Original Research Article

Paying for Health Care by Households in Ghana: The Effects of Poverty Status and Location

Abstract

The quest for economic growth and development can be attained based on the quality and quantity of human capital of a country and that is underpinned by the good health enjoyed by the people. This paper examines the effects of poverty status and north-south dichotomy on household's health expenditure using data from the latest wave of GLSS-VI by estimating a Tobit model. The paper establishes considerable differences in household health expenditure with respect to two categories of poverty status (very poor and poor) and north-south dichotomy. Particularly, there was a negative significant relationship between household poverty status and demand for health. Very poor and poor households pay increasingly less on health care compared to non-poor households. Further, demand for health was significantly influenced by household characteristics such as age, household size and education in both the southern and northern part of the country. The paper recommends that policy strategies to improve income generating activities of households should be pursued as this may engender greater demand for healthcare by individuals from poorer households. Besides, policy priority should be placed on bridging health infrastructural gap between the southern and northern sectors of the country.

Keywords: Households, poverty status, health expenditure, Tobit model, Ghana

Introduction

The quest for economic growth and development can be attained based on the quality and quantity of human capital of a country and that is underpinned by the good health enjoyed by the people. It is in the light of this that increasing access and utilisation of healthcare services has become the prime goal for many developed and developing countries. Therefore, there should be financial protection for those who cannot adequately afford to pay for the cost of their health. Such costs include both direct expenses, such as household expenditure for medical treatment, often termed out-of-pocket (OOP) payments and indirect costs, such as the loss of income from an inability to work or time taken in travelling to a healthcare facility. According to Kim and Hong (2015), whenever household health expenditure exceeds 40 per cent of household income is left after subsistence needs have been met, it becomes catastrophic health expenditure These expenses often constitute a large share of a household disposable income (Leive and Xu, 2007) thereby making meeting demand for health care a great challenge to households. Indeed, households may opt for less costly traditional or suboptimal care or forego health care services they need (Goudge et tal, 2009). Also, they may use compensation strategies such as dissaving, selling assets, borrowing and expenditure cuts to pay for non-direct health expenditure and high levels of debt to satisfy health care needs (Kim and Yang, 2010). In this context, health expenditure becomes an important economic policy variable especially when considering the poor and vulnerable of the

population. Health expenditure affects not only the health of the population in the long term but also their ability to earn income due to reduction in productivity and labour supply. The Government of Ghana, recognizing the importance of the healthcare needs of its citizenry continuous to invest in the health sector. Over the last two decades, public expenditure on healthcare has increased on average, by about 74%. In particular, public spending on healthcare as a proportion to GDP rose, from 1.7% of GDP in 1990 to 2.96% of GDP in 2012. Clearly, this expenditure as proportion of GDP is low as compared to the globally acceptable standard of 5.76% (World Bank, 2014). In 2007, for instance, government allocation to health sector represented 16.24% (3.75% of GDP) of total government expenditure, which exceeded the Abuja target of 15% (World Bank, 2014). This period witnessed significant investments in the health sector mostly in the form of construction of new health facilities (e.g. CHPS, and clinics), hiring and training healthcare personnel, upgrading of existing facilities and other health infrastructure in the country. Between 2008 and 2012, the average government allocation to the health sector was 12.32% and 9.72% respectively of total government spending (World Bank, 2014). The reduction in government allocations to the health sector around this period were born out of cost containment and the achievement of macroeconomic stability.

While substantial literature exists on the determinants of public health expenditure at the macro level (Pan and Liu, 2012; Samadi and Homaie, 2013; Bilgel and Tran, 2013; Chaabouni and Abednnadher, 2014; Rezaei et tal, 2016), analysis of household healthcare expenditure has received very little attention especially in developing countries. To the best of my knowledge, the very few studies that exist at the micro level include (Malik and Syed, 2012) in Pakistan, (Olasehinde and Olaniyan, 2017) in Nigeria and (Zeng, 2017) in China. Besides, most of the researches on health care demand have concentrated on the individual as the consumer of health, however focusing on the household as the main producer and consumer of health care has far-reaching policy implications. This is because basic decisions of life such as accommodation, income generation, investment and consumption, as well as children composition, constitute common dilemmas facing households (Olasehinde and Olaniyan, 2017). Besides, the intra-household dynamics of decision making and resource allocation have greatly impacted on the well-being of its members and the community it belongs (Yusof and Duasa, 2010). Within the African context, these may be even more imperative to take into account when analysing the demand for health care where the family union is stronger with high dependency ratio. Therefore, elucidating the main determinants of health care expenditure at household level would facilitate the design of location-specific policies that will mitigate the adverse effect of household health spending and promote equity of paying for healthcare services. This is because improved health increases the supply of labor input as the time lost due to disease or illness is minimised. Besides, good health engenders labor e□ciency due to improvements in the quality of labor when individuals are healthier. The tendency is that labor productivity would expand thereby increasing the per capita income.

