations. There are Regional Directors of Health Services (RDHS) to assist the PDHSs. Each RDHS area is sub-divided into several Medical Officer of Health (MOH) areas. Currently, there are 329 MOH areas within the country. MOH areas are the smallest health unit in the public health network and it provides most of the preventive and public health services with a team comprising several categories of staff (Family Health Bureau, Ministry of Health, 2012). By the end of year 2012, there were 621 government medical institutions with in-patient facilities, 487 Primary Health Care Units and 337 MOH areas (Table 3.1).

## 3.3 Health Care Provision by the Private Sector

Although the size of the private sector in the health care system is smaller compared to the public sector, in recent years the private sector contribution in provision of health care in Sri Lanka has increased significantly. Although the private sector provides only curative care, the demand for private health care has increased attributed to many reasons. Increase in income levels, demographic changes, limitations of public health care, increase in non-communicable diseases, and increasing health awareness and use of medical services are some of the driving forces behind the increased demand for private health care (RAM Rating (Lanka) Ltd., 2013). There were several international standard tertiary-care private hospitals established in the recent past. The capacity of these institutions is ranging from highly sophisticated multi-specialized hospitals to small-scale medical centres. In 1990, there were only 46 private hospitals in operation. This

**Table 3.1**  
**Number of Health Institutions and Hospital Beds, 2000- 2012**

Item	2000	2003	2004	2005	2006	2007	2008	2009	2010	2012
Hospitals*	558	607	628	608	608	615	647	642	630	616
Patient Beds*	57,027	59,262	57,404	61,594	67,024	68,694	67,942	70,842	72,510	76,087
Patient beds per 1000 population	2.9	3.1	2.9	3.2	3.4	3.4	3.4	3.5	3.5	3.7
Central Dispensaries	404	400	397	413	428	441	439	443	464	487
MOH areas	252	280	273	286	288	291	298	303	327	337

Note: \*Includes Maternity Homes and Central Dispensaries.

Source: Ministry of Health Sri Lanka, 2012.

number has increased up to 90 by 2008 (Institute of Policy Studies, 2011). Nevertheless, the private sector health care is highly concentrated in the Western Province (United Nations Development Programme, 2012), (Institute of Policy Studies, 2011).

In 2006 the Private Medical Institutions Registration Act (PMIRA) No. 21 of 2006 came into effect with the aim of regulating private medical institutions in Sri Lanka. Private Health Regulatory Council (PHSRC) was established to exercise, perform and discharge its powers, duties and functions under the Act. Development and monitoring of standards to be maintained by the registered private medical institutions, acts as a method of evaluation of standards maintained by such private medical institutions, ensuring the minimum qualifications for recruitment and minimum standards of training of personnel, and ensuring the quality of patient care services rendered or provided by such private medical institutions which are the main functions carried out by the PHSRC (Private Health Services Regulatory Council, 2013).

### 3.4 Determinants of Choosing a Health Care Provider

There are three commonly accepted conceptual models of health care utilization: the behavioural model, health belief model and economic model (Pokhrel & Sauerborn, 2004). The behavioural model is based on three major components - predisposing factors (e.g. age, sex,

family size, education, employment); enabling factors (e.g. income, insurance, residence); and need factors or illness level (e.g. perceived health status, symptoms of illness, disability days). The health belief model claims that individual perception, which is influenced by health beliefs about vulnerability to a particular health threat and the consequences of the health problem, affects the individual's state of readiness to take an action. Further, it assumes that this state interacts with modifying factors such as demographic, socio-psychological and structural variables, and the perceived benefits of the health services lead to the likelihood of service utilization. The economic model is based on the assumption that factors such as price and income covariate with a set of other socio-demographic and need factors and creates a demand for health care. The demand for health care is represented by health care utilization (Pokhrel & Sauerborn, 2004). In this study, the focused is made more on the behavioural model and the conceptual framework and the empirical model of the study is also structured based on the behavioural model. A theoretical framework for viewing health services utilization is presented, emphasizing the importance of (1) the characteristics of the health services delivery system, (2) changes in medical technology and social norms relating to the definition and treatment of illness, and (3) individual determinants of utilization by Andersen & Newman (2005). In this study, these three factors are specified within the context of their impact on the health care system. Empirical findings are also discussed which

demonstrate how the framework might be employed to explain some key patterns and trends in utilization. Based on the conceptual framework of health-seeking behaviour developed by Anderson and Newman (Anderson and Newman, 1973), Chakraborty et al. (2003) analysed the factors associated with the use of maternal health care services in Bangladesh on the basis of data from a survey of maternal morbidity in Bangladesh (Chakraborty, Islam, Chowdhury, Bari, & Akhter, 2003). This behavioural model proposed that the use of health care services is a function of three sets of individual characteristics: (i) predisposing characteristics, e.g. age, household size, education, number of previous pregnancies, health-related attitude; (ii) enabling characteristics, i.e. income, characteristics of health care system and accesses, and availability of health facilities; and (iii) need characteristics, i.e. characteristics of illness, perceived health status, and expected benefit from treatments. Predisposing factors reflect the fact that families with different characteristics have a different propensity to use health care services, while the enabling factors reflect the fact that some families, even if predisposed to use health services, must have some means to obtain them, i.e. income, access, and availability of health services (Fosu, 1994 as cited in Chakraborty, Islam, Chowdhury, Bari, & Akhter, 2003). According to Andersen and Newman, the need factor is the most immediate cause of health service use (Andersen and Newman, 1973 as cited in Chakraborty, Islam, Chowdhury, Bari, & Akhter, 2003). The need factor reflects the perceived health

status, as indicated by severity of the morbidity conditions or the number of morbidities.

Chakraborty et al. (2003) have adopted both the bivariate and multivariate analyses.

### **Income and User Fee**

Lawson (2004) emphasizes that income and user fees are the main factors which influence health care demand in Uganda. After controlling for endogeneity issues, it was found that income is strongly associated with increased health care usage, across all age ranges but especially for women, and that user fees are less significant than one might first expect, especially when compared to having a health unit within close proximity. Further, it was found that significant differences in health seeking behaviour are related to age and gender, and that increased levels of education are consistently associated with a transfer away from government provided health care, possibly indicating that people regard its quality as inferior (Lawson, 2004). Lawson has adopted a multinomial logit approach that not only focuses on the most important decision (whether medical care was sought) but also on what type of medical care is demanded.

Paköz and Yüzer (2014) also found that income level of the household is playing a significant role in choosing a health care provider. As the level of income changes, so does the hospital preference. Middle and low income groups have a more limited budget for healthcare services and ownership of personal car is less frequent, hence demand elasticity is lower compared to the high and high-

middle income groups. Therefore, 'accessibility' and 'affordability' dimensions of the access come to the fore for middle and low income groups, while 'acceptability' is cared more by the high and high-middle income groups (Paköz & Yüzer, 2014) .

Qian, Lucas, Chen, Xu, & Zhang (2010) conducted a tracer illness study of urban people with acute upper respiratory tract infections (URTI) to examine the factors that affect their use of different out-patient health care providers by using data from the fourth China National Health Services Survey (NHSS) that was conducted in 2008 (Qian, Lucas, Chen, Xu, & Zhang, 2010). The study addresses the observed demand for both public and private providers. The findings indicate that overall, private clinics are important sources of medical care for low consumption households, that insured patients are less likely to use private clinics and more likely to use Community Health Services Centres (CHC), and that children are more likely to see a high-level provider. A number of other factors, including city size and severity of illness, were found to play a role in determining provider utilization. The analysis is based on the assumption that the use of a given type of provider would be influenced by three groups of factors: (a) predisposing, (b) perceived need for care, and (c) enabling. Four types of health care provider (the dependent variables in model estimation): self-treatment, private clinics, CHCs and city hospitals have been identified. A multinomial logit model (MNL) is used to analyze the determinants of out-patient health care provider use because the alternative options are distinct,

have different attributes and can be considered to be mutually exclusive. The MNL model was also seen as appropriate since all the independent variables in the estimated model are individual characteristics.

