Demand and willingness to pay for health care in rural West Bengal*

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The present paper investigates household demand for health care and willingness to pay (WTP) for publicly provided health care services, based on primary survey data from rural West Bengal. Contingent valuation techniques were adopted to elicit WTP amounts for malaria and diarrhoea, the most prevalent severe morbidities in the study area. OLS regressions were employed to identify the determinants of WTP for health care and a household demand for health care model was developed. Household health expenditures were treated as the outcome variable, proxying the quantum of health care utilized by the households.

Results indicate considerable WTP for health services in public facilities, provided the service delivery and quality aspects are scaled up to match those of the private facilities and availability of medicines and other necessary infrastructural amenities are ensured. Notably, ability to pay of the households are identified as the single most influential variable conditioning WTP, which necessitates consideration of the population income distribution while pricing publicly provided health services as a part of the ongoing health sector reforms in the state. The health care demand model is indicative of a largely inelastic nature, with the possible exception of the relative influence of perceived severity of the illness episodes and choice of the health care provider. Nevertheless, the model suggests a rudimentary framework of the possible pathways of the relative effect of demographic, socio-economic, and community-level determinants on aggregate health care demand.

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INTRODUCTION

Health is regarded as the most crucial aspect of human well-being. The health status of a population reflects the physical quality of life enjoyed by its members. As such, ill health or disease is recognized as a significant indicator of human well-being and a determinant of poverty (Gumber 1997). Health care has emerged as a basic concern in all nations, though the problems of the developing world are radically different. The major issues in most of the Third World is how best to deliver health care to the majority, most of whom are poor, rural and inaccessible. However, apart from the supply-side considerations of delivery of health care, the demand for health care services by the households assumes significance in policy considerations aiming at an integrated approach towards ensuring equity and efficiency of the health care system. Simultaneously, in view of the reform measures in the health sector ongoing at various places across the developing world, financing health care services also assumes considerable importance. In view of the cost-recovery measures explored by most of these nations, willingness to pay for health care services needs to be ascertained in conjunction with their ability to pay as well, before embarking on such measures, and pricing services in the public sector available erstwhile for free or at nominal cost. This paper draws on a larger study on the demand, utilization and quality of health care services in rural areas of selected districts in northern West Bengal, India to provide empirical evidence on demand for health care and willingness to pay for publicly provided health care services. With the usual limitations of a small-scale sample survey, it is maintained that the results should provide a reasonable scenario of prevailing conditions in similar socio-cultural settings elsewhere.

HOUSEHOLD DEMAND AND WILLINGNESS TO PAY FOR HEALTH CARE: THE THEORETICAL PERSPECTIVE

From the perspective of economic welfare, households act as a primary decision-making unit, that, given limited resources and other constraints, tries to maximize its own welfare. Welfare, or utility, is visualized to be deriving from the consumption of goods and services, including intangibles like good health. The theoretical framework of analysing health care demand has been laid down by Gertler and Van der Gaag who suggest that relative prices of health care guide the choices of treatment seeking during illness episodes (Gertler and Van der Gaag 1990). However, in a setting where the health care system is populated by a plethora of health care
providers and different households based on their relative choice of providers face different price vectors, it is more prudent to judge the household demand functions with more stress on the household ability to pay. Further, reliable data for the different price vectors a household faces corresponding to the provider choice is rather difficult to gather and needs to be adequately smoothed to rule out undesirable ‘price shocks’.

The demand function for health care allows us to obtain price or income elasticities for medical care. It is possible to determine the compensating variation in income, leaving the household equally well-off in the event of a price increase, which in other words, is the maximum amount a household is willing to pay for the improved access (reduced travel time, for example) to a clinic or hospital. This notion of willingness to pay needs to be introduced in the analysis of demand for health care and utilization of medical services, in order to discuss the effects on welfare and the potential for generating revenue of introducing or increasing user fees for health services.