The paper proceeds as follows. The next section provides a brief overview on the health care system in Ghana followed by the theoretical framework in the third section. The fourth section contains the related literature on household health expenditure followed by the

methodology in the fifth section. The sixth section contains the empirical results and discussion while the seventh section presents the conclusion and some policy implications.

Brief Overview of the Health Care System in Ghana

Ghana has a comprehensive health service delivery system involving four main categories of health care providers: public, private-not-for-profit, private-for-profit, and traditional (Ghana Health Service, 1995). The public sector encompasses community-based programs, such as the Community-based Health Planning and Services (CHPS) initiative (GHS 2002); sub-district health centers and clinics; district general hospitals; regional general hospitals; and specialized tertiary hospitals. The public sector is systematically categorised into first, second and third tiers. At all tiers, five levels of care are operated, from the grassroots community (Community-based Health Planning and Services, CHPS), sub district, district, regional, to the largest and most comprehensive, national-level teaching hospitals. Accordingly, lower levels provide primary care services while those at the top focus on secondary care. Teaching hospitals concentrate on tertiary services, specialised clinical and maternity care, academic research and training of medical personnel. The tiers operate in conjunction and are modelled on a referral system that encourages use of bottom levels before higher levels.

The private healthcare system, on the other hand, is organised under private-for-profit, private-not-for-profit. Private-for-profit operators normally serve wealthier individuals as 'Private Medical and Dental Practitioners' constitutes smaller privately owned hospitals, health centres, clinics, maternity homes, retail pharmacies as well as specialist facilities. Private-not-for-profit facilities, on the other hand, include faith-based institutions and NGO's that provide health services from hospitals, clinics and primary care facilities. The private-not-for-profit/mission sector reportedly provides 42% of Ghana's health care services (MeTA Ghana, 2010). This sector is made up of Christian Health Association of Ghana (CHAG), the Islamic equivalent, Muslim Ahmadiyya Movement (MAM). Both CHAG and MAM focus on remote and rural regions (Ballou-Aares et al., 2008). In addition, there are cooperate bodies and security agencies that have facilities that provide health services for their employees.

Practitioners in the traditional system use herbs, other plant products and animal parts, and possibly religious practices (depending on the practitioner) to manage diseases; ranging from common problems like malaria to chronic diseases such as hypertension, diabetes and asthma (Tsey, 1997; GNDP, 2004; Busia, 2005). It is estimated that about 75% of the population in Ghana still use the services of traditional medicine practitioners (TMPs). Though this form of health care is highly accessible, activities of unlicensed itinerant peddlers make it difficult to determine or ascertain efficacy. In recent times, the high demand for TMPs has proliferation of herbal shops in both urban rural areas to deal with essential health or primary care needs (Houghton et al, 2003; Tabi et al, 2006; Goodman et al, 2007).

Administratively, health in Ghana is divided into three administrative levels: the national, regional and districts levels. This is further divided into five functional levels of national, regional, district, sub district and community levels. All the levels of administration are organised as Budget and Management Centres (BMCs) or cost centres for the purpose of administering funds by the Government and other stakeholders. There are a total of 223 functional BMCs and 110 Sub-Districts BMCs. With the headquarters of the Ghana Health Service (GHS) also managed as a BMC, there are 10 Regional Health Administration, 8 Regional Hospitals, 110 District Health Administrations and 95 District Hospitals. All of these are run as BMCs (GHS, undated-b).

It is worthy of note that all systems formally operate under and are ultimately responsible to the MOH, but day-to-day management and administration of all state owned

facilities (excluding teaching hospital and some quasi-government institutions15) are handled by the Ghana Health Service (GHS).