Karkee & Kadariya (2013), found that public healthcare facilities are sought by people in the first instance, mainly because of financial and physical accessibility rather than adequacy of resources or better healthcare delivery. Karkee & Kadariya (2013), evaluated whether people chose private or public facilities in the first instance for acute health problems and assessed the reasons for their choice (Karkee & Kadariya, 2013) using a logistic regression. Data from a cross-sectional survey was done by use of a questionnaire administered to 400 household heads in Jhapa district, Nepal.

### **Demographic Factors**

Dey & Mishra (2014) reveal that people with increasing age, females, lower income group people, uneducated, weaker sections of society and those having access to primary public health care are more likely to utilize public healthcare services as compared to private ones in India (age, gender, income, education level, social status and access). The study examines the determinants that lead an individual to choose between public and private healthcare service providers in India (Dey & Mishra, 2014). For this purpose, a national level health survey data (National Family Health Survey NFHS - 3) is used. Logistic regression analyses are carried out and total, urban and rural samples are studied separately.

Muriithi (2013) develops and tests the hypothesis that the information available about service quality in a health facility affects demand for health care (Muriithi, 2013) in a low income setting in Kenya. The study found that service quality, information about service quality, wealth, user fees, and gender are the main determinants of patients' choice among alternative medical treatments.

Determinants of choosing a health care provider may differ from country to country, from region to region. Pomeroy, Koblinsky and Alva (2010) observed that in three African countries, socio-demographic characteristics are associated with use of private delivery care, while in Bolivia and four Asian countries, economic indicators are more relevant (Pomeroy, Koblinsky, & Alva, 2010). Pomeroy, Koblinsky and Alva (2010) argue that in the case of African countries, the association with the socio-demographic characteristics suggests complementarity to public facilities (e.g. private delivery services cover populations that may not be reached by public services), while in the latter it may mean competition. Pomeroy and et al. have examined the determinants of a mother's choice to deliver in a health facility and then among women delivering in a facility, their decision to use a private provider. They have grouped the determinants of use by socio-economic characteristics, economic and physical access and by actual/perceived need from the woman's perspective and two key sets of factors that influence woman's decision on where to give birth were also identified: (1) Her individual determinants, such as socio-demographic characteristics,

economic and physical access based on household wealth and proximity to birth facilities, and actual/perceived need for health care based on risks associated with childbirth and the use of antenatal care and other health care services; (2) The structure of the health system in her country, including availability of public and private providers, financing mechanisms for the demand and supply side, the supply and location of the health workforce as well as their decisions on care provision, health information available to the public, and government policies influencing private/public sector behaviour as well as patient choice (Pomeroy, Koblinsky, & Alva, 2010).

#### **Features of the Service Provider**

Apart from the individual and community factors that influence the choice of selecting a healthcare provider, a patient would also consider the attributes and qualities (actual as well as perceived) of the health care provider. Table 3.2 summarizes seven crucial aspects of health care delivery (equity and access, public health, preventive and curative care, management, customer orientation, flexibility, financing, and competition) and presents the advantages and disadvantages of public and private health care providers.

Basu S., et al (2012) reviewed all of the evidence in a systematic way to evaluate available data on public and private sector performance under the World Health Organization's six essential themes of health systems; (a) accessibility and responsiveness, (b) quality; (c) outcomes; (d) accountability, transparency and

regulation; (e) fairness and equity; (f) efficiency. Financial barriers to care (such as user fees) were reported for both public and private systems. Although studies report that patients in the private sector experience better timeliness and hospitality, studies suggest that providers in the private sector more frequently violate accepted medical standards and have lower reported efficiency (Basu, Andrews, Kishore, Panjabi, & Stuckler, 2012) .

Bishop et al. (2011) conducted a study to compare patients' experiences of public and private sector healthcare, using acupuncture as an example. Using consumerism as a theoretical framework to explore patients' experiences, they have identified six different prominent faces of consumerist behaviour: consumer as chooser, consumer as pragmatist, consumer as patient, consumer as earnest explorer, consumer as victim, and consumer as citizen. Bishop et al. (2011) found that the decision to use either the private sector or the public sector was rarely well-informed and public and private patients both had misconceptions about the other sector (Bishop, Barlow, Coghlan, Lee, & George, 2011).

Ozawa and Walker (2011) studied the trust in public vs. private health in rural Cambodia. Public and private providers are trusted for different reasons, and that villagers' trust in and relationship with providers is an important consideration affecting where they seek care. Public providers were trusted for being 'honest', 'sincere', having 'good [medical] skills', not 'bad-mouthing' people, explaining the 'status of disease' and having an effective referral system. Private providers were trusted for being 'friendly',

**Table 3.2**  
**Comparative Advantages and Disadvantages of the Public and Private Health Sectors:**  
**Ideal and Perceived**

Issue	Public Sector	Private Sector
Equity and access	<ul style="list-style-type: none"> <li>• Targets services for poor and vulnerable populations poor and vulnerable excluded or ignored</li> <li>• Attentive to geographic disparities</li> <li>• Public health, preventive and curative care</li> </ul>	<ul style="list-style-type: none"> <li>• Individuals who can pay favoured; the</li> <li>• Services concentrated in population centres</li> </ul>
Public health preventive and curative care	<ul style="list-style-type: none"> <li>• Emphasis on preventive and public health services (public goods with large externalities)</li> <li>• Extensive system of hospitals and curative care centers often maintained</li> </ul>	<ul style="list-style-type: none"> <li>• Little attention to preventive and public health services without special incentives</li> <li>• Emphasis on curative care services by paying customers (private goods)</li> </ul>
Management	<ul style="list-style-type: none"> <li>• General dependence on political and legislated direction</li> <li>• Hierarchical bureaucracy with diffused accountability</li> <li>• Commitment to public service compromised by vested personal interests</li> <li>• Restrictive range of discretionary flexibility, less innovation</li> </ul>	<ul style="list-style-type: none"> <li>• Greater reliance on information for decision-making and planning</li> <li>• Recruitment of managers limited primarily by cost/benefit consideration</li> <li>• Smaller and more focused authority structures</li> <li>• Greater synergy between business personal interests</li> <li>• Broader range of discretionary authority greater flexibility, more innovation</li> </ul>
Customer orientation	<ul style="list-style-type: none"> <li>• Limited attention to customer convenience and comfort</li> <li>• Indirect accountability for customer satisfaction</li> </ul>	<ul style="list-style-type: none"> <li>• Focuses on relatively narrow range of customer needs and wants and</li> <li>• More attentive to customer convenience and comfort</li> <li>• More direct accountability for customer satisfaction</li> <li>• May exclude poorest and sickest</li> </ul>
Flexibility	<ul style="list-style-type: none"> <li>• Extensive infrastructure of owned facilities</li> <li>• Slow to respond to changing market conditions because of political and budgetary commitments to ongoing programs</li> </ul>	<ul style="list-style-type: none"> <li>• Adaptable access to infrastructure through rentals and leasing</li> <li>• Flexible employment and pay practices</li> <li>• Quicker response to changing market conditions</li> </ul>
Financing	<ul style="list-style-type: none"> <li>• Access to tax revenues</li> <li>• Weak incentives to be cost conscious or cost efficient</li> <li>• Programs financed primarily through historic budgetary allocations</li> <li>• Limited access to private capital markets</li> </ul>	<ul style="list-style-type: none"> <li>• Dependent on revenue flows from sales or contracts</li> <li>• Attentive to cost and price</li> <li>• Needed but unprofitable services possibly curtailed or discontinued</li> <li>• Resources assigned to profit centres</li> <li>• Sensitive to cross-subsidization and cost shifting</li> <li>• Access to capital markets</li> </ul>
Competition	<ul style="list-style-type: none"> <li>• Possible monopoly on selected services reinforced by regulation and subsidization</li> </ul>	<ul style="list-style-type: none"> <li>• Vulnerable to competition from public and private providers</li> </ul>

Source: (Harding & Preker, 2003).

