DEMAND FOR HEALTH CARE SERVICES IN BURE TOWN

NAHU ASTERAYE

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Demand for Health Care Services in Bure Town

By
Nahu Asteraye Tsige
Faculty of Business and Economics

Approval by Board of Examiners:

Dr. Abdulhamid Bedri K. Advisor	Signature
Ato Getachew Yoseph Examiner	Signature
Dr. Alemu Mekonnen Examiner	Signature

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ABSTRACT

This study attempted to identify the determinants of seeking treatment during illness and the demand for health care services among different providers in Bure Town. The factors that are expected to have an influential impact were categorized as individual and/or household specific variables and choice specific variables.

The data used to estimate the effects of identified variables on the specified models were collected through a field survey on 400 households of the residents in Bure Town between February 16th to March 6th, 1999. A systematic random sampling method was designed and used for purposes of data collection in the assumption of homogeneity in the population.

The estimated empirical model results showed that individual and/or household specific variables such as sex of the patient, severity of illness, monthly income of the household and household size and the choice specific variable, distance to reach the nearest health facility, were found to have a significant effect on whether or not treatment was sought, but not on the choice of provider of health care services.

On the other hand, age of the patient, sex of the household head and education level of the patient from the individual and/or household specific variables and quality variables, medical cost of treatment per visit and waiting time for treatment from the choice specific category were found to have their own strong influence on the choice of providers of health care services with unexpected result that waiting time for treatment played in the choice of public facilities and the medical cost of treatment per visit played in the choice of private facilities which warrant us to perform further research in this area. The policy implication of such findings is discussed.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Health is an important objective of households and governments in developing countries. In addition to its direct importance to individual welfare, it indirectly affects welfare through its influence on the efficiency of human capital and on the productivity of work. Zweifel and Breyer (1997) presented the following proverb to point the dual property of health: "Health is not everything in life, but without health, life is nothing." According to them:

- Health is a highly valued asset (i.e., ... other values and goals do exist in life, yet, compared to health, they ranked lower on the preference scale of most people).
- Health is a prerequisite for success in other activities (i.e.... poor health limits the production capabilities of the affected person, including his or her ability to enjoy the good things of life (apart form health)).

Mills et.al (1988) also pointed that the nature and level of a country's economic development is a major determinant of the health status of its inhabitants and at the same time, the health of a population can itself influence economic progress. Because, people are the driving forces and final targets of socio-economic developments. Hence, the two are interdependent. As such, the provision of health services is an important aspect of socio-economic development of a country. It is this fact and viewing of health as a basic human right that make most governments to accept the declarations of Alma Ata that aims at "Health for all" by the year 2000 (World Development Report, 1993).

But, Ethiopia is one of the poorest of the LDCs as shown by per capita income, food insecurity, recurrent famines, overseas aid, infant mortality, and life expectance which points us that health status of the population is very low and diseases are wide spread (Kloos, H. 1998). According to the Ethiopia Social Sector Note (1998) the poor health status of Ethiopians is characterized by vulnerability to largely preventable infectious diseases and nutritional deficiencies, high rate of population growth, the low-income status of much of its population, their low education level and high rates of illiteracy, inadequate access to clean water and sanitation facilities, and poor access to health services. For instance, life expectancy was 49 years (compared to average of 52 years in SSA) and infant mortality was 112 out of 1,000 live births (compared to 92 for SSA) in 1995. Moreover, to show how the health status of Ethiopians is poor as compared to the Sub-Saharan African regions and other low-income countries the following table is indicated there.

Table 1.1 Basic Health Status Indicators

	Ethiopia	Eritrea	Kenya	Tanzania	Uganda	Africa
Crude Death Rate (Per 1,000)	18	15	9	14	19	15
Life Expectancy	49	46	59	51	42	52
Infant Mortality (per, 1000)	120	135	59	84	122	92
Child Mortality (Per 1000)	240	204	94	167	185	172
Maternal Mortality (Per 1,000,000)	452-1528[b]	...	510-646	200-748	550	573...
Immunization Coverage (Percent)						
DPT	28	...	82	82	73	50
Polio	28	...	81	81	74	50
Measles	22	...	79	79	73	51
Access to Proper Sanitation	10	...	86	86	67	26[a]
Access to Safe Water	18-26	...	52	52	...	37[a]
Access to Health Care	55	...	93	93	...	54[a]
Attended Births	10	...	60	60	...	34[a]

Note: (a) Excludes South Africa
(b) Maternal Mortality Estimates for Ethiopia vary widely depending on source used
Source: Ethiopia Social Sector Note, 1998

As such, as we can see from the above table, Ethiopia is disadvantaged relative to other low-income countries and the whole of Africa in most of the health indicators. Thus, in a country where such problems are there, tremendous efforts should be made to over come those problems and there by improve the health status of the people. To make such efforts effective, health sector programmes should incorporate households that are essential

for the sustainability of health care policies. In this regard, demand study for health care services by the households should be in place to assist the formulation of rational strategies since an econometric analysis of demand determinants allows to make inferences, with known statistical confidence, about how demand is affected by each of its multiple determinants.

1.2 The National Health Policy of Ethiopia

According to the health policy document of the TGE (1993)

> ... health, constituting physical, mental and social well being, is a prerequisite for the enjoyment of life and for optimal productivity. The government therefore accords health a prominent place in its order of priorities and is committed to the attainment of these goals utilizing all accessible internal and external resources.

Ethiopia's National Health Policy that was approved by the Council of Ministers in September 1993 is based on the following 10 principles.

1. Democratization and decentralization of the health system.
2. Development of the preventive and promotive components of health care.
3. Development of an equitable and acceptable standard of health service system that will reach all segments of the population within the limits of resources.
4. Promoting and strengthening of inter-sectoral activities.
5. Promotion of attitudes and practices conducive to the strengthening of national self-reliance in health development by mobilizing and maximally utilizing internal and external resources.
6. Assurance of accessibility of health care for all segments of the population.

7. Working closely with neighbouring countries, regional and international organizations to share information and strengthen collaboration in all activities contributing to health development, including the control of factors detrimental to health.
8. Development of appropriate capacity, based on assessed needs.
9. Provision of health care to the population on a scheme of payment according to ability, with special assistance mechanisms for those who cannot afford to pay.
10. Promotion of the participation of the private sector and non-governmental organizations in health care.

To realize these policy objectives, the government has developed its Health Development Sector Program which emphasizes improved access to primary health care services as its highest priority, accompanied by improvements in other components such as information, education and communication, medical supplies, and personnel.

1.3 Statement of the Problem

As it is indicated above assurance of accessibility of health care for all segments of the population and promotion of participation of the private sector and non-governmental organizations in health care are among the main policies of the present government of Ethiopia. Because of these policies, modern health care services are provided by the government through the Ministry of Health (MOH), private for profit providers, missions and other NGOs, traditional healers and by other government agencies at clinics, health centres, hospitals etc. In this regard, most private for profit provisions are giving their services based on a higher service fee as compared to other providers particularly to the

subsidised provision of government health services because "the service fees paid there are not structured on a full cost recovery basis (A Review of Ethiopian Health Sector and Development Programme, 1995)."

Though such conditions and efforts are there, the health status of the Ethiopian population is very low as the different health status indicators evidence it. Hence, trying to improve the health status of the population is unquestionable. For this to be in practice, one has to know what makes the people to seek medical care in times of illness and also what kind of health care service do people need to use and which facility. As such, demand analysis should be in place because studying demand implies knowing about the factors that affect individuals' decisions to seek care and to choose among from providers. Moreover, an understanding of the determinants of demand is important to health policy makers if they wish to encourage certain patterns of service use and discourage others.

Being ignorant about those factors that affect demand is likely to result in a waste of resources when policies related to demand are implemented. Because, we are not certain about the likely effects those policies would have, for instance, if the providers increase service fees, what would be the response of patients ?

As such, policy makers cannot have an information as a starting point for the application of demand related policies. So that they cannot forecast the likely consequence of a certain policy in a statistically significant way.

1.4 Justification of the Study Area

Bure, which is one of the Woreda towns, in the West Gojam Administrative Zone is the site on which this study is based. The choice of this study area was based on various considerations.

First and fore most is that no study on demand for health care service has been done in this site and, even at the national level no study has been done on such type of rural towns, the area is relatively easily accessible for purpose of data collection.

Second, Bure town is one of the most populated rural towns that comprised about 13,437 people under its four Keble's according to the 1994 census and these people are heterogeneous in terms of socio-cultural conditions and may represent some parts of the people that are living in the Amhara Regional State.

1.5 Scope of the Study

This study is concerned in determining empirically the factors that are associated with the decision of seeking medical treatment and the choice of providers of health services in times of illness.

1.6 Objectives of the Study

The broad objective of this study is to investigate the determinants of demand for health care service in Bure, a rural town.

The specific objectives of the study are:

i). to assess the utilization patterns of households at different providers based on a series of variables that are the main determinants of demand, including income, medical cost, waiting time etc.

ii). to estimate the demand for health care services that is provided by different providers.

iii) to look into the policy implications of the findings from (i) and (ii) above.

1.7 Significance of the Study

Since improved health is a crucial part of people's well being that contributes to the economic growth of a country, the success of any other activity is dependent on health. An understanding of the factors that affect demand for health would enable policy makers to design effective and efficient strategies of promoting the health status of the people.

As such, the findings of this study would give some highlights and assist policy makers in the health sector particularity for the Amhara Regional State Health Department (office) which is responsible for planning, implementation and monitoring of health programmes in its respective region to make a rational plan regarding rural towns.

1.8 Organization of the Study

This study comprises of five chapters: chapter 1 gave the background of the study, health policies of Ethiopia, statement of the problem, justification of the study area, scope, objective and significance of study. Then, a review of the theoretical and empirical literature is given in chapter two. In chapter three research methodology, the theoretical

framework on which the study is based and specification of the empirical model followed by the hypothesized relationships and the estimation technique used, data types, sources and collection methodology, and data limitation and reliability are presented. Then, analysis of the results based on the descriptive statistics and empirical findings are performed in chapter four. Lastly, conclusions and policy implications are presented in chapter five.

CHAPTER 2

REVIEW OF LITERATURE

2.1 General Literature

Mwabu et al (1995) evaluated the effects of health service pricing reforms in Kenya: 1989-93, by collecting data from four health facilities in Kirinyaga district where one of the districts in which reforms were implemented and by constructing a simple model of the form:

$$Q= Q(P_1,P_2,D,\varepsilon)$$

Where Q is number of out patient visits per day or per week; P_1 is registration fees;P_2 is charges for laboratory test; D is a dummy variable that turns on after cost sharing; and ε is an error term.