Theoretical Framework

The empirical model adopted in this paper follows the Grossman demand for health and healthcare model, which describes how individuals make choices regarding healthcare utilization (Grossman, 1972; Muurinen, 1982) According to Grossman, every individual acts as both a producer and a consumer of health. Individuals demand for health for both consumption motives, because they gain utility from being healthy; and for investment motives, because health is durable like any other capital good disposed to depreciation. This distinguishes health from other market commodities in that individuals allocate resources and time in order to both consume and produce. They invest in health by trading off their time and resources in the form of, for example, having nutritious food, immunisation, avoiding certain activities and engaging in exercise. Therefore, when an individual invests in health now they expect fewer sick days, more productive days and higher income in the future. At the same time individuals consume part of their current health by obtaining utility from being healthy. A key contribution of the Grossman model is a theoretical framework for testing the relationship between characteristics of an individual and his or her health behaviour. Since Grossman, empirical studies have examined the marginal effects of characteristics such as income, age, education, health insurance, health status, distance to a health provider, etc, on health decisions and healthcare consumption (Wagstaff, 1986; Kenkel, 1994; Sauerborn et tal, 1994).

The Grossman model postulates that apart from expanding an individual's ability to pay, higher wages lead to a substitution of medical consumption for time or resources invested in health promotion or prevention. In other words, a higher wage induces an individual to dedicate less time to health promotion or prevention and more time to earning a wage (Grossman, 1972; Muurinen, 1982). In contexts where healthcare utilisation is dependent on out-of-pocket (OOP) payments, income works through price to relax the consumer's budget constraint. Hence, income is expected to increase the likelihood of seeking healthcare as well as the magnitude of health spending. Although the model predicted a negative relationship between education and demand for healthcare on account that education increases an individual's health prevention ability, through health knowledge, healthy lifestyle, processing health information, and so on, empirical studies have shown a positive relationship (Wagstaff, 1986; Uzochukwu & Onwujekwe, 2004). The hypothesis is that more years of schooling make individuals choose better healthcare options which include the ability to seek effective medical care following an illness experience. With regard to age, theory predicts a positive relationship between age and healthcare demand since old age leads to depreciation of health capital. However, studies have suggested a non-linear relationship as at some point in age, the marginal cost of investing in renewing health exceeds its marginal benefits, at which point this relationship becomes negative (Windmeijer & Santos, 1997; Pohlmeier & Ulrich, 1995).

Empirical extensions of Grossman's work have included other factors such as gender and region of residence. In this paper, the set of explanatory variables include age, household wage income, gender, level of education attained by the head of the household, poverty status of the household and residential location of the household.

Empirical Evidence

Several studies have explored the determinants of health care spending both in developing and developed countries. While some have focused on the determinants of public health expenditures with several macroeconomic indicators (Murthy and Okunade, 2009; Baltagi and Moscone, 2010; Kea, et tal, 2011; Wang, 2011; Tan, 2017), others have concentrated on the correlates of household health spending using socio-demographic features and health system variables. With regard to studies involving macroeconomic variables, Rezaei et tal (2016) indicated that the GDP per capita, degree of urbanization and illiteracy rate increase healthcare expenditures, while physician per 10,000 populations and proportion of population aged≥ 65 years decrease healthcare expenditures. In another study, Baltagi and Moscone (2010) employed the fixed effects panel homogeneous model to reconsider the long-run relationship between health care expenditure and income using a panel of 20 OECD countries observed over period 1971-2004. Chaabouni and Abednnadher (2014) used the Autoregressive Distributed Lag (ARDL) bounds testing approach to examine the determinants of health expenditures in Tunisia during the period 1961-2008. The results of the bounds test show that there is a stable long-run relationship between per capita health expenditure, GDP, population ageing, medical density and environmental quality. Wang (2011) used international total health care expenditure data of 31 countries for the period 1986-2007 to explore the causality between an increase in health care expenditure and economic growth with both panel and quantile regression analyses. He noted that the influence of health expenditure growth on economic growth is positive in countries with medium and high levels of economic growth. Using Generalized Method of Moments to estimate the relationship between government health expenditures and health outcomes, Bilgel and Tran (2013) investigated the determinants of Canadian provincial health expenditures over a 28 year period. They analysed dynamic models of health expenditure via Generalized Instrumental Variables (GIV) and Generalized Method of Moments (GMM). Results indicate that the long run income elasticity of health expenditure is substantially lower than one. In their study of the effects of official development assistance (ODA) on health spending using data from 1995 to 2006 in low and low middle income countries Lu et al (2010), indicated that GDP per capita had no significant relationship with government health expenditure as a share of GDP. Samadi and Rad (2013) on their part used ECO countries balanced panel data between 1995 and 2009 to estimate the determinants of health expenditures. They established a long run relationship between the health expenditures per capita and GDP per capita, the proportion of population below 15 and above 65 years old, number of physicians, and urbanisation. Narayan and Narayan (2008), using a panel cointegration technique to assess the role of environmental quality in determining per-capita health expenditures on eight OECD countries for period 1980-1999, noted that income and carbon monoxide emissions exert a statistically significant positive effect on health expenditures in short-run, and sulphur oxide emissions have a statistically significant positive impact on health expenditures in addition to income and carbon monoxide in the long-run. Potrafke (2010) evaluated whether government ideology and electoral motives influenced the growth of public health expenditures in 18 OECD countries over the 1971-2004 period and observed that incumbents behaved opportunistically and increased the growth of public health expenditures in election years. Tan, X. (2017) explained provincial government health expenditures in China with evidence from panel data 2007–2013. They established that the

