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**Healthcare Seeking Behavior among Self-help Group  
Households in Rural Bihar and Uttar Pradesh, India**

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## Abstract

In recent years, supported by non-governmental organizations (NGOs), a number of demand-driven community-based health insurance (CBHI) schemes have been functioning in rural India. These CBHI schemes may design their benefit packages according to local priorities. In this paper we examine healthcare seeking behavior among self-help group households, with a view to understanding the implications for benefit packages offered by such schemes. This study is based on data from rural locations in two of India's poorest states.<sup>1</sup> We find that the majority of respondents do access some form of care and that there is overwhelming use of private services. Within private services, non-degree allopathic providers (NDAP) also called rural medical practitioners account for a substantial share and the main reason to access such unqualified providers is their proximity. The direct cost of care does not appear to have a bearing on choice of provider. Given the importance of proximity in determining provider choices, several solutions could be foreseen, such as mobile medical tours to villages, and/or that insurance schemes consider coverage of transportation costs and reimbursement of foregone earnings.

## Keywords

Healthcare seeking behavior; Non-degree allopathic providers; Community-based Health Insurance schemes; Self-help group; India

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## 1. Introduction

Notwithstanding progress in health outcomes, healthcare financing in India is still largely reliant on out of pocket spending (OOPS).<sup>1</sup> On that count, India compares unfavorably to certain countries with a similar level of GDP per capita (Murray, Vos et al. 2012), exposing many households to financial hardship when confronted with ill-health, or causing them to forego care altogether (Bonu, Bhushan et al. 2009, Binnendijk, Koren et al. 2012). While the Indian government is currently offering hospitalization insurance to households below the poverty line, through a scheme called Rashtriya Swasthya Bima Yojana (RSBY), coverage for outpatient care, representing some 80 per cent of total health expenditure, is still not included (Berman, Ahuja et al. 2010, Dror, Vellakkal 2012). In the absence of other solutions to ease OOPS, a number of community-based health insurance (CBHI) schemes have been initiated in rural India by non-governmental organisations (NGOs) (Dror, Radermacher et al. 2007, Devadasan, Ranson et al. 2006). These schemes have different benefit-packages, reflecting both different priorities within a demand-driven model, and unequal availability of services across rural locations. Clearly, a good understanding of household healthcare seeking behavior can inform how well such schemes respond to perceived priorities.

There is some evidence on determinants of health-seeking behavior in urban settings in India (Das, Hammer et al. 2012, Das, Hammer 2007, Das, Sanchez-Paramo 2003, Ergler, Sakdapolrak et al. 2011, Gupta, Dasgupta 1999, Levesque, Haddad et al. 2006, Sudha, Nirupa et al. 2003). There is much less evidence-based literature on healthcare seeking behavior in rural India, and the information available is mainly disease/case specific research (Berman, Ahuja et al. 2010, Bhatia, Cleland 1995, Engelgau, Karan et al. 2012, Iyer, Sen et al. 2007). Ager and Pepper (2005) reported that in 1996 primary healthcare centers were relatively underused in rural Odisha. Rather, the

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<sup>1</sup> Private expenditure constitutes 81 percent of total health expenditure in India of which 94 percent is out-of-pocket expenditure (Berman, Ahuja et al. 2010). Less than 15 percent of the population is covered by health insurance (Berman, Ahuja et al. 2010, World Health Organization 2012).

population preferred both qualified and unqualified private providers;<sup>2</sup> reputation of provider, cost and ease of access were important in influencing provider choice. Borah (2006) and Sarma (2003) find that the demand for healthcare in rural India is negatively affected by the price of healthcare and distance to a healthcare facility. Using data from 1996, India's National Sample Survey Organisation (NSSO) concludes that poorer households in rural India are more price-sensitive, with higher elasticity of demand in seeking care for children than for adults (Borah 2006). Since the NSSO does not publish information on distance to non-degree allopathic providers (NDAPs), these are not considered. Gautham, Binnendijk et al. (2011), using 2008/09 data from household surveys, key informant interviews and focus group discussions, find that the majority (92 percent) of respondents in Andhra Pradesh visit private providers, of which 75 percent visit NDAP ; and in Odisha, 53 percent of respondents sought allopathic care, of which about 76 percent chose NDAP. The main self-reported reasons for such provider choice were proximity, and the providers' readiness to make house visits when needed.

