

# Health-seeking Behavior in urban Delhi: An Exploratory Study

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## **I. Introduction**

It is by now well established that most Indians pay large amounts out-of-pocket for covering their health costs: three quarters of health spending in India comes from households' out-of-pocket disbursements (Berman, 1998; Ellis et al., 2000). If one takes only primary curative care, household spending forms the majority of this expenditure in India. In addition to just the expenditure, the elaborate government health care system belies the fact that the private health care sector has grown at a phenomenal rate, and today forms an equally significant part of the health system in India. About 57 percent of hospitals and 32 percent of hospital beds are in the private sector (Bhatt, 1999). But merely stating that private provision is an important part of the health care system in India is not enough. The highly pluralistic health care system comprise several kinds of systems within - allopathic, homeopathic, ayurvedic, unani etc. - all of which are significant in their presence.

The second point to note is that there seems to be an even greater burden on the rural than the urban population. This is because, compared to rural India, in urban areas the whole range of facilities such as hospitals, dispensaries, community health centers (both of government and private sectors) exist and are widely utilised by the urban communities. In the rural areas, the quality of these services, especially government services is of very poor quality (Dreze and Sen, 1995; World Bank, 1995), forcing individuals to visit the private sector instead. Also, the indirect costs like those associated with travel to the facilities act as deterrents for the rural population (Uplekar and George, 1994); in fact, many urban areas like Delhi witness large influx of rural populations to the major hospitals, indicating the absence of similar facilities in the rural areas.

Recent evidence indicates that in rural areas, individuals accessing private practitioners often end up going to providers who are not legally qualified to dispense medication (Rohde and Viswanathan, 1995). Thus in terms of price, access, and quality, the rural Indians are probably much worse off than their urban counterparts.

As for availability, India has approximately 4,500 government hospitals with more than 450,000 beds. However, as more than two-thirds of the hospitals in India are located in urban areas, accounting for about 80 percent of all hospital beds, the urban population is better served with respect to number of hospital beds (Duggal, 1997). Of course, with about 300 million Indians living in urban areas, even the current number of public and private facilities is far too small to meet their total health care needs.

While the existence of these rural-urban differences is now almost a part of received wisdom, it remains true that not much work has been done on the health care delivery system in urban India. What does the picture look like in a typical urban city like Delhi? Do people by and large access allopathic providers? Does this pattern differ by socio-economic class? What type of providers (in terms of ownership and system of medicine) do the residents of Delhi access? To look at some of these issues, we use data collected under a study entitled "Willingness to Avoid Health Costs", which was carried out in Delhi with the objective of analysing the willingness and ability of individuals to participate in private health insurance programs.

While literature on the urban health sector is relatively sparse, in Section II we mention some of the highlights of these past studies. Section III describes the data and the survey methodology. In Section IV we analyse the type of care and providers that individuals access in Delhi. Section V presents a model of determination of care, correcting for selection into the sample of those who are ill. Finally, in Section VI we present the summary and conclusions of the paper.

## **II. Survey of related studies**

With regard to the share of public and private facilities in the health care market, evidence indicates (Gumber, 1997; Shariff et al., 1999) that for inpatient care, individuals from both rural and urban areas prefer public facilities. For outpatient care, i.e., for the treatment of illnesses not requiring hospitalisation, private facilities are more often used, particularly in the urban parts of India. Evidence (Naylor et al., 1999) also indicates that the share of private health care providers for outpatient care increases with a rise in the economic status of the population. For example, it has been observed that with the growth in income, high purchasing power, and the expansion of the middle class, urban India has witnessed a tremendous growth in the private health care system (Sunder, 1992; World Bank, 1993).