Willingness to pay (WTP) is a concept that is being used increasingly to inform policy decisions in the health sector (Russell et al., 1995). Willingness to pay for any goods or service is a significant premise, which is important for analysis from the theoretical as well as policy perspective. According to the basic tenets of consumer behaviour, subjective desire for the consumption of a commodity becomes an objective want, only if the consumer exhibits sufficient willingness to pay for the commodity as well as possesses sufficient ability to pay for it. For public or quasi-public goods traded in the market, like health care services, assessing willingness to pay assumes greater importance from the viewpoint of efficiency and equity of such publicly provided services. In the presence of ‘need’, rising out of experiencing an ailment or injury, the decision taken by the individual or household to seek medical care hinges crucially on his willingness to pay for the services. Here the price paid or the cost borne is inclusive of direct monetary payments such as consultation fees, purchasing drugs and also non-monetary access costs in terms of travel, waiting time, opportunity costs of income foregone and reflects, to a certain extent, the value an individual ascribes to being in a healthy state. Thus examining willingness to pay remains central to any meaningful analysis of demand for health and medical care. Ascertaining willingness to pay in the population, for health and medical services provided by the government, in particular, is also important for judging the potential for introduction of user charges and other such revenue raising or cost sharing mechanisms for these services.
In our exercise, simultaneous to the modelling of household demand for health care, we aim to explore the extent of willingness to pay for health services among the population, as an important methodological as well as policy exercise of evaluating health state from an economic viewpoint.

**DATA AND METHODS**

The present paper is based on a larger study aimed at examining the household economics of health care, focusing on demand, utilization and quality of health care, based on a primary study in selected areas of rural northern Bengal. The study population was selected following a multi-stage sampling design where the districts were selected in the first stage, followed by community development blocks, gram panchayats (GPs), primary sampling units (PSUs) and ultimately the sample households. The study was carried out in the rural areas of northern West Bengal, commonly referred to as North Bengal. All the districts of the state were classified on the basis of certain demographic, socio-economic and health status indicators. Aggregate scores were calculated for each district, which was then divided into two groups, high and low levels of development, the median score of the state being the cut-off. Most of the districts in North Bengal fell under the low development category, and Uttar Dinajpur district was selected from this cluster, while Darjeeling, the only district of North Bengal belonging to high development status was selected. Two community development blocks were selected from each district, one relatively centrally located in the district, close to the district head quarters and the other away from it. As such, Naxalbari and Phansidewa blocks in Darjeeling and Karandighi and Hemtabad blocks in Uttar Dinajpur were selected. In the next stage, instead of directly selecting the villages from the census village list, we selected one Gram Panchayat (GP) each randomly from the blocks. Based on the profile of all revenue units (or census villages) collected from the GP, two primary sampling units were constituted from each GP, clubbing smaller villages into a single unit. After ensuring satisfactory results, the PSU list was finalized and comprised eight PSUs, two each from the selected GPs. Before selection of the households, a complete houselist of all the households in the PSU was prepared based on the GP records, supplemented by recent houselists prepared under the “Sarba Shiksha Abhiyan”. Based on this sampling frame, sample households were selected by systematic random sampling. Total population of the PSUs, provided by the GPs was taken into account while allotting the sample size proportionally to each PSU. On average, 60 households were selected from each PSU and the actual number of households surveyed was 458.
A specially designed semi-structured interview schedule was used to collect information on the socio-economic and demographic particulars of all household members; health information collecting data on health status, utilization and source of receiving medical care, cost of treatment and source of financing health expenditures; an account of the users’ perspective on quality of care of services received; willingness to pay for two major diseases in the study area (malaria and diarrhoea); and on basic aspects of maternal and child health care, and community level characteristics like availability and accessibility of health services. In the present study we have followed a self-reported morbidity measurement approach, where respondents were asked to report any illness, disease or specific symptoms during the reference period. We have also followed a disability approach, similar to the one used in the WHO sponsored Health System Performance Assessment Survey (2006) in six Indian states. As such, we have tried to ascertain the extent of disability or functional limitation imposed on the individual due to specific illness conditions, and classified them as moderate and severe. Generally, the moderate disabilities were found to be caused by common minor illnesses or long-standing chronic illnesses of lesser severity. Severe disabilities were largely due to acute cases of high severity. A reference period of 90 days was employed for moderate disabilities and a 365-day reference period was used for severe disabilities.