This paper complements that of Gautham, Binnendijk et al. (2011) in several aspects. First we provide evidence on the healthcare seeking behavior of households affiliated to Self-help Groups (SHGs) in rural Uttar Pradesh and Bihar. These states are amongst India's most populated, poorest and least urbanized, and display large gender differences and in so far as SHG households are typically poorer and less educated than the general population, our analysis sheds light on the healthcare seeking behavior of a relatively marginalized population in rural India (Panda, Chakraborty et al. 2013)<sup>3</sup>. Second, we model the probability of seeking care from a specific provider,

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<sup>2</sup> Unqualified or less than fully qualified practitioners (De Costa, Diwan 2007) are referred to by a variety of designations: rural medical practitioners (RMPs), local medical providers, non-degree allopathic providers (Gautham, Binnendijk et al. 2011) or somewhat informally as "quacks".

<sup>3</sup> A self-help group (SHG) usually consists of between 10–20 poor women living in the same village who come together and agree to save a specific amount each period. The savings of all SHG members are combined and deposited in a bank or a co-operative organization. Members may borrow from the pooled savings when the SHG agrees to give the loans. SHGs are usually supported and trained by NGOs. According to Fouillet, Augsburg (2008) there are about 40 million SHG members in India. The Government of India hopes to include approximately 150 million citizens by the end of 2015 (Planning Commission, Government of India 2011).

while distinguishing between patient and provider characteristics. Third, our analysis distinguishes between care sought for acute and chronic conditions, between outpatient and inpatient care, and we examine the probability of seeking care from a wider range of providers.

The paper is organized as follows: the data is described in section 2, the methods used in section 3, followed by results in section 4. Section 5 contains a discussion and concluding remarks.

## 2. Data

The data used for this paper originates from household surveys collected between March and May 2010 in *Kanpur Dehat* and *Pratapgarh* districts in Uttar Pradesh and in *Vaishali* district in Bihar, as part of baseline studies preceding the implementation of three CBHI schemes.<sup>4</sup> The target group consisted of households with at least one woman registered in March 2010 as a member of an SHG. 3,686 SHG households (1,284 in Pratapgarh, 1,039 in Kanpur Dehat and 1,363 in Vaishali) representing 21,366 individuals were surveyed. The primary respondents were the SHG members themselves or the head of the household, if the member was unavailable.

While the survey gathered information on a wide range of socio-demographic characteristics, of particular interest to this paper is the detailed information collected on health status, self-reported symptoms experienced during the four weeks preceding the survey for outpatient care and one year for inpatient care, and the type of provider approached. A distinction is made between out- and inpatient care. Respondents that reported an illness were asked whether care was sought, and if so, where. Data pertaining to 10 specific providers were collected: traditional healers, priests, pharmacists, NDAPs, nurses, qualified private doctors, qualified public doctors, specialist public doctors, specialist private doctors and 'others'.<sup>5</sup>

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<sup>4</sup> Project details can be found at <http://www.microinsuranceacademy.org/content/developing-efficient-responsive-community-based-health-insurance-cbhi-india> and in Doyle, Panda et al. (2011).

<sup>5</sup> Qualified private doctors and specialists have been grouped together and are henceforth referred to as private doctors. Similarly, qualified public doctors and specialists have been grouped together and are referred to as public doctors. Due to the small number of observations, traditional healers, priests and nurses have been grouped together and form the 'other' category.