'gentle and sympathetic', with personal interactions; they were easy to contact, will go to patient's homes and patients can 'owe [them] some money' (Ozawa & Damian, 2011). In an earlier study, Russell (2005) examined treatment-seeking behaviour in two poor urban communities in Colombo. People from a range of income groups preferred to use public providers for more serious

illnesses because public services were free and they trusted the technical competence of public providers at both a personal and institutional level. Further, the study also shows, that inter-personal quality of care was lacking in the public sector and that residents from the two communities, including a considerable minority of the poorest, preferred to use private providers for moderate acute

illnesses. People choose private services as it saved time, doctors listened and they could build better relationships with private doctors. Despite the strengths of Sri Lanka's public health sector, poor relationships act as an access barrier and push a range of income groups to the private sector (Russell, 2005). Determinant factors used in different studies are summarized in Table 3.3 below.

**Table 3.3**  
**Determinants of Health Care Usage**

Study	Dependent Variable	Individual Determinants	Supplier Attributes
Lawson (2004)	Type of medical care demanded	<ul style="list-style-type: none"> <li>• Sex</li> <li>• Education</li> <li>• Income</li> <li>• Region</li> <li>• Household composition (percentage of women or young people in the household)</li> </ul>	<ul style="list-style-type: none"> <li>• Distance travelled to the health care provider</li> <li>• Price</li> <li>• Ownership type</li> </ul>
Chakraborty, Islam, Chowdhury, Bari, & Akhter (2003)	Use of maternal health care services	<ul style="list-style-type: none"> <li>• Female education</li> <li>• Women's age</li> <li>• Number of previous pregnancies</li> <li>• Severity of disease condition</li> <li>• Birth order</li> <li>• Income</li> </ul>	<ul style="list-style-type: none"> <li>• Physical accessibility</li> </ul>
Andersen & Newman (2005)		<ul style="list-style-type: none"> <li>• Predisposition of the individual to use services;</li> <li>• Ability to secure services</li> <li>• Illness level.</li> </ul>	
Qian, Lucas, Chen, Xu, & Zhang (2010)	Type of health care provider	<ul style="list-style-type: none"> <li>• Age</li> <li>• Gender</li> <li>• Marital status</li> <li>• Education</li> <li>• Economic status</li> <li>• Occupation</li> <li>• City size</li> </ul>	<ul style="list-style-type: none"> <li>• Distance</li> <li>• Price</li> <li>• Quality of service</li> <li>• Health insurance schemes</li> </ul>
Karkee & Kadariya, (2013)	Type of health facilities	<ul style="list-style-type: none"> <li>• Age</li> <li>• Sex</li> <li>• Educational status</li> <li>• Marital status</li> <li>• Religion</li> <li>• Ethnicity</li> <li>• Occupation</li> </ul>	<ul style="list-style-type: none"> <li>• Health personnel</li> <li>• Practices and conduct</li> <li>• Adequacy of resources and services</li> <li>• Healthcare delivery</li> <li>• Financial and physical accessibility.</li> </ul>
Dey & Mishra (2014)	Choice of health care service provider made by an individual. This choice is either a private or public health care service provider (the dependent variable is categorical in nature)	<ul style="list-style-type: none"> <li>• Age</li> <li>• Gender</li> <li>• Education</li> <li>• Income</li> <li>• Caste</li> <li>• Marital status</li> <li>• Exposure to mass media</li> </ul>	<ul style="list-style-type: none"> <li>• Access</li> </ul>

# 4. Methodology and Data

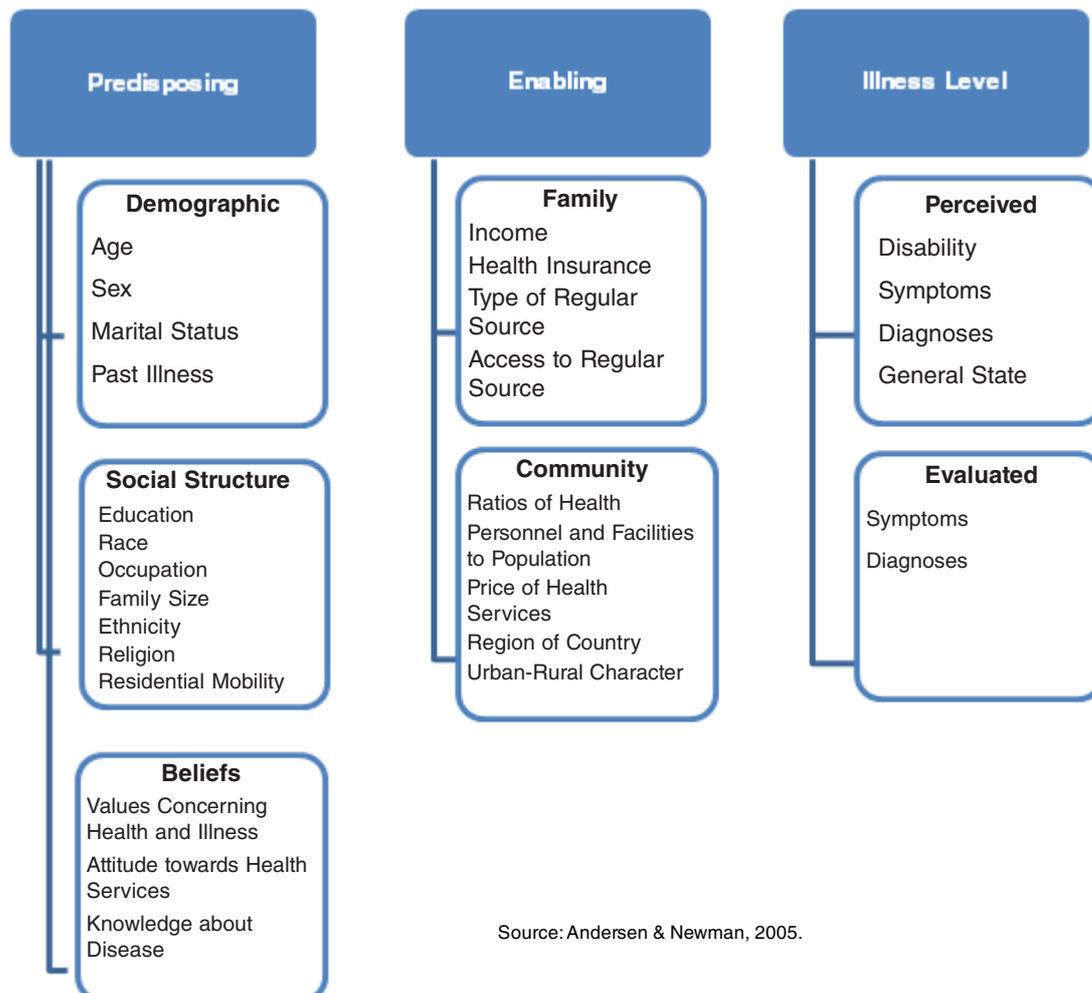
## 4.1 Theoretical Model

The underlying theoretical model for the analysis is the model presented by (Andersen & Newman, 2005). Andersen & Newman (2005) suggest a method for evaluating the utility of various individual determinants of health services utilization used in the framework for achieving a situation of equitable distribution of health services in the United States. Andersen and Newman argue that most of the empirical studies and theories

dealing with health services utilization have emphasized the individual characteristics while less attention has been paid to the societal impact and this paper outlines a framework for viewing health services utilization which takes into account both societal and individual determinants. In addition to societal effects, individual characteristics of people help to determine the health care they receive. It is necessary for such an

analysis to develop a model which relates these individual characteristics to utilization patterns in some logical fashion. The model should also serve as a guide in the selection of relevant variables to include in the analysis. Finally, together with the systems components the model suggests the differing impact of these variables. Such behavioral model of health services utilization is depicted in Figure 4.1. The

**Figure 4.1**  
**Individual Determinants of Health Service Utilization**



Source: Andersen & Newman, 2005.

underlying model assumes that a sequence of conditions contributes to the type of volume of health service a person uses. Use is dependent on: (1) the predisposition of the individual to use services; (2) his ability to secure services; and (3) his illness level.