Monthly per capita consumption expenditure (MPCE) was used as a primary measure of household economic status. Apart from the MPCE quintiles, an economic status index based on ownership of durable assets and other household attributes, constructed employing principal component analysis, was also used. Household expenditure on health care and capacity to pay were computed-based on methodology suggested by the WHO (Xu et al., 2003a; Xu et al., 2003b; Murray et al., 2003; Xu 2005). All the expenditure variables were first converted into a monthly estimate. Total monthly expenditure on health care was obtained by summing up the expenditure for the treatment of moderate and severe disabilities, malaria and diarrhoea. Household health expenditure is the sum of monthly health expenditure for the individual members.

Out-of-pocket health payments refer to the payments made by the household at the point of receiving health care services. This includes doctors’ consultation fees, purchases of medicines and hospital bills, but excludes expenditure on transportation, special nutrition and on attendants, net of any insurance reimbursement (Xu 2005). Out-of-pocket expenditure
for the households was calculated accordingly after deducting transportation costs and other expenses comprising expenditure on attendants and food during inpatient stay. Insurance coverage was almost entirely absent in the study population, and the reported expenditure was entirely out-of-pocket.

**Methods of Assessing WTP**

The maximum amount that people are willing and able to pay for a good service can be assessed in two ways:

i. by observing and modelling past health care utilization, expenditure and responsiveness to prices, or;

ii. by asking people directly how much they would be willing and able to pay for specified health service or product.

Under the first method, one can estimate willingness to pay from the demand function for health and the price/income elasticity of such demand. However, in the context of understanding willingness and ability to pay, such theoretical or empirical models do not yield satisfactory results (Russell et al., 1995).

The second method is believed to overcome these problems. Such methods have been used more commonly in assessing the demand for sanitation services, improvements in the water supply, the benefits of protecting natural reserves, cost/benefits of restricting land use and other related issues in environmental economics (cited in Bateman et al., 2003; Portney 1994). In the field of economic valuation of health programmes and demand for health services, the direct survey method of eliciting willingness to pay values from the people, based on a certain change or improvement in service have gained much currency, although employed increasingly only since the last decade (examples include Diener et al., 1998; Bhatia & Rushby 2002; Bonu et al., 2003; Abel Smith & Rawal 1992, Gupta and Dasgupta 2002). In fact, application of this method of eliciting WTP values in the health sector is more appropriate, because contrary to most of the domains of environment where the service or subject to be valued is generally under passive use by the people, the inherent nature of health services involve active use and thus such valuations are explicitly based on revealed preferences of the consumers. Since the elicited WTP responses are contingent on the particular hypothetical market or situation described to the respondent, this approach came to be known as **Contingent Valuation Method** (CVM) (Mitchell and Carson 1986, cited in Russell 1996).
The most crucial aspect of Contingent Valuation (CV) studies involves the design of WTP questions and method of eliciting WTP responses. A number of methods have been suggested in the literature, which includes open-ended questions to obtain maximum and minimum WTP bids, closed-ended dichotomous questions (a yes or no, ‘take-it-or-leave-it’ type of response), and iterative bidding games, in which a series of dichotomous choice questions are followed by a final open-ended question and payment-card approach, in which the respondents select their maximum WTP amount from a list of possible sums presented on a card to them (Bateman et al., 2003). The combination of ‘iterative bidding with payment card’ approaches has been tested by few studies in India (Bhatia & Rushby 2002; Gupta and Dasgupta 2002) yielding satisfactory responses. It is maintained that such range of prices that is offered to the consumers attain importance for the policy purpose, with the potential of capturing the cost-differentials associated with alternative service delivery mechanisms, and the mid-point of the range offered, for example, may be the average cost of producing the service, thereby providing an important link between costs of service delivery and its demand in the population. Further, the final open-ended question (“how much are you prepared to pay maximum/minimum for the service?”) can provide some estimates about the maximum/minimum willingness to pay.