Outpatient illness episodes were separated into acute or chronic.<sup>6</sup> For chronic illnesses, information was gathered on the most recent visit; for acute illnesses, information was gathered for up to three illnesses and three visits per illness in the four weeks preceding the survey. While we have data on multiple illnesses and multiple visits, the analysis deals mainly with choice of healthcare provider for the first illness and the first visit, as most individuals (98%) experience only a single illness during the four-week period. While there are repeat-visits for the same illness, the number of cases is not as large as the first visit and perhaps more importantly, as will be discussed later, the choice of provider does not vary substantially across subsequent visits. In the case of inpatient care the survey enquired whether any household member had been hospitalized in the 12 months preceding the survey. It is possible for an individual to be hospitalized more than once in the 12 months before the survey but the data show no such instances.

Consistent with the existing literature, the probability of healthcare use and the choice of provider are modeled as functions of individual and household level covariates (Borah 2006, Sarma 2003, Sahn, Younger et al. 2003) and three regional indicators (*Pratapgarh, Kanpur Dehat and Vaishali*). The individual characteristics include the respondent's demographics, educational attainment, occupational status and self-reported health status. In modeling health-seeking behavior in the case of acute illnesses, we use the socioeconomic characteristics of the household head, since a substantial proportion of the sample consists of children (41 per cent) and we assume that their healthcare choices are made by parents.<sup>7</sup> We control for the nature of the respondent's illness by including a set of self-reported symptom variables (see Table 2) and health status is measured by the generic quality of life variable (EQ5D) which contains information on five dimensions of health: mobility, self-care, pain, ability to perform usual activities and mental health status. The scores from each question are converted into an index that is increasing in health and

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<sup>6</sup> Chronic illnesses are defined as conditions that have been ongoing for 30 days or more.

<sup>7</sup> Some studies use the socioeconomic status of the mother while others use the status of the household head (Qian, Pong et al. 2009, Amin, Shah et al. 2010, Amuge, Wabwire-Mangen et al. 2004, Chibwana, Mathanga et al. 2009).



ranges between -1 to +1 using the procedure suggested by Dolan (1997). As these questions were administered only to individuals older than 12 years, the EQ5D measure is only used while modeling the probability of obtaining care for chronic conditions which is estimated only for respondents older than 12. Household level covariates include household size and gender of the household head, whether a household belongs to a scheduled tribe or caste and household socioeconomic status as captured by (the log of) per capita consumption.<sup>8</sup>

### 3. Methods

The probabilities of using acute and chronic outpatient care, and inpatient care, are modeled using probit specifications. We consider the probability of using outpatient care conditional on reporting an illness while for the probability of inpatient care we use the full sample.

To model the choice of healthcare provider for outpatient care, we use an alternative-specific conditional logit model (McFadden 1974), hereafter referred to as a conditional logit. This has the advantage of allowing both individual and provider level characteristics to influence the choice of healthcare provider (see Qian, Pong et al. 2009, Borah 2006, Eryana, Damrongplasit et al. 2011 for applications) and does not require arbitrary choices applied in the nested logit model (see Chawla, Ellis 2000, Brown, Theoharides 2009, Dor, Gertler et al. 1987). The probability that individual  $i$  chooses healthcare provider  $j$  (out of a set of  $m$  providers) can then be written as (Cameron, Trivedi 2010):

$$p_{ij} = \frac{\exp(x'_{ij}\beta + z'_i\gamma_j)}{\sum_{j=1}^m \exp(x'_{ij}\beta + z'_i\gamma_j)}, \quad j = 1, \dots, m \quad (1)$$

where  $x_{ij}$  are healthcare provider specific regressors and  $z_i$  are individual specific regressors.

Since respondents only report information such as cost and travel time for the providers they actually visit, following established practice (Borah 2006, Qian, Pong et al. 2009, McFadden,

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<sup>8</sup> Information on household consumption is self-reported and based on a 30-day recall period for store bought and home grown food items and a 12 month recall period for household durables and investments in agricultural equipment. This is then divided by the household size to arrive at the figure.