The linear model that they estimated using the ordinary least square method was given as

$$Q = \beta^0 + \beta_1 P_1 + \beta_2 P_2 + \beta_3 D + \varepsilon$$

where β_s are the effects of right-hand-side variables on out patient visits and the sign of β_1 and β_2 are expected to be negative. The main policy questions addressed by their study were:

- what happened to the demand for health care when fees were introduced?
- what happened to demand when the fees were suspended?
- how did the new fee system affect demand?
- what are the key factors to consider when adjusting or introducing fees?

The empirical result of the study showed that following the introduction of user charges, the utilization of health services dropped by some 38 percent, but after the abolition of registration fees the use of health services increased though it is insufficient to reverse the overall down ward trend in demand. They also further found that patients are more sensitive to fees for diagnostic services than to registration fees. So that during the introduction or adjustment of fees, they recommend that, proportional increase in charges for diagnostic services should in general be smaller than those for out patient services.

By assuming a simple model with two goods entering the individual's utility function: medical services, m , and a composite,X, for all other goods and services, and fixed proportions of money and time to consume m and x and the full income assumption, Acton (1975) developed a model of the form:

Maximize U= U(m,X)

Subject to

$$(P + wt)m + (q+ ws)X \leq Y = y + wT,$$

Where U is utility; P is out- of- pocket money price per unit of medical services; t is own-time input per unit of medical services; q is money price per unit of x; s is own- time input per unit of x; w is earning per hour; Y is total (full) income; y is nonearned income; and T is total amount of time available for market and own production of goods and services, to develop predictions for the demand for "free" and non free care.

Based on this utility maximization model, he analyzed the role of money price, time prices, and earned and nonearned income in determining the demand for medical services in New York City by using data that comes from a 1965 survey of users of the out patient

departments of the same city. Respondents were selected from a random sample of persons at the clinic and the demand for health care by type of provider is estimated from a Simultaneous-equation system using TSLS.

The result of his study supports the prediction that travel time functions as a price in determining the demand for medical services when free care is available. This survey of users of the municipal Out Patient Departments indicates negative own price elasticities with respect to travel distance at free providers and positive cross-price elasticities for non free providers of care. Further, the study showed that persons with higher earned income are more likely to use the private sector, which is relatively less time intensive, than the public sector.

An important feature of his study was the introduction of a time price for "free" health services. However, Acton's study has a major weakness due to the estimation of demand for outpatient and inpatient services independently, yet the two service are complements. Because, demand for inpatient service is influenced by out patient visits since individuals with frequent out patient visits have a high likelihood of being hospitalised. As such, in estimating demand for inpatient health services, outpatient visits might be added as an explanatory variable.

A study done by Hay et al (1982) evaluated the determinants of demand for dental health by developing an econometric model. For the study, data was collected through questionnaires, claim forms and dental examinations during 1978 from 161 individual that are covered by Blue Cross/Blue Shieled of Greater New York (BC/BS) employees which is

a non profit insurance carrier. From the model, they derive the following hypotheses to be tested:

- the demand for dental services decreases as the price of dental service increases and as the wage rate falls;
- the amount of time spent in home production of dental care increases, as the price of dental services increases and it decreases as the wage rate rises;
-as an additional testable hypothesis implicit in the model they suggest that dental health increases with dental services and with time spent in home production.

Based on these formulations, the result indicated that the number of annual dental visits is significantly and positively related to total annual dental expenses and negatively related to out of pocket expenses; with a net price demand elasticity of -0.2. Moreover, while age is significantly negatively related to dental visits, variables representing income, the other family demographic characteristics, and past oral health status were not found to be significantly related to the number of dental visits. However, the major weakness of this study was they estimated total dental health visits made the last one year in which this makes doubtful the patient to recall and consequently would have an effect on their results.

A similar study by Holtman and Olsen (1976) analyzed the demand for dental visits by 923 households in New York and Pennsylvania during 1971-72 through household interviews conducted in a five-county area. In this regard, a utility maximization problem subject to time and income constraints was constructed to derive the demand function for dental care as a function of waiting time and travel time as well as price and other traditional economic variables.

The finding showed that a confirmation with theory is there. For instance, the coefficients of price and waiting time were negative, but elasticities with respect to these variables were small. Income, the size and composition of the household were also very important determinants of the number of dental visits though the demand for dental visits is inelastic with respect to income.

Moreover, in order to ascertain whether the price elasticity and/or time elasticity vary across income classes, they specified a model reflecting an interaction between the variables. As such, they concluded that the lowest income class appears to be most sensitive to money price and waiting time. Further, money prices and waiting time are significant factors in influencing the demand for dental care though the elasticities were small. This study also shares the weakness of the study done by Hay et.al. al. (1982) as expressed above.

In performing an empirical analysis on the quality of medical care and choice of medical treatment in Kenya, Mwabu et al (1995) specify an econometric model of logit specifications of individual choice of medical treatment as:

$$P_{ij} = \exp(\beta' Q_{ij} + \alpha'_j S_i) / \Sigma \exp(\beta' Q_{ik} + \alpha'_k S_i)$$

Where P_{ij} is the probability that individual i will seek treatment from health facility j; Q_{ij} is a vector of generic attributes (in log form) that individual i faces in facility j; S_i is a vector of characteristics (in log form) specific to individual i, including income- facility interaction terms; α and β are vectors of parameters to be estimated.

The log-likelihood function that needs to be maximized in order to estimate values of the parameter vectors α and β was given by

$$L = \Sigma_i \Sigma_j G_{ij} \log P_{ij}$$

Where L is the logarithm of the likelihood function; $G_{ij} = 1$ if individual i chooses health facility j ; other wise G_{ij} takes a value of zero.

For their study, they used a data from Meru District, which is a representative of low-income areas in rural Kenya. According to the estimation result, income exerts a strong positive effect on the probability of seeking medical care from a mission or private provider, relative to self-treatment. More schooling made patients to consult a government health facility than to self-treat. Though, the sign on the coefficients for user fees and distance is negative as expected, they are not significant. The elasticity of medical care demand with respect to user fees and distance is greater in mission and private clinics than in government health facilities. In addition to these, the result for quality variables reflecting drug scarcity showed that they were significant determinants of demand though these variables as commonly measured were subject to endogenity.

In examining the efficiency and equity effects of introducing user fees in public facilities of Kenya, Mwabu et al (1986) studied the predicted demands (probabilities of seeking treatment) in various health facilities when user fees are charged for health services in government clinics by specifying a household's utility function as

$$V_{ij} = f(P_{ij}, Y_i, S_i, X_{ij})$$

Where V_{ij} is indirect utility for patient i in clinic j, j= 1, ..., M; P_{ij} is a vector of

money and time prices that patient i faces in clinic j; Y_i is income of patient i; S_i represent other personal characteristics of patient i, X_{ij} is a vector of non prices attributes that patient i faces in clinic j, and estimated the parameters of this utility model with an econometric technique known as Conditional Logit by assuming a household to face a set of distinct alternative sources of medical care that are substitute for one another in the event of an illness.

The result of the analysis showed that the demand for health services in government clinics, mission clinics and pharmacies (shops) is highly sensitive to changes in relative money prices while it is quite inelastic in government hospital, private clinics and traditional clinics. These results are obtained when demand prediction is done by assuming the government use the revenue obtained from user fees for purpose other than the improvement of health services in its clinics. On the other hand, when the government was assumed to use the revenue from its clinic to up grade the quality of health services, the government clinics now are chosen over mission clinics at all levels of user fees.

Generally, the study showed that the net welfare effect of user charges on medical services is ambiguous. More specifically, if the user fees were imposed across the board in government health facilities, the equity trade-offs would be large, and for that reason, the user fees would be socially and politically unacceptable. But, if the user charges are restricted to government hospitals, the attendant equity problem would not be too difficult to manage (i.e., they would promote equity) because they would benefit the poor more than the rich. However, since the data for the study was collected from a single rural health district, the derived policy cannot be representative of the whole Kenya.

Heller (1982) developed an econometric model to analyze the determinants of the demand for medical and health care services in Peninsular Malaysia by using data obtained from a 1975 household survey.

A logit model of the form;

$$\log \frac{P(Y=1)}{1-P(y=1)} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_n x_n + \varepsilon$$

was used to estimate the demand equations for inpatient care, for the likelihood of outpatient care, for obstetrical quality and for the likelihood of usage of a traditional medical practitioner, where p (Y=1) is the probability that the Th event has occurred. This logit model was then estimated directly by TSLS after transforming the dependent variable.

The following issues were empirically tested by him concerning such a demand. They are:

- is household demand for outpatient and inpatient care sensitive to its cost in time and financial resources?
- are the principal consumers of medical care those groups with the highest rate of illness?
- is the demand for medical care elastic to income?
- what factors lead households to seek treatment from traditional medical practitioners rather than from modern medical facilities?
- what explains a household's choice of a private rather than public out patient clinic?
- does the pattern of demand differ across ethnic groups?

Results from the estimation indicated that total medical demand, as measured by the absolute volume of outpatient and inpatient consumption, appears highly inelastic to cash price, income or time cost. Yet, consumers were clearly responsive in their choice among alternative sources of medical care to the relative prices. A further increase in income also made consumers to prefer private physicians clinics to public clinics. The deterrent effect of distance on utilization is also supported by the negative effect of transportation time. In addition to these, the result indicated that the pattern of demand by age group does not correspond to the hypothesized U- shaped relationship between morbidity and age. Generally, neither income nor time cost appears a significant barrier to access or to the utilization of medical care and this finding holds across ethnic groups, in both urban and rural areas.

Sauerborn et al (1994) used a logistic regression model of the form

$$\ln \frac{pr(U)}{1-pr(U)} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k + U$$

Where X_i's are time and pecuniary costs associated with receiving care, household income, household wealth, and demographic characteristics of the household and the individual; the dependent variable is the log odds ratio of the probability of using professional health services; in order to derive price elasticities of demand for health care in Burkina Faso based on cross sectional survey data.

The result of the empirical analysis showed that, while demand for health care appears inelastic over all (-0.79), subgroup analysis reveals differences in elasticity across age and income groups. As such elasticity of demand for infants and children (-3.6 and -

1.7) and for the lowest income quartile (-1.4) were substantially greater than overall elasticity.

Guilkey et al (1987) analyzed the patterns and determinants of prenatal care use in the Philippines through the use of a randomly selected sample of 3000 rural and urban women who were studied prospectively during pregnancy and at three or four days postpartum. The focus of the analysis was on the knowledge gap of the patterns of use of traditional practitioners and on the effects of primary health care strategies on usage patterns.

In their analysis, they developed a model of the following form that show a relationship between type of prenatal health care used and the exogenous factors by predicting the out come of the maximization process as a woman's use of each type of health service to be determined by the prices and quality of the service plus a set of socio-economic, demographic, and community factors. The specified model was

$Y_{pti} = f(P_{ci}; T_{wi}; P_{tri}; T_{tri}; Z)$

Where Y_{pti} is alternate measures of prenatal care, such as the month of pregnancy at the time of the first visit to receive prenatal care from personnel of type i; i is type of personnel delivering the prenatal service; P_{ci} is the cash price paid to service provider of type i; T_{wi} is time cost associated with waiting to use the provider of type i; P_{tri} is cash costs of travelling; T_{tri} is time costs of travelling ; Z is the set of exogenous house hold and community characteristics affecting the income available to the time constraints on and the knowledge and preference of the mother.