## 4.2 Empirical Model

Utility depends upon the attributes of health care choice  $j$  which varies with both the choices and characteristics of the individual. It's been assumed that each individual knows which health care facilities are available together with their prices and proximity, and that everyone has access to government owned facilities. As such, the probability that individual  $i$  choose alternative  $j$  can therefore be expressed by the following;

$$Prob[Y_i = j] = \frac{\exp(\alpha' X_{ij} + \beta_j^i Z_i)}{\sum_{j=0}^j \exp(\alpha' X_{ij} + \beta_j^i Z_i)}, \quad j = 0, 1, 2, \dots, j$$

Adopting such an approach for the estimation of a discrete model requires supplier specific data such as the price of drugs and travelling distance and may mean that there is missing data or problems in the actual measurement or definition of the prices.

Although the actual estimation of the demand for health care can be as simple as adopting a binary choice model there can be a number of problems. Whether healthcare is either sought or not and whether such an approach fulfills the primary need in

analysing health care demand of focusing on whether a sick individual demands health care or not, and whether leads to a largely uncomplicated analysis of the demand for health care, such a strong simplification neglects the valuable data on the types of health care chosen (Lawson, 2004). Hence, adopting a multinomial logit approach is the more suitable approach. Multinomial logit models are used to model relationships between a polytomous response variable and a set of regressor variables. Depending on whether the response variable has an ordered or unordered structure, these polytomous response models can be classified into two distinct types (So & Kuhfeld, 2010).

In a multinomial logit model, an individual is assumed to know all

the provider-specific features and to choose the alternative that maximizes his/her utility. The observed choice is determined by the differences in utility across alternatives, rather than in levels of utility (Muriithi, 2013). This implies that the visit decision involves a comparison of the utility obtained from each option. A MNL model is specified as:

$$(y_i = j) = \frac{e^{\beta_j V_i}}{\sum_{j=1}^j (e^{\beta_j V_j})} \quad j = 1 \dots \dots j \dots \dots (1)$$

Because  $\sum_{j=1}^j y_i = 1$ , a restriction is needed to ensure model identification and the usual restriction that  $\beta_1 = 0$ . While in a conditional logit values of  $X_s$  are used as deviations from their means, in a multinomial logit deviations in coefficients are used to compute marginal benefits expected at alternative source of treatment. The highest benefit is chosen where the utility comparison is expressed as;

$$V_{ij} = pr (V_{ij} > V_{ik}) \quad \text{for all } j \neq k \dots (2)$$

Where  $V_{ij}$  is the perceived benefit of visit to facility  $j$  by individual  $i$  while  $V_{ik}$  is the benefit of visit to facility  $k$  by the same individual  $i$ ,  $V_{ij}$  are the benefits of medical treatment that individual  $i$  expect at facility  $j$  ( $j=1 \dots J$ ).

The random utility model associated with a visit to a health provider under the above specification and which is estimated is

$$V_{ij} = V(X_i, Z_j, N_i) + e_{ij} \dots \dots \dots (3)$$

Where  $X_s$  are individual specific variables (i.e. predisposing characters) such as age, sex, marital status, level of education, occupation;  $Z_s$  are the enabling characteristics such as income, user fee, proximity to the service provider, and sector while  $N_s$  are the need characteristics such as type of illness.

Considering all independent variables, the empirical model for individual can be expressed as follows;

$$Y_{ij} = \beta_1 Age_{ij} + \beta_2 Sex_{ij} + \beta_3 Mar_{ij} + \beta_4 Edu_{ij} + \beta_5 Occu_{ij} + \beta_6 Inc_{ij} + \beta_7 Fee_{ij} + \beta_8 Prox_{ij} + \beta_9 Sector_{ij} + \beta_{10} Illness_{ij} + e_{ij} \dots \dots (4)$$

However, in this study choosing a health care provider is considered as a household decision rather than an individual decision, hence a household level model is used. It is fair to assume that choosing a healthcare provider is a household decision as the consumer (patient in this case) might not be in a situation to make such a decision. For an example, a person who met with an accident or sudden illness is not in a situation to make such a decision. Especially in the case of a sick child, the decisions regarding child health care are 'household decisions' in that these decisions are largely influenced by household factors such as the relation to other members of the household (say, parents), their educational and occupational exposures, and household income (Levin et al. 2001; Pillai et al. 2003 as cited in Pokhrel and Sauerborn, 2004). The household decision on health has four hierarchical steps. The first step is the 'perception of illness', the second step is 'seeking care', the third step is to 'choose a provider' (from various types available, i.e. public, private, traditional healers, etc.), and the final step is 'health expenditure', the level of which depends on the type of provider chosen (Pokhrel & Sauerborn, 2004) (See Annex 1).

Two separate analyses were done for out-patient treatment and in-

patient treatment. In the case of out-patient treatment, supposing that the outcome variable 'Y' takes on multiple unordered categories

Y= 1 if the patient use private facilities for out-patient treatment

Y= 0 if the patient did not use private facilities for out-patient treatment

The same procedure was repeated for the in-patients.

### 4.3 Data Sources and Description of Variables

The main data source was the Household Income and Expenditure Survey (HIES) data by the Department of Census and Statistics. The latest available HIES data, HIES (2012/13) were used. The following: (1) School education (aged 5-19 years), (2) Health information, (3) Inventory of durable goods, (4) Access to infrastructure facilities, (5) Household debts and borrowings, (6) Housing, sanitary and disasters and, (7) Land and agriculture holdings

**Dependent variable (Y):** type of health care facilities for out-patient/ in-patient treatment

**Independent Variables (X):** The following independent variables are to be considered when constructing the model.

#### **Data Limitations**

HIES, the data source for this study has some limitations. HIES data mainly focuses on collecting

household income and expenditure data. Hence, extracting data related to health care service provision matching with the study objectives was difficult. For an example, the data set doesn't have information on the user fee for out-patient and in-patient treatments separately but only the household expenditure on health as a whole. Therefore, a proxy variable (community health expenditure) was used for user fee. Further, the reference period for in-patient treatment is 'last 12 months' (annual) but the reference period for household health expenditure data is 'last month' (monthly). Hence, expenses related to in-patient treatments are not fully captured. It only captures in-patient treatment expenses incurred during one month at the time of survey. Further, the categorization of illness type is too general and broad. For an example, the reasons for out-patient treatment are listed broadly as treatment for illness, treatment for injury, medical check-up/consultation, immunization, treatment for infectious diseases, and other. However, HIES data not being an epidemiological data set, we cannot expect to have very specific categorization of illness type.