Train 2000), we impute costs and time faced by each individual and for each provider. We estimate a log linear model on the sample of users (using individual, household covariates and regional indicators as described in the previous section) and subsequently predict costs and travel time. Costs and travel time for those who do not use care are normalized to zero (Qian, Pong et al. 2009). To ease interpretation of coefficients, we calculate marginal effects for the alternative specific variables as:

$$\frac{\delta p_{ij}}{\delta x_{ik}} = p_{ij}(1 - p_{ij})\beta \quad (2)$$

Since we use the logarithm of costs and travel time in our models, the marginal effects for these two variables should be interpreted as the change in the probability of choosing healthcare provider  $j$  due to a 1 percent increase in costs or travel time. We do not model the choice of inpatient care provider as only about 2 percent of the sample report use of such care and there is a very limited choice of providers.

## 4. Results

### 4a. Summary statistics

Summary statistics for the full sample, and across the three different sites, are provided in Table 1. Each of the three sites represent about a third of the sample. Half of the adult respondents are women while children younger than 13 years account for 37 percent of the sample. The average household size is 6.73. 30 percent of the sample may be classified as scheduled caste or tribe (SC/ST).<sup>9</sup> The average annual per capita consumption is INR 13,588.<sup>10</sup> About 37 percent of household heads have no education while 11 percent have more than a higher secondary degree. As for employment, 48 percent of the respondents report being students. 34 percent of the household

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<sup>9</sup> This is a higher proportion than the state rural SC/ST averages (nearly 17 per cent in Bihar and 23 per cent in Uttar Pradesh).

<sup>10</sup> PPP\$1 = INR 18.073 for 2010 (International Monetary Fund, 2012). A comparison between SHG affiliated households and randomly selected non-SHG affiliated households in the same location shows that the monthly per capita expenditure of SHG members was about 6 percent lower than the comparison group and that educational attainment of the SHG members was about 7 percent lower.

heads are self-employed in agriculture followed by 26 percent who are casual wage laborers. While there are differences across the three sites in terms of traits such as the percentage of households headed by women and occupational status of household head, differences in terms of household size, self-assessed health status, educational attainment, share of SC/ST, annual per capita expenditure are not substantial.

#### **4b. Disease Burden and Healthcare Seeking Behavior**

Figure 1 shows the incidence of illnesses (see Annexure 1 for site-specific patterns) while Table 2 shows the distribution of self-reported symptoms for both acute and chronic conditions. Approximately the same proportion of the sample reports having acute or chronic illnesses (20 percent and 17 percent respectively). Over half of the acute conditions relate to diarrhea and cholera (53 percent), followed by respiratory diseases (20 percent). While symptoms related to chronic conditions were more difficult to classify, 27 per cent were grouped into the 'other' category, followed by musculoskeletal symptoms (22 per cent), lung/respiratory illnesses (15 percent) and gastrointestinal symptoms (15 percent). Eleven percent of the sample reports having persistent allergies or infections. While the classification of symptoms is based on interpretation of self-reported information, and subject to error, the statistics in Table 2 show that persistent ill-health conditions are as prevalent as acute conditions. There do not appear to be substantial differences in symptoms across the three sites.

Figure 1 displays the pattern of healthcare seeking behavior in the sample (see Annexure 1 for site level details). There are several notable points emerging from the figure. Although the sample consists of a relatively poorer population, the majority of respondents seek care for both acute (86 percent) and chronic illnesses (71 percent). Of those who seek care for acute illnesses, only 8 percent visit qualified doctors/specialists at public health facilities while the rest seek care from private practitioners. Non-degree Allopathic providers (NDAPs) dominate and account for 56 percent of visits while qualified doctors/specialists in private practice treated 24 percent of respondents, followed by pharmacists (11 percent). While the share of those who visit public facilities is higher in

the case of chronic illnesses (14 percent), privately provided healthcare continues to dominate and accounts for 86 percent of healthcare visits. In the case of chronic illnesses, the share of patients seeking care from qualified private doctors/ specialists (39 per cent) is higher as compared to acute illnesses but NDAPs are still responsible for a substantial proportion of care (30 percent) followed by pharmacists (14 percent). With regard to inpatient care, once again private care (nursing homes and private hospitals) dominates and accounts for 81 percent of visits followed by public district hospitals (13 percent) and other public providers (6 percent). Figure 2 displays healthcare seeking behavior for second visits in the case of acute illnesses. The main point emerging from the distribution is that individuals tend to use the same provider a second time. For instance of the 1,996 individuals who visited NDAPs, 629 (32 percent) report a second visit of which 91 percent visit an NDAP. In the case of those who visited private providers, 35 percent report a second visit of which 72 percent visit a private provider the second time around.

