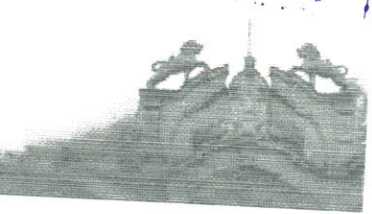


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**DETERMINANTS OF DEMAND FOR HOUSEHOLD
HEALTH CARE: THE CASE OF ETHIOPIAN
PUBLIC AND PRIVATE HEALTH CARE FACILITIES**

BY

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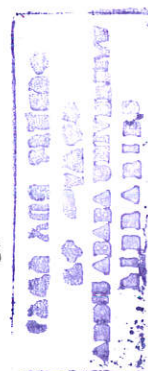
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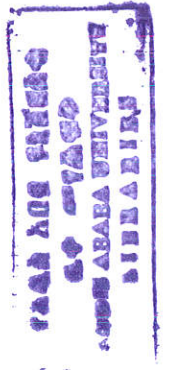


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ABBREVIATIONS

AIDS	Acquired Immuno-deficiency Syndrome.
ANC	Antenatal Care
DPT	Diphtheria, pertusis and tetanus
EDHS	Ethiopian Demographic and health survey.
EPI	Expanded program on immunization
GDP	Gross domestic product
HHS	Household size
HIV	Human Immuno- deficiency virus
HRDS	Human Resource Development Survey
MEDAC	Ministry of Economic Development and Cooperation
MOH	World health organization
OGA	other government organization
OLS	Ordinary Least Squares
SES	Socio economic Status
SSA	Sub-Saharan Africa
UNICEF	United Nation Children Fund
WB	World Bank
WDR	World development report
WHO	Non- government organization



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Abstract

This paper is intended to identify the factor that determine the medical treatment seeking behavior at the time of illness and the demand for health care services by employing a maximum likelihood estimation techniques. The study also employed both descriptive and empirical analysis. It has shown that individual and household preferences are influenced by demographic, economic and quality variables that determine demand for health care services from different providers in utilizing DHS data of 2005.

The results of the two-logit model employed in socio-demographic characteristics such as sex of the patients, wealth and marital status of the households, which was sought at time of illness significantly, affect the treatment. While, patient preferences of household providers are influenced by the age of the patients and quality variables. Furthermore wealth and quality are determinant of the demand of health care provider, which implies that patients would prefer private instead of the public facilities for their illness. It is suggested that improving the number and quality of professional health staff and upgrading the physical and technical capability of the health facility will increase the efficiency for better health care services. This again suggests the need of the interventions of government to design an appropriate policy measures that would facilitate the expansion of health facilities that accompanied with resources to provide quality health care services at reasonable cost to the majority of the population.



Chapter one

1.1. Background of the study

Ethiopia is one of the Eastern African countries with a population of more than 78 million. It is the poorest country in the world. According to World Bank 2006, a GDP per capita is 180 dollars. Its economy is based mainly on agriculture and cattle rearing. The primary sector accounts for 45 percent of GDP and employs about 80 percent of the labor force. The adult literacy rate is 37.9 percent. Only 22 percent of the population has access to safe water and 13 percent to sanitary facilities

Available data indicate that the total number of hospitals in the country is 138 of which 62.3 percent are under ministry of health while 9.4, 19.6 and 8.7 are owned by the OGA, the private sector, and NGOs respectively. All these hospitals are endowed with 13922 beds, 2115 physicians, 17845 nurses, 1239 environmental health workers, 1935 pharmacy technicians, 715 health officers and 1050 other health workers. The health system of Ethiopia is also supported by 635 health centers, 1206 health stations, 5955 health posts, and 2264 privately owned clinics of various types, 246 pharmacy, 476 drug shops and 1754 drug venders which are operating through out the nation (MOH, 20006). In addition, the ratio of physicians to population, health officers to population and nurses to population has to improve from 1:47,834 to 1:35,493, 1:220,756

to 1:104,988 and 1:8461 to 1:4207 respectively between the year 2000/01—2005/06. However, the ratios show that there is only one physician per 35, 493 population compared to 10,000 and one nurse per 5,800 population compared to one per 5000 WHO standards.

Health indicators in Ethiopia are low and are even below what would be expected at the equivalent level of GDP (World Bank, 2006). Life expectancy at birth is estimated to be 48 years. Under EPI program about 75.6 percent of children are estimated to have obtained DPT3 Immunization in 2006, while the proportion of pregnant women immunized for tetanus is estimated to be 51.8 percent and antenatal coverage is about 50.5 percent. All these compared with past years it is encouraging but still low most of sub-Saharan African countries. Most of the health problems affecting the population are mainly infections diseases and parasites (malaria, diarrhea, respiratory infection).

The EDHS Data of 2000 examined that the specific patterns of health care use of children health care seeking behavior extremely low. In Ethiopia there has been a declining trend in all measures of mortality and improvements in the health sector service provision systems, mortality levels still remains high. The current maternal mortality rate (673/100,000) is among the highest in the world. Data from the EDHS 2005 shows that infant mortality has declined by 19 percent over the last 15 years. Under five years mortality has gone down by 25 percent. Both infant and child mortality rates are declining, the current

levels of infant mortality rate (77/1000) and child mortality rate (123/1000) are still high (MOH, 2006). These calls for government and international organization is to allocate considerable amount of budget to the health development to supply the services at required quality and quantity forever growing demand of the population.

Most infectious diseases manifested in the form of fever, which affect both dietary intake and utilization as negative effects on improved child and women nutritional status. A comparative study on children's nutritional status (Semmerfelt et al, 1994) indicates that stunting was highest among children with recent diarrhea.

Unfavorable health environment caused by in adequate water and sanitation can increase the probability of infections diseases and indirectly cause certain types of malnutrition (UNICEF, 1990). Comparative study in some developing countries in Jimma, Ethiopia (Getaneh et al. 1998) showed that unprotected water source and non-availability of latrine were associated with low health structure.

The access of a household to health care providing unit is determined by a number of factors: income of the household, quality being provided, age, religion, and proximity to the health facility, individuals' perception about specific health care providing units, availability of drugs, and the life style pursued.

As health services from part of the basic social needs of the society, health care providing units are not only essential for a society's welfare but also plays a major role in the growth of the economy. However, the health status of Ethiopia among the least in the world, the spread of communicable diseases and poor nutrition's are the leading out comes of poor housing and environmental conditions almost all part of the country. Not only shortage of health facilities but also underutilization of the existing health care providing units arising from many factors like long catchments areas from clinics in rural, low income, etc are part of the cause for the miserable state of Ethiopia (MOH, 2004). Therefore, the health status of the population is very low. The country, experiences a heavy burden of disease with growing prevalence of infections diseases with high morbidity and Mortality largely attributes to potentially health disorders and nutritional deficiencies.

1.2. Statement of the problem

Nowadays the main challenge for many developing countries is to provide the necessary access to social services in particular education and health care. Investment in this area is key ingredient to the formulation of human capital, which brings about social and economic development.

It is evidenced that the rapid economic development is the key factor for the improvement of health care systems and expenditure on the health which is determined largely by other sectors. Growth in the health sector also affects the performance of the rest of the economy. Health and economic development are interdependence that reinforces each other. Healthy labor force is prerequisite for a successful economy; the wealth created by the rest of the economy may be earmarked health sector would expand to reinforce other sectors. In adverse due to low level of income at the household level and concentration of the available health facilities at the urban areas the majority of the population in the developing countries still has limited access to modern health facilities. This problem is compounded with and unaffordable price for the large proportion of population, enable the services provided may not be sufficiently acceptable (Barnum and Kutzin, 1993)

The health care delivery system in Ethiopia is dominated by the government health care structures. Government provides both curative and most of preventive services. This is because of the policy of “free” medical care on the one hand and other economic factor on the other (population growth, stagnant or dropping per capita income with dropping level of food production and under nourishment, domestic and imported inflation and discouraging of private health care, particularly traditional medical services) have resulted in a very wide gap between the supply and demand for health services (Abdulhamid, 1996)

Most studies in developing countries show that government clinics and hospitals are overcrowded, the quality of the service delivery is not satisfactory and the price of consultation is very low and little or free of charge to the service. It is further suggested that the private provider are relatively efficient and spends less time to get the better services. But large amount of money is imposed to such services.

World Bank in 2008 study Chad shows that free or subsidized government provision of health care service doesn't guarantee that people in the low income groups will go government facilities, but in the poorest population groups reveals strong preference for private paid care. The individuals with high opportunity cost of time and high income tend to move to the private providers, while the low income groups will not have any opportunity except spending longer time to get a poor quality service from the public health sector. Recently, Ethiopia, like most of other developing countries, strives to move to better and more efficient health care utilizations. Extensive evidence exists on how this could be achieved (WB, 2004). The efficiency of health care markets in developing countries is hampered by factors such as the inefficient popular knowledge on the impact of diseases and treatment in particular on the external effects of endemic diseases such as HIV/AIDS, tuberculosis, and malaria. The competition in health markets is hindered by set-up costs in the training of health personnel, construction of hospitals, clinics, and infrastructure developments such as safe drinking water and sanitation, which are particularly relevant for the rural set ups.

The World Development Report emphasizes that the private sector can be a more efficient producer of secondary and tertiary level of health care and, therefore, the government budget can be diverted in to primary health or a minimum package of care (WDR, 1993). In developing countries the private sector is playing a major role in providing health care. In India, for instance, nearly 80 percent of expenditure is being incurred in the private sector. In Ethiopia also large amount of expenditure is incurred in a private sector.

In the poor countries, therefore, there is obviously an imperative reason to allocate scarce fiscal resources based on a clear understanding of investment in the health sectors that are going to affect demand. There is also an imperative reasons how changes in the pricing of the public services, and investment in quality improvements, are going to affect consumer decisions in seeking health care. Differentiating how poor versus non- poor consumers make decisions about treatment, related pricing and quality to influence the provider's choice is critical in the quality implications of alternative policies. It is assumed that an exploitation of the consumer will take place with the sole reliance on the private-for profit sector where a patient may commonly lacking to approaching perfect information (Arrow, 1963). By and large the private sector then serves the urban elite, affecting equity. The World Bank policy research working paper (2008) shows that in most Sub -Saharan African countries there is weak competition in the health sector that creates a situation where the population is often faced with local primary health provides where some individuals choose



to be treated in health centers far away from their homes. This ensures greater time and transport costs in order to obtain services perceived better place to their needs. Leonard et al (2002) in Tanzania found that patients seek higher quality providers with better staff and basic supplies and tend to understand the importance of these factors in their illness.

Analyzing the health care demand behavior of households in Ethiopia has paramount importance in identifying and addressing the socially excluded group of the population or the deprived individuals within households from the health care market. The study also will examines individual's decisions are influenced in quality and wealth to demand health service among private and public health providers where Private providers in Ethiopia represent especially an important part of the health sector in urban areas.

1.3 Objectives

General Objective

1. To assess and analyze factors that determines the household demand for health care services.

Specific Objectives

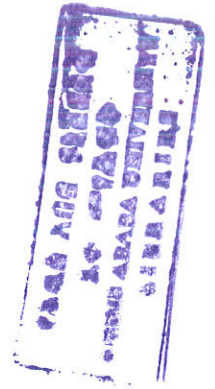
1. To identify factors that influences the decisions of individual patients to demand medical treatment at the time of illness.
2. To analyze importance of urban demands among health care users in both quality and household income and come up with practical recommendation.