229 determinants of provincial government health expenditure in China include the real per capita
230 budgetary deficits, economy, and industrial structure. From the results, increasing 1000 yuan
231 real per capita budgetary deficits was expected to increase the real per capita government
232 health expenditure by 34 yuan. A one-unit increase in the economy was associated with a 249
233 yuan higher real per capita government health expenditure, while a one-unit increase in the
234 industrial structure was expected to decrease the real per capita government health
235 expenditure by 33 yuan.

236

237 Closer to home, Murthy and Okunade (2009) used cross-sectional data from 44 African
238 countries to analyse the core determinants of health expenditure. They indicated that real per-
239 capita GDP and real per-capita foreign aid resources are the main determinants of real per-
240 capita health expenditure in the African context. In addition, they found that maternal
241 mortality rate had no relationship with public health expenditure in African countries. Again,
242 Odoh and Nduka (2014) examined the determinants of public health expenditure in Nigeria
243 from 1977 to 2008. They showed the existence of cointegration between per capita health
244 care expenditure, per capita income, petroleum prices, population with age below 15 years,
245 under-five mortality, inflation rate, unemployment rate and government regime shift.

246 Empirical studies on household health expenditure have identified several factors such
247 as age, education, household size, income, poverty, etc as the core determinants of household
248 health spending. Angulo et al. (2011) applied Heckman's selection model to analyze the
249 hospitalization and the pharmaceutical expenditures of a population for year 2004 in Spanish
250 and showed that age positively influenced both types of expenditure. Malik and Syed (2012)
251 estimated determinants of out-of-pocket payments (OOP) Pakistan Household Integrated
252 Economic Survey (HIES) and Pakistan Standard of Living Measurement (PSLM) Survey for
253 the year 2004-2005. Ordinary Least Square (OLS) results provide evidence that household
254 non-food expenditure was the single highest significant predictor of household OOP health
255 expenditure. Household features like literate head, unsafe water and unhygienic toilet were
256 significant positive predictors of OOP payments. Wang et tal (2016) made use of two-sample
257 t-test, Lorenz and concentration curves to undertake an empirical analysis of rural urban
258 differences in out-of-pocket health expenditures in a low-income society of China using data
259 from Urban Household Survey and Rural Household Survey data for 2011/2012. The results
260 show that approximately 5% and 8% of total household consumption expenditure was spent
261 on health care for urban and rural populations, respectively. In 2012, the wealthiest 20% of
262 urban and rural population contributed 49.7% and 55.8% of urban and rural total health
263 expenditure respectively, while the poorest 20% took only 4.7% and 4.4%. The concentration
264 curve for out-of-pocket expenditure in 2012 fell below the corresponding concentration curve
265 for 2011 for both urban and rural areas, and the difference between curves for rural areas was
266 greater than that for urban areas. Olasehinde and Olaniyan (2017) adopted Engel curve
267 approach, to examine the determinants of household health expenditure in Nigeria using the
268 2010 Harmonised Nigeria Living Standards Survey (HNLSS). The result shows that
269 individual characteristics like age, religion, education and household characteristics like
270 income, size and headship commonly influence healthcare expenditure in Nigeria

significantly. The household-level variables possess stronger significant effects among the rural households while marital status and employment had differential effects in both urban and rural locations. It also confirmed that Nigeria engages in intergenerational transfer of healthcare by the working population to the young and older generations