#### **4c. Determinants of seeking care conditional upon reporting illness**

Figure 3 shows the main reasons provided by respondents for choosing a specific healthcare provider (Figure 3A for acute, 3B for chronic conditions and 3C for inpatient care respectively). In the case of acute illnesses, NDAPs dominate and the main reason for visiting them is their proximity (60 per cent), followed by the view that they are the best providers (23 per cent) while cost considerations are not as important (10 per cent). Those who visit private hospitals point out that the main reason for visiting them is that they are considered the best providers of care (50 per cent) followed by proximity. With regard to chronic conditions, qualified doctors/specialists in private practice dominate as they are considered as best by the care-seekers (58 percent). The reason for visiting NDAPs is their proximity. Disaggregated results by site reveal similar patterns (see Annexure 3).

Table 3 contains estimates of the probability of seeking outpatient care for acute (column 1) and chronic illnesses (column 2) and the probability of seeking inpatient care (column 3).<sup>11</sup> Several points emerge from these probit estimates. Across all three specifications, for the most part, employment status and whether an individual belongs to the SC/ST groups do not have much of a bearing on the probability of seeking care. However, socioeconomic status as reflected by annual per capita household expenditure is positively correlated with the probability of seeking care. A 1 percent increase in expenditure is associated with a 4 percentage point increase in the probability of seeking care in case of an acute illness. The effect for chronic illnesses is stronger (7 percentage point effect) while for inpatient care the effect is much smaller, perhaps reflecting the necessity of such care. Reflecting ease of access to at least some form of medical care, educational attainment is not correlated with the probability of seeking care for acute illnesses. However, those with higher educational levels (higher secondary education) are substantially (13 percentage points) more likely to seek care for chronic illnesses. In the case of acute illnesses there are clear gender differences. Male children (0-13 years) and working age men (14-55 years) are more likely to be treated for acute conditions compared to adult females (5 and 6 percentage points respectively). Female children are also more likely to receive care compared to adult females in the age group 14 to 55. Respondents in Pratapgarh and Kanpur Dehat are substantially less likely to seek outpatient care compared to those in Vaishali. This may be due to the greater proximity of healthcare providers in Vaishali versus the other two sites. The health status of an individual has an expected sign, namely those in better health are less likely to seek care.

#### **4d. Determinants of the choice of healthcare provider**

Before turning to health provider choice, we show (Annexure 2) estimated travel time and average costs for providers across sites, both for acute and chronic conditions. Across all three sites the closest providers are NDAPs followed by pharmacists (17 and 21 minutes travel time, respectively).

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<sup>11</sup> The estimates for chronic and inpatient care are restricted to the age group 13 and above as we don't gather information on health status for children below this age.

On average, qualified public and private providers are about 40 minutes away. Across the three locations Vaishali seems to have the greatest concentration of access to healthcare facilities. On average, NDAPs are only 9 minutes away in Vaishali as compared to 18 and 23 minutes in Pratapgarh and Kanpur Dehat respectively. Similarly, it takes about 30-34 minutes to access qualified doctors in Vaishali as compared to 51-54 minutes in Kanpur Dehat.

With regard to the costs of treatment, there are marked differences across acute and chronic conditions. Regardless of the provider, the cost of care is higher for treating chronic conditions compared to acute illnesses. We find that pharmacists are the cheapest amongst the various providers for both acute and chronic illnesses (INR. 81 and INR 167 respectively), followed by NDAPs (INR 125 and INR 279 respectively), public doctors (INR 162 and INR 625 respectively) and private doctors (INR 314 and INR 876 respectively) (see also Binnendijk, Koren et al. 2013).