Regarding expenditure pattern, an average Indian household spends Rs. 250 per capita per annum on the use of health services (Shariff et al., 1999). For the urban households, the figure is about 40 percent higher than their rural counterparts. As for health insurance, most Indians are not covered by any insurance schemes, but the small minority that are covered, mostly belong to the organised urban sector; the rural population has almost no insurance coverage at all, formal or informal (Ellis et al., 2000; Gumber and Kulkarni, 2000). It is estimated that a small fraction of less than nine percent of the Indian workforce is covered by some form of health insurance, through Central Government Health Scheme, Employee State Insurance Scheme, and Mediclaim (Gumber and Kulkarni, 2000). The slum population, which is growing in urban areas, again remains uncovered by any insurance.

Despite a large and extensive public health care system, there has always been some criticism regarding its quality and accessibility, especially in the recent past (World Bank, 1997). With regard to the direct provision of public services, the entire system is grossly overloaded and under-funded. Problems like crowded outpatient departments, poor physical conditions of the infrastructure, and primitive health information, continue to remain in the public health care system. On the other hand the private sector, which is easily accessible and is seen as delivering better quality services, is much more expensive and is largely supported by direct out-of-pocket payments. This discrepancy in the cost of treatment in the private sector is much higher in the urban areas than in the rural areas. For instance, according to the NSS survey, the average cost of treatment involving hospitalisation in the private sector was 350 percent higher than the public sector in urban areas; whereas for the rural areas the same indicator was 150 percent higher (Gumber and Berman, 1995).

The more complex health care system in the urban areas is also due to the fact that many of these areas face a dual burden of communicable and non-communicable diseases. According to one study, in 1990 communicable diseases accounted for about 56 percent and non-communicable diseases for about 29 per cent of the burden of disease (as a percentage of Disability-adjusted Life Years lost) on average. In the year 2020, the projected figures are 24 per cent for communicable diseases and 57 per cent for noncommunicable diseases (Naylor et al., 1999). Till the epidemiological transition is complete in all sections of the urban population, there will remain an immense pressure on both basic primary health care services as well as an increasing demand for sophisticated secondary and tertiary health services. This will in turn create pressure on existing facilities, spur the further growth of the private sector, and see further inequalities in both access and burden of treatment.

Delhi, being a major growing urban centre is not an isolated case and all these observations can be easily applicable to it. Delhi has more than 40 percent of its population living in slums; at the same time there has been a significant increase in the State Domestic Product accompanied by a visible expansion of economic activities. However, the health of the less privileged population remains poor (Gupta et al., 1998). This study seeks to study the health status as well treatment seeking behavior of those living in Delhi, to further the understanding of the status of urban health and health care in India.

### **III. Data and Methodology**

The survey was designed to collect data on the following items:

- (a) socio-economic and demographic profiles of households and individuals, including income, assets and consumption
- (b) patterns of morbidity, including kinds of acute and chronic illnesses
- (c) health expenditures on consultations, drugs, diagnostics, hospital, transport and other items

- (d) details on current insurance coverage, from all sources
- (e) willingness to participate in private health insurance programs

Each household member was asked to report an illness and/or injury suffered in the past four weeks to probe further about episodes of acute illness. Respondents were also asked about an illness/injury, which lasted for more than 6 months (chronic illness). Such information was collected for all reported illnesses. Individuals could report up to a maximum of three such illnesses/injuries for each of the two categories of illness - acute or chronic.

The study was designed for a period of six months. Each household was visited after every 2 months and in the second and third rounds, additional illnesses/injuries and/or health expenditures were noted. In this way, the survey enabled the collection of 6 months' data on health patterns and expenditures for each member of a household.

The sampling design was kept simple. The idea of the project was not to correctly estimate morbidity rates in the population; rather, it was necessary to have representation from households with varying socio-economic and demographic characteristics. Thus a purposive sampling frame was adopted, and households were selected from lower, middle, and upper income areas. While it is true that geographic location may not always be a good indicator of economic status, as will be seen below, Delhi's housing patterns and geographic spread has a very close relationship with socio-economic status, with localities considered "posh" or low income, depending on the area. In all, 504 households were present in every round of data collection. In the analysis below, we look at only the households in the first round, though some households had subsequently dropped from the second and third rounds due to some problems. In all therefore, there are 526 number of households that are being analysed in this paper.