Guilkey used a mixed logit technique of the following form to estimate the above statistical relationship as :

$$\log \frac{P(Y_i = j)}{P(Y_i = 1)} = \alpha (X_{ij} - X_{il}) + \beta_j Z_i$$

$$i = 1,2 \ldots\ldots, M$$
$$j = 2,\ldots\ldots,N$$

where X_{ij} represent a vector of a set of independent variables that vary by choice,j=1,2....N, and by woman, i=1,2.....,M;and Z_i represent a vector of independent variables that vary only by woman; the dependent variable is the log of the odds of any particular choice being made; α and β_s are parameters to be estimated.

From the result of the study, they found that a large number of policy factors influence the number of visits, and several affect choice of most frequently used type of prenatal care, and how early to make the first visit to modern care. Improved education of women also proves to have consistently beneficial impacts in the utilization. Moreover, the quality of care provided, accessibility to this care , and insurance available to the mother all had important effects on prenatal patterns. But they found that both waiting time and money cost within the ranges observed for the urban sample have little practical impact on choice of care.

Coffey (1983) focused on the effect of time price on the demand for medical care services. To examine this effect,three medical-care decisions are considered: (1) choice of type of provider, (2) decision to enter the medical-care system-"entry demand", and (3) demand for services given entry.

The researcher found that time price of medical-care demand (travel, waiting, and treatment time) negatively affect the probability of using the medical-care system during a year. But the time price does not affect the number of visits demanded in a year. As a whole, the entry and visits demand equations are influenced more by health problems than by economic variables. In contrast, the provider--choice decision is almost exclusively influenced by economic variables (time and money prices, income, distance, and eligibility for no-fee care) and in the expected direction.

Chernichovsky and Meesook (1986) examined the utilization of traditional and modern health services in Indonesia, using household sample survey socio-economic data in conjunction with community-level data on availability of services.

According to the regression result, low household income was a barrier to the utilization of modern health services, even where they were publicly provided. Further, the result suggested that an exposure to modern services that involve health education brings about the right kinds of substitutions from an efficiency viewpoint: paramedics for traditional practitioners as well as physicians.

Hotchkiss (1998) examined the trade-off that consumers make between price and quality in the demand for health care. The analysis is based on data collected from both households and health care facilities in Cebu, Philippines. In the paper, a discrete choice model was used to estimate the effects of quality, price, distance and individual characteristics on the choice of obstetric care providers.

The econometric model used was the nested mixed multinomial logit. In choosing among health care providers, the woman is assumed to compare the following alternative-specific indirect utility function.

$$U_{ijk} = X_{ijk}\,\beta + Z_{ij}\,\alpha_k + X_{ij}\,Z_{ij}\,\delta + U_{jk} + \varepsilon_k$$

Where U_{ijk} represent the utility that woman i (i=1,2...,N) of community j (j=1,2...,M) will enjoy if alternative K (k= 0,1,2,...K) is chosen; X is a vector of three groups of characteristics that vary by alternative: provider attributes, price, and the opportunity cost of travel time; Z is a vector of exogenous characteristics of individuals or household that do not vary by alternative.

The estimation result suggested that facility attributes that influence quality of care, such as crowding, practitioner training, and drug availability, are significant determinants of the choice of obstetric care provider. Price effects for both poor and non-poor households are negative, but are statistically significant only for the former. Moreover, distance to the health facility has a negative and highly significant effect on facility choice. Assets are positively and significantly associated with choosing alternatives that are associated with higher quality. Having health insurance also has the same effect. Regarding the trade-off between price and quality among women in the Philippines, the policy simulations indicate that, when prices and quality are simultaneously increased in government health care facilities, the mean probability of using public facilities can increase for both poor and non-poor households.

Ching (1995) examined the potential effects of user fees on the demand for child health care across income groups in the Philippines. The study utilized data taken from the 1981 Philippine National Health Survey that is collected from 13 regions of the country both from urban and rural residents. A sample of 520 children under the age of 15 was the basis of their empirical work.

The researcher modelled the demand function for health care services from a utility maximization problem, in which the expected utility of individual i conditional on receiving care from provider j is given by

$$U_{ij} = U(H_{ij}, C_{ij}\ T_{ij})$$

Where H_{ij} is the expected improvement in health status of individual i after receiving treatment from provider j, C_{ij} is individual i's consumption net of the cost of obtaining care from provider j, and T_{ij} is the nonmonetary cost of access to provider j facing individual i. Moreover, as a constraint a health care production function, H_{ij}, and a budget constraint were specified as follows:

$$H_{ij} = Q_{ij} + H_{io}$$

$$Y_i = C_{ij} + P_{ij}$$

Where Q_{ij} is the quality of provider J's care, H_{io} is the expected health status of the individual with out professional medical care, P_{ij} is provider J's price facing individual i, and Y_i is individual i`s income.

Based on this maximization problem the demand function of the following form was derived and a mixed conditional logit model adopted.

$$\pi_{ij} = \frac{\exp(\beta_{0j} + \beta_{1j} X_i + \beta_{2j} Z_{ij} + \alpha_1 (Y_i - P_{ij}) + \alpha_2 (Y_i - P_{ij})^2 + \alpha_3 T_{ij})}{\Sigma \exp(\beta_{0j} + \beta_{1j} X_i + \beta_{2i} Z_{ij} + \alpha_1 (Y_i - P_{ij}) + \alpha_2 (Y_i - P_{ij})^2 + \alpha_3 T_{ij})}$$

Were π_{ij} is the probability of choosing provider j, and where self-care is one of the J+1 alternatives; X_i is a vector of the individual's characteristics; Z_{ij} is a vector of characteristics of alternative j facing individual i and other variables are as defined above.

The empirical result indicated that the coefficients on consumption and consumption squared are significant showing us that price and income play important roles in the demand for health care. This result supports those of Gertler et al while it differs from Akin et.al. al, who concluded that price and income have little impact on the demand for health care. The travel time coefficient and family size are negative and significant, indicating that both are an important deterrent of provider choice.

Akin et.al. (1995) attempted to empirically answer three important policy questions for a population sample from Ogun State, Nigeria in studying the quality of services and demand for health care :

1. Would price increases for health care lead to large reductions of care usage or to shifts across types of care used?
2. Would price increases lead to net increases in revenues for the health system?
3. Would the price increases have larger impacts on lower income members of the population?

For the purpose of estimating the demand for outpatient health care, household data were combined with data on prices and quality of care, collected directly from facilities. As

such, by assuming individuals to make a utility valuation for each choice, a statistical method called multinomial probit model was employed for the estimation purpose.

According to the estimation result, price and quality of care are found to be a significant determinant of health care choice. As such, it was seen that higher prices at either type of facility tend to reduce usage of that type, and that usage tend to increase for each type of care as the quality of the care is increased. The result also indicate that there is no difference in the price responsiveness of different income groups.

Gertler and van der Gaag (1990) analyzed the willingness to pay for medical care by taking evidence from two developing countries. The main policy question they addressed was: `To what extent do prices (user fees) prevent individuals from seeking care?' To analyze this issue the models were estimated with data from the 1985 Cote d'Ivoire Living Standards Survey and the 1985-86 Peruvian Living Standards Survey.

The estimates of their study showed that price was an important determinant of the decision to use medical care and they also found that the price elasticity of demand falls in absolute value with income. More specifically, they found that demand was very elastic for individuals in the lowest income groups and quite inelastic for individual in the highest income groups and they ascertained the robustness of their results since they observed them in the models for both countries and for both children and adults. The implication of their result was, user fees can generate substantial revenue without much effect on utilization by individuals in the upper income groups, but they may cause large reductions in utilization by individuals in the lower income groups.

In addition to this, they found that "time prices ration the market" in the case of Cote d'Ivoire since the opportunity cost of time was the whole price of medical care at that time while in Peru they found that it was the "money price that ration the market" since monetary prices were large relative to the opportunity cost of time.

2.2 Specific Literatures

In studying the household demand for health in Ethiopia, KUAWAB consultants tried to identify the factors determining choice of health providers (government, private, religious and individual health facilities) for those individuals obtaining medical treatment by applying a logistic regression model.

In the study, the data was taken from the Urban /Rural Household Income, Consumption and Expenditure Survey (HICES) of 1995/96 that was conducted by the Central Statistics Authority (CSA) comprising 21 rural and 11 urban domains.

The regression result indicated that distance to the nearest health facility has a stronger effect in the choice of all health providers. Income that was proxied by log of per capita household expenditure has also a stronger positive effect on the choice of health facilities, except on religious health facilities. Moreover, mother's education has positive effect on the choice of health facilities (private, individual and missionary) implying the greater role that mother's education can play in the household demand for health. On the other hand, age has a positive influence on choice of government and private facilities, while age square has a negative and significant effect on the choice of private facility and a

positive and significant effect on the choice of individual health facilities indicating older people tend to obtain treatment from individual health providers.

However, the main limitation of the study was, it does not take into consideration the non-monetary cost of treatment (i.e. time spent in travelling to reach a facility and waiting for treatment) and the monetary cost (i.e. medical cost) that would have their own effect in the choice of providers.

In identifying the main socio-economic factors that determine access to and utilization of health care service in urban Ethiopia, Abdulhamid and Alem (1996) employed bi-nominal probit models and a multinomial (conditional) logit model that is motivated by random utility models for the analysis of choice of type of facility. The analysis was based on the data collected from 7 known towns of Ethiopia that include a sample of 1,500 households.

According to the regression result, income was found to be an important determinant of whether treatment was sought or not. An interesting finding of the study regarding the estimation result on the health care service utilization was residents of most of the towns (Bahir Dar, Awassa, Dessie, and Jimma) were more likely to seek treatment than residents of Addis Ababa while resident of Dire dawa had a lower probability and residents of Mekele were as likely as that of Addis Ababa to seek treatment.

In addition to this, the regression result performed on the choice of provider showed that richer households were the most utilizer of private facilities than do the poorer

households and older people were found to use private facilities more often which falls with age later. Sex of head of the household was also found to be significant determinant of choice of service provider-private V_s Public_ while it was insignificant in all other cases. On the other hand, mother's education has a significant effect in both cases favouring private services in the first case and hospital treatment in the other case while father's education was not significant in any of the equations.

But the major limitation of their study was that certain variables that are choice specific, for instance, distance, waiting time for treatment, and time spent to reach the facility and medical cost were not included in the estimated models due to the paucity of the available data set. This may have some impact on the reliability of the estimated result.