Methodology

Data source

This paper made use of the Ghana Living Standards Survey Six (GLSS-6) data for the study. The data was collected by the Ghana Statistical Service which is the statutory body mandated to collect official national data. The Ghana Living Standards Survey Six (GLSS-6) conducted in 2012/2013 is the most current data set available. It focuses on the household as the key socio-economic unit and provides valuable information on the living conditions and well-being of households in Ghana. The survey covered a nationally representative sample of 18,000 households in 1,200 enumeration areas. Out of the 18,000 households, 16,772 were successfully enumerated leading to a response rate of 93.2 percent. Detailed information was collected on the Demographic characteristics of households, Education, Health, Employment, Migration and Tourism, Housing conditions, Household Agriculture, Household Expenditure, Income and their components and Access to Financial Services, Credit and Assets.

The sample size for the estimation of household spending on health care was obtained by merging three data files with information on the income of the household, household poverty and general household conditions. It was observed that not all households relevant information on the other variables which were included in the model; hence the final sample size used for this study was 6,382.

Model

Tobit regression model was employed in the analysis of this study. This is due to the fact that any attempt to use ordinary least square method of estimation to model household health expenditure with zero observations for the dependent variable would result in biased estimates (Maddala, 1992). Hence, the Tobit model was estimated to capture both zero and non-zero values of the dependent variable (i.e. household expenditure on health) in order to take into account the zero observations. In the literature, the Tobit model has been widely utilised in applied microeconometric studies (Brehanu and Fufa, 2008; Amemiya, 1984) and studies of household behaviour (Lee, 2013; Song et al., 2012; Jingchao and Kotani, 2012).

In this model, the observed expenditure on health (Y) of a household takes"0" or a positive value. The relationship between the censored variable (y) and the independent variables can be expressed by the Tobit model, where it is assumed that the observed endogenous variables (Y_i) for observations $i = 1, 2, 3, 4, ..., n$ satisfy the following:

$$Y_i = \max(Y_i^*, 0) \quad \text{----------} \quad (1)$$

where the Y_i^*'s are the latent variables generated using linear regression model:

$$Y_i^* = \beta' X_i + \varepsilon_i \quad \text{----------} \quad (2)$$

where X_i is the vector of regressor variables. The model error ε_i is assumed to be normally distributed with zero mean and constant variance $\left[iid \square N(0; \delta^2) \right]$

The observed value of Y_i is censored below 0, that is, as is shown below:

$$Y_i = \begin{cases} Y_i^* \ if \ Y_i^* > 0 \\ 0 \ if \ Y_i^* \le 0 \end{cases} \text{----------(3)}$$

In this model, a household spends on health only when the latent variable Y^* takes a positive value, and the actual demand $Y = Y^*$. Otherwise, the household does not demand for health and therefore $Y = 0$.

Usually, the Tobit model is estimated using a method of maximum likelihood estimation. The log likelihood function for this model can be expressed as follows:

$$LL_{Tobit} = \sum_{0} \ln\left[I - \phi\left(\frac{\beta_i x_i}{\zeta_i} \right) \right] + \sum_{+} \ln\left[\frac{I}{\zeta_i} \omega\left(\frac{y_i - \beta_i x_i}{\zeta_i} \right) \right] \text{----------(4)}$$

where "0" is the total sum of the zero observations in the sample, that is $(y_i = 0)$, "+" represents the total over the positive observations, that is $(y_i > 0)$, ϕ stands for the standard normal random variable cumulative distribution function (cdf) and ω represents the standard probability normal