This study employs a format of contingent valuation where to elicit response about willingness to pay for health services from the respondents a single bid followed by an open-ended bid to elicit the maximum WTP is put forward to the respondents. At the heart of any WTP study is the scenario, which is presented to the respondent against which the valuation exercise is carried out. Scenarios should capture the proposed improvement or change in the service adequately which is to be valued. Most of the studies in the literature have carried out the valuation exercise for a particular service or treatment or specific attributes of service delivery (immunization, anti-hypertensive therapy, insecticide treated mosquito nets for reducing malaria risks, voluntary counselling and testing for HIV/AIDS, reduction in waiting time, reliable drug delivery, etc.). We introduce scenarios for the treatment of malaria and diarrhoea, the two most common yet severe diseases prevalent in the population, that depict general improvement or changes in the delivery of publicly provided health care. The range of values for these different scenarios was determined after discussion with health personnel and knowledgeable people within the community regarding the general pattern of treatment suggested/ observed and costs involved in these two different domains. Scenarios included general attributes of service delivery including quality of
care, availability of facilities and drugs, distance and effectiveness of treatment (Please refer to the Appendix for the layout of the contingent valuation questions for malaria and diarrhoea).

RESULTS AND DISCUSSION

Willingness to Pay for Malaria and Diarrhoea

For malaria, the initial bid presented was Rs. 40. Of 132 valid responses, 109 (83 per cent) responded that they were willing to pay the amount for improved treatment and other allied aspects of service delivery for treating malaria in public hospitals. The bid was quoted for a single visit and excluded possible expenses on transport, food and attendants. The proportion of respondents, who expressed their inability to pay the stated amount, almost unanimously cited that public services were meant to be delivered free of cost, so the question of paying for the services received in public facilities does not arise. A few also reasoned that they were unable to pay even Rs. 40, due to limited ability to pay. The maximum amount, which the respondents were willing to pay, varied considerably depending on the economic status of the households. Figure 1a depicts the kernel

Figure 1a: Kernel Density for Willingness to Pay for Malaria
density estimates of the maximum WTP for malaria. The density estimates resembles a lognormal distribution, with a bimodal appearance, the second hump occurring in the neighbourhood of Rs. 500. The average value cited was quite low at Rs. 270.37 (standard deviation = 155.35) and a median amount of Rs. 200. The dispersion is not wide, suggesting that most of the respondents are willing to pay around Rs. 250 as a maximum for a single visit to a public health facility contingent on substantial improvement in quality and effectiveness of service delivery. The second hump is indicative of the higher WTP for richer households having higher ability to pay.

Similarly the WTP for diarrhoea was also elicited with Rs. 50 as the initial bid. Of the 59 valid responses, an overwhelming majority of 50 respondents (85 per cent of the households responding) expressed their willingness to pay the stated amount, for a single visit to any public facility for treatment of diarrhoea, provided significant improvements in the quality and availability of effective services, including required medicines are available on demand. The kernel density estimates for the maximum WTP for treatment of diarrhoea, too resembles that of malaria (Figure 1b).

Figure 1b: Kernel Density for Willingness to Pay for Diarrhoea
The distribution resembles a normal distribution, with an indication of a loop at the Rs. 400 level. The average value of the maximum WTP for diarrhoea is found to be Rs. 243 (standard deviation = 105.95) with a median WTP of Rs. 200, suggesting a more evenly distributed density function. In other words, the average respondent in the study area is willing to pay Rs. 243 as the maximum amount for treatment of diarrhoea in public facilities contingent upon substantial improvement in service delivery and quality. (Details of the scenarios are available from the authors).