CHAPTER THREE

RESEARCH METHODOLOGY

In this chapter, a theoretical framework that form the basis of the study with the specific model employed is explained. Then the hypothesized relationships that are to be tested and the estimation techniques are stated. Moreover,necessary information regarding the data is indicated at the last section.

3.1 Theoretical Framework.

In a general sense, demand for a particular type of health care service that is produced by a given type of supplier is the quantity of that service that people are willing to obtain as a function of the characteristics that are attributed to the individuals and all the providers.

According to Grossman (1972), consumers have a demand for health because of two reasons: (i) it is a consumption commodity-it makes the consumer feel better so that it directly enters their preference function; and (ii) it is an investment commodity_ a state of health will determine the amount of time available to the consumer. Hence, a decrease in the number of sick days will increase the time available for work and leisure activities, the return to an investment in health is the monetary value of the decrease in the sick days. Moreover, the same author indicated that, what consumers demand when they purchase medical services are not these service by itself, rather, "good health".

In this regard, analyzing the demand for health care service as being derived from the individuals demand for health provides a better basis for determining which factors should be included in a model of demand for health care service and for hypothesizing their effects.

As such, as a tool of demand analysis we can employ either a utility maximization problem, an indirect utility function or minimization of an expenditure function (Deaton and Muelbauer (1980), Varian (1992)). For our case let's consider the first case. A usual utility function that is employed by different scholars such as Gertler and Van der Gaag (1990) can be adopted to show the behaviour of the users in the study site.

When an individual is faced with an illness or injury, it is expected to seek a medical treatment from a health care service provider or not. If it is seeking treatment out side of his home, the direct utility derived by that individual i from a health care service provider j can be formulated as follows:

$$U_{ij} = U_{ij}(H_{ij}, C_{ij}) \quad \text{.....(3.1.1)}$$

Where U_{ij} is the expected utility that is conditional on receiving care from provider j; H_{ij} is the expected improvement in health status of individual i after receiving treatment from provider j, and C_{ij} is the consumption of all other goods and services other than the health care services, the amount of which depends up on the choice of provider j, because of the associated monetary and non monetary costs of treatment from provider j.

But the expected improvement in health status, H_{ij}, and the consumption of all other goods and services other than the health care services, C_{ij}, are not typically observed. So that, functions relating H_{ij} and C_{ij} with observable variables can be expressed as follows. Following Behrman and Deolaikar (1988) and Senauer and Garcia (1991) with some modifications (i.e. by picking out those variables that are not observable, for instance, genetic endowment and nutrient in take etc.) the health production function for the ith

individual is expressed as:

$$H_{ij} = H(I_i, F_{ij}) \quad \text{.....(3.1.2)}$$

Where $H(I_i, F_{ij})$ is the health care production function; I_i is a vector of observable socio-economic characteristics of the individual i and his households, such as, their age, gender, education, household size etc; F_{ij} is a vector of characteristics that individual i faces at the health care service provider j, such as, the quality of treatment obtained, treatment cost etc.

Moreover, along with this production function, the individual is constrained with the following usual full-income constraint, that combines both time and income in to one total resource constraint:

$$Y_i = P_h H_{ij} + P_c C_{ij} + W_i T_H \quad \text{.....(3.1.3)}$$

Where Y_i is monthly income of the individual i; P_H and P_c are the prices associated with the consumption of health care services and all other goods and services respectively; W_i is the opportunity cost of time for individual i; and T_H is the total time spent for treatment in travelling to and waiting for treatment by individual i at the health care service provider j.

Considering equations (3.1.1) through (3.1.3), a demand function for health care service (i.e., as a function of the health care service prices, income and other exogenous factors) can be derived from the first order condition of the constrained maximization formulation. Specifically, maximizing the utility function (3.1.1) subject to the health care production function (3.1.2) and the full budget constraint (3.1.3) yields a system of demand equations.

Generally based on this theoretical framework and by taking into account all of the other factors that have an effect on the demand, we can derive the demand function for health care service of the following form as a function of the variables that are individual specific and choice specific:

$$D_{ij} = f(Z_i, X_{ij}) \quad \text{.....(3.1.4)}$$

Where D_{ij} is the demand for health care service of type j by individual i; Z_i is a vector of individual and household specific variables, such as, education, age, income etc; X_{ij} is a vector of choice specific variables that individual i faces due to a choice of provider j, such as, treatment cost, waiting and travel time for treatment, distance and perceived quality etc.

3.2 Specification of the Empirical Model

When individuals are faced with an accident, illness or injury, they would decide whether to seek a medical treatment or not and even when they are seeking, they would decide which facility to use (i.e., the modern or the traditional service). More over, from the modern health care services that are available to them they would decide whether to use the governmentally or privately provided services that would enable them to maximize their utility. As such, for any individual we can observe the alternative chosen and define a dummy (discrete) economic variable, D_i, as follows:

1. $D_i = 1$ if individual i seeks medical treatment in times of illness (3.2.1)
   0 if not

2. $D_i = 1$ if individual i seeks the medical treatment ....(3.2.2)
   from government health care provisions
   0 if it is from the private facilities

In this regard, since we can not predict with certainty the choice that a randomly selected patient will make, because the choices may depend on both the observable and un

3.2.1 Derivation of the Logit Model

For deriving the model that is being in use in this study (i.e., the logit model), let us consider modelling the choice behaviour of individual patients when two alternatives (for instance, seeking treatment or not, choosing the government health facility or the private health facility) are available and one must be chosen. The binary decision made by the ith patient can be represented by a random variable D_i that takes the value one if the choice is made and the value zero if the other choice is made.

If we let P_i represent the probability that D_i takes the value one and further assume that the utility derived from the choice made is based on the socio-economic characteristics that are specific to the individual patient and his households and to the choice made and a random disturbance term, the random utilities of the two choices can be specified as:

$$U_{io} = V_{io} + \varepsilon_{io} = Z_{io}' \delta + W_i' \tau_0 + \varepsilon_{io}$$

$$U_{il} = V_{il} + \varepsilon_{il} = Z_{il}' \delta + W_i' \tau_1 + \varepsilon_{il}$$

Where U_{io} and U_{il} denote the utilities of the two choices, Z_{io}' and Z_{il}' vector of the alternatives as perceived by the patient i and W_i' a vector of socio-economic characteristics of the ith individual.

From this instance, $D_i = 1$ if $U_{il} > U_{io}$, and $Di = 0$ if $U_{io} > U_{il}$. As a result,

$$Pr(Y_i = 1) = P_i = P_r(U_{il} > U_{io}) =$$

$$= Pr[(\varepsilon_{io} - \varepsilon_{il}) < (Z_{il} - Z_{io})'\delta + W_i' (\tau_1 - \tau_0)$$

$$= F(X_i\beta)$$

where $X_i = ((Z_{il} - Z_{io})', W_i)$, $\beta' = (\delta', (\tau_1 - \tau_0))$, and F is the cumulative distribution function (CDF) of $(\varepsilon_{io} - \varepsilon_{il})$, and this leads us to

$$\Pr (D_i = 0) = 1 - P_i = 1 - F(X_i' \beta)$$

Hence, the likelihood function is

$$L = \prod_{Y_i = 0} [1 - F(X_i' \beta)] \prod_{Y_i = 1} F(X_i' \beta)$$

or $L = \pi^{N} [1 - F(X_i' \beta)]^{1-p_i} [F(X_i' \beta)]^{p_i}$, where N observation are available and the log-likelihood function is

$$\ln L = \sum_{i=1}^{N} (1 - P_i \ln [1 - F(X_i' \beta)] + P_i \ln [F(X_i' \beta)]$$

Here, the functional form for F depends on the assumption made about the random disturbance term. If we assume that the cumulative distribution function of (ε_{io} --ε_{il}) is the logistic, we will have the logit model of the following form:

$$P_r (D_i = 1) = P_i = F(\beta X_i') = \frac{\exp (\beta X_i')}{1 + \exp (\beta X_i)} = \frac{1}{1 + \exp (-\beta X_i')} = \lambda (\beta X^{i_i})$$

and hence

$$\Pr (D_i = 0) = 1 - P_i = 1 - F(\beta X_i') = \frac{\exp (-\beta X_i)}{1 + \exp(-\beta x_i')} = 1 - \lambda (\beta x_i')$$

Where pr (D_i=1) is the probability of individuals' seeking a medical treatment or the probability of choice of a health facility provider in times of an illness, β are vectors of parameters to be estimated, X are vectors of explanatory variables that are defined in exhibit 1 for the first out come and in exhibit 2 for the second out come respectively, Λ (.) indicates the logistic distribution function.

Exhibit 1. Vector of Variables included in X for the first out come (Seeking Treatment or Not)

- INCH households monthly income in Birr.
- HHS Household size in number.
- DOCCP Dummy variable equalling one if the patient is employed and zero other wise.
- DMS Dummy variable equalling one if the patient is married and zero other wise.
- AG Age of the patient in years.
- AGH Age of the head of the household.
- SX/SXH Dummy variable which equals one if the sex of the patient/head of the household is male and zero otherwise.
- OH Dummy variable if the patient's household own their own house.
- EDUP/EDUH highest level of education that the patient/ head of the household completed.
- LUW Length of days that the patient was unable to perform his/her regular activity.
- DSev Dummy variable that equals one if the illness is very severe and zero other wise.
- Dist Distance to reach the nearest health facility in k.m.

Exhibit 2. Vector of variables included in X for the second outcome (choosing the private versus public health facility)

Individual/ Household specific Variables

- SX/SXh Dummy variable which equals one if the sex of the patient/ head of the household is male and zero otherwise
- Ag/Agh Age of the patient/head of the household in years.
- EDUP/EDUH Highest level of education that the patient/head of the household completed.
- DOCCP Dummy variable equalling one if the patient is employed and zero other wise.
- DMS Dummy variable equalling one if the patient is married and zero other wise.
- HHS Size of the household in number.
- INCH Total income of the household per month.
- DSev Dummy variable equalling one if the illness of the patient was very severe and zero otherwise.

Choice Specific Variables

- WAIT Waiting time for treatment in minutes.
- TRAT Travel time to reach to and come back from a health facility chosen
- DIST Distance to reach the health facility attended in k.m.
- PQUAL Dummy variable equalling one if Perceived quality of treatment is excellent or very good and zero if good or poor.
- DBSTAF Dummy variable that equals one if the behaviour of the staff members during the attendance of treatment is excellent or very good and zero other wise as evaluated by the patient.

3.3 Description of Hypothesized Relationship

Though, there might be some difficulties to make a firm expectation on the signs of coefficients of the individual and household specific variables, from a general economic framework viewpoint the following relationships can be hypothesized.

(i). Income (INC).

It captures the monthly income of the total households in Ethiopian Birr. In this regard, a patient with better income is expected to spend relatively more for a health care service as far as health care service utilization is a normal good for that individual. Thus, income is expected to have a positive coefficient. But the reverse would be true if it is considered as an inferior commodity.