The distribution of the households was roughly proportionate among the three areas; area I had a total of 184 households (35 percent), area II had 172 households (33 percent) and area III contributed 170 households (32 percent). There were in all a total of 2,745 individuals spread over these 526 households. Of these, adults - defined here as those 15 years and above - comprised about 77 percent of the sample.

The total consumption expenditure of households was calculated based on expenditure on food, utilities, and personal non-food expenditure. There was a very high correlation between the area variable and consumption expenditure. The household size was highest in the low-income area; per capita mean total consumption expenditure as well as food expenditure increased with the economic status of the area. Finally, food expenditure was a much higher percentage of total consumption expenditure in the lower income areas and least in the higher income areas. These results confirmed that the area variable and economic categories were highly correlated and that the sampling was adequate to meet the needs of the project.

#### **IV. Health-seeking Behavior in Delhi**

In analysing health-seeking patterns, a natural starting point would be to look at the share of health expenditures in total consumption expenditures of households. [Table 1](#) gives the average share of household expenditure in total consumption expenditure, including health as well as excluding health. To arrive at these shares of household expenditure, we take only expenditure for 6 months for consumption, since the reference period for health expenditure is 6 months for each household.

As can be seen from the table, households in the low-income areas spend a larger share of their outlays on health: while 2.3 percent of total expenditure is spent on health by low income households, slightly less than 0.5 percent is spent by the middle and higher income households. The reasons are not difficult to gauge: another study (Gupta, 2000) based on the same data shows that this group has a higher morbidity rate as well, and are by and large not covered by any of the existing insurance programs (see Footnote 1).

While [Table 1](#) indicates the disproportionate burden of health expenditure on poorer households, the distribution of health care expenditure itself is skewed among individuals. As [Figure 1](#) indicates, the bulk of the health expenditure emanates from a small proportion of households - about 75 percent of individuals surveyed

contributed less than 20 percent of all health expenditure. While this does indicate a concentration of costs, by itself it may not indicate an inequitable distribution of these costs, if the bulk of the expenditure that is concentrated emanates from better-off individuals and households. What is relevant here is the burden on poorer households; in fact, when pooled over households, we found that the low, middle, and high-income households contributed almost equally to total health expenditure (30, 40 and 30 percent respectively). This indicates a distribution of expenditure which is not according to the ability-to-pay, partly because of burden of morbidity on poorer households, and partly because of the type of providers these households access.

The illness specification indicates that those with middle and high education have a lower probability of falling sick. Similarly, the high and middle-income households have a lower probability of falling sick than the low-income households. The results also indicate that older adults have a higher probability of falling sick than younger ones, and finally that a higher household size has a negative relationship with probability of falling sick. What type of providers do residents of Delhi access? The evidence from other parts of India points to an overwhelming use of private health care facilities. Is this true in Delhi too? For this, we turn to [Table 2](#).

Some extremely important features of the health seeking behavior immediately emerge from this table. Firstly, government hospitals, which are meant for the use of less privileged households and are subsidised for that purpose, are mainly used by high and middle-income households. Twenty-six percent of high income and about 22 percent of middle income households used government hospitals as against 17 percent for low-income households. Secondly, the lower income households mainly use private clinics (80 percent), followed by middle and high-income households. Both of these results are completely opposite to what the government visualises: the subsidised hospitals are being used more by those who can afford to pay, whereas the private sector is largely being used by those who are less able to afford its services.