1.4. Significant of the study

The World Bank discussion paper (1996) has shown that quality of medical care is now well recognized in the success of health care delivery system in financing health sector in developing countries like Ethiopia. This study therefore, intends to provide the necessary information that affects the demand for health care quality.



Ample of evidences have shown that consumer demand in health care provider is mainly an urban phenomenon that poses a serious question in the allocation of public health resource between urban and rural areas. rural facilities are low in quality, while urban public facilities are underutilized given that they are generally by passed to the benefit of private providers. Thus rural patients barely exercise demands and their choices that are restricted towards their local environment and poor quality Monopolistic facility geared their village. Therefore, the study will provide the necessary information for the policy makers that would determine consumers demand for health care market them to use the resource effectively.



CHAPTER TWO

LITERATURE REVIEW

2.1 THEORY OF MODELING THE DEMAND FOR HEALTH CARE.

The modern health care demand analysis is heavily based on the neo classical paradigm of rational consumers and constrained utility maximization theories. In this regard, analyzing the demand for health care services as being derived from the individuals' demand for good health providers as a sound basis for determine which factor to be included in the model specifying the demand for health care services and for hypothesizing their effects. The usually straight for word exercise of estimation demand is greatly complicated in the case of health care by the fact that there is often little or no variation in price with in country.

According to Gertler and Vander Gaag (1987), in developing countries governments set prices close to or, in many cases, run equals to zero in most medical services. Even when prices are positive, they are typically uniform with in the country. The second complication in modeling the demand for medical care is that the decision to use services is discrete. Individual's choice to visit a clinic, hospital, or private doctors or to obtain care or not at all levels. A third issue is that the effects of user's fees are likely to vary by income so that the distributional consequences must be considered. Indeed, if the poor are more prices sensitive than the richer, user fees will reduce the utilization of the poor

more than by the rich. In such case, uniform user fees would be regressive.

According to the same author, Driving discrete choice model specification, of the demand for medical care from a utility maximizing theoretical model shows how private time price variation can be used to identify the parameters necessary to compute price elasticity's and measure of willingness to pay (these are called compensating variation). The model makes use of the well-known result that private price, such as the opportunity cost of time; ration the market when monetary prices are absent or small (Gerter, 1987). An added advantage of the model is that the theoretical frame work naturally leads to an empirical specification that flexible enough to all on the price elasticity's and measure of the willingness to pay for vary by income level.

Evidence from the literature, demand for medical care in developing countries contains conflicting messages. A study conducted elsewhere suggests that prices are not important determinants of utilization of medical care. Akin and others (1984); reported very small and sometimes-positive price effect, most of which were statistically insignificant, Gertler et al (1987) found that prices were important. The study employs discrete choice models. Other study on Birdsall and Chuhan (1983), also estimates multinomial model for the demand for type of curative health services in Mali, and they found that distance and quality have significant effect. The divergence between most literature on industrial countries and that on developing countries is somewhat paradoxical. Even though, prices might be less important in industrial countries than in

developing countries. Two reasons were observed to be immediately apparent:

1. Medical insurance is almost universal in industrial countries and non existence in developing countries and
2. Income levels are substantially higher in Industrial countries. Higher income levels and pervasive insurance coverage imply that medical care takes up a much smaller percentage of household budgets in the industrial World than in the developing World. Individuals might be expected to be more sensitive to prices when these prices constitute a bigger share of their budget. In addition, estimated income elasticity suggests that price elasticity's should be higher in developing countries. The empirical evidence shows that the demand for medical care is more income elastic in the poorer, developing countries than in the richer, industrial countries (Gertler and vander Gaag, 1987).

In most developing countries, the price of medical care at government run facilities is small or, in many cases, Zero. Hence it is not surprising that prices do not ration the market. Acton (1975) and others have shown that when monetary prices are small, the prices of time (that is, the opportunity cost of time used in obtaining the good) ration the market. Time prices could be expected, therefore, to rations the market in developing countries. Gertler and van der Gaag (1987) showed that variation in travel time is sufficient to identify all of the parameters necessary to compute monetary price elasticity's and compensating variation. For one explanation of the paradoxical result of Zero



elasticity's for developing country is that the models of demand for medical care in developing countries are misperceived. The study types of demand model as a discrete choice, with the price effect specified to be independent of income. This assumption is restrictive, since one would expect the Wealthy to be less sensitive to price differences among providers than the poor. Anther paradoxical studies of demand for medical care in developing countries use data set of dubious quality, thus information, especially on income, prices, and travel time, leaves much to be desired. (Gertter and Van der Gaag 1987).

The modern health care demand analysis is heavily based on the neo-classical paradigm of rational consumer and constrained utility maximization theories. In this regard, analyzing the demand for health care services derived from the individuals' demand for good health providers as sound as is for determining which factors to be included in the model specifying the demand for health care services and hypothesizing their effects. Hence, the benefit from consuming medical care is an improvement in health and the cost of medical care is a reduction in consumption of other goods. Further more, the patient is assumed to choose the health care alterative that yields the maximum expected utility.

2.2 Consumer responsiveness of perceived Quality services.

Attempts to estimate the impact of quality on consumer demand for the health care have faced difficult theoretical and practical problems. Studies that treated quality, as unobserved variables could not know how much of the unobserved effects captured by the dummy variables were reflective of quality-related factors. Most studies that conceptualized as quality is an unobservable measurable, thus the variables are faced difficulties of measurement error, endogenously, and multicollinearity. Some early studies examined quality treated it as an unobservable independent variable. Mwabu and Mwangi(1986) constructed provider-specific dummy variables to capture this influence by interacting patients' provider preferences with each of the classes of health care providers(mission, government hospitals, private clinics, government clinics, pharmacies, and traditional healers).using parameters on these dummies, which produced a ranking in the order of provides listed above, they claimed that it represented a ranking consistent with the one would be obtained based on facility capacity to treat a range of illnesses and reliabilities of drug supply. Using simulation based on the estimated results, they found that user's fees could generate welfare gains if they were used to improve the quality of medical services. For those studies that treated quality as an observable (independent, explanatory) variable of respondent's choice, there was a variety measures of quality used. But adequate measurement of quality must surmount theoretical and practical difficulties. First, the theoretically

correct concept is to use a measure of a patient's perception of what constitutes quality, since it is an important respondent characteristic that is hypothesized to determine choice to treat and choice of provider. As a practical matter, however, the measure must be exogenous to the other determinants of a patient's choice, and the choice itself. Otherwise, the estimated coefficients would suffer from multicollinearity. (For example, a patient's reported satisfaction with a provider (one possible measure of perceived quality) would correlate rather highly with the provider chosen). In a 1993 study in Ghana, Lavey and Quigley attempted to identify quality improvements that "can pay for themselves" with increased user fees. They sought to measure directly the kinds of quality changes that could be made available to patients: improved physical infrastructure, added staff, and improved availability of services and drugs. To try to minimize multicollinearity, they grouped quality variables into five measures:

- Availability of three drugs
- Number of medical staff;
- Provision of basic adult and child health services
- Availability of electricity, and
- Availability of running water.



All these factors had significant and large positive effect, both as individual variables and jointly, with availability of drugs the highest patient responsiveness. Also when quality variables were omitted from equations, the coefficients on the price variables were similar. While interpretations of the

quality variables are problematic, since it is hard to translate the quantification of quality in to meaningful practical terms, simulation of improvements in quality (using multinomial logit coefficients) showed that responsiveness of patients was about the same in public and private sectors. Using compensating variation estimation methods, Lavey and Quigley found also that willingness to pay also increases with income, and that the income effect was more important for the quality variables than for distance to the facility and price.

Another measure of consumers' quality responsiveness is necessary develop measures of health care quality; a multidimensional construct, which does not have a single generally, accepted definition. There are at least three components of health care quality: the technical aspects of quality, the interpersonal aspects of quality, and the amenities of care (Donabedian, 1980). The technical aspects of quality refer to how well medical science and knowledge's are applied to the diagnosis and treatment of the medical problem. The interpersonal aspects of quality refer to the interacting between the patient and the provider or the responsiveness, friendliness and attentiveness, of the health care provider. The amenities of care include the appeal and comport of the health care facility. Further more; quality of care can be measured according to three categories: structure, process, and outcomes. Structure refers to the relative fixed characteristics of the medical delivery system such as the number, type and qualifications health care providers and facility. Process measures reflects what is done to for the patients—the application of medical procedures, drugs, etc.

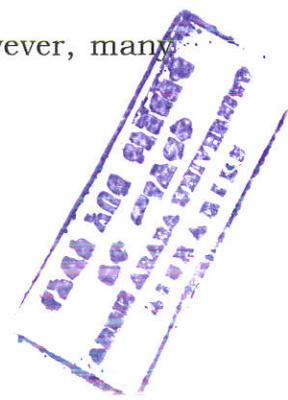
out come refers to the changes in the patients' current and future health status that can be attributed to antecedent medical care. Given these different dimensions of quality, the welfare implications of price and quality competition are difficult to predict. Quality dimensions that increase demand may not be welfare enhancing if these dimensions are not directly related to improved health outcomes. Consumers thought to have difficulty assessing the technical quality of the care they receive, and to focus instead on the interpersonal components of quality, including amenities such as location and waiting time (Donabedian, 1980). Consumer choice is based on perceived, rather than actual, quality differences. It is possible that providers will respond to price competition by reducing the technical components of quality and increasing the interpersonal component.

Orbeta (1999) suggested that when providers are predicted to compete on prices, an appropriate policy response would include proper regulation and monitoring of quality of services, so that cost reduction will not be gained at the expense of quality. To the extent that consumers are quality insensitive, the government may also need to provide better quality information and educate consumers to ensure adequate quality of care. If providers are likely to engage in quality competition, it will be essential to understand which aspects of quality consumers are most sensitive to, since these will probably be the attributes on which providers will compete. If consumers are more responsive to the aspects of quality that enhance health outcomes, the government rely

more on forces market to assure the quality of services. On the other hand, if consumers are more responsive to quality aspects that are expensive to increase yet have no discernible effect on health outcomes, then government regulation may again be required. For example, it has been observed in many countries that consumers view drug prescriptions and high technology procedures as indication of quality. Competition leading to increased use of these services will to cost inflation without necessarily providing additional health benefits to patients.

World Bank discussion paper (1997) has shown that consumer decisions are influenced by the choice available to them via array of health care providers. In its effects, the extent of competition within the health sector can be influenced relative price and quality options. The market for health and medical services may be consists of consumer segments that have different geographical and income characteristics, and different providers may service these segments.

According to the World Bank discussion paper (2003), Many Government have a number of policy levers by which they may make markets for health care products more competitive, i.e. promoting a competitive environment in supply and distribution of the products to achieve higher efficiency, lower prices and higher consumer welfare. In United States, for example, Federal Trade Commission (FTC) has played an important role seeking to balance Intellectual Property and competition policy in the interest of consumers. However, many



developing countries where established public sectors, non-profit institutions offers "almost" free care, it is commonly to observe a relatively high proportion of the population using the private sector and paying prices several times higher than those of public sector. Ethiopian Journal Health Economics (April 2002), has shown that public hospitals and non-profit institution have been criticized by providing health care to offer "almost" free care, with little consideration of the parallel market prices for the equivalent services. Moreover, in most subs Saharan African countries, weak competition in health sector creates a situation where the population is often faced with local primary health providers, which are considered as monopolies. Despite this, some individuals choose to be treated in health centers farther way from homes, and thus incur greater time and transport costs in order to obtain services perceived as a better adapted to their needs.