A set of OLS regressions were run to identify the significant predictors of WTP for malaria and diarrhoea. Independent variables included background demographic and socio-economic variables (age, education, occupation, and economic status), provider choice for malaria/diarrhoea, and certain village level parameters (availability of health centre within the village) and block-level dummies. Results are summarized in Table 1. Results indicate that higher severity of illness episodes positively affect WTP. This is justified as in the case of malaria and diarrhoea, increased severity requires hospitalization, exerting an upward pressure on health care costs. Along similar lines, respondents having visited private practitioners have a higher WTP, which is most likely conditioned by the higher expenditures experienced during the course of the recent treatment episodes. Education and occupation does not significantly determine willingness to pay for malaria and diarrhoea. This, taken along with the observation of a similar effect of age, leads to the possibility of WTP for health care (if generalized across all ailments) is relatively independent of demographic background characteristics of the population. Demographic parameters can be, it seems, considered to affect WTP considerations through more proximal intervening variables, predominantly ability to pay. As seen, economic capacity, summarized by the MPCE variable, is strongly significant and exerts considerable influence on WTP. For malaria, the effect is more pronounced, with a steady rise in WTP with increase in ability to pay. Availability of public health facility in the village is also found to have a positive effect on WTP, with higher WTP reported for both the ailments by the respondents from villages having any public health facility. Nevertheless, there exists considerable unobservable heterogeneity in the models fitted, which underscores the need for further exercises, with a larger coverage and more complex analytical treatment to unearth the predictors as proximal determinants of WTP for health care.
TABLE 1
Results of the Multiple Regression Analysis for Determinants of Willingness to Pay for Malaria and Diarrhoea

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Malaria β Coefficient</th>
<th>Diarrhoea β Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE²</td>
<td>0.41</td>
<td>0.47</td>
</tr>
<tr>
<td>SEVERITY</td>
<td>1.87*</td>
<td>1.63*</td>
</tr>
<tr>
<td>(Severe=0, 1 otherwise)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROVIDER</td>
<td>0.79**</td>
<td>0.92**</td>
</tr>
<tr>
<td>(Public=0, Private =1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDUCATION</td>
<td>-0.37</td>
<td>-0.35</td>
</tr>
<tr>
<td>(Illiterate =0, Literate=1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCCUPATION</td>
<td>-0.53</td>
<td>0.49</td>
</tr>
<tr>
<td>(Cultivation/agriculture=0, Non-agricultural =1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPCE</td>
<td>2.34**</td>
<td>1.76**</td>
</tr>
<tr>
<td>(Monthly per capita consumption expenditure)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACILITY</td>
<td>-0.79*</td>
<td>-1.03*</td>
</tr>
<tr>
<td>(No public health facilities in the village = 0, Else= 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of obs</td>
<td>132</td>
<td>59</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.517</td>
<td>0.485</td>
</tr>
<tr>
<td>Adj R-squared</td>
<td>0.482</td>
<td>0.341</td>
</tr>
<tr>
<td>Root MSE</td>
<td>1.0463</td>
<td>1.3812</td>
</tr>
</tbody>
</table>

Dependent Variable: WTP amounts stated for Malaria/Diarrhoea
* Denotes dummies for Expenditure Quintiles; Reference category is Quintile 1 (poorest 20%)
** Denotes significance at 95% level

The exercise to elicit WTP for two widely prevalent diseases in the study population, malaria and diarrhoea, gives an estimate of the demand for health care for these two diseases, to a certain extent. It is indicative that, people are indeed willing to pay about Rs. 200 on an average for the treatment of these diseases in public facilities, albeit contingent on improvements in the quality and effectiveness of services delivered, which signifies that there is considerable demand for services delivered in public facilities, if the quality of treatment and efficacy is scaled up. More importantly, the finding also suggests that there is sufficient scope for public facilities to introduce certain user charges for services, like fees for diagnostic tests, medicines at subsidized prices, which people ultimately end up paying in private, provided service delivery is revamped on the lines of private facilities ensuring availability, affordability and
efficiency and cater to the needs of the poorer sections in a much better manner. However, as the regression models suggest, WTP is strongly contingent on the ability to pay, and inequality in the income distribution should be factored in while deciding on pricing health care services.