It is noteworthy that these results emerge despite the existence of an extensive network of government health facilities spread out all over the city. Data from the Directorate of Health Services (Government of National Capital Territory of Delhi, 1999) indicates that as of 1999, there were a total of 83 hospitals, 545 dispensaries and health centers, and 282 mobile dispensaries in Delhi. These were mostly allopathic, but for dispensaries and health centers, ayurvedic and homeopathic facilities were also important. With the help of the survey data, an attempt was also made to map the government health facilities existing within physical reach of the households that were surveyed. It is not obvious from the data that the low-income households always have access to government hospitals in terms of physical proximity. However, the distribution of dispensaries, health centers, and mobile clinics seems to have been planned more equitably. This again raises the issue of both quality and accessibility of government versus private health facilities.

While it is true that population-based norms have been used wherever possible to set up health facilities, the rapid expansion of population in Delhi coupled with the unique feature of migrants settling in slums, has meant that the existing distribution of facilities has not kept pace with the needs of accessibility. The fact that even the poor prefer private facilities despite the existing network of health centers, dispensaries, and mobile clinics, raises questions about the quality of services within this network.

Another point to note is that, unlike the evidence found from rural areas, poorer households do not rely much on traditional healers (Gupta and Dasgupta, 2000). Nor are they relying much on the charitable facilities; in fact, this category is mostly being accessed by the middle class, which is again not a desirable feature of the health system. Private hospitals however are being frequented mostly by the high-income households, since these are completely out of reach of the poorer people.

In [Table 3](#), we next turn to the distribution by the type of treatment/care that is sought by those who are ill. The Table confirms the preference for allopathic treatment across all socio-economic categories. It is important to note that both homeopathic and ayurvedic systems of medicine are more important for the middle and upper income households compared to the lower income households.

While our data does not provide any indicators for assessing the quality of a particular provider, the data does provide us with information on whether individuals change the type of provider they access with a new acute

illness. [Table 4](#) shows data for all the individuals who participated in this survey and were ill over a period of six months (total numbers surveyed - 2657; numbers reporting at least one acute illness over the survey period - 1179). It is based on the data for new acute illnesses reported over the three rounds of survey conducted over these six months. It can be seen that across all socio-economic categories, a little over 90 % of those seeking care do not change the type of provider accessed, irrespective of the number of illness episodes they may have experienced over the study period.

What are the reasons that may explain the low occurrence of this phenomenon? In other words, why do only about eight percent of the sample change doctors? It is interesting that in 60 % of the cases the main reason for changing the doctor was that it was done on the recommendation of the patients' previous doctor. In 10 % of the cases the change was because a specialist's treatment was called for and, in only 20 % of the cases the change was attributed to dissatisfaction with the previous provider. In any case, can we take this evidence to say that individuals prefer the same provider for quality reasons? While it is difficult to draw any firm conclusions based on this evidence about quality; it can safely be said that probably private health providers (who are the majority providers for all classes) are preferred on quality grounds to public providers, especially since most seem to continue with the same providers.

Finally, we look at the expenditure patterns over the same set of provider types as given in [Table 2](#), to see the relative costs of each. [Table 5](#) summarises information on the average health expenditures incurred by provider type across all reported acute illnesses. These health expenditures include expenses on consultations, drugs, and diagnostics, and also include costs of transportation.

The data in the preceding table leads to several interesting inferences. Firstly, we find that government facilities, especially hospitals are in fact not synonymous with free or inexpensive care as they are commonly understood to be. This point has been recognised earlier in the literature (Dreze and Sen, 1995) and is clearly borne out from our data. While the consultation is mostly free in such a facility, the other costs associated with treatment of a particular illness can be quite substantial. This is of particular interest since we have seen that government hospitals are in fact the second most commonly accessed facility after private registered clinics. In fact, the average expenditure associated with private registered clinics is lower than that associated with government hospitals. As expected, private hospitals are phenomenally expensive; average expenditure in private hospitals is more than three times higher than in government hospitals.

We turn next to the determinants of health seeking behavior to understand more about the reasons behind choosing health care in Delhi.