2.3 PUBLIC PRIVATE PARTNERSHIP IN HEALTH CARE

In the last twenty years there has been a major international wave of privatization, which has shifted service provision from the public to private sector. Although Europe has played key role in this process, privatization in Europe as apart of a broader world wide move away from system of direct government control to private provision, which thought to stimulate efficiency and innovation by introducing competitive pressure, where quality and price can be regulated by the government when necessary, and where consumers are

able to meet directly most of the cost of delivery. This related issue dominates while reviewing the level of public private interaction in the health care sector in transition countries. The familiar one is what can governments do to make the Public sector more responsive to a rapidly changing environment? The more recent focus is not whether the market should substitute whether the public sector fails, but whether there can be a better match between the roles of state and the private sectors, using their respective strengths to produce better results than either could produce alone. In most countries, this means rebalancing an already complex mix of public and private roles in the health sectors. The prime mover in this must be government.

What can be done about the private health sector in the low-income countries? reflects how the private sector activity can be influenced that helps to meet national health objectives. Although there is limited evidence, there is fair information on the types of intervention that are most successful in the directly influencing the necessary conditions for success. There is much less evidence, however, of effective providers to intervene on the demand side or on the purchasing and regulatory role of government.

Many of recent reforms in developed countries, for instance in United Kingdom, are geared towards privatization. Policy changes in favor of privatization cater to regulated markets in greater reliance is placed on the market mechanisms with government regulation imposed only to prevent market failure. Here the

health care market may be opened to private providers and the price mechanism is a critical tool for balancing supply and demand. Generally it is presumed that managed markets especially in the hospital sector will increase supply-side efficiency by increasing competition among providers and there will be increased transparency in trading or hospital business. Thus, efficient managed markets in welfare services like health presuppose: competition between suppliers; definable outputs for which consumer valuation could be made and; lower transaction costs compared to an existing set of costs (Stiglitz, 1988).

In case of developing countries, doubts have been expressed about the applicability and generalization of managed markets in health care. In these countries the nature of health sector institution, market conditions and other crucial parameters are very different from their developed country counterparts. Simultaneously, most of the conditions necessary for successful implementation for such market-oriented reforms (namely, high competition among providers, information availability and transparency, and management capacity) often do not exist in developing countries. Nonetheless, as articulated in the World Bank 1993 has been emphasizing that the private sector can be a more efficient producer of secondary and tertiary level of health care. Therefore, the government budget can be diverted to primary health or to a minimum package of care (WB, 1993). But as a matter of fact in some developing countries the private sector is already playing a major role in providing health

care. In India, for instance, nearly 80 percent of expenditure is being incurred in the private sector.

The less developed countries in the recent studies considered the adoption of Policies to encourage competition between public and private providers to improve the performance of health sector. The recent movement towards greater hospital autonomy in many developing countries is evidence of this trend of preparing the public sector for competition with the private sector providers. Proponents of public/private competition argued that competition would motivate public providers to increase efficiency and act as benchmark for measuring and constraining any misconduct of the private sector (Orbeta, 1999).

Private health care in developing countries recommends there objectives to address the private provision of care towards the public health importance: widening access, improving Quality, and ensuring non-exploitative prices. None of these will be simple of achieved, and multi faceted interventions involving policy-makers, providers, and users will be required. Increasingly, service users (or” customers”) are seen as the key to driving improvements to achieve their goals. The roles of consumers have, however, been little evaluated in developing countries. Community education uppercuts, accreditation schemes, and free service targeting may potentially be means of attaining the objective.



To examine Public-private partnership in the health sector the Government of Ethiopia has considered as a sole supplier of essential social services such as water, education and health care. After Structural Adjustment Program there is a shift in attitudes that government is no more considered as the only supplier. These shifts in attitudes are underway in the health sector too. The public sector can provide the public goods and the private sector can provides private goods. The rationale for introducing the private sector to participate in health system is to promote the allocative and productive efficiency while the market failure and market imperfections are the economic rationale of government involvement in medical care.

World Bank (2004) discloses that the private sector plays an important role in the provision of health care services especially in the form of pharmacies .As argued by Benett (1991), the private sector has been extensively involved in the provision of health services in developing countries. Private health services can improve the efficiency of health services and can provide greater consumer choice. One of the drives in investment decisions of the private sector is the financial incentive for the promotion of qualitative and quantitative improvement of health care services and drug shops. However, most of the larger private facilities such as hospitals and health clinics tend to be in urban areas. Given the profit motive of the private sector, there is clearly a role for a public in preventive services where the provision of health services in the poor and remote areas. In terms of area comparative advantage, the public sector

could be mainly focusing on the delivery of the health education program, while the private sector could be mobilized to play a more significant role in Community health promotion and Social marketing activities that maximize local channels to reach different segments of the population and clinical/curative services. Such interventions would be important if think ways to ensure that the poor are not marginalized.

According to World Bank (2004), used DHS Data from 2000 has shown that nearly 45 percent sought care in public facility, while the rest sought care from a private facility. Except for the richest quintile, health stations and clinics seem to be the main providers of the care, followed by health centers. Both public and private hospitals are frequent more often by the richest quintile of the households. Households in the poorest quintile are more likely to use public clinics, pharmacies, and other trained private providers instead of public hospitals. These indicted that private health services provider greater consumer choice. Privatization and equity concerns, despite the increase the number of facilities, geographical access to the health services in Ethiopia one of the lowest in the world. Physical access has slightly improved over five years with the average Distance to the nearest health facility providing curative care (hospitals/health centers/health clinics) decreased from 8.8kms in 1995, to 7.7kms in 2000. Large rural to urban differentials exist with the nearest health facility providing curative care being 1.4kms in urban areas in 2000. Regional differentials are also very large with the distance as low as 1.3kms in Addis

Ababa as far as 9.8kms in Afar. The average distance for the poorest quintiles of the household is 8.8kms and 6.1kms for the richest quintiles. Around 30 percent of the household lives beyond 10kms of the nearest hospitals/health centers /clinics, this figure does not much across income quintiles. Even though there were big strides the distribution health care units there were also problems such as

- Low level of structural quality, un maintained building and poor supplies.
- Unmotivated personnel –low salaries and allowance, unsupervised and unmonitored personnel led to irresponsible management of government units.
- Series shortages of essential drugs in government and non-government units leading to consumer dissatisfaction with service rendered.
- Government low financing capacity led to its over depend on donors to finance the public health care services to about 40-50percent level.

The above and other factors motivates the government to consider the other form of financing the health care services, hence privatization policy that has also a cost sharing policy in the government owned units, at least at the level of referral, regional and district hospitals for now.

2.4. EMPIRICAL LITERATURE

Orbeta et al (1999) examined the relative importance of price and quality in demand for health care in Egypt. In this paper, conditional logit model was employed to estimate the quality of medical care and choice of medical treatment. The estimation result revealed that Quality on average has a positive effect on patient's choice of providers. More over income effect that moderates negative impact of price on a patient's choice of provider. That is, individual with higher income are less sensitive to prices. This result corroborates the Peru result of Gertter etal (1987). A significant interactive effect between price and income would imply that health care costs tends to escalate as the income of the country grows, individuals not only demand for more services but also become less sensitive to higher prices.

The study conducted in Thailand Wattana S.Janjaroen (2007), suggested that Impacts of potential trade in health services on national health sect raising the framework of equity and quality. Here, binomial log it model was employed to estimate the effect of quality, price and other individual characteristics on the choice of service provider. The estimation result also suggested that the inequalities in access to health care in Thailand would inevitably increase, since there is high competition among health providers to attract the high and segment of the market, driving the cost of these services upward and hence the prices to be paid, which inhibits domestic inhabitants at relatively lower income

levels from gainful access to health care services. The waiting time prior to receiving health services at public hospitals is much longer than that at private hospitals. Moreover, there could be a mutual cross-subsidization between the public and the private health service sectors via part-time employment of qualified health personal from the public sector at private hospitals, augmenting the income of public sector health services professionals, not having to totally abandon their duties at public hospitals. The health care service market, especially in large urban centers, is competitive one. The quality of health services may be in proved by competition in meeting more curative demand influenced by International market.

Based on the utility maximization model, Acton (1975) used the effect of money price, time price, and income determining the demand for medical services in New York the data obtained from a 1965 survey of users at out patient departments. The result of the study indicated that prediction in travel time is function of price in determining the demand for medical services when free care is available. More over, the study showed that individuals with higher income are more likely to use the private sector.

Gauthier and wane (2008), has examined by passing behavior in health care provider in Chad: Quest for better price and Quality by using probit model. Here, the discrete choice model was employed to estimate the effect of quality, price and income. The study was use data from Chad as a part of Health

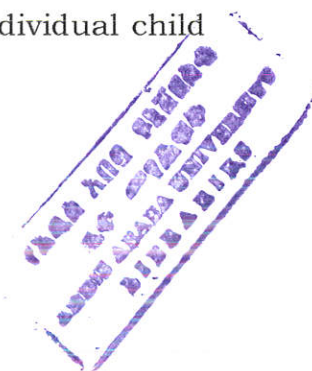
Facility survey organized by the World Bank (2004), by passing decision that are influenced by differences in service quality, level of competition, and patients' socio-economic characteristics. Here, by passers appear to be motivated by higher quality and thus higher price facilities, which in all likelihood are also private. Among income quintiles, patients in the poorest quintile are sensitive to price and tend to be significantly deterred by higher prices. On the other hand, prices not to impact them are passing behavior of patients in the richest quintile. Competition can be quite intense in urban areas; health providers in rural areas often enjoy a monopolistic position. In subjective quality assessments, expecting of a higher quality of services leads to significantly more by passing in urban but not rural areas. Among urban facilities to come to visit them because they sell drugs at lower price. The objective quality measure also seems to have positive effect in urban but not in rural areas. For example, better infrastructure and more skilled increase the chances the patients in the urban facility are by passers, where as a higher staff absenteeism decreases the probability that the patient is a by passer.

Leonard et al (2002) examined by passing behavior in rural Tanzania and Bernard Gauthier et al (2008) in Chad found that patients seek higher quality providers with better staff and basic supplies and tend to understand the importance of these factors for their illness conditions. By passing decisions in both countries are influenced by differences in quality, prices and competition among health providers across different socio economic groups. By passing

behaviors in Chad very different across income groups: poor individuals tend to by pass higher quality facilities because they cannot afford them where as richer individuals by pass lower quality facilities and go for better care. Further more, it found by passing is significantly more prevalent among higher income groups. In that respect, income inequalities in Chad create health service inequalities. There are significant differences in patients' choice of facility across income groups as well as between urban and rural population.

Hot Ch kiss (1998), examined trade off that between price and Quality in the consumer health care demand in Philippines. Here, a discrete choice model was employed to estimate the effect of quality, price, distance and individual characteristics on the choice of obstetric care providers. The estimation result suggested that such facility attributes that influencing quality of care as crowding, practitioner training and drug availability are significant determinants of the choice of obstetric care provider. The prices affect both poor and non- poor households were negative, but statistically significant only for the poor.