Table 1: Description of variables in the model

Variable	Description
Health Expenditure	Continuous: It is the logarithm of the amount spent in total educational activities by households
Age	Continuous: It captures the age of the household head
Household Size	Continuous: It captures the number of people living in the household
Poverty Status	Categorical: It measures the poverty status of the household and it assumes values from 0 to 1. It takes a value of 0 if the household is very poor; 1 if household is poor; 2 if household is not poor.
Highest Education	Categorical: It measures the educational attainment of the household head and it assumes values from 0 to 4. It takes a value of 0 if the head has no schooling record; 1 if head's highest educational attainment is primary; 2 if head's highest educational attainment is junior secondary; 3 if head's highest educational attainment is senior secondary; and 4 if head's highest educational attainment is post-senior secondary
Gender	Binary: It captures the sex of the household head and it assumes a value of 1 if male and zero otherwise
TV	Binary: It captures the ownership of television by household and it assumes a value of 1 if a household owns a television set and zero otherwise
Radio	Binary: It captures the ownership of radio by household and it assumes a value of 1 if a household owns a radio and zero otherwise
Locality	Binary: It captures the locality of the individual. It assumes a

	value of 1 if the household is located in the north and zero otherwise
Place of Residence	Binary: It captures the place of residence of the household. It assumes a value of 1 if the household is located in an urban area and zero otherwise

Source: GLSS-6 survey

density function. Maximisation of the above likelihood function with respect to ζ and β will give the maximum likelihood estimates of these parameters. In this paper, we use the logarithm of total household health expenditures is used to control for heteroscedasticity. Following from the literature (Malik and Syed, 2012; Olasehinde and Olaniyan, 2017) the explanatory variables considered in this study are: the age head of the household, household size, the poverty status of the household, the educational attainment of the head of the household, sex of the household head, household possession of TV and radio and locality (urban versus rural; and north versus south) in the health care expenditure model (see table 1 for description of these variables).With scarce resources, the intra-household competition for resources can be an important factor that explains health care spending. The study includes household size to capture the competition for household resources effect in the demand for health care.

Empirical Results

Table 2: Descriptive statistics of explanatory variables

Variable	Frequency	Percentage
Age		
16 - 34	2,296	26.32
35 - 45	2,608	29.90
46 - 50	965	11.06
51>	2,853	32.71
Household size		
1 - 6	6,902	79.13
7 - 13	1,718	19.70
14 - 20	93	1.07
21>	9	0.10
Poverty Status		
Very Poor	579	6.64
Poor	1,168	13.39
Non Poor	6,975	79.97
Educational Level		
No Education	2,406	28.72
Primary	1,996	23.82
Secondary	3,211	38.33
Tertiary	765	9.13
Gender		
Female	2,298	26.35
Male	6,424	73.65

Television		
Yes	4,112	52.85
No	4,610	47.15
Radio		
Yes	5,066	63.50
No	2,912	36.50
Place of Residence		
Rural	5,193	59.54
Urban	3,529	40.46
Locality		
South	6,407	73.46
North	2,315	26.54

Source: Authors' computations based on GLSS-6 data

From table 2, it can be noted that about 67% of respondents sampled were between the ages of 16 and 50 years. This demonstrates the youthful nature the Ghanaian population and this has implications on labour supply and productivity. On the other hand, 33% of respondents were 51 years and above. The descriptive statistics also show that majority (79%) of households were made up of 6 members. From the results, about 80% of households were not poor while about 13% were poor and about 7% were within the very poor category. With regard to educational attainment, about 29% of household heads have no education, 24% have had primary education, and 38% with secondary education and 9% have attained tertiary education. About 74% of households are headed by males. This shows male dominance in household decision-making in Ghana. About 53% of households own television while 47% did not have television. Again, about 64% households have radio while 36% did not have radio. The results indicate that about 60% of households live in rural areas while 40% reside in urban areas. This goes to suggest that most communities in Ghana are rural based. The descriptive statistics further indicate that about 57% of households own reside in rural areas as against 43% urban dwellers. In terms of locality, about 73% households are located in the Southern part of the country while 27% are located at the Northern.

In table 3, we present and discuss the empirical findings in relation to the factors that explain household's health care expenditures. From the sample estimation, it is established that age of the household head, household size, and poverty status, educational attainment of the household head and location of the household are imperative in explaining household's health expenditure considerations. Particularly, we observe that age and age squared of the household head are positively associated with health care expenditure and statistically significant. The estimated coefficients for age indicate that as age of the household head increases, health stock of the household head decreases hence more resources would be committed into health care needs. The sample estimation show that an increase in the age of the household by one year leads to a 0.4479 percent increase in expenditure on medical treatment. The estimates indicate that household size is positive and significantly related with a household's health expenditures, indicating, perhaps, the fact that larger family size

adversely affects household budget, which might negatively affect allocation of extra resources to pay for medical treatment of members of the household.