**Modelling Demand for Health Care**

Economic analysis of demand for health care has its roots in the human capital approach to health, suggested by Grossman (1972). According to this model, demand for good health is conceived to be a function of prices consumer pay in obtaining health care, quality of care, income, as well as social, household, cultural and individual preferences and knowledge about the characteristics of, and need for, medical treatment. Demand is thus, influenced by factors that determine whether an individual identifies illness and is willing and able to seek appropriate health care. An economic model of health care accordingly leads to a demand for health care of a given quality that is determined by individual and community factors as well as the price of medical care and other similar goods.

However, not many attempts have been made to examine the nature and form of demand for health function in India, or for that matter in South Asia. Sodani (1997) attempted to identify the factors influencing the demand for health care and to estimate the demand function for health care in the surveyed tribal households of three districts of Rajasthan. In order to estimate the demand function for health, health expenditure (direct and indirect) was taken as the dependant variables and two models of different functional forms – linear and log-linear – were employed to estimate the demand functions applying simple OLS regression. He too arrived at the conclusion, on the basis of the coefficients of the explanatory variables in the log-linear demand function, which provide health care expenditure elasticity that demand is inelastic in nature. However, following the methodology suggested by Gertler, van der Gaag and others, Gupta and Dasgupta (2002) using the NCAER data on the Human Development Survey across the country, suggests low values of demand elasticities in the government sector as well as for private qualified providers. Also, the elasticities were income-sensitive, indicating that the poor are more price-sensitive; and that there may be some scope to levy user fees in the government as well as private sector facilities.

It thus appears that the issue of estimation of demand function as well as the elasticity of demand involves methodological as well as realistic dimensions. Given the paucity of studies which models household
preferences for health care, taking into account locally endemic factors, such exercise should be attempted with great caution, and based on surveys typically designed for such an objective.

In our exercise, we follow the regression approach to estimate demand for health care and price elasticity of demand. Health care demand has been modelled as a log-linear function of the total health expenditure, which is regressed upon a set of variables denoting health status, provider choice, socio-cultural and demographic attributes and ability to pay, using the Ordinary Least Squares Method (OLS). This approach is well suited for small area studies, particularly with a limited sample size. Further the OLS procedure assumes the ideal condition of the random residual, which adds to the robustness of the estimated model (Greene 2006). It is assumed that the random error term is normally distributed, has zero mean and constant variance, in the range of $-\alpha$ to $+\alpha$, and is symmetrically distributed about the mean. Separate demand functions are estimated for each of the study blocks, to understand block-level differentials in the demand. The estimated coefficients of the log-linear function depict the elasticity of health care expenditure with respect to the independent variables. In the absence of any price variables, or other externally imputed supply side information on pricing, we have relied on the aggregate amount of health expenditure, as a proxy for price of health care. Thus, the dependent variable is a composite one reflecting the total cost of health care, inclusive of travelling and allied expenditure on food and miscellaneous items.

We have included a set of seven independent variables in the analysis for health care demand. Health status is reflected by the variable ‘SEVERITY’, having the value of ‘1’ for severe disabilities and ‘0’ for moderate disabilities. Choice of provider is captured by the variable ‘PROVIDER’ assuming the value of ‘1’ for private providers and ‘0’ for public. $AGE^2$ stands for age of the ailing member, the squared term employed to take care of the non-linearity effect of age. Socio-cultural characteristics are represented by a single variable ‘EDUCATION’ having a value of ‘0’ for the illiterates and ‘1’ otherwise. Economic status is denoted by two variables, ‘OCCUPATION’ representing the major source of household income, categorized as ‘0’ for daily wage labour (both agricultural as well as non-agricultural) and ‘1’ for other occupations, and a set of dummy variables representing the five quintiles of monthly per capita consumption expenditure (MPCE), the poorest 20 per cent, or the first quintile being used as the reference category. Block level dummies, with Karandighi as the base category was also entered as an independent variable, for the regression of the combined sample. Table 2 presents the results of the model.
TABLE 2
Demand for Healthcare: Results of the Multiple Regression Analysis for Determinants of Health Care Demand, Blocks and Combined Sample