The study was done in Philippine shows that the effect of price and quality in the child health care demand in developing countries. kell Hallmann(1999), discrete choice model was employed to estimate the effect of quality, price and distance. The estimation result revealed that demand for private care increases with the number of adult females in the residence. Starting at individual child



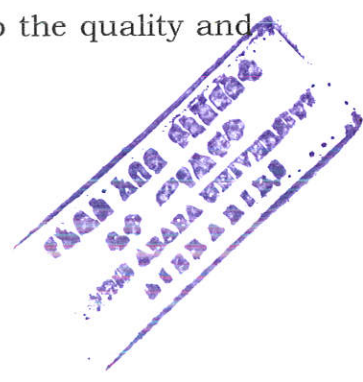
level, male children have a higher likelihood of being taken for private visit, the most expensive and the highest quality of care. This finding result may indicate that male children are treated preferentially for health care investments. This could arise for several potential reasons: parents may have the perception that boys are more vulnerable to illness, since their reported morbidity levels are occasionally slightly higher than girls in the first years of life; alternatively, if boys are more likely than girls to contribute to parent economic security in the future, perhaps their health needs are attended to first. Moreover, maternal education has strong positive effect on the probability of using private care. Household assets through the first tactile value and insurance greatly enhance private demand. Assets are an indicator of highest household income, and up to certain threshold, they may reflect preference for better quality care. Beyond this threshold, however, the influence of additional household resources on reducing child illness most likely outweighs preferences for consuming more high quality care. Insurance coverage probably also captures some elements of income and preference for quality and may reduce the high price of service.

Using data from one of the low-income health care system of Bolivia, Jose (2007), employed a Conditional logit model. The analysis mainly concerned on price and incomes are determinant of the decision choice of health care provider. Increasing government price or fees shifts the demand from government to private health facilities for consumers. In addition, the perception of quality is significant just for private health facilities. The

perception of quality-measured as the availability of essential drugs for medication and postnatal service was significant just for private health facilities. If income were the only determinant when choosing the health care provider, parents and individuals' chosen a private health centers instead of government or self care treatment. However, Medical establishment, the number of beds, and the number of trained professionals were inefficient and the national expenditure of health per capita also too low. All these factors lead to inefficiency and not enough services for most of medical establishment.

A study conducted in Nigeria showed that price and quality of care are significant determinant of health care choices (Akin et al, 1995), has observed that higher prices at the private facility tend to reduce usage of that private facility, and that usages tend to increase for each type of care as the quality of the care is increased. The result also indicated that there is no difference in the price responsiveness of different income groups.

The study conducted by Lavey and J. Germain ,show demand for health care is assumed to the function of price, medical care, quality and individual and household characteristics effect. The paper employed multinomial logit model for estimation. The data used were based on 1993 Human resource development survey (HRDS) to model the health care choices that individuals in Tanzania make sick or injured. The result of the model has showed that quality is an important determinant of health demand. This applies to the quality and



availability of the doctor's, nurses, drugs, and the clinic environment. The demand for health care was increased due to better option of qualified doctors', nurses, get access to pharmaceuticals, and attend health centers, clinic and dispensary cleaner, have access to toilet, water and roof. This was entirely plausible for rural area in Tanzania, where distance between facilities was great, and consumers has chosen the nearest one, and it was competed time price for travel. For the urban areas, however, it was difficult to drive a time price.

The second important message from this paper was that consumers in Tanzania highly responsive to the price of health care, and that this responsiveness was greater for individuals at the lower end of the income distribution. Own price elasticity's are high, although, less so far public clinic and dispensaries than the other options. Own price of services are increased, there will be a precipitous decline in the use of those services. The previous research Ghana (Wadliston, 1990) and Kenya (Mwabu, 1989), which have reported declines in the use of public clinics subsequent to the imposition of user fees.

Sylvester (2003) has examined Health care quality and choice of provider in Cameroon. The study was employed by individuals by pass the nearest and cheaper health facilities in quests for better quality and therefore distance, price, and income are not important determinants of provider choice. The data

were collected from a survey of households in the southern part of Cameroon. The data includes information on socio-economic factors, access to care, illness episodes, use of health care facilities and reasons for particular facility and cost of care. The government owned health clinics was Cheaper; where as private clinics were more expensive. The cost includes consultation fee, cost of drugs and travel cost.

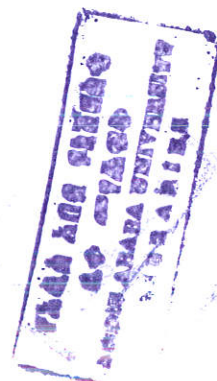
The descriptive part of the study shows that more people including the poor visit more expensive, more distance health facilities. Even though, those who cannot afford for the expensive facilities choose self-treatment that going to Cheaper but poor quality facilities. A multi-nominal logit model was used to estimate the effect of the subjective reasons on the Choice of providers from array providers such as government clinics, missions' clinics & private. The result shown that quality and severity of illness are significant determinates of health care providers.

According to Acton (1975), examined that Economic models attempt to predict or explain health services utilization (quantity demanded) as a function of prices in the context of utility maximization. Price of health care includes both monetary costs (consists of the direct of care represented by user fees as well as in direct cost of transportation) as well as non-monetary opportunity costs (travel time and waiting time). Various studies conduced have shown the significant effect of time cost on the demand for medical services.

Gertler et al 1987 used nested multinomial logit model of provider choice and showed that medical care demand for poorer individuals is. Substantially more travel time elastic than for richer individual in rural cote deivoir where monetary prices are zero (1987). A Study on child health care seeking in Bangladesh found travel time to be negatively associated with the use of provider Acton (1975). However, previous studies have shown mixed results about the relationship of SES and type of care utilized. Acton 1975, defined accessibility of services by distance, travel time or availability of transport as a major determinant in the choice and utilization of service of sick infant In Brazil; he also hypothesized that lack of association between family income and type of care could be due to the fact that income was homogeneously low and government health care was free or not costly. However, Hill (2000 &2003) found financial access as a major barrier to care seeking in Ghana.

Using data from the (1989), Jamaican survey of living conditions and Jamaican Labor force survey health care facilities, victor Lavvy et al (1995), employed logit model to analyze the quality & health outcome of medical care and choice of medical treatment. The estimation revealed that older people are more likely to use private hospitals and income expected a strong positive effect on the probability of seeking medical care from private providers compared to self-treatment. The result also shown that improving the quality of health facilities has a significant but small effect on health and indirect effect (through health) Labor force participation.

The study data were used Agrarian institute, Moscow in cooperation with (author) in October 2000. The survey was carried out in two regions of European Russia. The part of the model was used binary logit model. Here, the estimation was used the probability of an individual visiting a health care provider during the recall period. Based on the economic analysis the following conclusions can be drawn: Income is an important determinant of access to health care services in general. The analysis result showed that income does not affect the level of out of pocket payments incurred up on visiting a health care provider. This indicates that health care is still a public food, and that a minimum social protection is guaranteed. However, investments in the health status of the household members seem to be strongly affected by the household's income. Economic studies on the demand for health care confirm that price, both in interims of cash and time, is an important determinant. Factors that have been found to be important are traveling time and distance to facility Acton (1975), Cash price of health care Akin et al (1987) and waiting time Besley et al (1999). These studies suggest that households in both developing and developed countries take decisions to seek health care in response to economic constraints such as cash price and travel time, as well as income. Income appears to be important constraint in developing countries; while travel time and waiting time are important determinants in the developed countries.



Gertler et al (1990) analyzed the willingness to pay for medical care considering evidence from two developing countries.

- The study is developed to answering the policy questions of how price elastic is the demand for medical care in general.
- Is the demand for medical more or less price sensitive for some groups than the other? The poor are more price sensitive than the rich?
- Models of the choice of the variables were estimated using data from the living standards survey of rural Cote d'Ivoire and rural Peru, conducted in 1985. The estimation results for Peru and Cote d'Ivoire and for all age groups showed that prices are important determinants of utilization of medical care and found that the price elasticity of demand falls with income. That is, demand is the elastic range for the lowest income groups, where as it is inelastic in upper income groups.

In studying the house hold demand for health care services in Ethiopia, Nahum (2006), using a logistic regression model, tried to identify the factors deterring the choice for health providers for those individuals obtaining medical treatment. The regression analysis revealed that distance to the nearest health facility has strong impact on the choice of all health care providers. Income, proxies by per capita household expenditure, was also observed to have a stronger positive effect on the choice of the health facilities, except those run by religious institution.

The above study further indicated that education in general positively influences the choice for private, implying the greater role education could play in determining the household demand for health care. On the other hand, age produces positive influence on the choice of government and private facilities; Age Square has negative and positive effects on the choice of private and public facilities, respectively. The latter relationship depicts the tendency of older people to obtain treatment from private health providers.

However, major limitation of this study is its failure to take into consideration the non- monetary cost of treatment such as waiting time of treatment and the monetary cost that is that has its own effect on the choice of provider.

Abdulhamid and Alem (1996) employed multinomial logit model has shown that richer households were the most utilize of private facilities than the poor households. In addition, older people were also found to use private facilities more often, the rate ultimately falling with an increasing in age. Moreover, mothers' education has a significant effect in determining the choice of service providers and type of facilities, favoring private services in the first case and hospital treatment in the other case.

The major limitation of this study was that certain choice specific variables, such as distance, waiting time of treatment and medical cost were not included in the estimated models due to small amount of available data. Improving the

quality of services and adjusting user fees at Ethiopian Government health Facilities:

Estimating the potential impacts of implementing various options Alan Fair bank (2001) to generate data and relevant information from surveys at household level. The result showed that perceived quality was a very important determinant for both patients' choice to provider and the willingness to pay for services and drugs. The lost of medical care was the second most important determinant of provider choice. It was clear, particularly from the household survey that patients do pay considerable amounts for medical care, and are willing to pay even higher amounts than they now do if they obtain higher quality care in return.

CHAPTER THREE
RESEARCH METHODOLOGY

Alternative literatures and technical reports were reviewed to evaluate providers and consumers health care demand and to enrich the discussion on the importance of wealth and quality consumer choices.

3.1. BASIC MODEL OF HOUSEHOLD HEALTH CARE DEMAND

Considerer individual **i** demanding medical treatment from health care service provider **j**, the direct utility derived by the individual that could be formulated as a function of improvement in health status attained after treatment and consumption of consumer good as:

$$U_{ij} = U (H_{ij}, G_{ij}, Z) \dots\dots\dots (1)$$

Where **U_{ij}** represents the utility valuation that individual **i(i=1,----,N)** gives to choice **j** where **j=1** is the provider that was chosen and **j=2** is the second best alternate forgone. **H_{ij}** the expected improvement in health status of individual **i** either receiving treatment from provider **j**; **G_{ij}** is the consumption of composite good conditional (**Z**),a taste and preference shifter.



Senauer and Garcia (1991), with some modification suggested that H_{ij} and G_{ij} are none observable variables, for instance, genetic endowment, nutrient intake and health related behaviors, sanitation and excreta disposal practices etc. were applied. This function is modeled as a relation between the health outcome and a set of health input choices; and whose shape will depend on underlying health technology was applied to determine preferences. The production function can be:

$$H_{ij} = H(c_i, F_{ij}, E_{ij}) \dots \dots \dots (2)$$

Where c_i is the quality and quantity of health care chosen and F_{ij} consists of other health inputs, such as food and nutrient intake health behaviors such as cooking, food storage, sanitation, and excreta disposable practices. E_{ij} is the set of community characteristics influencing health, such as access water quality, electricity, sanitation and general diseases environment. C could be exogenous characteristics that can have both direct and indirect effect through endogenous input into health F and E .