The results establish that poverty status of households had negative significant influence on the amount households' spend on health. Very poor and poor households spend 0.9835 and 0.5823 times less on health care relative to non poor households. Household heads with no education spend 0.3032 times less on health care compared to those with tertiary education. However, household heads with primary and secondary educational attainment significantly, with decreasing magnitudes, spend less on medical treatment. Household heads with primary and secondary education spend 0.2375 and 0.1955 times less on health care respectively. One probable reason may be that educated people are relatively more appreciative of the importance of good health status and for that matter are likely to keep good hygiene practices and environment clean and hence spend less on medical attention.

Location of household is an important factor in explaining household health expenditure. Household location is positive and significantly affects household expenditure on

Table 3: Tobit Results of Determinants of Household Health Expenditure

Variables	Marginal Effects	Standard Error	t-score	P-value
Age	0. 4479*	0. 2396	1.87	0. 062
Age^2	0. 0092*	0. 0053	1.74	0.083
Household Size	0. 0863***	0. 0059	14.61	0.000
Poverty Status (Ref: Non Poor)				
Very Poor	-0.98345***	0. 0613	-16.05	0.000
Poor	-0 .5823 ***	0. 0449	-12.95	0.000
Highest Educational (Ref: Higher Education)				
No Education	-0.3032 ***	0. 0589	-5.14	0.000
Primary	-0. 2375***	0. 0609	-3.89	0.000
Secondary	-0.1955 ***	0. 0544	-3.59	0.000
Gender				
Female (Ref: Male)	-0.0034	0. 0343	-0.10	0.922
Radio (Ref: Yes)				
No	-0.0335	0.0304	-1.10	0.272
TV(Ref: Yes)				
No	-0.0116	0.0345	-0.34	0.737
Place f Residence (Ref: Urban)				
Rural	-0.0307	0. 0329	-0.94	0.350
Locality (Ref: North)				
South	0. 2456***	0. 0372	6.59	0.000
Constant	2.6066***	0.6624	3.94	

Sigma	1.2236	0.0099
Observations	6, 382	

Source: Authors' computations based on GLSS-6 Data
Note: * significant at 10%; ** significant at 5%; *** significant at 1%

health care. Comparatively, households located in the southern part of the country spend 0.2456 times more on medical treatment relative to northern households.

Table 4 documents the marginal effects (with 95% confidence interval) estimates of the Tobit model showing the effect of poverty status on household health expenditure. The results show that non poor household heads with no schooling experience spend 0.3037 times less on health compared to those with primary and secondary education who spend 0.2368 and 0.1769 times less on health. Further, the locality within which a household is situated significantly affect

Table 4: Effect of Poverty status on Household Health Expenditure

Variables	Very Poor	Poor	Non Poor
Age	-1.4256*	0.6201	0.5202*
	(0.8199)	(0.6575)	(0.2727)
Age^2	0. 0307 *	-0.0189	-0.0097
	(0.0171)	(0.0141)	(0.0061)
Household Size	0 .0747***	0.1096***	0.0851***
	(0 .0163)	(0.0135)	(0.0071)
Highest Educational (Ref: Higher Education)			
No Education	0.1867	-0.2456	-0.3037***
	(0.5394)	(0.2924)	(0.0624)
Primary	0.1924	-0.2324	-0.2368***
	(0.5318)	(0.2951)	(0.0656)
Secondary	0. 2618	-0.1403	-0.1769**
	(0.5342)	(0.2898)	(0.0564)
Gender (Ref: Male)			
Female	-0.1262	0.1723*	-0.0083
	(0.1254)	(0.0997)	(0.0381)
Radio (Ref: Yes)			
No	0.1201	0. 0996	-0.0705*
	(0 .0944)	(0.0789)	(0.0349)
TV(Ref: Yes)			
No	0.0385	0. 2279*	-0.0423
	(0.1972)	(0.0983)	(0.0379)
Place f Residence (Ref: Urban)			
Rural	0.1730	0. 0924	-0.0422
	(0.1708)	(0.0981)	(0.0359)
Locality (Ref: North)			
South	0.1886***	0.2914**	0. 6359***
	(0.1076)	(0.0839)	(0.0445)
Constant	6.1073*	1.2138	2.4343**
	(2.3672)	(1.8675)	(0.7501)
Sigma	1.0435	1.1934	1.2384
	(0.0319)	(0.0263)	(0.0112)