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Karandighi β Coefficient</th>
<th>Naxalbari β Coefficient</th>
<th>Phansidewa β Coefficient</th>
<th>Hemtabad β Coefficient</th>
<th>Combined Sample β Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
<td>t</td>
</tr>
<tr>
<td>AGE</td>
<td>0.34</td>
<td>0.21</td>
<td>0.57</td>
<td>0.29</td>
<td>0.56</td>
</tr>
<tr>
<td>SEVERITY</td>
<td>1.91*</td>
<td>1.85*</td>
<td>1.42*</td>
<td>1.78*</td>
<td>1.78*</td>
</tr>
<tr>
<td>PROVIDER</td>
<td>0.71**</td>
<td>0.56**</td>
<td>-0.18</td>
<td>0.82**</td>
<td>0.46**</td>
</tr>
<tr>
<td>EDUCATION</td>
<td>-0.18</td>
<td>-0.18</td>
<td>0.32</td>
<td>0.20</td>
<td>0.03</td>
</tr>
<tr>
<td>OCCUPATION</td>
<td>-0.42</td>
<td>0.43</td>
<td>0.88*</td>
<td>0.28</td>
<td>0.34***</td>
</tr>
<tr>
<td>MPCE QUINTILE 2s</td>
<td>-0.30</td>
<td>-0.56</td>
<td>1.01</td>
<td>0.98**</td>
<td>0.29</td>
</tr>
<tr>
<td>MPCE QUINTILE 3s</td>
<td>0.15</td>
<td>-0.84</td>
<td>2.45*</td>
<td>0.31</td>
<td>0.41</td>
</tr>
<tr>
<td>MPCE QUINTILE 4s</td>
<td>1.19**</td>
<td>-0.20</td>
<td>1.27***</td>
<td>1.13**</td>
<td>0.71*</td>
</tr>
<tr>
<td>MPCE QUINTILE 5s</td>
<td>0.80**</td>
<td>-0.55</td>
<td>1.92**</td>
<td>0.28</td>
<td>0.67**</td>
</tr>
<tr>
<td>NAXALBARI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.17</td>
</tr>
<tr>
<td>PHANSIDEWAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.90*</td>
</tr>
<tr>
<td>HEMTABAD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.67**</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>5.63*</td>
<td>6.48*</td>
<td>3.09</td>
<td>4.04*</td>
<td>5.31*</td>
</tr>
</tbody>
</table>

Dependent Variable: Log (Total Health Expenditure)

Number of obs 423 636 625 595 2279
F( 9, 40) 4.37 1.68 4.09 5.41 14.25
Prob > F 0.0005 0.1383 0.0003 0 0
R-squared 0.4957 0.3433 0.3479 0.4244 0.4254
Adj R-squared 0.3823 0.1395 0.2628 0.3459 0.3956
Root MSE 1.0281 1.4655 1.0929 1.3823 1.2689

* Denotes block level dummies; Reference category is Karandighi
1 Denotes dummies for Expenditure Quartiles; Reference category is Quintile 1 (poorest 20%)
* Denotes significance at 99% level
** Denotes significance at 95% level
*** Denotes significance at 90% level.

Among the demographic variables, age proved to be insignificant in having any effect on aggregate health care expenditure. Physiological needs to seek treatment, manifest in the perceived severity of the ailments, significantly affect health care expenditure. Compared to moderate ailments, health expenditure for severe ailments is significantly higher, in all the blocks, as well as for the combined sample. In the blocks of Karandighi and Naxalbari in particular, expenditure for severe disabilities is likely to be nearly twice that of moderate disabilities, controlling for
other variables, which is likely due to the higher prevalence of severe disabilities in Karandighi and that of malaria, leading to hospitalization episodes in Naxalbari, both of which pushes up health care expenditure. Again, since the coefficients have value of more than one, the nature of the demand for health care for severity of ailments is highly elastic, with increased expenditure predicted, as the severity of the disease increases. Further, due to the high responsiveness of severity to the expenditure, or cost of health care, less health care will be consumed if cost increases, in face of increased severity of the illnesses.