The household also faces a budget constraint:

$$Y = P_H H + P_C C + G \dots \dots \dots (3)$$

Where Y is household income, P_H is the price of health care, and P_C is the prices of other health related inputs. The price of health care is comprised of the user fee and access costs such as travel time to the facility.

$$P_H = B + wT \dots \dots \dots (4)$$

Where B is the user fee, W is the wage rate, and T can represent travel time to and/or waiting time at the facility. Substituting equation (4) in to equation (3) gives the full income budget constraint

$$Y = (B + wT) H + P_c C + G \dots \dots \dots (5)$$

Substituting equations (5) and (2) equation (1) gives the conditional utility function for health care choice j,

$$U_{ij} = U [H (I_i, F_{ij}, E_{ij}), Y-(B+wT) H- P_c c, z_j] \dots (6)$$

To specify the utility maximization problem for choice of health care, suppose the individual consumer faces j feasible alternatives. The unconditional maximization problem is

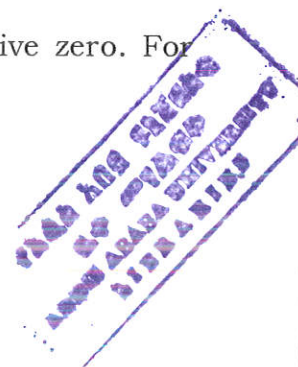
$$U^* = \text{Max}_j (U_1 \dots U_j), \dots \dots \dots (7)$$

Where U^* is maximum utility. The solution to the utility maximization problem gives the health care alternative that is chosen. When stochastic terms are added, the probability that an alternative is chosen can be interpreted as the demand function in conditional discrete choice model.

3.2. ECONOMIC SPECIFICATION OF THE EMPIRICAL MODEL.

3.2.1 Theoretical View of Logit Model

Regression model in which regression evokes yes or no, present or absent responses are known as dichotomous or dummy dependent variables. They are applicable in wide variety of fields and are used extensively in survey or census-type data (Gujarati, 1992). According to (Gujarat 1992), in the particular study when the dependent variables are dummy, or qualitative in nature dichotomous, or combination of both, OLS cannot be applied. Therefore, we omitted the use of convectional OLS methodology the regression models where the dependent variables considered as dummy variables. To estimate such dependent variables with data on individual observations, it is suggested that the logit or probit model can be applied. It is also indicated that since the two models generally give similar results, logit model is preferable because of its comparative mathematical simplicity. Therefore, if we have data individual observations we can use the maximum likelihood (ML) of the logit model to estimate the parameters. When dealing with dichotomous variables our main interest is to access the probability that one or anther characteristic is present (Mokherijee, 1998). The logit regression queries of the question what determines the probability yes or no is? The special feature of the model guarantees that probabilities estimated from the logit model will always lie within the logical bound of zero and one. Let individual patient i chooses private provider as alternative one or public provider as alternative zero. For



any individual patient we can observe the alternative chosen and define a discrete (dummy) economic variable Z as the out come

$Z = 1$, if the individual patient chooses a private provider.

$Z = 0$, if the individual patient chooses a public provider.

Since it is assumed that in their choices individual patients act to maximize their utility, alternative 1 will be chosen if private provider yields the patient more utility than visiting the public ones. That is, if

U_{i1} = utility that individual patient i derives from choosing private providers

u_{i0} = utility that individual patient i derives from choosing public providers.

Then $Z_i = 1$ if $u_{i1} > u_{i0}$

$Z_i = 0$ if $u_{i0} > u_{i1}$

The assumption that utility is random leads to a probabilistic representation of individual choice of behavior's the value of the variables reflecting the characteristics of the alternative change, so do the utilities yielded by the alternative choices. But given any set of characteristics since utility random, we cannot certain which alternative will be chosen. We can only make statements concerning the probability that one over come or the other will occur (Gujarat, 1992).

When individuals are faced with an accident, illness or injury, they would decide whether to seek a medical treatment or not, and those who are seeking would also decide which health care unit to use i.e. government or privately provided services that would enable them to maximize their utility.

Hence in order to determine the probability of individuals seeking treatment at times of illness and/or the probability of choosing any one health care unit, the following binomial logit model is employed.

$$P_r (Z_{ij} = 1) p_i = F(B_{xi}) = \frac{\exp(B_{xi})}{1 + \exp(B_{xi})} = \frac{1}{1 + \exp(-B_{xi})} = \mu(B_{xi})$$

$$P_r (Z_{ij} = 0) p_i = 1 - F(B_{xi}) = \frac{\exp(-B_{xi})}{1 + \exp(-B_{xi})} = 1 - \mu(B_{xi})$$

Where $P (Z_i = 1) = P_i$ is the probability of individual seeking a medical treatment, or the probability of choosing a certain health care provider.

B 's are vector of parameters to be estimated.

X_{is} are vector of explanatory variables

(μ) Is denotes the logistic distribution function.



Table 3.1 Vector of explanatory variables Definitions

Variables	Definition of variable
Age	The age of respondents in years
Age square	Age square
Mrsd	Dummy variable, one if the household head is married and zero otherwise.
HHsize	Household size in number
Richd	Dummy variable, one if the head of household head is the highest wealth quintile, zero otherwise.
Poord	Dummy variable, one if the head of the household is in the poverty, zero otherwise.
Disd	Distance to the nearest health facilities.
Empd	Dummy variable, one if the patient is employed and zero otherwise.
Sexd	Dummy variable, one if the patient of the household is male and zero otherwise.
Educd	Dummy variable, one if the patient of the household education level is Secondary and above, and zero otherwise.
primaryd	Dummy variable, one if the patient of the household education level is primary in urban resident and zero otherwise.
Quqlitd	Dummy variable, one if the patient of the household obtained perceived quality of treatment from health professional (Doctors, Nurses and mid wives), and zero other wise.

variables	Variable Definitions
Tigray	TIGRAY= 1 indicates respondents residents of TIGRAY region, else=0
Afar	AFAR = 1, indicates respondents residents of AFAR region, else=0
Amahara	AMHARA=1, indicates respondents residents of AMHARA region, else=0
Somali	SOMALI=1, indicates respondent resident of SOMALI region, else=0
Benshanguli	BENSHANGULI=1, indicates respondent resides of BENSHANGUL region, else=0
SNNRP	SNNRP=1, indicates respondent resident of SNNRP region, else=0
Gambella	GAMBELLA=1, respondent resident of GAMBELLA region, else=0
Harari	HARARA=1, indicates respondent resident of HARARI region, else=0
Addis Ababa	ADDIS ABABA=1, indicates respondent resident of ADDIS ABABA, else=0
Deri Dawa	DERI DAWA=1, indicates respondent resident of DERI DAWA, else=0
Cons.	Constant terms



3.3. Model Specification of the study

When we study factors affect individuals' decisions to seek health care and to choose among different providers, the dependent variables, choice of health care service providers (public versus private) is dummy or qualitative. Therefore, the dependent variable, the individual choice of health care service providers, can take two values, one if the individual patient choose private health provider and zero if the individual patient choose public health provider. When such types of discrete dependent variables are there, an economic theory suggests us either to use probit or logit model. According to (Gujarati, 1992), the probit or logit model give similar results and due to mathematical simplicity we use logit model.

3.3.1 LOGIT MODEL

$$Z_i = \alpha + Bx'$$

General form

$$Z = \beta_0 + \beta_1 \text{eduD} + \beta_2 \text{sxd} + \beta_3 \text{disd} + \beta_4 \text{quald} + \beta_5 \text{hhsize} + \beta_6 \text{mrsd} + \beta_7 \text{primd} + \beta_8 \text{Age} + \beta_8 \text{Agesqr} + \beta_9 \text{Empld} + \beta_{10} \text{richd} + \beta_{11} \text{secod} + \beta_{12} \text{poord} + e_i$$

B₁- B₁₂ = Coefficients indicating elasticity of the choice of private or public provider in respect to independent variables.

3.4 Data

Given the theoretical framework under which a demand function for any type of goods and services derived, an empirical analysis that employs a logit model through a maximum likelihood estimation technique, supplemented by a descriptive analysis is used in the study. The study was focused on the data from 2005 demographic and health survey (DHS) with the reference to 39,887 households. These data were collected at the national level from different regions, ethnic and religious groups of the households. The data also contain useful information about the socio economic and demographic status of the households. The data are rich in information of health care, education and other demographic and socio economic variables. In order to determine monetary cost of treatment respondents were asked to state amount of medical expenditure (consultation and contraceptive, fees paid for registration) that incurred per visit. And to capture non-monetary cost of treatment, the questions relating travel time to and waiting time for treatment were included. Envisaging the influencing of household wealth has the choice of health facility. This choice depends on characteristics of alternatives such as medical cost, quality of services, income and distance to the nearest health facility. In addition, the study was based on the reason for choosing a health facility and what kinds of health facility are used more compared others with high quality of care. Households were asked the necessary information for the analysis such

as on socio-economic variables, demographic characteristics of household, the quality of services they received by taking in to account the availability of drugs, common laboratory tests and medical expenditure (for instance, charges paid for contraceptive methods, laboratory, etc.)

3.5 Variable Definitions

3.5.1 Quality

The questions involve patient's assessments now they used the health care providers. These broadly classified in to

- **Personnel:** Prenatal and postnatal health treatment given by health professionals (doctors, nurses and midwives). The facility measure is an indicator of the level of human resources available at the private or public facility. This attempt to reflect the sophistication and range of health service provided

3.5.2 Wealth index

The economic index used in this study was to test inequalities of household income; use of health services and health out comes (Rutstein et al, 2000). It is an indicator of the level of wealth that is consistent with expenditure income measures (Rutstein, 1999). The economic index was constructed using household data including ownership of a number of consumers ranging from a television to a bicycle or car, as well as dwelling characteristics, such as source

of sanitation facilities and type of material used for flooring. Each asset was assigned a weight (factor score) generated through principal component, and the resulting asset scores were standardized in relation to a normal distribution with a mean of zero and standard deviation of one (Gwatkin et al, 2000). Each household was then assigned a score of each asset, and the scores were summed for each household; individuals were ranked according to the scores of the household in which they resided. The sample then divided into quintiles from one (lowest) to five (highest)

3.6 Hypothesis

The relationship between the dependent and independent variables is hypothesized in relation to perceived quality, medical cost, wealth and demographic variables and others.

Hypothesis I

Quality

It is hypothesized that consumer perception of health care quality influences their demand for health care services. But the problem is how the consumer's measure quality, Ghana (Lavey and German, 1995) and Nigeria (Akin, Guilk and Denton, 1995) have suggested that number of objective quality indicators, especially the number of doctors and nurses could be possible measures of quality. Therefore, the perceived quality is expected to have a positive and



better coefficient is more expected in private health facility. This is because, as the number of specialized doctors and nurses' increases then the demand of the household patient will increase. Assuming decision of the patients about the quality of the health facility they visited compared to the number of health personnel in the facility and diagnosis of the side effect.

Hypothesis II

WEALTH

The wealth of the household is determinant of the demand of health care provider and assets as an indicator of highest household income and up to a certain threshold, which may reflect preference for better quality care. Therefore, it is hypothesized that an Increase in households' wealth will have negative effect for public facilities. We speculate those households' preference have shifted from public facilities to those of private ones as wealth level rises.

Hypothesis III

Education

Education is hypothesized to have a negative effect on the demand for medical care. Heller (1982) suggested that the more educated people have fewer problems because they consume more preventive care. They have higher income and better living of conditions. As a result more educated people are less likely to demand care when ill and chances of being victim are very rare.

Hence, negative sign will be expected. Some suggested that education instead of affecting once decision to demand health care when ill or injured, it rather affects his/her health care seeking of provider. Therefore, once he/she decides to visit a health care provider and concludes that more educated people tend to more the private provider. A possible explanation is that better educated people believe that better income can have a greater positive effect on quality preferences on their health care.

Hypothesis IV

Household size

Household sizes hypothesized to have a negative effect on the demand for medical care. It is assumed that household size is significantly determining the demand for the provision of public health. Therefore, it is assumed that positive sign expected in public and negative sign expected in private sector. With possible explanation in that an increase in the household sizes, high pressure on wealth of the household. Therefore, more spend on child care consumption of medical care, food; clothing would result by shifting indifference curve household to seek to cheaper providers of health care.