Observations	6, 089

Source: Authors' computations based on GLSS-6 Data

Note: Figures in brackets are the standard errors; * significant at 10%; ** significant at 5%; *** significant at 1%

amount of resources committed into securing the health needs of the household. Whereas non poor southern sector household spend 0. 6359 more on health, very poor and poor households located in the south spend 0.1886 and 0.2914 times less on health.

Table 5 presents the marginal effect estimates of the Tobit indicating the effects of southern-northern dichotomy on household spending on medical care. Poverty status is significantly associated with the amount household spend on health care. The results show that very poor and poor households from southern part of the country spend 0.6583 and 0.5324 times less on education respectively. On the contrary, households located at the northern part of the country spend 1.273 and 0.6935 less on medical treatment. Education of the household head exerts a significant influence expenditure on health. However, it is worthy of note that the effect was neither constant across all levels of education nor was it similar for the two categories of household location. It is evident from the table 5 that southern households with no television

Table 5: Effect of Location on Household Health Expenditure

Variables	**South**	**North**
Age	0.2434	0.9761*
	(0.2891)	(0.4234)
Age^2	-0.0028	-0.0249**
	(0 .0065)	(0.0093)
Household Size	0.0809***	0.0965***
	(0.0075)	(0.0093)
Poverty Status (Ref: Non Poor)		
Very Poor	-0.6583***	-1.2373***
	(0.1044)	(0.0756)
Poor	-0.5324***	-0.6935***
	(0.0593)	(0.0665)
Highest Educational (Ref: Higher Education)		
No Education	-0.3249***	-0.3524**
	(0.0725)	(0.1229)
Primary	-0.2888***	-0.29097*
	(0.0675)	(0.1272)
Secondary	-0.1826**	-0.1513
	(0.0609)	(0.1184)
Gender		
Female (Ref: Male)	0.0232	-0.0631
	(0.0392)	(0.0726)
Radio (Ref: Yes)		
No	-0.0204	-0.0716
	(0.0392)	(0.0537)
TV(Ref: Yes)		
No	-0.0749*	0.1892**
	(0.0396)	(0.0707)
Place f Residence (Ref: Urban)		
Rural	-0.0340	-0.0084
	(0.0378)	(0.0671)
Constant	3.3672***	1.1782
	(0.7985)	(1.1795)

Sigma	1.2504	1.1285
	(0.0118)	(0.0179)
Observations	5, 660	

Source: Authors' computations based on GLSS-6 Data

Note: Figures in brackets are the standard errors; * significant at 10%; ** significant at 5%; *** significant at 1%

significantly spend 0.0749 times less on health care whereas northern households spend 0.1892 times less on medical attention.

Conclusion and Implications for Policy

This study adds to the existing body of knowledge on demand for health. In particular, the current paper, examines the influence of poverty status and location of households on health expenditures using data from the latest wave of GLSS-6. Predominantly, household demand for health was significantly influenced by socio-demographic variables including age of the household head, household size and household head's education. Age of the household head has significant positive influence on education expenditure. Surprisingly, educational attainment of the household head had significant negative effect on household health care expenditure. However, this occurs at the instance of decreasing household health expenditure with increasing educational level. Besides, the differences in household health expenditure with respect to two categories of poverty status (very poor and poor) and north-south dichotomy are considerable. From the study, very poor and poor households increasingly spend less on health care compared to non poor households. Further, demand for health was significantly influenced by household characteristics in both the southern and northern part of the country. However, the impact of each of these household characteristics and other controlled variables were substantial in the north.

The paper recommends that policy strategies to stimulate income generating activities of households should be pursued as this may engender greater demand for health care by individuals from poorer households. Besides, policy strategies which involve the design of schemes specifically to offer assistance for those who are economically vulnerable, particularly among the aged should be pursued. Furthermore, policy priority should be placed on bridging health infrastructural gap between the southern and northern sectors of the country.

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