(ii). Medical Cost (MEDC)

This includes all out-of-pocket expenses usually incurred in making a consultation to the preferred source of care per trip such as registration fees, drug costs, laboratory test expenses and others. This represents the monetary price aspect of using a health care service. Thus, according to economic theory, the price of a service and the use of that service are inversely related: as the price is reduced purchase or use of that service will increase. Hence, we will expect a negative coefficient for medical cost.

(iii) Education (EDUC)

Because education develops people's understanding to value a healthy condition more than those who are illiterate, it is expected to increase demand for health care services in times of injury or illness. Thus, we would expect a positive coefficient. On the other hand, though the educated stand to gain more economic benefit from good health than the less educated and are therefore expected to invest more in health, they may not invest in health through medical care rather through other more efficient means including improved diets etc. in form of preventive service. Hence, demand for medical services particularly for curative services would decline as the level of education rises.

(IV) Distance (DIST)

This represents the distance in k.m from home to the health care facility attended and the nearest health facility. Since larger distance involves higher money and time costs, the demand for health care services will be lower. Hence, we would expect a negative coefficient for distance.

(V). Waiting time (WAIT)

Because waiting time involves an opportunity cost to the user of a health care service, it is expected that the higher the amount of waiting time in seeking treatment, the

lower will be the demand for that health facility. Thus, we would expect a negative coefficient for waiting time.

(Vi) Perceived Quality (PQUAL)

Though it is difficult to measure and asses the quality of a medical care service due to some technical aspects associated with health care, respondents are asked to express the perceived quality of treatment they get from their experience particularly by focusing on the availability of drug and common laboratory tests. Generally higher quality leads to more utilization of a health care service at a given price. Thus, an excellent or a very good perceived quality of health care service would raise demand. Hence, we would expect a positive coefficient for such perceived quality.

(Vii) Household Size (HHS)

Since a larger family size leads to a lower income per capita than does a smaller family size with the same income, it is expected that demand for health care services will be lower for higher family size. Therefore, we would expect a negative coefficient for this variable.

3.4 Estimation Techniques and Procedures

Multiple regression analysis is employed in order to assess the factors that affect the demand for health care services. For this purpose, a maximum likelihood estimation technique such as logit or probit is employed to estimate the discrete regression model by

ruling out the usage of the normal regression (OLS) method since the dependent variable assumes discrete values. Other statistical inferences are applied in the study such as tests for the presence of multicollinearity (through the analysis of correlation matrix) and heteroscedasticity (by using a Limdep Programme whose estimation result is given by a heteroscedasticity corrected result) problem. Because, if the data has to give best estimation result, it should not suffer from these problems.

3.5 The Data

In this section, the data types and sources, data collection methodology, the sample design, justification of the study area and lastly the limitation and reliability of the data are presented.

3.5.1 The Data Types and Sources

The data that is used for this study is primary data and is obtained from the residents of Bure town which is the capital of Bure-Womberma Woreda in West Gojam Administrative Zone in the Amhara Regional State.

3.5.2 Data Collection Methodology

The data for this study was collected personally by administering a questionnaire (see Appendix 1) to households that experience an illness or injury in the previous four weeks before the time of the interview in a randomly selected sample of all the households in Bure town. As such, detailed information on individuals illness and utilization of health

care services over the four weeks immediately preceding the date of interview, in addition to many socio-economic variables that are specific to the patient and to the choice made and any relevant variables to the demand for health care services are collected.

In this regard, the first question presented to individuals was have you been ill in the past four weeks?'. Based on the reply of this question, those who were not sick were not asked the follow up questions while those who were sick were asked what they did first and second in order to treat their illness , for the sake of categorizing individuals based on their choice. As such, if they reply as 'no consultation' to the two questions they are grouped as not seeking treatment. Moreover, they were grouped as utilizer of a governmentally provided health facilities if they went to a government facility first or if they went to a government facility second after responding `no consultation' to what they did first. However, if the respondents reply a combination of governmental and private facility use, what they did first was used to group the individuals which is vital to define the dependent variable. What we note here is that, individuals were categorized as utilizer of `private facility' in a similar fashion. Moreover, patients that sought treatment from traditional healers are grouped as utilizer of traditional health care services, while patients that bought medicines from drug shops and pharmacies with out being consulting a physician were taken as utilizer of self treatment.

From the detail of the question, patients were asked to assess the quality of treatment they received and to evaluate the behaviour of the staff members in times of treatment. Because these variables were regarded as important variable which affect decision of where to seek treatment. In addition to this, patients were asked to state the

amount of medical expenditure (that comprises fees paid for registration, treatment, laboratory test, drug cost etc) they incurred per visit, to represent the monetary cost of treatment and the time spent to reach at and come back from the facility and by waiting for treatment which represents the non-monetary cost of treatments and they were also asked to state the monthly income of the total households from different sources since these variables are expected to have a greater influence from where to seek treatment.

The data was collected with the assistance of ten research assistants. The assistants were briefed on the purpose of the study and all the questions were discussed prior to collection of the data to avoid misunderstanding of different concepts. This made it possible to collect the required data for the study almost in three weeks time.

3.5.3 The sample Design

The sampling frame included all the households in Bure town to come up with a representative sample. In this regard, a systematic random sampling method was applied to obtain the required number of sample size that can be representative of the population in the study site. From the list of about 2019 household heads, 20% of them were taken as a sample and 400 patients were interviewed based on the designed questionnaire by randomly choosing households using random number tables to act as a random start. After identifying the first household number every fifth household was picked from the list until the size of the expected sample was obtained.

3.5.4. Field Work Problems and Data Reliability

As it is indicated in sub-heading (3.5.3.), only 20% of the households in Bure town were approached due to the time and budget constraints. Such problems may have an effect on the statistical reliability of the estimated model. The other problems encountered were identifying the selected household and even after identifying, there was a problem of getting a person who was sick in that household. In order to solve this problem, research assistants were creating a contact with kebele committees and other known individuals that have the knowledge about the dwellers. Moreover, the next household to the house was visited when there is no one that was sick in the previous four weeks from the selected household.

In addition to these, since a survey data relays on recall by the patients, this frequently leads to an under reporting of some variables, particularly costs of medical care utilization. Such an under reporting would generally bias the coefficients of explanatory variables towards to zero.

Because of the paucity of data, we were not able to estimate the value of time, since the opportunity cost of travel time and waiting time for treatment are important costs of health care. As such only the time spent in minutes rather than interms of opportunity cost was in use in the estimated model.

CHAPTER FOUR:

ANALYSIS OF RESULTS

4.1 DESCRIPTIVE STATISTICS RESULTS.

4.1.0 INTRODUCTION

In this section, utilization of the different health care providing establishments by households in the study area is assessed based on the important determinants of demand such as economic factors (e.g., income and medical cost), access variables (e.g., time spent by waiting for treatment and to reach the facility), demographic characteristics of the patients (e.g., age, sex, marital status, education, occupation, etc,) and subjective factors (e.g., perceived quality of treatment and evaluating the behaviour of the staff members in times of taking treatment) etc. In this regard, the analysis is conducted based on the construction of different frequency tables. As a general introduction,among the 400 patients that are included in our study,16 % of them did not seek medical treatment out of their home while 84% of them already did and out of the latter group 53.64 %, 43.16 %, 1.46 % and 1.74 % respectively sought medical treatment from the government , private, traditional and self care health facilities.

4.1.1 Economic Factors.

Income:- the effect of income of the household of the patient on the treatment seeking behaviour and its relation with the choice of a health care service provider is analyzed here. For the sake of analysis, the stated monthly income that the household of the patient obtained is divided in to four quartile as quartile 1 (poorest), quartile 2 (lower-middle), quartile 3 (upper-middle) and quartile 4 (richest).

Table 4.1. Household Income,Medical Help Seeking Behaviour and Use of Different Health Facilities.

Income Quartiles	Seeking Treatment				Facility chosen							
	No		Yes		Govt		PVT		Traditional		Self Treatment	
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	count	Row %	count	Row %
Quartile One (poorest)	26	23.0	87	77.0	55	63.2	25	28.7	3	3.4	4	4.6
Quartile Two (Lower Middle)	16	17.8	74	82.2	41	55.4	30	40.5	1	1.4	2	2.7
Quartile Three (Upper middle)	14	14.4	83	85.6	47	56.6	35	42.2	1	1.2	0	0
Quartile Four (richest)	1	1.0	99	99.0	41	41.4	58	58.6	0	0	0	0

Source: Survey Data

As it can be seen from Table 4.1, as the level of the income range rises the treatment seeking behaviour of patients also rises (i.e., from 77.0 % for the poorest segment to 99.0 % for the richest) and their non-seeking behaviour declines (i.e., from 23.0 % to 1.0 %). As such, one can expect that income would have an influential effect on the decision of seeking treatment outside from home in times of an illness because the richer the patients are the more likely the probability of seeking treatment. With regard to the choice of a provider of health care services, all the income groups frequent the government facilities with a smaller percentage share for the richest income groups in relative terms while the private facilities are highly utilised by the higher income groups as compared to the lower income groups.

In this regard,the poorest segment of the patients (i.e.,Quartile 1) utilized 63.2%, 28.7%, 3.4%, and 4.6% of the government,private,traditional and self treatment health care services respectively. Moreover,the richest segment of the patients (i.e.,Quartile 4) utilized 41.4 % and 58.6 % of the government and private health care provisions respectively while they used none of the traditional and self-care treatments. Such descriptions can be repeated for Quartile 2 and Quartile 3 with the same result. Thus, while the governmental health care provisions are frequented both by the poor and higher income groups, private health care services are highly utilized by the richest income groups. As such, policy changes that are set regarding the private and governmentally owned health care services should take this situations in to consideration.

Medical Cost:- Given the type of an illness that made patients to visit a physician, with the rising medical cost of treatment, the percentage of patients visiting the government health care services declines while it is rising for the case of private health care services as it can be seen from Table 4.2. This indicates us that as compared to the private provisions, government provisions of health care services are relatively cheap assuming all other things constant.

Table 4.2. Medical Cost Incurred by the Patient at Different Health Facilities.

Grouped medical Expenditure in Birr	Facility Type							
	Govt		PVT		Traditional		Self Treatment	
	Count	Row%	Count	Row%	count	Row%	Count	Row%
<= 5	37	78.7	2	4.3	5	10.6	3	6.4
5.10-10	43	93.5	2	4.3			1	2.2
10.10-15	35	81.4	7	16.3			1	2.3
15.10-25	31	57.4	23	42.6				
25.10-40	17	34.0	33	66.0				
40.10-70	10	23.3	32	74.4			1	2.3
70.10-90	3	18.8	13	81.3				
> 90	8	19.0	34	81.0				

Source: Survey Data

From this, we can deduce that the rise in the medical cost of treatment at the governmental health facilities will lower the probability of choosing that service while it would be the reverse for the probability of choosing private facilities assuming ceteris paribus for same services. This may be the case that the quality of treatment at the private providers is better than that of the government and it may also be the case that a larger portion of the private health care services are utilized by the higher income groups so that the effect of incurring the higher medical cost do not preclude them from using that service. If this is supported by an empirical analysis, it would have a greater policy implication regarding the relation ship between the medical cost and quality of services.