CHAPTER FOUR

4. Findings of the study

The analyses carried out on the determinants of demand for health care seeking behavior of households are presented in this section. It reviews the descriptive statistical and empirical results' as shown from the estimation of the specified econometrics model.

4.1 The descriptive statistics results

In this subsection the level of utilization of different health care providing establishments by surveyed household is assessed against some demographic variables such as economic factors (example wealth and medical cost), objective quality (For example, perceived quality of treatment), access such as distance and the behavior of employment in providing treatment.

As shown in Table 4.1 the proportion of male and females respondents as evaluated against medical demanding behavior from the health facilities of government, private, NGO and traditional health services accounted for 67.5%, 13.6%, 15.5% and 3.5% respectively (Table 4.1). The finding showed more males (71.7%) were demanding medical services from government facilities compared to females (63.2%), while more female (15.7 %) demanding medical treatment from non-recognized private sector. The implications of these findings

may mean that more women demanding private health care due to the low purchasing power of women. Therefore they demand their health care services from ordinary shops, clinics and traditional vendors possibly in association, to the scarcity of financial resources.

Table 4.1 Respondents by Medical care demanding behavior & by types of preferences.

Sex by preferences	Types of preferences			
Sex	Government	Private	NGO	Traditional
Males	71.7	11.4	15.1	1.8
Female	63.2	15.7	15.9	5.2
Proportion	67.5	13.6	15.5	3.5

In table 4.2 Over 80 % of women residing in the rural areas reported that access to the transport is a big problem and compared to this only 34 % of women in urban. The average value in Table 4.2 indicates that the major problems are associated with no health care providers (77%), followed by getting money for treatment (67%) and absence of female provider (65%). These implicate that the provision of health facilities, education and wealth categories should be strengthened at the public facility level.

Table 4.2 Proportions of women by problem of accessing health care by resident, educational level and wealth status.

Problem accessing health care	Residence				Education		Wealth		
	Urban	Rural	Total	No education	Primary	Secondary	Lowest	Middle	Richest
Demanding for treatment	16	38.5	25.5	38.1	34.9	14.2	37.5	40.4	30.4
Getting money for treatment	53.4	80.4	66.9	82.3	72.8	45.2	84.3	80.3	67.8
Distance to health facility	31.1	75.6	53.3	74.3	65.2	35.7	79	76.3	57
Having to take transport	33.5	79.8	56.7	78.7	68.1	36.9	82.2	80.3	60
No female provider	53.7	76.5	65	75.2	74.1	54.4	74	78	69
May not be health provider	71.2	82.5	76.9	81.2	82.1	73.7	79	85	80
Total	2499	11571	14070	9271	3123	1675	5071	2752	6268

Out of 7312 Antenatal health care users registered 996 (13.6%) were in the age category of less or equal to 20 years, 4925(67.3%) were between 20_34 years and 1391(19.1%) between 35_49 years (table 4.3). The findings also revealed that only 26.6 % of the reproductive age groups of females demanded treatment from health professionals for their antenatal care, while 70.5 % didn't demand



treatment from Health Professionals. In aggregate the majority (76.6%) of the respondents in the age groups of 35-49 did not demand (Table 4.3)

Table 4.3 Antenatal care provider by age distribution

Age category	Health Professionals	Traditional		No one	Users
		Trained	Untrained		
<20	27.3	0.7	0.4	71.5	996
20-34	29.7	0.2	0.6	70.1	4925
35-49	22.7	0.0	0.5	76.6	1391
Total	26.6	0.3	0.5	70.9	7312

As depicted in Table 4.4 the proportions of women by urban residences 68%, by secondary education 80.9% and by the category of richest 58% demanded for antenatal care from health professionals (doctors, nurses and mid wives) compared to other partners.

The health professionals provide antenatal care for 69 % of mothers in the urban areas compared to only 24 % of mothers in rural areas (Table 4.4). It is noticed that three in four mothers in rural areas do not receive antenatal care. Therefore the use of antenatal care service is strongly correlated with mother's level of education, wealth and residences. Further analysis revealed that women with secondary education are more likely to receive antenatal care from health professional's (81%) compared to women with primary (39%) and no education (22%). The significant of this finding show the correlation of wealth and

receiving antenatal care from health professional and women in the highest wealth rank which is nearly five times more likely to receive antenatal care from a health professional compared to women in the rank of lowest wealth.

Table4.4. the coverage of ANC by socio-demographic variables

Variables	Health professionals	Traditional		No one	Users
		Trained	Untrained		
Urban residence	68.9	0.3	0.5	30.1	634
Rural residence	23.7	0.2	0.5	75.4	6674
No education	21.7	0.3	0.6	77.3	5734
Primary education	39.4	0.1	0.4	60.0	1205
Secondary & above	80.9	0.1	0.4	85.0	368
Lowest wealth	12.7	0.1	0.8	86.4	1520
Secondary	18.6	0.2	0.4	80.4	1553
Middle	25.2	0.4	0.4	74.1	1586
Fourth	30.6	0.0	0.5	68.8	1451
Richest	58.0	0.2	0.7	41.0	1196
				Total	21921

About 95.9%, 97%, 97.1%, 98.2% and 98.3% who demanded home health care health facilities were in the age groups of 35-49, rural, not educated, and lowest wealth groups respectively (Table 4.5). Children born in the urban areas are 20 times more likely to be delivered in health facility than children born in the rural areas. The implication of this is the strong association in mother's education and place of delivery. The proportion of births delivered in health facility is only 2 percent among uneducated mothers, compared to 52 percent mothers in secondary and above. It indicates that deliveries in private health facilities are most common among educated women. Similarly, assistance provided by trained health professionals in health sector varies by economic

status of the women. Women the highest wealth are much more likely to be assisted by trained health professionals 27 percent than birth to women in the lowest wealth 1 percent.

The proportion of births delivered in a health facility is generally low in most of the region (6 percent or less) with the exception of Gambela, Harari, Addis Ababa and DireDawa. For example the proportion of births delivered in the health facility ranges from 15 percent in the Gambella region to 79 percent in Addis Ababa. Generally the proportion of births assisted by a trained professional is quite low (less than 10 percent). About one in seven births in Gambella, one in four births in Dire Dawa, one in three births in Harrari, and nearly four in five births in Addis Ababa are delivered by health professionals (Table 4.5).

Table 4.5. the socio-demographic variables by type of Health Facilities demanding for delivery

Variables	Public sector	Private sector	Home	Others	Health profession	Users
< 20	5.9	0.4	93.1	0.4	6.9	1715
20_34	5.0	0.4	93.9	0.4	5.8	7702
35__49	2.5	0.9	95.9	0.5	3.8	1749
Urban	39.5	2.9	56.9	0.7	44.6	815
Rural	2	0.3	97	0.7	2.6	10348
Tigray	6.1	0.0	93.9	0.1	6.0	698
Afar	3.9	0.0	95.8	0.3	4.5	107
Amhara	3.5	0.0	96.3	0.0	3.7	2621
Oromiya	3.7	0.6	95.2	0.3	4.8	4411
Somali	4.6	0.4	93.9	0.0	5.2	477
Benishangul	4.7	0.0	80.7	13.3	5.1	105
SNNRP	3.3	0.4	95.7	0.7	4.2	2500
Gambela	13.2	2.0	81.1	3.4	15.3	31
Harari	31.1	0.4	66.5	0.8	31.4	22
Addis Ababa	67.5	11.0	21.0	0.5	78.8	153
Direi Dawa	24.5	1.4	74.2	0.0	26.7	37
No education	2.1	0.1	97.1	0.5	2.3	8838
Primary education	6.9	1.1	91.3	0.5	8.5	1855
Secondary , above	1.2	0.0	58.2	0.3	1.3	2356
Lowest wealth	0.5	0.1	98.3	0.7	0.7	2440
Middle	1.8	0.1	97.8	0.1	1.9	2486
Highest	22.8	1.8	74.7	0.5	26.6	1660

Education level

Disaggregated by the level of respondents education high level of variations is observed in medical treatment demanding behavior. The percentage of those who sought medical treatment at the time of illness is increasing with the level of schooling. The higher level of education of the respondents the lower is the tendency not to demand medical treatment at time of illness in the government sector (Table 4.6). It can thus be concluded that education positively influences the decision of individuals whether or not to demand medical treatment at times of illness. Thus , it can be generally observed that 1) private and public health care units are the most widely used facilities by the majority of the respondents irrespective of the level of education (as opposed to the traditional). 2). the preferences of government health care facilities show a slight tendency of decreasing with the level of education.(table 4.6)



Table 4.6 Medical care demanding behaviors and facility preferences by education

Education by Preferences	Types of preferences			
	Government	private	NGO	Traditional
Education status				
No education	80.9	7.3	10.8	1.0
Primary education	73.2	12.9	12.9	1.0
Secondary education	67.9	15	4.5	0.9
Higher education	50	15	32	3
total	68	14	16	2

Our discussion in table 4.7 showed that wealth is observed to have an influential effect on the decision to demand treatment in time of illness. Thus, the richer the household of the patient, the more likely would be the probability of demanding treatment.

The majority (78%) of all wealth groups showed preferences for frequent government facilities utilization followed by private health care units (17%), while those who used traditional health services were the lowest with a share of only 5%. However, preferences' seem to shift from government facilities to those of private ones as wealth level rises. Thus health care units tend to fall with the increase in the level of wealth while the units rise in the case of private facilities. Moreover, lower wealth group of the households are observed to

frequently use traditional health services, though the proportion is too low (Table 4.7).

Table 4.7 Respondents by Medical care demanding behavior and types of preferences by wealth status

Wealth status	Types of preferences		
Wealth group	Government	Private	Traditional
Poorest	81.5	4.8	13.7
Poorer	86.6	8.9	4.4
Middle	86.4	12.8	0.75
Richer	77	22	1.0
Richest	68	31.7	0.3
Average	78	17	5

4.2 Logit estimation Results

The result from regression model for the estimation of bi-variant model analyses was used. We identified the factors that influence the household patients' demand on medical treatment at time of illness as observed by the residence (rural and urban).

4.2.1 Binomial logit regression household demand

4.2.1.1 Outcome 1

- **Levels of Health Care service demand by sickness and utilization**

The findings in Table 4.8 among 20 variables tested for the levels of significance indicated that 17 variables correlated either positively or negatively associated for health care service demand in the probability of sickness. The socio-economic status(SES) expected to impact in the maximum likelihood estimates of logistic regression were education of the households ($Z=8.9$, $P=0.000$) marital status ($Z=2.1$, $P=0.04$), age($Z=4.9$, $P=0.000$), employment ($Z=2.4$, $P=0.007$) and richness ($Z=11.2$, $P=0.000$), which showed statistically strong and positive associations to influencing health care demand probably in case of sickness from the providers (Table 4.8), while four variables i.e. distance ($Z=-1.89$, $P=0.002$), household size ($Z=-7.6$, $P=0.000$), age square ($Z = -6.8$, $P=0.000$) and

Poverty ($Z=-11.2$, $P=0.000$) showed statistically negative associations. Similar logit estimation model by regions analyzed to observe either positive or negative impacted of Health demanding factors. Strongly associated in health demands for the probability of sickness were Addis Ababa ($Z=14.9$, $P=0.000$) Tigray ($Z=6.8$, $P=0.000$), Amhara ($Z=5.6$, $P=0.000$), Afar ($Z=3.4$, $P=0.01$) and Harar ($Z=1.9$, $P=0.08$) were strongly associated in health demands for the probability of sickness. While SNNPR ($Z=-3.2$, $P=0.01$), Gambella ($Z=-7.3$, $P=0.000$) and Somali ($Z=-15.8$, $P=0.000$) regions were negatively associated health care demand in the probability of sickness. One SES variable i.e. sex and two regions i.e. Benshangul and Diredawa did not show positive or negative correlations (sign for significance of coefficient direction of relationship) for demanding health care services in the probability of sickness from the providers (Table 4.8)



Table 4.8 Decision whether treatment was demanded or not (National) by SES & Region.