**Table 4.1**  
**Variables and Variable Descriptions**

Variable	Description
Dependent Variable Health Facility	Attending Government hospital or health centre as an out-patient Attending Private hospital or health centre as an out-patient
	Staying at a Government hospital or health centre as an in-patient Staying at a Private hospital or health centre as an in-patient
<b>Independent Variables</b>	
<b>Predisposing variables</b>	
Level of Education of the Head of the Household (HH)	Primary Secondary Tertiary Special Education No schooling = 1 if HH passed Grade 5 =0 otherwise = 1 if HH passed G.C.E (A/L); =0 otherwise = 1 if HH passed degree or above; =0 otherwise; omitted group = 1 if HH has special education or above; =0 otherwise = 1 if HH no schooling ; =0 otherwise
Occupation of the Head of the Household (HH)	Managers and Senior Officers Professionals Technical and Associate Professionals Clerks Sales and Service Workers Skilled Agricultural and Fishery Workers Craft and related Workers Plant and Machine Operators Elementary Occupations Forces Other Occupations = 1 if HH is a Manager /Senior Officer/; =0 otherwise; omitted group = 1 if HH is a Professional; =0 otherwise = 1 if HH is a Technical and Associate Professional; =0 otherwise  = 1 if HH is a Clerk; =0 otherwise = 1 if HH is a Sales and Service Worker; =0 otherwise = 1 if HH is a Skilled Agricultural and Fishery Worker; =0 otherwise  = 1 if HH is a Craft and related Worker; =0 otherwise = 1 if HH is a Plant and Machine Operator; =0 otherwise = 1 if HH is doing an Elementary Occupation; =0 otherwise = 1 if HH is in Forces; =0 otherwise = 1 if HH is doing an Other Occupation; =0 otherwise
Household type	Presence of an infant Presence of a child Presence of an elderly A normal household = 1 if the HH has an infant; =0 otherwise = 1 if the HH has a child; =0 otherwise = 1 if the HH has an elderly; =0 otherwise = 1 if the HH does not have either an infant or child or an elderly; =0 otherwise ; omitted group
<b>Enabling Variables</b>	
Income	Household Monthly Income
User Fee	Community health expenditure (proxy variable for user fee)*
Access to health insurance	Access to health insurance Does not have access to health insurance = 1 if the HH has access to health insurance; =0 otherwise = 1 if the HH does not have access to health insurance; =0 otherwise ; omitted group
Proximity	Distance from the house to the closest facility (Hospital/ Government Time taken to reach the nearest medical facility)
Sector	Urban Rural Estate = 1 if Urban; otherwise 0; omitted group = 1 if Rural; otherwise 0 = 1 if Estate; otherwise 0
Location (Province)	Western Central Southern Northern Eastern North-Western North-Central Uva Sabaragamuwa = 1 if Western; otherwise 0; omitted group = 1 if Central; otherwise 0 = 1 if Southern; otherwise 0 = 1 if Northern; otherwise 0 = 1 if Eastern; otherwise 0 = 1 if North-Western; otherwise 0 = 1 if North-Central; otherwise 0 = 1 if Uva; otherwise 0 = 1 if Sabaragamuwa; otherwise 0
<b>Illness level</b>	
Type of illness	Type of treatment (out-patients) and Reasons for staying (in-patients) proxy variable for Type of illness Type of Treatment for out-patients
	Treatment for illness Treatment for injury Medical check-up/ Consultation Immunization Treatment for infectious diseases Other Reasons for staying for In-patients Treatment for illness Treatment for injury Operation/ Surgery Child delivery Treatment for infectious diseases An accident Other = 1 if Treatment for illness; =0 otherwise; omitted group = 1 if Treatment for injury; =0 otherwise = 1 if Medical check-up/ Consultation; =0 otherwise = 1 if Immunization; =0 otherwise = 1 if Treatment for infectious diseases; =0 otherwise =1 if Other; =0 otherwise  = 1 if Treatment for illness; =0 otherwise; omitted group = 1 if Treatment for injury; =0 otherwise = 1 if Operation/ Surgery; =0 otherwise = 1 if Child delivery; =0 otherwise = 1 if Treatment for infectious diseases; =0 otherwise = 1 if An accident; =0 otherwise = 1 if Other; =0 otherwise

Note: All the expenditure on health were considered as expenditure on private health care providers assuming that all public health facilities are free of charge.

# 5. Findings

## 5.1 Descriptive Statistics

Within a month, 16.7 per cent of the household population takes health treatment from a government hospital or a health care centre as out-patients and 14.8 per cent of the household population has taken treatment from a private hospital or a health care centre as out-patients. 31.63 per cent of the population of the country seeks health treatment as out-patients either from the government sector or private sector.

On average, during a one year time, 8.3 per cent of the household population stays at government hospitals as in-patients and 0.2 per cent of the household population stay at a private hospitals for in-patient treatments.

Out of total household population in Sri Lanka, 14.1 per cent has suffered from chronic illness or

disability at the time of the survey. Blood Pressure, Diabetes, and Asthma are recorded as the most prevailing chronic illnesses among the households in Sri Lanka (Table 5.1). 3.4 per cent, 2.6 per cent and 1.5 per cent of the total population suffered from these illnesses respectively.

### **Access to Health Care Facilities - Geographical Distance and Time**

Hospital utilization is strongly correlated with the geographical distance from the hospital. Higher visiting rates will also result in increased a) admission rates, b) out-patient visiting rates and, c) technical investigations (Magnusson, 1980). Hence, proximity in itself has a major influence on how the resources are

allocated to the hospitals. Further, there is a life-saving effect of hospital proximity. An increase by a standard deviation of distance to the nearest hospital (5 km) increases the fatality rate by 13.84 per cent, which equates to a 0.92 additional death per every 100 accidents and proximity matters more when the road safety is low; the emergency service is not properly organized, and the nearest hospital has lower quality standards (Bertoli & Grembi, 2015).

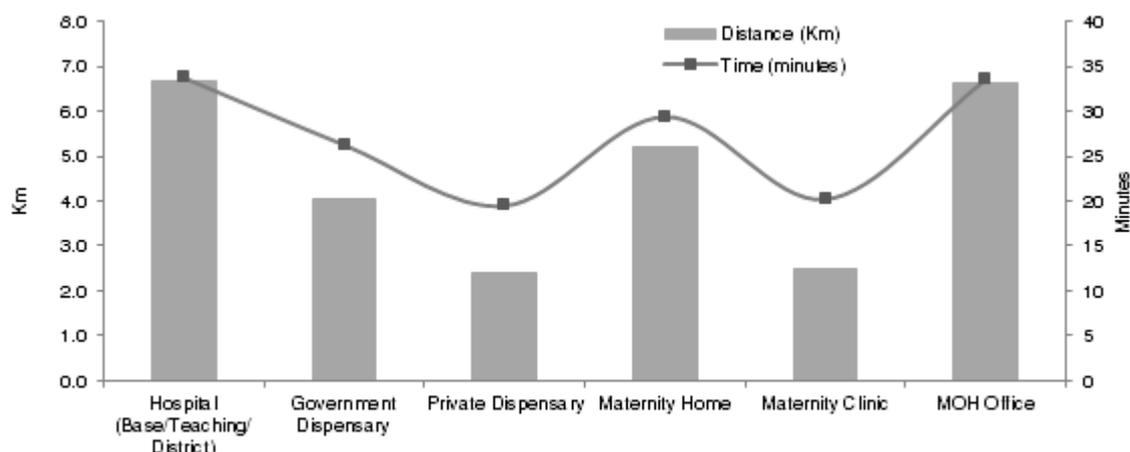
The analysis shows that on average, every household in the country has a private dispensary within 2.4 Km which can be reached in 19 minutes and a government dispensary within 4 Km which can be reached in 26 minutes (Figure 5.1) for out-patient treatments. This

**Table 5.1**  
**Prevalence of Chronic Illnesses and Disabilities 2012/13**

Disease/ Illness	% Composition of Those Who Suffered from Chronic Illness or Disability	As a % of Total Population
Heart Conditions/ Diseases	8.2	1.2
Blood Pressure	24.1	3.4
Diabetes	18.5	2.6
Asthma	10.9	1.5
Epilepsy	1.4	0.2
Cancer	1.5	0.2
Stomach disease / Gastritis	2.3	0.3
Diseases related to Eyes	1.9	0.3
Diseases related to Ears	1.4	0.2
Arthritis	5.3	0.7
Mental retardation	2.7	0.4
Hemorrhoids	0.8	0.1
Catarrh	2.4	0.3
Severe headache	1.2	0.2
Disabled at birth	2.3	0.3
Disabled by an accident	2.7	0.4
Other	12.4	1.7
	100	14.1

Source: Author's calculations based on HIES 2012/13 data.