4.1.2 Access Variables

Waiting Time: Table 4.3 shows the relationship between waiting time for treatment in minutes and the choice of the health facility type. As we can see from this table, waiting time for treatment on the one hand and choice of government and private facilities on the other are related positively and negatively respectively.

Table 4.3 Waiting Time for Treatment in Minutes at Different Health Facilities.

Grouped waiting Time For Treatment in Minutes	Facility Type							
	Govt		PVT		Traditional		Self Treatment	
	Count	Row %	Count	Row %	count	Row %	Count	Row%
< 30	13	8.7	129	86.6	3	2.0	4	2.7
31-60	24	60.0	16	40.0	-	-	-	-
61-90	7	100.0	-	-	-	-	-	-
91-120	44	93.6	2	4.3	1	2.1	-	-
121-150	14	100.0	-	-	-	-	-	-
151-180	42	100.0	-	-	-	-	-	-
>180	40	95.2	1	2.4	1	2.4	-	-

Source: Survey Data

Almost 86.6 per cent of the patients that spent less than 30 minutes in waiting for treatment visit the private health care service providers while the corresponding figure was only 8.7 per cent for visits of government health facilities. Moreover, it is about 95.2 per cent of the patients that who spent more than 180 minutes visit the government facilities while it is only about 2.4 per cent at the private facilities. Thus, we might expect that when waiting time for treatment at the private facilities rises the probability of choosing those facilities would decline and the reverse would be true for the choice of government facilities. But from an economic theory point of view the latter case seems sense less since waiting time and demand for health care services are inversely related because waiting time involves an opportunity cost. But, the lower cost of treatment and the associated higher visit of government health facilities may be the case for this occurrence.

The discussions in section (4.1.1.) and (4.1.2.) can be stabilized by looking at the pooled reasons from the response of patients for the case to choose the facility they attend. According to Table 4.4, almost 83.69 percent of the patients that attend the government health facilities are giving "the lower cost of treatment" as a reason and about 10.87 per cent of them give "best quality of treatment with sufficient medical inputs" as a reason to attend that facility.

On the other hand, about 77.03 per cent of the respondents give "best quality of treatment with sufficient medical inputs together with argent services" as a reason for attending the private health care facilities. Therefore, our expectations may coincide as it is discussed earlier.

Table 4.4 Pooled Reasons for Attending the Chosen Facility in Percentage

Pooled Reasons to Attend the Chosen Facility	Govt	Pvt	Traditional	Self Care
Lower cost of treatment	83.69	0	0	0
Best quality of treatment with sufficient instruments	10.87	55.41	0	0
Argent Services	0	21.62	0	0
Nearness of the facility	1.09	9.45	0	0
Not working day/time	0	6.76	0	0
Frequent occurrence of the illness	0	0	0	66.67
Not treated by modern treatment	0	0	80.00	0
Others • due to others advice • for free treatment • Missing	4.35	6.76	20.00	33.33
Total	100%	100%	100%	100%

Source: Survey Data

In addition to this,the pooled reasons for not seeking medical treatment (see Table 4.5) showed that the incapability of covering the cost of treatment account for 50 % of the response followed by the distance to reach the nearest facility that account 37.5 % of the response.

Table 4.5 Pooled Reasons for Not Seeking Treatment.

Reasons	Percentage of Responses
Incapability to cover cost of treatment	50.0
Distance to reach the nearest health facility	37.5
Non seriousness of the illness	4.69
Religious case	4.69
Others	3.12

Source: Survey Data.

4.1.3 Subjective Factors

Perceived Quality of Treatment and Evaluation of the Behaviour of the Staff Members.

In Table 4.6, the perceived quality of treatment and evaluation of the behaviour of the staff members in times of taking treatment is presented. According to this descriptive statistics, higher percentage of respondents valued the quality of treatment and the behaviour of the staff members of government facilities as poor while they valued it as excellent in the case of the private facilities.

Thus, we might expect that the quality of treatment and welcoming behaviour of the staff members raise the probability of choosing the private facilities relative to the government facilities. This may also be one of the reasons for individuals to choose the private facilities at a higher cost of treatment relative to the government facilities.

Table 4.6 Subjective Factors and Choice of Facilities

Facility Type	Perceived Quality of Treatment				Evaluation of the Behaviour of Staff Members			
	Good and Poor		Excellent and Very Good		Good and Poor		Excellent and V.Good	
	Count	Row %	Count	Row %	Count	Row %	Count	Row%
Government	112	60.9	72	39.1	128	69.6	56	30.4
Private	23	15.5	125	84.5	14	9.5	134	90.5
Traditional	3	60.0	2	40.0	3	60.0	2	40.0
Self treatment	5	83.3	1	16.7	2	33.3	4	66.7

Sources: Survey Data

4.1.4 Demographic Characteristics

Sex: As it is indicated in Table 4.7., from the total patients that reported an illness in the previous 4 weeks before the survey date, 16 percent of them did not seek treatment while 84 percent of them did and out of the latter 48.25% and 35.75% were respectively females and males.

Moreover, out of the patients that seek treatment from the government, private, traditional, and self care providers, 30.61% 24.78%, 1.17% and 0.57 respectively were females while the remaining were males.

Table 4.7 Sex of the Patient

Sex	Seeking Treatment			Facility Chosen			
	No	Yes	Total	Govt	Pvt	Traditional	Self Treatment
Female	10.00	48.25	58.25	30.61	24.78	1.17	0.57
Male	6.00	35.75	41.75	23.03	18.38	0.29	1.17
Total	16.00	84.00	100.00	53.64	43.16	1.46	1.74

Source: Survey Data

From this descriptive statistics, we could also observe that females were predominantly affected by an illness and they were the most utilizer of the health care services provided by the government and private providers as compared to males. The predominance of females may be attributed to the complications associated with their reproductive physiology. As such, we might expect demand for health care services to decrease as the gender variable changes from male (=1) to female (=0) in the dummy representation. If this phenomena is supported by the empirical analysis, it would make the female group potentially vulnerable to any negative effect of an increased user fees in both the government and private health facilities. Especially, females that are in the lower income group are the most affected ones. Thus, the finding will be of particular concern because a high level of female illness is likely to have an adverse impact on family welfare given the important role they play in households.

Age:- Regarding this, the most affected people through illness and the one who seek treatment from the government and private facilities are found in the age range of 16-30, < 15 years and 31-50 years in descending magnitude as it can be clearly seen from Table 4.8.

Table 4.8 Age Level of the Patient in Years

Age Grouping	Seeking Treatment			Facility Chosen			
	No	Yes	Total	Govt	Pvt	Traditional	Self Care
< 15 years	5.00	25.25	30.25	16.33	12.54	0.58	0.29
16-30 years	4.75	28.00	32.75	18.37	14.29		1.45
31-50 years	3.50	21.25	24.75	13.99	11.08		
51-63 years	2.25	6.25	8.50	3.49	3.79		
64 > years	0.50	3.25	3.75	1.46	1.46	0.88	
Total	16.00	84.00	100	53.64	43.16	1.46	1.74

Source: Survey Data

<u>Martial Status:-</u> with regard to the marital status of the patient, the largest percentage share is accounted for the unmarried (48.25%) followed by the married (35.00%) in fall of an illness and with a greater treatment seeking behaviour. Moreover, it is this category of martial status that used the government and private health facilities frequently with a higher proportion as it is indicated in Table 4.9.

In this regard, Feildstein (1988) indicated that martial status affects the demand for medical services. As to him, single person generally use more hospital care than do married persons because the availability of people at home to care for an individual may substitute for additional days in the hospital.

Table 4.9 Marital Status of the Patient

Marital Status	Seeking Treatment			Facility Chosen			
	No	Yes	Total	Govt	Pvt	Traditional	Self Care
Married	3.75	31.25	35.00	18.95	17.49	0.30	0.29
Unmarried	8.50	39.75	48.25	26.82	18.95	0.58	1.45
Divorced	2.50	8.75	11.25	5.83	4.38	0	0
Widowed	1.25	4.25	5.50	2.04	2.34	0.58	0
Total	16.00	84.00	100.00	53.64	43.16	1.46	1.74

Source: Survey Data

Occupation:- The unemployed category of occupation followed by the business people are the ones who were more prone to an illness in the survey period as we can see form Table 4.10. Moreover, it is this category of occupation that utilized more of the government and private health facilities.

Table 4.10 Occupation of the Patient

Occupation	Seeking Treatment			Facility Chosen			
	No	Yes	Total	Govt	Pvt	Traditional	Self Treatment
Business	3.50	18.00	21.50	10.20	10.51	0.30	0.29
Employee	0.75	9.25	10.00	5.25	5.54	0	0.29
Farming	0.50	3.50	4.00	2.33	1.75	0	0
Unemployed	11.25	53.25	64.50	35.86	25.36	1.16	1.16
Total	16.00	84.00	100.00	53.64	43.16	1.46	1.74

Source: Survey Data

Education Level:- Regarding the educational level of the patients,patients with no formal schooling, primary level and secondary level account respectively 34 %, 20.50 % and 19 % share of seeking medical treatment from the total of 84% that seeks treatment in times of an illness during the survey period. Moreover, it is this level of education that utilized more share of the government and private health facilitates as we can see from Table 4.11.

Table 4.11 Educational level of the Patient

Grouped Level of Education of the Patient	Seeking Treatment			Facility Chosen			
	No	Yes	Total	Govt	Pvt	Traditional	Self Treatment
No formal schooling	10.00	34.00	44.00	22.74	16.33	0.88	0.86
Primary	3.75	20.50	24.25	13.11	10.21	0.58	0.58
Junior	1.25	7.25	8.50	3.21	5.25	0	0
Secondary	0.75	19.00	19.75	12.83	9.33	0	0.30
Certificate, College Diploma and Degree	0.25	3.25	3.50	1.75	2.04	0	0
Total	16.00	84.00	100.00	53.64	43.16	1.46	1.74

Source: Survey Data

4.2 Empirical Results

In this sub-heading the econometric results that are obtained from the estimation of the specified empirical models in chapter Three are presented. In this instance, two empirical results that coincide with the models specified and the objectives that we set at the introduction part are in order for analysis. As such, we would analyze the factors that determine individual patients decision to seek medical treatment or not in times of an illness first and then we would analyze the factors that determine the probability of choosing a health care service provider (the factors that affect the demand for health care services) given that the individual patient is seeking care. For our analysis, a bi-nominal logit model is employed since we are involving a discrete (dummy) dependent variable.