S.No	Variable	Coefficient	Odds ratio	X ² (Z V)	P. Value
1	Disd	-0.0716	0.93	-1.89*	0.017
2	Sxd	-0.007	0.992	-0.18	0.195
3	Empld	0.034	1.03	2.38**	0.008
4	Age head	0.625	1.06	4.91***	0.000
5	Age squre	-0.0012	0.998	-6.72***	0.000
6	HHSize	-0.0416	1.04	-7.61***	0.000
7	poord	-0.389	0.667	-11.2***	0.000
8	Richd	0.289	1.33	8.52***	0.000
9	EducD	0.418	1.52	8.87***	0.000
10	Mrsd	0.091	1.09	0.13	0.000
11	Tigray	0.306	1.35	6.79***	0.000
12	Afar	0.186	1.20	3.43***	0.000
13	Amhara	0.2236	1.25	5.75***	0.000
14	Somali	-1.253	0.28	-15.7***	0.000
15	Benshangul	-0.594	0.94	-1.14	0.255
16	SNNRP	-0.1258	0.88	-3.22***	0.001
17	Gambella	-0.4747	0.62	-7.31***	0.000
18	Harrari	-0.1023	1.10	1.87*	0.077
19	Addis Ababa	0.826	2.28	14.98***	0.000
20	Dirdawa	-0.048	0.95	0.80	0.432
Cons	Cons	-2.424535		11.13	0.0000

NB: The estimates are significantly different from Zero at *10%, **5% and ***1%

significant Level. Log like hood=-2230.42 LRChi² (20) = 2632.53 prob>=0.0000

Pseudo R² = 0.557, Number of observation=39,876

A logistic regression analysis result revealed that out of 39,876 sampled households 17% and 83% from urban and rural setting were from demanding health care services respectively (Table 4.9 and Tab 4.10.)

4.2.2 Out come 2

Decisions of treatment demands on the context of Urban Settings

Table 4.9 evaluates that in urban setting that 20 factors such as sex ($Z=1.89$, $P=0.048$), age of head of the households ($Z=4.49$, $P=0.000$), richness ($Z=3.3$, $P=0.001$), primary education ($Z=3.32$, $P=0.001$), and quality ($z=14.6$, $p=0.000$) strongly positive associated for health care demand in probability of sickness while distance ($Z=-1.9$, $P=0.001$), age square, ($Z=-5.5$, $P=0.000$), household size, ($Z=-2.9$, $P=0.05$), poverty ($Z=-3.21$, $P=0.001$) and secondary education ($Z=-2.12$, $P=0.015$) showed highly negative correlation (table 4.9).

A logit estimation analysis showed Addis Ababa, Amhara, and Harar by regions strongly positive associations, while Afar, SNNPR, Somali and Diredewa showed statistically negative associations for health treatment demand in the probability of sickness. In urban settings Tigray, Gambella and Benshangul regions did not show any association either positively or negatively (Table 4.9)

The finding for urban setting shows that the higher the household wealth, the higher would be the probability of the household demanding in medical treatment in the time of sickness. In addition, higher wealth of head of the households was significantly and positively associated with the probability of demanding medical assistance in urban. The increasing in the wealth of household in the richest is expected to incline the probability or the odds of consulting a physician by a factor of 1.47 times as high as that of lowest wealth holding group. Household wealth shows similar result in both urban and rural settings (Table 4.9 and 4.10). Nahu Astery (2006) has arrived at the same conclusion.

In the urban setting demanding of medical care among the household of education is secondary and above decline in the probability of sickness. This is because of educated patients had taken more attention to preventive health care compared with none educated. In this regard the probability of the household sickness that was secondary and above consult physician at times of illness nearly by a factor of 0.99 times as high as that of none educated. In general, households with high education are more inclined to demand modern medical treatment at time of illness.

The distance variable observed to strongly and negatively influence the demand for medical seeking behavior at time of illness. Accordingly, the travel to the nearest health care increased by a km, other thing being constant, odds ratio

reveals that the probability of the households consulting physician fall by a factor of 0.69 in the urban setting.

The household's size significantly affects probability of demanding of medical treatment at time of illness. This is expected that persons from larger households to be less likely to demand medical care, because of competition for resources in the household. The finding limited to the household demand for cheaper provider of the health care could probably be due to lower income per capita associated with large family households. The household variable showed the same sign in both urban and rural setting (see table 4.9 and 4.10)

The Age of the patients and Age square of the patient are found to have important factor influencing the probability of demanding health care facility positively and negatively at 1% significant level. Other thing being equal, the odds ratio depicts as a one-year's rise in the age of the patient at the early adult stage would raise the probability of consulting physician by a factor of 1.14 while at the latter stage it would reduce by at factor of 0.999. The age and age square have showed the same sign in both urban and rural setting (see table 4.9 and 4.10).

Table 4.9 Decision whether treatment was demanded or not (urban)

Binomial Logit model: Maximum likelihood Estimates (demanding treatment = 1, not demanding treatment = 0)				
Variable	Coefficient	Odd ratio	X ² =z	P. value
Disd	-0.35684	0.699	-1.88*	0.001
Sxd	0.45081	1.046	1.89*	0.048
Empld	0.037768	1.038	0.69	0.489
Age head	0.130809	1.139	4.49***	0.000
Age squ	-0.002251	0.997	-5.47***	0.000
HHSize	-0.03099	1.031	-2.89***	0.004
Poord	-0.452158	0.64	-3.21***	0.001
Richd	0.38708	1.47	3.32***	0.001
Primaryd	0.10559	1.11	1.39	0.0139
Secondaryd	-0.099562	0.990	-2.12*	0.015
quality	0.9487139	2.58	14.6*	0.000
Mrsd	0.014375	1.014	0.18	0.858
Tigrayd	0.19164	1.21	1.46	0.145
Afard	-0.009205	0.990	-0.05	0.957
Amharad	0.56925	1.77	4.79***	0.000
Somalid	-0.76097	0.467	-5.20***	0.000
Benshanguld	0.1863	1.20	1.23	0.219
SNNRPD	-0.0552	0.946	-1.89*	0.025
Gambelad	0.09786	1.10	0.72	0.469
Hararid	0.26805	1.31	2.31**	0.019
Addis Ababad	0.85398	2.35	9.10***	0.000
Deri Dawad	-0.58637	0.56	-5.12***	0.000
Cons	-2.8195		3.92***	0.001
LRChi ² (20) = 603.09 Prob > Chi ² = 0.0000 Pseudo R ² = 0.665				
Number of obs = 6759				

N.B: The estimates are significantly different from Zero at

*10%, **5% and ***1% significant.

Out come 3

❖ Out come of Rural Settings: Assessment of decision of treatment demand.

The findings in Table 4.10 showed that s employment, age, wealth, education and marital status were strongly positively significant at $P < 0.05$ to correlate treatment demand for the probability of sickness, while variables age square, household sizes and poverty were negatively associated at $P < 0.05$ (Table 4.10)

The finding by regions showed that Tigray, Afar, Amhara, Addis Ababa and Diredewa showed significantly positive associations at $P < 0.05$, while Somali, Binshengul, SNNPR and Gambella showed negative corrections at $P < 0.05$ (Table 4.10).

The inhabitants of Tigray, Afar, Amahra and Addis Ababa regions are among regions more likely to demand medical treatment out side of home compared with the reference region Oromeyia. But inhabitants of Somali, Binshengul, SNNPR and Gambella were found to be less likely to demand medical assistance out side of their home. The resident of Addis Ababa demanded higher medical treatment compared to patients in the other region. One can expect that the higher income of the consumer, if the consumer were a resident of Addis Ababa, the higher demand for medical treatment in the probability of improved condition.



The important variable that has fairly better effect (without expected sign) in the rural setting is household education i.e. The more educated households have better understanding of the benefits of modern health care service compared to traditional ones. Similarly it can be seen from the table 4.10, having higher educational level seemed to raise the probability of demanding out side of medical assistance in the rural. Regression result indicates that the education level of secondary and above live in the rural areas prefer to consult physicians 1.6 times as high as the patients at primary and no education categories.

Employment is an important variable that associated with demand for the health care services. Moreover, the odd ratio confirmed that the chances for employed household demand physicians at the time of illness estimated to be more than that of unemployed. In this regard, employed households would raise the probability of consulting physicians at the time of sickness increased by a factor of 1.04 times greater than those of unemployed.

Table 4.10 Decision whether treatment was demanded or not (Rural)

Binomial Logit model: Maximum likelihood Estimates (demanding treatment = 1, not demanding treatment = 0)				
Variable	Coefficient	Odds ratio	Z Value	Level significant
Disd	-0.04692	0.9541	-0.560	0.576
Sxd	-0.0451	0.95587	-0.096	0.338
Empld	0.04878	1.04999	3.75***	0.000
Age head	0.04604	1.064	3.23***	0.001
Age squ	-0.000994	0.999	-4.87***	0.000
hysize	-0.04558	1.04663	-7.09*	0.000
Poord	-0.37847	0.68490	-10.47***	0.000
Richd	0.2477482	1.2811	6.82***	0.000
EducD	0.485599	1.625	6.16***	0.000
Mrsd	0.189434	1.208	3.50***	0.000
Tigrayd	0.3170	1.373	6.59***	0.000
Afard	0.1919	1.21	3.34***	0.000
Amaharad	0.2016	1.22	4.87***	0.000
Somalid	1.521	0.218	-15.13***	0.000
Binshanguad	-0.0902	0.91	-1.61	0.106
SNNRPD	-0.1261	0.881	-3.01***	0.000
Gambellad	-0.705	0.49	-9.06***	0.000
Harrarid	0.0121	1.01	0.17	0.863
Addi Ababad	0.6584	1.931	6.83***	0.000
Deri-Dawad	0.325	1.38	4.36***	0.000
Cons	2.38419	-	-9.98***	0.001
LRChi ² (20) = 1724.07 Prob > Chi ² = 0.0000 Pseudo R ² = 0.6015				
Number of obs = 33,117 Log likelihood = -17,973.86				

N.B: The estimates are significantly different from zero at 10%*,5%** and 1%

Out come 4

❖ Out come of public and private preferences: Assessment of decision of treatment demand.

The findings in Table 4.11 showed that s employment, age, wealth, education and marital status and quality were strongly positive significant at $P < 0.05$ to correlate treatment demand for the probability of sickness, while variables distance, household sizes and poverty were negatively associated at $P < 0.05$ (Table 4.11)

The result also shows wealth significantly associated with the demand of the private health care provider. The households' preferences seem to shift from government facilities to those of private ones as their wealth level rises because the demand of government health care units tends to fall with the increase level of wealth, while it rises in the case of private facilities. This because of an individual takes in to account quality parameters in their preferences of private providers.