## **V. Determinants of Health-seeking Behavior**

The model used in this paper is best described as a maximum-likelihood Probit model with sample selection (see [Footnote 2](#)). The Probit model with sample selection assumes that there exists an underlying relationship:

$$y_j^* = x_j\beta + u_{1j} \text{ (latent equation)}$$

such that we observe only the binary outcome

$$y_j^{\text{probit}} = (y_j^* > 0) \text{ (probit equation)}$$

In our context,  $y_j^*$  relates to an individual's health status, or feeling of well/ill-being which is essentially an unobservable.  $y_j$  is an observable defined on  $y_j^*$  and takes a value of 1 if the individual seeks care and a value of zero if he does not seek care. While the individual's feeling of well being is not measurable, the dependant variable  $y_j$  probit is an observable in all those cases where an individual has reported an illness. This in turn defines :

$$y_j^{\text{select}} = (z_j\gamma + u_{2j} > 0) \text{ (selection equation)}$$

where,

$$u_{1j} \sim N(0,1)$$

$$u_{2j} \sim N(0,1)$$

$$\text{corr}(u_{1j}, u_{2j}) = \rho$$

When  $\rho \neq 0$ , standard probability techniques applied to the first equation would yield biased estimates. Using a sample selection technique, based on the Heckman's principle, would provide consistent, asymptotically efficient estimates for all the parameters in such a model. A likelihood ratio test can then be performed by comparing the likelihood of this full model with the sum of the log likelihoods for the probit and selection models. If  $\rho = 0$ , then the log likelihood for the probit model with sample selection is equal to the sum of the probit model and the selection model.

In our model, the dependent variable  $y_j^{\text{probit}}$  is the "care" variable, which is defined only for those individual's who have reported an illness in  $y_j^{\text{select}}$ . Thus, care=1 if an individual has sought care upon falling ill, and care=0 if he has not sought care; ill=1 if the individual has reported illness while ill=0 if the individual does not report being ill. Thus, the model estimates the probability of seeking care as being conditional on the probability of falling ill.

The model was estimated with all adults in the data set, defined as those 15 years of age and above. Each observation in the sample corresponds to an individual who either reported having an acute illness or not having an illness. A total of 485 individual adults reported being ill, and were therefore used as valid observations for the probit estimation on whether care was sought or not upon falling ill. Thus, there were 1632 censored observations (as they did not report an illness) and 485 uncensored observations which were used in the probit equation. The sample selection equation (whether ill or not) was obviously defined over the total sample of 2117 observations. [Table 6](#) gives the summary statistics on the explanatory variables used in the estimation. Age, gender, educational attainment, and work status of the individual are assumed to play a role in influencing both the health and the care outcomes. In our specification, the size of the household is included as a factor determining the health outcome in the illness equation (by affecting resources per head) as well as whether or not the individual has access to any free/subsidised source of medical care is expected to influence the care outcome. Both the selection and probit equations include dummies to capture the effect of exogenous factors unique to the three areas from which the sample had been drawn.

Since there was a fairly high correlation between the areas from which the sample has been drawn and the consumption variables ([Table 7](#)), we did not use the consumption variables in addition to the area codes.

The age and household size variables are self explanatory in [Table 6](#). The education variable was graded on a scale from 1 to 15, to capture the educational attainment ranging from non-literates to the highest degree holders. For estimation purposes these were clubbed into three broad categories - up to secondary, from secondary up to higher secondary, and bachelor's degree and above. The gender variable is defined to take a value of 1 in case of males and 0 otherwise. "Insure" is a binary variable, which is unique to the care equation. It takes a value of 1 in all those instances when the individual has access to any free or subsidised source of health care such as CGHS/ ESIS schemes, Medclaim, etc. Similarly, the variable work status is a binary variable, which takes a value of 1 for all individuals who are currently employed.

The illness specification indicates that those with middle and high education have a lower probability of falling sick. Similarly, the high and middle-income households have a lower probability of falling sick than the low-income households. The results also indicate that older adults have a higher probability of falling sick than younger ones, and finally that a higher household size has a negative relationship with probability of falling sick. Correcting for sickness, the care equation indicates a very similar story vis-à-vis education and area. While the sign of the insurance variable is in the correct direction, indicating a possible negative relationship between seeking care and insurance, it is not significant.