**Figure 5.1**  
Average Distance and Time to Closest Health Care Providers



Source: Author's calculations based on the HIES 2012/13 data.

implies that physical availability and accessibility of the health care providers for out-patient treatments is not a major issue. A government hospital which has in-patient treatment facilities (Base/Teaching/ District) is available within the proximity of 6.7 Km to every household of the country and on average, it would take 34 minutes to reach a government hospital

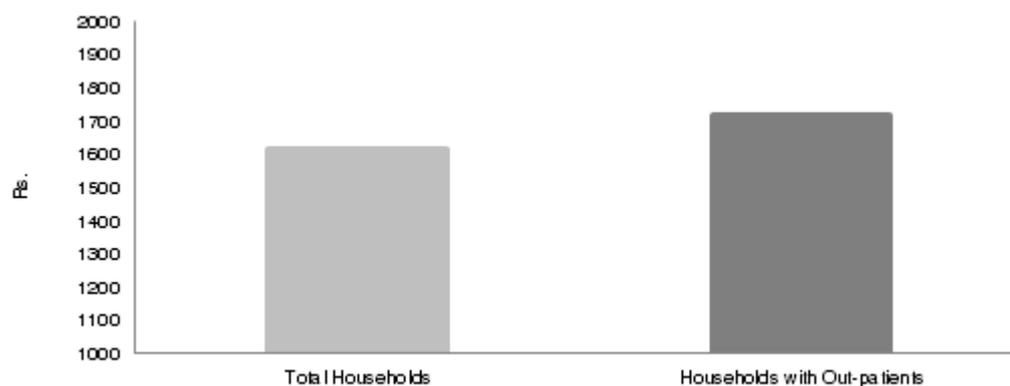
with in-patient facilities. The availability of private hospitals with in-patient facilities could not be analyzed as the required data were not available in the data set.

**Expenditure on Health**

The average household monthly expenditure on health<sup>1</sup> was recorded as Rs. 1,613 (Figure 5.2). The average monthly health

expenditure was slightly higher for households with out-patients (Rs. 1716). Health expenditure for households with in-patients could not be analyzed as two different reference periods have been used for identifying the in-patients (12 months) and the household health expenditure (monthly) in the data source (HIES 2012/13).

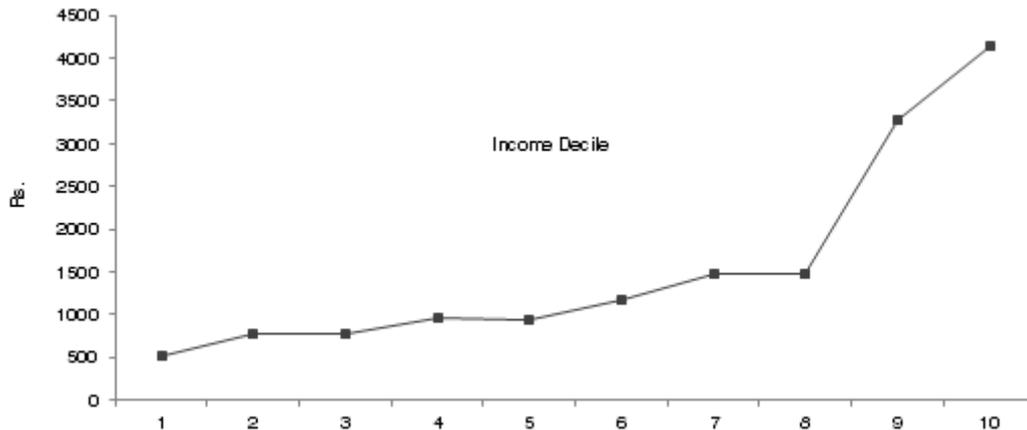
**Figure 5.2**  
Average Household Monthly Health Expenditure



Source: Author's calculations based on the HIES 2012/13 data.

<sup>1</sup> This includes: (i) Fees to private medical practitioners, (ii) Ayurveda consultation fees, (iii) Consultation fees to specialists, (iv) Payments to medical laboratories for test analysis, (v) Payment to private hospitals and nursing homes, (vi) Purchasing of medical and pharmaceutical products, (vii) Expenses on spectacles, Hearing aids, Scans, X-rays, and other health related expenses.

**Figure 5.3**  
**Average Monthly Household Health Expenditure by Income Decile (2012/13)**



Source: Author's calculations based on the HIES 2012/13 data.

The average monthly household expenditure on health by income decile is depicted in the Figure 5.3. On average, the households in the highest income decile have spent eight times higher on health than the households in the lowest income decile within a month (the average monthly expenditure by households in the lowest income decile is recorded as Rs. 513 and the average monthly expenditure by households in the highest income decile is recorded as Rs. Rs. 4140). Further, it could be noticed that there is only a gradual increase in the health expenditure from 1st decile to 8th decile but from 8th decile to 9th decile there is a considerable difference (from Rs. 1484 to Rs. 3286 ) in the average monthly health expenditure.

#### **Characteristics of Out-patients**

The sample characteristics of the out-patients<sup>2</sup> are given in the Table 5.2 below. The numbers show that,

both the public and private sector play significant roles in treating the out-patients. 47.5 per cent of the out-patients were treated by the public sector, 40.9 per cent of them were treated by the private sector and 11.6 per cent of them had sought treatment from both the sectors during the reference period. The majority of the out-patients both in the public sector and the private sector had attended to get a treatment for illness (84.7 per cent of the public sector out patients and 89 per cent of the private sector out-patients). More percentage of public sector out-patients had chosen the public sector for immunization, medical check-ups and consultations than the out-patients who attended the private sector. There was no significant gender variation in selecting a healthcare provider. Out of the total out-patients who visited the public sector, 16.3 per cent of them were under 10 years

of age and 13.6 per cent of them were in the age category of 30-39. Almost the same figures for the same age categories could be observed from the out-patients who visited the private sector. There was no significant difference between the education levels of the out-patients who have attended the two sectors. Though there were no remarkable differences of the occupation compositions of the out-patients in both the sectors, the percentage of out-patients from the 'Managers and Senior Officers', 'Plant and Machine Operators' categories are slightly higher for the private sector out-patients and the representation of 'Skilled Agri. and Fishery Workers' category is higher in the public sector out-patients.

<sup>2</sup> People who have visited a health care provider for out-patient treatment during the reference period (last month).

**Table 5.2**  
**Out-patients' Sample Characteristics**

Out-patients Seeking Healthcare during Last Month		%
Government hospital/ health centre		47.5
Private Hospital/ health centre		40.9
Both		11.6
		100
<b>Reason for Attending</b>	<b>Government</b>	<b>Private</b>
Treatment for illness	84.7	89.0
Treatment for injury	3.8	3.5
Medical Check-up/ Consultation	7.6	5.0
Immunization	1.3	0.5
Treatment for infectious diseases (injection etc.)	0.6	0.4
Other	2.1	1.6
	100.0	100
<b>By Sex</b>		
Male	48.08	48.3
Female	51.92	51.7
<b>By Age Group</b>		
<10	16.3	16.2
10-14	8.0	8.0
15-19	7.8	7.5
20-29	12.5	11.8
30-39	13.6	13.5
40-49	12.6	12.7
50-59	11.1	11.8
60-69	7.3	8.0
Over 70	10.7	10.4
	100.0	100
<b>By Education</b>		
Primary	35.7	33.8
Secondary	59.5	60.8
Tertiary	1.9	2.3
Special Education	0.1	0.0
No Schooling	2.9	3.1
	100.0	100.00
<b>By Occupation</b>		
Managers and Senior Officers	6.4	8.0
Professionals	6.2	6.3
Technical and Associate Professionals	7.5	7.5
Clerks	3.7	4.8
Sales and Service Workers	9.0	8.0
Skilled Agri. and Fishery Workers	20.2	16.5
Craft and related Workers	15.7	16.5
Plant and Machine Operators	7.7	9.2
Elementary Occupations	23.0	22.6
Forces	0.5	0.5
Other	0.0	
	100	100.0

Source: Author's calculations based on the HIES 2012/13 data.