Household size is significant determinant of demand of public health provisions. It is significant at 5% level and negative determinant of private health care demand. The negative value of this coefficient shows that larger the household size the lower would be the probability of demanding private health care. The possible explanation in that increasing the household size will put

pressure on wealth of the household that spend on the child care consumption of medical care, food, clothing etc, there by compelling such household to demand cheaper provision of the health care. The result obtained on the size of the household member shows that more patient the household member, the less likely would the private facilities to be demanded for medical treatment.

Employment is an important variable that associated with demand for the health care services to bring positive impact in the household. Moreover, the odds ratio confirmed that employed household visiting private medical facilities for treatment than public. In this regard, employed households would raise the probability of visiting private facilities at the time of sickness increased by a factor of 1.04 times greater than those of unemployed.

Educations are significant and positive determinants for the private health care options. The regression result has shown more on the completion of primary and secondary education level at 10% significant level the household prefers private than public option. Completion of primary education by the household's head reduces the probability of visiting public facilities. This is the augmented in the positive and significant impact of completion of primary education on demand for private health care. Therefore, the probability of seeking medical care significantly increases when the head of the household complete primary education.

Quality one important variable that positive and significantly determinant of private health care option. The medical seeking behavior of modern health care is influenced by the availability of health professionals such as (doctors, nurses and midwives) and provision of key services in the health facilities such as vaccination, mother and baby services. In concurrent to this table 4.11 suggests the quality variables are found significantly and positively influence the demand of health care. Thus, health professional's such as doctors or nurses are quality factors classified in the categories of positive coefficient and are considered as center of excellence for the probability of demanding modern medical preferences. The regression result indicates that increasing the quality variable estimated to raise the probability visiting private health facilities by a factor of 2.5. However, private medical preferences of health facilities are typical characteristics of the urban settings because of their accessibility and congestion to the urban patients.

Table 4.11 Demanding medical facilities (private versus public)

Binomial logit model: maximum likelihood Estimates (private=1, public =0)

Variable	Coefficient	Odds Ratio	Z value	Significant level
Age head	0.0798	1.08311	1.73	0.166
Age squ	-0.00125	0.9989	-1.67	0.183
Primary urban	0.21414	1.2388	1.82*	0.019
Secondary urban	0.2177	1.243296	1.79*	0.028
poord	-.21777	0.4213	-6.05***	0.000
Richd	0.6153	1.85032	5.28***	0.000
Empld	0.2302	1.2588	2.66**	0.008
Sxd	0.2457	1.2785	2.71**	0.008
Mrsd	0.2483999	1.28197	1.42	0.155
HHSIZE	-0.0212	0.978	-2.78**	0.004
quality	0.7323	2.0799	8.27***	0.000
disd	-2.551	0.07796	-2.53**	0.018
cons	-4.1296		-5.85***	0.000

N.B: The estimates are significantly different from zero at 10%*, 5%** , 1%***

Number of obs = 6557, LR chi2 (12) =450 Prob > chi2 = 0.0000

Log likelihood = -1991.40

Pseudo R2 =0.52

CHAPTER FIVE

5. Conclusions and policy options

5.1. Conclusions

The provision of proper health care service delivery is a major component that drives to improve health status of the people and economic development of the country. This study was conducted with the prime objective of identifying the determinants of demand for health care services in Ethiopia. The collected data used from Demographic and health survey of Ethiopia 2005, (EDHS, 2005) tried to examine the factor that determine the medical demanding behavior at time of illness. The finding from both descriptive and empirical analysis showed that the household wealth, quality, employment, education and distance were the significant determinant of demand for medical treatment and utilization.

The study on the households' responses against demographic, economic and social factor analyses of the estimated empirical results had drawn the following major conclusions:

First, the age level of the household in years and sex of the household head were found to have a positively and significantly associated with demanding the modern health facilities. The square of the age level of the patient was also found to have negative association demanding the health care facilities.

Increase in the age of the patient up to certain level (i.e. according to descriptive part of discussion less or equals to 34 years) demand for the health care increases and then starts to decline after words. Thus, based on the age and age square, it can be concluded that demanding health care services are utilize more by adult patients than the older patients.

Secondly, in the descriptive part of the study use of antenatal care service is strongly correlated with mother's level of education and wealth. The analysis also revealed that women with secondary education are more likely to receive antenatal care from health professional's (81%) compared to women with primary (39%) and no education (22%). The significant of this finding show the correlation of wealth and receiving antenatal care from health professional and women in the highest wealth rank which is nearly five times more likely to receive antenatal care from a health professional compared to women in the rank of lowest wealth.

Thirdly, In the empirical findings the socio-economic status(SES) expected to impact in the maximum likelihood estimates of logistic regression were education of the households ($Z=8.9$, $P=0.000$), employment ($Z=2.4$, $P=0.007$) and richness ($Z=11.2$, $P=0.000$), which showed statistically strong and positive associations to influencing health care demand probably in case of sickness from the providers, while the variables i.e. distance ($Z=-1.89$, $P=0.002$),



household size ($Z=-7.6$, $P=0.000$), and Poor ($Z=-11.2$, $P=0.000$) showed statistically negative associations.

The analyses carried out either positive or negative impacted of Health demanding factors in the regions. Strongly associated in health demands for the probability of sickness were Addis Ababa ($Z=14.9$, $P=0.000$) Tigray ($Z=6.8$, $P=0.000$), Amhara ($Z=5.6$, $P=0.000$), Afar ($Z=3.4$, $P=0.01$) and Harar ($Z=1.9$, $P=0.08$) were strongly associated in health demands for the probability of sickness. While SNNPR ($Z=-3.2$, $P=0.01$), Gambella ($Z=-7.3$, $P=0.000$) and Somali ($Z=-15.8$, $P=0.000$), regions were negatively associated health care demand in the probability of sickness. One SES variable i.e. sex and two regions i.e. Benshangul and Direedawa did not show positive or negative correlations (sign for significance of coefficient direction of relationship) for demanding health care services in the probability of sickness from the providers. The empirical and descriptive part of the discussion call for the government intervention.

The more the patient is educated, the more likely would have prefer private to public health care units for medical treatment at time of illness. In this regard, one would be safe to conclude that compared to none level of education, the primary and higher level of education plays the significant role in determining the health seeking behavior of the patient.

The medical seeking behavior of modern health care is influenced by the availability of health professionals such as (doctors, nurses and midwives) and provision of key services in the health facilities such as vaccination, mother and baby services. It also suggests the quality variables are found significantly and positively influence the demand of health care. Thus, health professional's such as doctors or nurses are quality factors classified in the categories of positive coefficient and are considered as center of excellence for the probability of demanding modern medical preferences. The regression result indicates that increasing the quality variable estimated to raise the probability visiting private health facilities than public. Therefore, the quality of medical services being provided and attitude and behavior of medical professional towards the patients are important factors to attract patients to a particular health care unit. It can therefore, better conclude that improving basic services such as the quality of higher medical staff in a community is likely to have a significant effect on the demand for health care.

The regression analysis also produced expected result by establishing the household wealth to have significant positive impact on the for private or public health care provision. Among wealth quantities, we observed in descriptive analysis patient in the poorest quintiles are sensitive to medical cost and tends to be significantly deterred by higher medical cost. On the other hand, quality seems to impact on demanding behavior of the patients in the richest quintiles.

Fourthly, In contrast, Ethiopia performance in antenatal care including tetanus toxoid vaccination and delivery care is still not encouraged by the World Bank 2004 study. Likewise, the use of these interventions is particularly low in urban areas and almost negligible among the poorest community. Wealth based differentials are most marked for delivery care: less than 13 percent of deliveries were attended by health professionals among the poorest compared to others.

5.2 policy implications

According to empirical and descriptive findings of the study, the following recommendation can be drawn:

Medical care demand depends on both observed and unobserved characteristics of the individual seeking medical care behavior. The sex and the age of the household, size of the households, education, quality and wealth etc were observed to significantly determine the decision of individuals medical seek behavior. Except age and household size, the rest of the variables had significantly and positively influences the decision of the household. Females should much lower medical demanding behavior than males; this implies that, as the children and mothers are the most vulnerable to the diseases due to age and psychological related cases. These could be explained by mothers need care which have no connection with men like obstetrics care and also mother more likely accompany children to the health care thus demanding treatment for

their own care at the same time. Therefore, mechanisms should be designed to enable them the provision of special health care services to those groups. It further suggested that women's employment for cash is an important determinant of the demand for the health care services from modern health services, especially improved quality of the private. This may be due to progress in women's economic influence within the household through participation in income generating activity. Therefore, strategies must be developed to increase women's productivity per unit of time both in paid work and domestic production so that women can increase their wealth without spending additional time. In addition, needs to raise awareness to get adequate information for the available medical methods like family planning.

The health system in Ethiopia is underdeveloped, and transportation problems are severe. The majority of the population resides in the rural areas and has little access to any types of modern health institution. It is also estimated about 75 percent of the population suffers some types of communicable diseases and malnutrition's, which is potentially preventable (DHS, 2005). Hence, though building health close to the community is the mainstream of expanding the health coverage, even facilities that are nearest to the people is home will have little value if they lack basic equipment and supplies. It has been described that in many part of countries faulty planning whereby new facilities are constructed before determine whether adequate running budget will be available to operate them. There fore, adequate emphasis must be given to

health education in many part of the country accompanied with training of health professionals and operating cost of health facilities at the time of planning. The stud further suggested that increasing the availability of public health care facilities must be accompanied by the necessary medical inputs such as essential drugs; medical equipment and trained health professional improve the quality of the health care. This is important implication of the government future plan in the public policy.

The ministry health policy would be aimed at promoting the participation of the private sector in the provision of health care services should further be strengthened by introducing various incentive schemes that could enable to expand private facilities. In addition, the MOH should formulate mechanisms that ensure the provision of best quality health care services to the users.

To sum up, this finding is based on 2005 DHS Data. The implication of this finding is, therefore does not accurately estimate the economic situation of the country. Hence, the dynamisms of recent economic situation demands future research to estimate health care demand and preferences of quality, the status of wealth and medical cost.

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ANNEX I: DEFINITIONS OF TERMS

Antenatal coverage: Coverage to the health institution made by a pregnant women to be sure that she has a safe pregnancy.

Average household size: The mean number of member per household

Child mortality: The probability of dying between exact ages one and the fifth birth day per 1000 children surviving to the first birth day.

Crude birth rate: The number of birth in the population during a specified period divided by the number of person year lived by the population during the same period. It is frequently expressed as a birth per 1000 population.

Crude death rate: the number of death in the population during a specified period divided by the number of person years lived by a population during the same period. It is frequently expressed as births per 1000 population.

Household: A single person living alone or a group voluntary living together, having common household keeping arrangements for supplying basic living needs, such as principal meals. The group may be consisting of related or unrelated persons.

Infant mortality: the probability of dying between birth and age one per 1000 live birth in given year.

Life expectancy at birth: the average number of years a new born infant can expect to live under current mortality level.

Maternal mortality rate: A measure of the women risk of dying of the causes associated with pregnancy

Morbidity: the extent of illness, injury or disability in a population.

Postnatal visits: visits made by a mother to a **HCU** or visited by health workers at home within the first 45 days after giving birth.

Postnatal health service coverage: the population covered in percentage based on existing health centers and health stations in catchment's area.

Under five mortality: the probability of dying between birth and age five 1000 live births in a given year.

Under five children: under five years children visited to health institution for monitoring and of growth and development, screening of risk cases, and for management of diseases. (Health and health related indicators, 2006)

Declaration

I, the undersigned, declare that this thesis is my original work and has not been presented at any other university, and that all materials used for the thesis have been duly acknowledged.

Declared by:

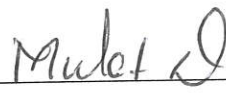
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