The choice of provider is also a significant determinant of health care expenditure, or in other words, the demand for health care. The coefficients indicate that expenditure is significantly lower, when consultations are with public physicians, as opposed to private providers, across the sample, which conforms to our earlier finding of less average spending on treatment sought from public facilities. However, the demand for health care in this case is inelastic, being less than 1, hence, aggregate health care demand is unresponsive to choice of provider. Education level of the ailing member, manifest in the literacy status, has no significant effect on aggregate health care demand. However, daily wage earners are found to be spending more on health care than other occupations, who spend around 34 per cent less than the former. The estimated elasticity of demand for occupation is also inelastic, which indicates that occupational status is largely unresponsive to demand for health care.

For the combined sample, economic status, as reflected through the monthly per capita consumption expenditure (MPCE) quintiles, is found to have a significant effect on health care expenditure. Although the estimated elasticities indicate inelastic demand, across the MPCE quintiles, except for the fourth quintile in Karandighi, Phansidewa and Hemtabad, where elasticity is greater than unity, showing relatively elastic demand for health care for the fourth quintile, yet it is apparent that the elasticity rises along with the increase in economic status. The reason is obvious. Owing to higher ability to pay, out-of-pocket expenditure also tends to be higher for the richer MPCE quintiles, which does not necessarily indicate that the proportional expenditure, relative to the capacity to pay or aggregate household consumption expenditure is also higher in the richer economic quintiles. In fact, as we have seen earlier, except for the anomalous behaviour of the fourth quintile in some instances, it is the poorer households who shoulder a proportionately higher burden of out-of-pocket payments with respect to their capacity to pay. In that case, the
regression results denoting the nature of the health care demand with reference to economic status does not contradict the findings of descriptive analysis on out-of-pocket payments and capacity to pay, across the different quintiles denoting economic status.

In all the blocks, the overall health care demand is inelastic, as indicated by the negative coefficients (less than unity) for each of the blocks. With respect to Karandighi, health care expenditure decreases as we move to the other blocks. This was also evident in the earlier sections, where average health care expenses were found to be the highest in Karandighi, most probably due to higher prevalence of severe ailments and higher extent of utilization of private providers for treatment-seeking.

Overall the model explains around 40 per cent of the observed variance. The models indicate that, except for the perceived severity of the ailments, the aggregate demand curve for health is largely inelastic. Except for the nature of the functional form specified for the demand analysis, the probable reason of such a finding, that contradicts to a certain extent the findings of Gupta and Dasgupta, is that we have not used separate age-specific regression models, due to paucity of sample size, which might have indicated the different nature of elasticity of the said demand curve, for different age-groups.

CONCLUSION

The present paper presents a situational analysis of demand and willingness to pay for health care services, as ascertained from households in rural West Bengal. Notably, as the findings indicate, significant demand for health services can be traced to the reasonably higher amounts households have stated as their willingness to pay for publicly provided health services, with quality upgradation and availability and affordability of drugs and medicines. Further regressing total health expenditure on its possible determinants brings to the fore the importance of ability to pay and economic status of the household. The poor are found to bear the disproportionate burden of health expenditures consequently having higher income elasticity in these groups. Although, overall health care demand is less elastic in nature and apparently less responsive to changes in the predictors, which however, does not dilute the visible linkage between ability to pay and health care demand. Lower ability to pay constricts provider choices and induces vulnerability to expenditure shocks. Limited by a smaller sample, further disaggregated analysis was not possible, with different functional forms, which may have yielded more explicit results.
Nevertheless, we have highlighted the influence of different predictors on aggregate health care expenditures, which have been used as reflecting the demand. More insightful is the evidence on significant willingness to pay for the services, which allows for cost recovery, with offering better quality and effective treatment to the poor.

REFERENCES