A correlation matrix of the independent variables was established to remedy the problem of multicollinearity (See Appendix two). In this matrix, it was found that distance travelled to reach the attended health facility (DIST) and time spent in travelling to reach that health facility (TRAT) are highly correlated. Moreover, the length of days that the patient has been ill (LDAY) and the length of days that the patient was not able to perform his/her regular activity due to the illness (LUW) are also highly correlated. As such, only one of them from each correlated variables are included in our regression analysis. In the mean time a variable that has a little or no contribution to the improvement of the adjusted R^2 is excluded from the regression.

From the estimated logit econometric result, coefficients are not directly interpreted as the change in probability of occurrence caused by a unit change in the independent

variable. But, the sign of these coefficients tell us the direction of the relationship between the explanatory variable(s) and the probability of occurrence. As such,the marginal effects are calculated to show the magnitude of the change in the probability of the occurrence,given a change in the explanatory variable. Particularly,an odds ratio greater than one indicates an increased chance of an event occurring versus not and an odds ratio less than one indicates a decreased chance of an event occurring versus not occurring.

Before going to the interpretation of the coefficients and odds-ratio estimates of the logit model in Table 4.2.1 that is applied to the primary data collected,let us say something on the joint or individual hypothesis tests about coefficients and about the pseudo R^2 that measures the percent of the "uncertainty" in the data explained by the empirical result. With regard to the joint significance hypothesis,the likelihood ratio statistic shows that the model is significantly different from the intercept only model by a chi square test(255.85 with 13 degrees of freedom).The variables SX,LDAY,HHS,INCH,and DIST1 have an estimate significantly different from zero at 5 %,10 %,10 %,5 %,and 1 % respectively as it can be seen from the column labelled as significance level. Though, "there are no general guidelines for when a Pseudo R^2 value is sufficiently high (Ben-Akiva and Lerman,1985)" using it in a similar fashion as R^2 of a regression analysis,almost 83.07 per cent of the variation in the probability of seeking treatment in times of an illness was explained by those explanatory variables included in the regression analysis.

Table 4.2.1. Choice of Whether Treatment Was Sought or Not.

Binomial Logit Model:Maximum Likelihood Estimates.

(Seeking treatment=1,Not seeking=0)

			LR Chi^2 (13)= 255.85 Prob > chi^2= 0.0000 Pseudo R^2= 0.8307	
Variable	Coef	odds Ratio	T-ratio	Significance level.
SX	2.443887	11.51772	2.088	0.037
AG	-.0501915	.9510473	-0.695	0.487
LDAY	.1278142	1.136342	1.845	0.065
HHS	-.3333731	.7165028	-1.751	0.080
INCH	.0076866	1.007716	2.005	0.045
SXH	-.5583246	.5721669	-0.562	0.574
OH	.9941459	2.702415	1.085	0.278
DMS	1.427257	4.167253	1.099	0.272
DOCCP	-.4584896	.6322379	-0.423	0.672
AGESQ	.0003575	1.000358	0.417	0.677
DIST1	-3.953213	.0191929	-5.578	0.000
DSCCUH	.023129	1.023399	0.015	0.988
DSCCU	.952921	2.593274	0.640	0.522
CONS	7.23342		3.413	0.001

From the empirical result,one of the variable that has a significant effect on the patients decision of seeking medical treatment out side from home or not was sex of the patient. A unit change in SX variable (from 0 to 1) indicates switching from female to male in the dummy variable called "SX".The sign of the parameter value of this coefficient shows the presence of positive relationship between this explanatory variable and the probability of patients being consulting a physician(i.e.,being male inclines one toward consulting a physician in times of an illness(as compared to females)).In this instance,the odds for male patients to have had consulting a physician in times of an illness are estimated to be 11.52 times as high as females,other things being equal.This result was consistent with the finding of Kuawab Consultants(1996) which was conducted on the Urban/Rural Household Income,Consumption and Expenditure Survey (HICES) of 1995/96 data in studying the household demand for health.

The second variable that has a fairly significant effect with the expected sign was length of days that the patient was ill or injured (LDAY)in the previous four weeks prior to the survey date. This variable can be taken as a proxy for the severity of an illness. The positive parameter value of this coefficient shows us that the larger the length of days that the patient has been ill,the more the probability of that patient to seek treatment because the illness is more severe. Specifically,other things being equal,an additional days of illness of the patient would raise the odds of consulting a physician by a factor of 1.14.

The other variable that has a fairly significant effect on the patients probability of seeking treatment was household size(HHS).The negative parameter value of this

coefficient which was as expected shows us that,as the household size rises,the probability of seeking treatment falls due to a lower income per capita, other things being held constant. Particularly,an additional household size in the patients family would reduce the odds of consulting a physician by a factor of 0.7165.This finding was also consistent with Kuawab Consultants(1996).

Monthly income of the household (INCH) was also the other variable that was found to have a significant effect with the expected sign. The higher the monthly income of the household,the more would be the probability of seeking treatment as we can see from the positive coefficient parameter estimate of this variable. Specifically,an addition of a Birr of the income of the households raise the probability of the odds of consulting a physician by a factor of 1.0077.This finding supports the work of Abdulhamid and Alem (1996) and that of Kuawab Consultants (1996).

The fifth variable with a very significant effect and as expected was the distance between the home of the patient and the nearest health facility (DIST1).A kilometre rise in distance would reduce the odds of consulting a physician by a factor of 0.01919.This finding was also consistent with that of Kuawab Consultants (1996).

Lastly,the positive significant constant term reflects the fact of a relative preference of consulting a physician in times of an illness.

In addition to these,the estimated parameter coefficient on the educational level of the household head (DSCCUH) and that of the patient (DSCCU) was found to be positive indicating the fact that having an educational background of secondary and above would increase the odds of consulting a physician by a factor of 1.023399 and 2.593274 respectively. But their effect was not statistically significant.

In general,an increased chance of the probability of consulting a physician versus not consulting was seen from the odds ratio estimates of the variables SX,LDAY,and INCH,while the decreased chance was seen from the odds ratio estimates of the variables HHS and DIST1.Moreover,except for the variable sex in which we can not determine its effect appriori the estimation result from the analysis of the probability of consulting a physician or not in times of an illness is consistent with economic theory.

With regard to the second specification that was set to identify the factors that contribute to the probability of choosing a health care service that are provided by different providers (for instance private V_s Public health facilities), in the bi-nominal logit model estimation result of Table 4.2.2, the likelihood ratio statistic showed that the model is significantly different from the intercept only model by a chi square test (315.78 with 14 degrees of freedom). The variables AG, MEDC, WAIT, SXH, DPQUAL, DBSTAF, DSCCU and AGESQ have an estimate significantly different form zero at 10%, 1%, 1%, 5%, 1%, 1% 5% and 10% respectively as we can see from the estimated significance level. In addition to this, about 73.3% of the variation in the probability of choosing a health care facility for treatment (i.e., private V_s Public) was explained by the variables that are included as an explanatory variable in the specified regression analysis.

As it is evidenced from this estimation result, age of the patient and square of the age of the patient were found to influence the probability of choosing the private health facility positively and negatively at 10% respectively. This result indicates that younger patients tend to utilize private health facilities more often. But this tendency would fall for older individual. This may be due to low income and unable to have an access from the costly provision of the private health facilities. To be specific, a rise in a year of the age of the patient at the early stage would raise the odds of probability of choosing private health facilities by a factor of 1.1299 while at the latter stage it would reduce it by a factor of 0.9984, assuming ceteris paribus.

The variables that were regarded as important factors in the decision of where to seek treatment were the quality variables that are defined with a dummy representation as the perceived quality of treatment obtained (DPQUAL) and evaluation of the behaviour of the staff members in times of taking the treatment (DBSTAF). In this regard, a unit change in either the perceived quality variables or in the evaluation of the behaviour of the staff members (from 0 to 1) indicates switching from good and poor expressions to excellent and very good in the dummy variable called "DPQUAL" and "DBSTAF" respectively. As such, the odds of excellent and very good expressions for these two variables that account for the quality of that service to have had chosen the private health facility are estimated to be 5.464 and 5.625 as high as good and poor expressions respectively, assuming all other things being equal. Hence, there is an increased chance of choosing the private health facilities because of the effect of these quality variables. This result was consistent with the finding of Mwabu et.al (1995).

The other two variables that are defined as dummy and have respectively a positive and negative significant influence on the probability of choosing private health facilities were sex of the head of the household and education level of the patient. For these variables, a unit change in either the sex of the head of the household or the education level of the patient (from 0 to 1) indicates switching from female to male in the dummy variable called "SXH" and from education level of below the secondary level to secondary and above level of education of the patient in the dummy variable called" DSCCU" respectively. In this instance, the odds for male household heads to have had chosen the private facility for treatment in times of an illness is estimated to be 5.280 times as high as female household heads other things being equal. Moreover, the odds for education level of the patient being secondary level and above to have had chosen the private health facility is estimated to be 0.238 as high as a patient with education level of below secondary level other things being equal. Hence, there is a decreased chance of choosing the private health facility by patients with education level of secondary and above.

With regard to the economic variables that are included in our model, medical cost of treatment per visit which represent the monetary cost aspect and waiting time for treatment that represent the non-monetary cost aspect are found to be significant determinants of the probability of choosing the private health facility for treatment with the unexpected and odd result in the case of the first variable. As we can see from the sign of the estimated parameter value coefficients, a rise in the medical cost of treatment and waiting time for treatment respectively are positively and negatively related to the

probability of choosing the private health facility. In particular, other things being equal, a Birr increase in the medical cost would raise the odds of using the private facility by a factor of 1.017 while a minute increase in waiting time for treatment would reduce the odds of using the private facility by a factor of 0.954 in which the latter finding is consistent with Coffey (1983) finding. From an economic theory point of view, the first result is not as expected since its direct implication is to mean that raising the medical cost would raise the probability of choosing the private facility. It may be probable that the quality of the treatment in this facility is better and thereby lead patients to utilize more of those services at such higher cost and also it may be probable that people with higher level of income are the frequent users of these services and the higher cost do not preclude them from utilizing that service.