**Characteristics of In-patients**

Unlike for the out-patient treatments, the public sector takes

the major responsibility for in-patient treatments. 91.2 per cent of the in-patients<sup>3</sup> were treated by the public

sector (Table 5.3). Out of the total people who had stayed at a hospital as an in-patient, only 6.2

**Table 5.3**  
**In-patients' Sample Characteristics**

In-patients Seeking Healthcare during Last 12 Months		%
Government		91.2
Private		6.2
Both		2.7
<b>Reason for Staying</b>	<b>Government</b>	<b>Private</b>
Treatment for illness	57.3	58.5
Treatment for injury	9.3	8.7
Operation/ Surgery	10.9	17.7
Child delivery	11.8	6.8
Treatment for infectious diseases (injection etc.)	1.4	1.1
An accident	3.4	1.7
Other	5.8	5.5
	100.0	100.0
<b>By Sex</b>		
Male	48.8	50.8
Female	51.2	49.2
<b>By Age Group</b>		
<10	16.4	15.5
10-14	7.9	7.0
15-19	7.9	8.8
20-29	12.2	14.8
30-39	14.1	13.1
40-49	13.1	13.1
50-59	10.8	9.1
60-69	7.3	8.3
Over 70	10.3	10.3
	100.0	100
<b>By Education</b>		
Primary	35.5	33.5
Secondary	59.7	59.5
Tertiary	1.8	4.0
Special Education	0.1	0.0
No Schooling	3.0	3.0
	100.0	100.0
<b>By Occupation</b>		
Managers and Senior Officers	7.4	6.6
Professionals	5.9	7.7
Technical and Associate Professionals	7.9	7.4
Clerks	3.3	3.0
Sales and Service Workers	8.2	12.2
Skilled Agri. and Fishery Workers	18.4	13.7
Craft and related Workers	17.0	18.6
Plant and Machine Operators	7.6	5.5
Elementary Occupations	23.8	24.5
Forces	0.6	0.7
Other		
	100.0	100.0

Source: Author's calculations based on the HIES 2012/13 data.

<sup>3</sup> People who have stayed at a health care provider for inpatient treatment during the reference period (last 12 months)

per cent of them had chosen to stay in a private hospital and 2.7 per cent of them had taken treatment both from the public sector and private sector within a year. The majority of the in-patients had stayed at a hospital (government and private) to get treatment for illness. However, when comparing the percentage composition of government in-patients and private in-patients, a higher percentage of in-patients are recorded for child deliveries and accidents from the government sector in-patients. At the same time, a higher percentage of in-patients are recorded for operations and surgeries from the private sector in-patients. Compared with the out-patient characteristics, there is a slight gender variation of the in-patient composition where the higher percentage of in-patients from the government hospitals are females and the higher percentage of in-patients from the public hospitals are males. The age breakdown of the in-patients shows that the majority of the in-patients are less than 10 years of age both in the government and private sector. The education level of the in-patients shows that out of the total government in-patients, a higher percentage of in-patients have primary level education compared with the private sector in-patients and likewise, a higher percentage of private in-patients have tertiary level education compared with the government sector in-patients.

## 5.2 Econometric Results Out-patients

The analysis shows that occupation of the head of the

household, monthly community health expenditure, sector, location (province), and injury type are significant variables in attending a private health care provider for out-patient treatment. Being the head of the household in the occupation category of Professional and Elementary occupation, decreases the likelihood of attending a private healthcare provider for out-patient treatment but the household head being in another occupation category increases the likelihood of attending a private health care provider for out-patient treatment. An increase in the monthly community health expenditure increases the likelihood of attending a private health care provider for out-patient treatment. Further, the time taken to reach the nearest private dispensary (proximity) also increases the likelihood of attending a private health care provider. The result of the analysis shows that the enabling community characters (sector and province) are highly significant in deciding the health care provider. When compared with the households in the urban sector, being a household in the rural or estate sector increases the likelihood of using a private health care provider for out-patient treatments. On the contrary, comparing with a household located in the Western Province, the likelihood of attending a private health care provider for out-patient treatment decreases for a household which is located in any other province (except the Sabaragamuwa province). According to the analysis results, the type of illness is also a significant variable in deciding the healthcare provider. Injuries, check-ups/ consultation, immunization, treatment for

infectious diseases, and other illnesses decrease the likelihood of attending a private healthcare provider for out-patient treatments.

### ***In-patients***

For the in-patient treatments, education level of the head of the household, geographical location (province) and the type of illness are significant variables in staying at a private hospital for in-patient treatment. Comparing with the household heads with a tertiary level education, when the head of the household has primary level or secondary level education it decreases the likelihood of staying at a private healthcare provider for in-patient treatment. Compared with a household located in the Western Province, the likelihood of staying at a private health care provider for in-patient treatment decreases for a household located in any other province. Injuries, operation/ surgery, child delivery, treatment for infectious diseases and other illnesses decrease the likelihood of staying at a private healthcare provider for in-patient treatments.

**Table 5.4**  
**Parameter Estimates for Out-patients and In-patients**

	Co-efficient	
	Out-patients	In-patients
<b>Predisposing Variables</b>		
Education level of the head of the household		
Primary	-0.0545	-0.3456*
Secondary	-0.0457	-0.3110*
Special Education	0.0000	0.0000
No Schooling	0.0229	0.0787
Occupation of the head of the household		
Professionals	-0.1368*	-0.0987
Technical	-0.0437	0.0234
Clerk	-0.0920	0.0503
Sales and service worker	-0.0380	-0.0790
Skilled Agricultural and fishery worker	-0.0104	0.0733
Craft and related worker	-0.0710	-0.0494
Plant and Machine operator	-0.0177	-0.1189
Elementary occupation	-0.0885**	0.1112
Forces	0.1567	0.0000
Other occupation	0.2024**	0.0000
Household type		
Presence of an infant	-0.0191	-0.1173
Presence of a child	-0.0089	0.0311
Presence of an adult	-0.0048	0.0913
<b>Enabling variables</b>		
Household monthly income	0.0000	0.0000
Monthly community health expenditure	0.0000**	0.0000
Access to health insurance	-0.0151	-0.1049
Proximity		
Distance to the nearest hospital	-0.0013	0.0044
Time taken to reach the nearest hospital	-0.0018	-0.0015
Distance to nearest private dispensary	-0.0123	
Time taken to reach the nearest private dispensary	0.0039**	
Sector		
Rural	0.0850**	-0.0672
Estate	0.2464 ***	0.0299
Location (Province)		
Central	-0.5822***	-0.6171***
Southern	-0.1423***	-0.2734***
Northern	-0.5916***	-0.1184
Eastern	-0.2825***	-0.1989*
NW	-0.2224***	-0.4658***
NC	-0.5752***	-0.6251***
Uva	-0.3322***	-0.5690***
Sab	0.1950	-0.5954**
<b>Type of Illness</b>		
<i>Out-patients</i>		
Injury	-0.8528***	
Checkups/ consultations	-1.1102***	
Immunization	-1.0909***	
Treatment for infectious diseases	-0.9680***	
Other	-1.1063***	
<i>In-patients</i>		
Injury		-0.7647***
Operation/ Surgery		-1.0591***
Child delivery		-1.2665***
Treatment for infectious diseases		-0.8770***
Accident		-0.8000***
Other		-1.2791***
Constant	0.4214***	-0.4992**

Note: The significance levels at 1, 5, and 10 per cent are indicated by \*\*\*, \*\* and \* respectively.

Source: Author's calculations based on the HIES 2012/13 data.