Since there is not much literature on the subject with which these results could be compared, we used the 1995 data collected by the National Council of Applied Economic Research, Delhi for rural India (see Footnote 3). A similar exercise using Heckman's probit was carried out though some of the variables like whether or not the person was insured were not available. Also, we used the household monthly income to substitute for type of area, in order to capture the economic correlates of illness and care.

The results were somewhat different (see [Table 8](#)). A person's work status, marital status, and the monthly household income were significant explanatory variables for explaining the probability of seeking care. Gender, age, and education are not significant determinants of care in the case of the rural sector. In contrast, the educational attainment of the individual concerned, does significantly affect the probability of seeking care in Delhi, though gender and age do not seem to be significant determinants of care.

In the illness equation for rural India, education, work status, age, household size, and the household's monthly income (which is highly correlated with area in the present data) are significant explanatory variables. The same variables except work status were found significant in the equation estimated for Delhi

What can we say looking at these results? The main implication seems to be that while the probability of falling ill is determined by more or less similar variables in both the rural and urban India (Delhi), there are some differences between rural and urban India in terms of who is more likely to seek care. For the latter, economic status and educational attainment matter much more in urban India than in rural India.

## **VI: Summary and Conclusions**

Delhi seems to be segregated along economic status, with the health seeking behavior of low-income households being quite different from that of middle and high-income households. This economic segregation has also manifested itself in geographic segregation in terms of clustering of households of similar economic type in one area.

The elaborate government health care system in Delhi, is mainly supposed to cater to those who are less privileged. However, the data revealed that this is more the exception than the rule. A greater percentage of high and middle-income households use government facilities, and a greater percentage of lower income households use private facilities. Also, the lower income households are also those with least insurance coverage and they are also seeking largely allopathic as well as institutional care (rather than indigenous practitioners). Since health care is an essential expenditure, the market mechanism places unnecessary burden on those with lesser ability to pay. There is a more than three times difference between expenditure in a private and a public facility and even the public facilities are not as inexpensive as one would think. The determinants of health seeking behavior

controlling for sickness indicates that the lower income households are more prone to seek care in Delhi as are those with less education. This further corroborates the evidence on the somewhat inequitable system that exists in Delhi in terms of health seeking patterns.

What are the likely ways of bringing about a more equitable system? Ensuring that the subsidised care reaches the population it is targeted for would of course go a long way in meeting the equity objective. At the same time, the preference for private providers, which exists irrespective of the economic status, indicates serious quality problems in the public health care delivery system, especially at the level of curative care. For the more expensive in-patient care, somehow the more affluent manage to corner a greater part of the subsidies than the poor. Thus, quality improvements at the primary health care level should be one major focus of policy-makers. Along with quality improvements and putting in place a mechanism of proper allocation of subsidised care, we would need the strict enforcement of the referral system in urban India. Finally, the excess burden of health care can also be alleviated to a great extent by a carefully thought out health insurance system, though not necessarily only a private one. The role of private and public sector in covering the entire population is an area that needs a lot more thought and research.

None of these prescriptions are new to those who have been following the discussion on health sector reforms. However, the focus in the literature has mainly been on rural India, partly because fewer studies have taken up the issue in urban India. That urban India also suffers from these maladies, and in fact may have a more inequitable system in terms of health care burden, indicate that serious attention need to be paid to the health needs of urban India.

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- 1 The low-income areas had a morbidity rate of 52% and an insurance coverage of 17%; these numbers were 43% and 46% for the middle income areas and 33% and 43% for the high-income areas.
  - 2 This technique was employed earlier by Van de Ven and Van Praag 21 in a study on the demand for deductibles in private health insurance.
  - 3 This data was collected as part of the Human Development Indicator Survey supported largely by UNDP, New Delhi.