Table 4.2.2 Choice of Service Provider- Private Vs Public

Binomial Logit model: Maximum Likelihood Estimates

(Private = 1, Public = 0)

			LR chi^2 (14) = 315.78 Prob > chi^2 = 0.0000 Pseudo R^2 = 0.7330	
Variable	Coef	Odds Ratio	T-ratio	Significance Level
SX	.7622588	2.143112	1.363	0.173
AG	.1221595	1.129934	1.880	0.060
LUW	.0255233	1.025852	0.650	0.156
MEDC	.0168779	1.017021	2.525	0.012
WAIT	-.0466857	.9543874	-6.257	0.000
DIST	.2372199	1.26772	0.501	0.617
HHS	-.075606	.9271814	-0.663	0.507
INCH	-.0002718	.9997283	-0.224	0.823
SXH	1.663938	5.280065	2.234	0.025
DMS	-1.167203	.3112362	-1.464	0.143
DPQUAL	1.698189	5.46404	2.680	0.007
DBSTAF	1.727149	5.624597	2.726	0.006
DSCCU	-1.433797	.2384019	-2.038	0.042
AGESQ	-.0015787	.9984225	-1.683	0.092
CONS	-2.483857		-2.008	0.045

CHAPTER 5

CONCLUSION AND POLICY IMPLICATIONS

5.1 CONCLUSIONS

The provision of proper health care services is seen as a major component of the drive to improve both the health status of the people and the level of the economic development of a country. This paper has examined the descriptive and empirical results of the primary data that was collected from the residents of households in Bure Town. In particular, this study examines the determinants of seeking medical treatment or not in times of an illness and the probability of choosing health care services that are provided by different health care providers (i.e. the demand for health care services) in Bure Town. The determinants were classified as individual and/ or household specific variables and choice specific variables. The models that are used in this study are presented in chapter three and the associated estimated results in chapter four.

From the descriptive statistics analysis, it was observed that out of the 400 patients that have been addressed by this study, about 16% did not seek treatment while 84% did and out of the latter 53.64%, 43.16%, 1.46% and 1.74% of them sought medical treatment respectively from the public, private, traditional and self treatment health care services. Analysis of the estimated empirical results led to a number of conclusions.

First, the sex of the patient (being male), the length of time that the patient had been ill (which is a proxy for the severity of the illness), and the monthly income of the household were found to have a strong positive effect on whether or not treatment was sought but not on the choice of provider of health facilities.

Second, the size of the household and distance to the nearest health facilities were also found to have a strong negative effect on whether or not treatment was sought but not on the choice of providers of health facilities.

Third, age level of the patient in years and sex of the household head (i.e. being male) were found to have a strong positive influence in choosing the private health facilities but not on whether or not treatment was sought. Moreover, square of the age level of the patient was also found to have a strong negative effect in choosing the private health facilities but not on whether or not treatment was sought.

Fourth, education level of the patient and the household head (i.e. being secondary level and above) were also found to have a positive effect on whether or not treatment was sought but with insignificant contribution. On the other hand, education level of the patient was found to have a strong negative effect on the choice of private health facilities.

Fifth, the results of the quality variables that were denoted with the perceived quality of treatment obtained and the evaluation of the behaviour of the staff members in times of taking treatment (i.e. being excellent and very good) were found to have a strong positive effect in choosing the privately provided health care services.

Six, the result for medical cost of treatment per visit , which was significant determinant of choosing the private health facilities, were found to bear unexpected sign. According to this result, an increase in the medical cost of treatment per visit increases the probability of choosing the private health facilities. As such, additional research is warranted in this area before this result can be relied on.

Lastly, waiting time for treatment was found to have a strong negative effect on the probability of choosing the private health facility, which is as expected. As such, an increase in the waiting time for treatment would reduce the probability of choosing the private health facilities.

5.2 Policy Implications.

On the basis of the descriptive and analytical findings of this study, there are some definite policy implications.

One, in our empirical finding income of the household was found to have a significant positive impact on whether or not treatment was sought. In this regard, even it is a general macroeconomic policy of most governments, devising mechanism to increase the income of the people particularly of females because they are found disadvantaged in seeking treatment, will raise the peoples demand for health care services from the formal health sector and there by improve their health status and intern the economic development of the country. But, raising the income of the people is not an over night task that can be achieved within short period. Thus, intervening on the supply side particularly reducing the cost of treatment would be necessary to prevent the poor not to be out of the medical market.

Two, reducing the distance to the nearest health facilities irrespective of the type of the provider will likely raise demand. But increasing access by constructing new health facilities alone can not be a panacea to increase utilization because quality of treatment with sufficient medical inputs was cited as an important determinant of demand for health care

service. Particularly, most patients perceived public health care services to be of poor quality and that of the private counterpart as higher quality. Thus, the increased availability of health facilities must be accompanied by necessary medical inputs such as essential drugs with medical equipment and also be staffed with a well trained personnel particularly that of the public health sector. Because, if the Ministry of Health wanted to capture a greater share of patients and obtain higher revenue through an increase in its price, it would have to improve the quality of its services first.

Third, the average waiting time for treatment at the public health facilities was found to be about 147.73 minutes while it was about 22.57 minutes in the private health facilities. On the other hand, the average medical cost of treatment per visit at the private health facilities was about Birr 82.84 while it was about Birr 23.82 at the public health facilities. Thus, any policy that is structured with regard to such variables must take this discrepancy in to consideration.

Fourth, since the contribution of the private health care service providers cannot be over looked (because about 43.16% of the respondents utilized them) the Ministry of Health's Policy of promoting the participation of the private sector in the provision of health care should further be strengthened to enable them expand and in the mean time ways should be devised to assure that best quality of service is being provided to the users.

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Appendix One

Questionnaire Design

General Introduction

Hello. I am a student from the Addis Ababa University. I am currently interviewing patients from a household in Bure Town about their illness, utilization of health care services and about their socio-economic and demographic attributes. Though the answers are confidential and for my academic purposes only the results of this study can be used to recommend policy measures for the policy makers in the health sector. Your co-operation in answering the following questions will be greatly appreciated.

The first question that was to be followed by other questions if the response was yes is, "has any member of the household suffered from illness or injury in the past 4 weeks? If no, the questionnaire was not presented. But, if their response was yes, the following questions were presented and filled.

General Information

1. Name of the head of the household
2. Kebele
3. Name of the respondent if the head was absent
4. Name of Interviewer

Section 1. About the patient

1. Name
2. Sex Male(1), Female (2)
3. Age in years

4. Marital status — Married (1), single (2), Widowed (3), Divorced (4), Too young to marry (5)

5. Main activity — Business (1), Employee (2), Farming (3), Unemployed (4)

6. The Education level completed

7. In the past four weeks

How many days have you been ill or injured?

How many days have you been unable to perform your regular activity due to this illness or injury?

8. Severity of illness

(i) very severe

(ii) severe

(iii) not severe

9. Have you consulted any one (e.g. physician, traditional healers etc) about this illness? yes (1), No (2)

10. If no, what are the reasons for doing so? Give at least two reason.

_____

_____

Section 2 About the Patient who Seeks Treatment

1. How many visits of physicians have you made in number?

2. Which facility (i.e., the government (1), private (2), NGO (3), traditional (4), or self-treatment (5)), have you visited when you are ill?

- at first _____
- at second _____
- at third _____

3. what are the reasons for selecting the facility that you have visited first?

Give at least two reasons: _____

_____

4. How much money (in Ethiopian Biro) was spent on treatment at this facility per visit? (i.e. at the facility visited first)

- for medicine
- for laboratory test
- for registration fees
- for transport
- for others, specify.

5. On a typical visit, how much time (in minute) did you spend?

- on travel to reach the health facility visited
- on waiting for treatment

6. Distance covered in k.m. to reach the health facility attended

7. Distance to reach the nearest health facility from home in k.m.

8. How do you perceive the quality of treatment received based on the availability of drugs and common laboratory tests prescribed for you and from your experience

(i) excellent (ii) very good (iii) good (iv) poor.

9. How do you evaluate the behaviour of the staff members during your visit?

(i) Excellent (ii) very good (iii) good (iv) poor

Section 3. About the Household

1). The Households Head

- Name
- Sex

Male(1)

Female(2)

Age in years

Highest level of education completed.

2. Mother's

- Name
- Age
- highest level of education completed

3. Total number of household members

4. Total monthly income (in Eth. Birr) of the household members from different sources such as:

   (i) salary

   (ii) Profit

   (iii) rent

   (iv) transfer

   (v) gift

   (vi) other sources, Specify ___

5. Do you own a house? _____

   If you were to sell, how much would you receive from the sale?

6. Do you own any livestock /poultry?

   - Type and amount (in number)_____
   - if you were to sell today, how much would you receive from the sale?

7. Do you farm, cultivate or perform any agricultural activity?

   - Size of total land holding (in sq.mts)___

8. Do you own any motor vehicle, machinery etc?

   - Type and number____

9. Source of the water you use for drinking purpose.

10. Do you own your tap water?

Apendix 2:Correlation Matrix of Independent Variables.

	sx	ag	lday	luw	medc	trat	wait
sx	1.0000						
ag	-0.0110	1.0000					
lday	-0.0250	0.2074	1.0000				
luw	-0.0420	0.2288	0.8435	1.0000			
medc	-0.0731	0.1835	0.2597	0.3280	1.0000		
trat	0.0525	0.0387	0.1065	0.0914	-0.1122	1.0000	
wait	0.0316	-0.0064	-0.0069	-0.0624	-0.3015	0.1813	1.0000
dist	0.1540	-0.0016	0.1922	0.1276	-0.0055	0.6878	0.0845
hhs	0.0519	-0.1029	-0.0315	-0.0368	-0.0164	-0.1007	0.0333
inch	0.0800	-0.1266	-0.1606	-0.1030	0.0618	-0.0831	-0.1146
sxh	0.2203	-0.1391	-0.0794	-0.0081	-0.0279	0.0027	-0.0360
doccp	0.2081	0.4642	0.0620	0.0218	0.1318	-0.0392	-0.0454
dpqual	-0.0798	0.0461	-0.0808	-0.0445	0.1940	-0.0901	-0.3096
dbstaf	-0.0548	0.0454	-0.0178	0.0143	0.2377	-0.1570	-0.4846
dsccu	0.1787	-0.0063	-0.0641	0.0002	0.0798	-0.0688	-0.0228
dsccuh	0.0893	-0.2643	-0.1936	-0.1433	0.0478	-0.1225	-0.0185

	dist	hhs	inch	sxh	doccp	dpqual	dbstaf
dist	1.0000						
hhs	-0.0939	1.0000					
inch	-0.0085	0.4095	1.0000				
sxh	0.1198	0.2709	0.3292	1.0000			
doccp	-0.0565	-0.0327	0.0330	-0.0974	1.0000		
dpqual	-0.1678	-0.0745	0.0373	-0.0665	0.0341	1.0000	
dbstaf	-0.1618	-0.0832	0.0211	-0.0413	0.0280	0.4065	1.0000
dsccu	-0.1045	-0.0863	0.0563	0.0588	0.1362	0.0531	0.0210
dsccuh	-0.0230	-0.0383	0.4270	0.2521	-0.0714	-0.0614	0.0119

	dsccu	dsccuh
dsccu	1.0000	
dsccuh	0.3849	1.0000

DECLARATION

The thesis is my original work, has not been presented for a degree in any other university and that all sources of material used for the thesis have been duly acknowledged.

Declared by:

Nahu Asteraye

Candidate

June 15, 1999

Confirmed by:

Dr. Abdulhamid Bedri Kello

Advisor

June 15, 1999