## 6. Conclusions and Policy Implications

The decision of choosing a health care service provider may be affected by various factors such as individual and household characteristics and features of the service provider. A sequence of conditions contributes to the type of volume of health service a person uses. Use is dependent on: (1) the predisposition of the individual to use services; (2) his ability to secure services; (3) his illness level.

Even with some data limitations, the study could explore a number of dimensions of health care service utilization in Sri Lanka. The HIES data analysis revealed that within a month, 30 per cent of the country's population seek healthcare treatment from either the government sector or private sector. Though the severity of the illnesses and the effects of these illnesses on the patients' economic and social activities are difficult to quantify from HIES data, it is fair to assume that there is a huge implication on the country's economy of being 30 per cent of the population ill within a month considering the direct as well as indirect costs of being ill. The findings suggest that more attention should be paid to the general health status of the people. The analysis also revealed that 14 per cent of the population was suffering from chronic illness or disability. Chronic illnesses and disabilities also known as Non-Communicable Diseases (NCDs) place a much heavier economic burden on an individual than communicable diseases and tend to leave residual disabilities. The

NCD patients require a longer period of medication, supervision, observation and home-based care. These findings imply the importance of taking more rigorous policy actions on preventive measures especially on NCDs. Although there are several policies and programmes in place (e.g. The National Policy for Prevention and Control of Chronic Non-communicable Diseases- 2009, National Cancer Control Programme), more attention should be paid on behavioural changes through effective implementation of available policies and programmes and introducing more specific policies and programmes in order to cater to different social segments on preventive measures (on communicable as well as NCDs).

The analysis suggests that physical availability and accessibility of the health care providers for out-patient treatments is not a major issue. Private healthcare providers are closely available than the public health care providers for out-patient treatments. The econometric analysis also shows that the likelihood of attending a private health care provider increases if the patient is from a household in the rural or estate sector. This may be because of the close availability of private health care providers. Data allow only to analysis the proximity of the public health providers with in-patient treatments. On average, it takes 34 minutes to reach the closest public health care provider with in-patient treatments which is 6.7 Km away. However, according to the results of the econometric analysis compared with the patients

from the Western Province, the likelihood of staying at a private health care provider for in-patient treatment declines for the patients from other provinces. This can be directly related to the distribution of the private hospitals across the country. In 2010, out of the total 102 private hospitals in the country, 57 per cent of them were located in the Western Province. In four provinces (Northern, North Central, Uva, and Sabaragamuwa) the availability of private hospitals was 5 or less than 5 (Dayaratne, 2016). Attention should be paid on increasing the availability of the health care units with treatment facilities either by the public sector or private sector.

Basically, there is no significant difference of usage preferences of different segments (by age, sex, occupation, sector, etc.) between selecting a public sector and private health care provider for out-patient treatments. The total out-patients of the country are equally divided among the two sectors. For immunization, medical check-ups and consultations, and treatment for infectious diseases (injection etc.), the majority have chosen the government sector. Though there were no remarkable differences of the occupation compositions of the out-patients in both the sectors, the percentage of out-patients from the 'Managers and Senior Officers', 'Plant and Machine Operators' categories are slightly higher for the private sector out-patients and the representation of 'Skilled Agri. and Fishery Workers' category is higher in the public sector out-patients. Given the fact that more

than 90 per cent of the total in-patients are treated by the government sector, a usage preference by segments could not be established.

Characteristics of the head of the household, community characteristics and illness type are the most significant factors in deciding in choosing a health care

provider. Occupation of the head of the household, community characteristics such as monthly community health expenditure, sector, and location (province), and injury type are significant variables in attending a private health care provider for out-patient treatment. For the inpatient treatments, education level of the head of the household, geographical location

(province) and the type of illness are significant variables in staying at a private hospital for inpatient treatments. As discussed earlier in this report, in most cases, the decision of choosing a health care provider is a household decision and the individual characteristics of the household head influence highly on the decision taken.

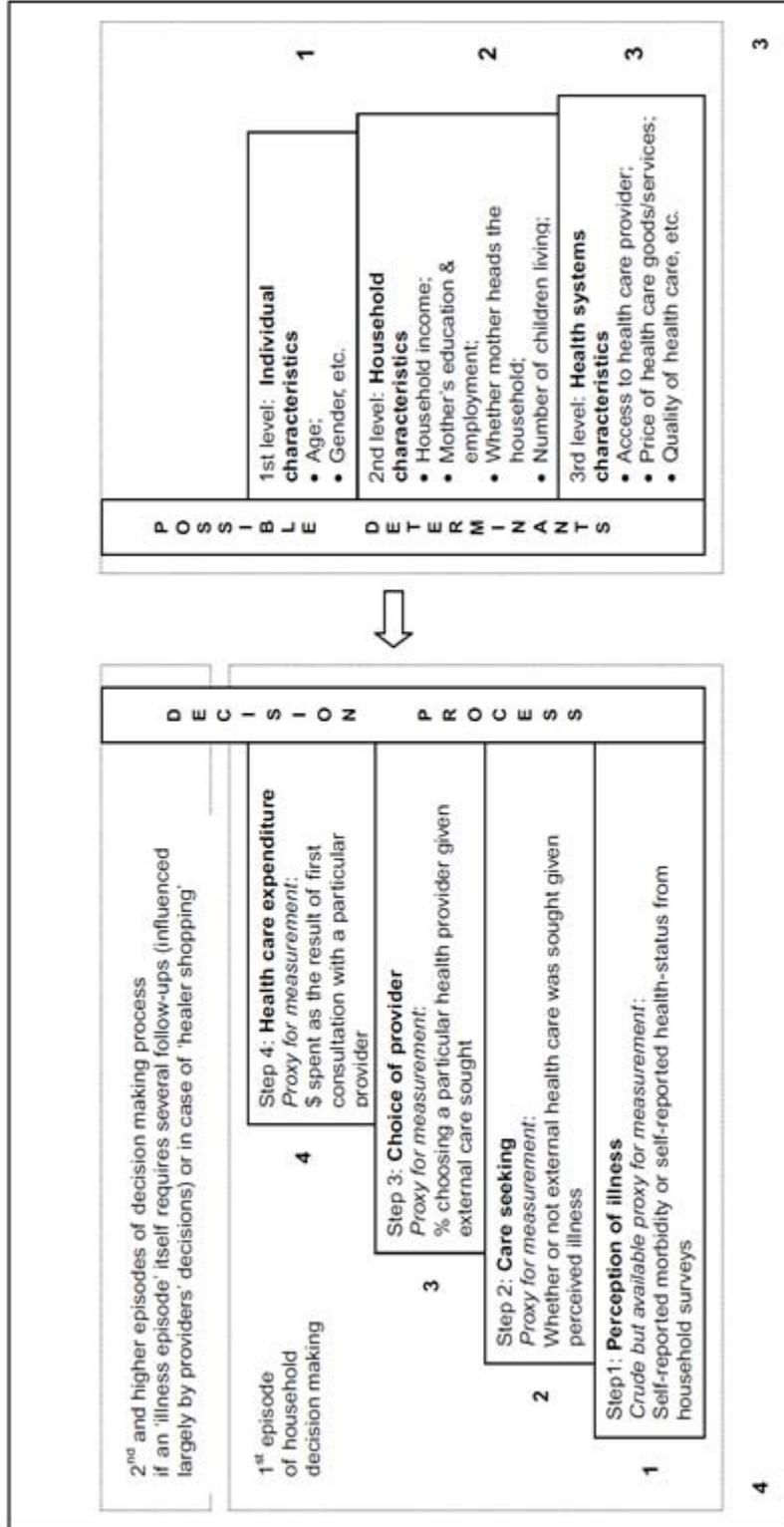
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# Annex

Annex 1: Household decision-making on child health care as a process involving four hierarchical



Source: (Pokhrel & Sauerborn, 2004).

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