Table 4 displays odds ratios (OR) based on estimating a conditional logit model for choice of outpatient care for acute conditions (the reference category is using self/no care). As discussed earlier, in general, employment status does not have much of a bearing on choice of provider. While SC/ST status does not inhibit access to care (see Table 3), it is clear that access to private care is restricted as SC/ST households are about 28 per cent less likely to seek care at a private facility compared to non-SC/ST households. Households with higher per capita expenditure are more likely to use care from qualified (public/private) and unqualified practitioners (NDAP). Similar to the expenditure effects, respondents in households with more educated heads are 1.9 times more likely to seek care from private providers compared to households headed by those who have no education. The estimates confirm the link between gender and healthcare seeking behavior and show that households are more likely to seek care from qualified private practitioners for their male children (OR of about 1.9). Consistent with the differences in availability of care, respondents from Kanpur Dehat and Pratapgarh are far less likely to seek any type of care.

The last two rows of Table 4 illustrate that while respondents are not sensitive to the direct cost of care, they are sensitive to the time it takes to reach a provider, and are far less likely to visit providers who are located far away. To facilitate interpretation, we show in Table 6 the marginal effects of travel time required to reach various types of providers. A 1 per cent increase in travel time reduces the probability of visiting a NDAP by 7 percentage points and the probability of visiting a private doctor by 4 percentage points. Respondents are not as responsive in the case of travel time to pharmacists and public doctors. Consistent with Figure 3, these estimates show that the main advantage of NDAP is their proximity. The substantially larger negative effect of distance to NDAPs compared to more qualified providers suggests that if NDAPs are located further away from households, their advantage is whittled away as households are then less likely to trade convenience for quality.

Estimates pertaining to chronic illnesses are provided in Table 5. As in the case of acute conditions, employment status exerts a limited influence and SC/ST households are far less likely to access private care. There is no strong statistical evidence of gender related differences in choice of provider among chronically ill, with the exception that members of households headed by females are more likely to self-treat or not seek care at all (OR of 0.72). Socio-economic traits such as educational attainment and household per capita expenditure influence choice of provider. Respondents with secondary or higher level of education are 2.8 to 3 times more likely to seek care from qualified doctors compared to no care, while richer households are nearly 1.7 times more likely to seek care from private doctors, followed by NDAPs and pharmacists (OR of 1.3 each). As in the case of acute illnesses, respondents living in Kanpur Dehat and Pratapgarh are less likely to seek care from private doctors compared to those in Vaishali. Mirroring the findings for acute illnesses, we find that travel time influences provider-choices while respondents are not sensitive to cost in the case of chronic illnesses (last two rows of Table 5). A one percent increase in travel time reduces the probability of visiting a private doctor by 4 percentage points and an NDAP by 3 percentage points (Table 6).

## 5. Discussion and concluding remarks

This paper examined healthcare seeking behavior among households where at least one female member is affiliated to a woman's self-help group in rural parts of Bihar and Uttar Pradesh, India. Consistent with recent comparable evidence (Gautham, Binnendijk et al. 2011), we found that the majority of rural households do access some form of care. In the case of acute illnesses only 14 percent of respondents forego care and in the case of chronic illnesses about 30 percent do not seek care. Analysis of provider usage patterns shows an overwhelming use of private care for both outpatient and inpatient services. In the case of acute illnesses, private care is sought by 90 percent of those who seek care while the corresponding figures are 84 percent in the case of chronic illnesses and 81 percent in the case of hospitalization. This study confirms the findings that non-degree allopathic providers account for a substantial proportion of private care, accounting for 61 percent of total private use in acute cases and 35 percent in the case of chronic illnesses. Both, the self-reported information and the econometric estimates confirm that the main reason for using NDAP is their proximity. Indeed we found that direct costs did not have a bearing on choice of provider while travel time influenced such choices strongly.

Our estimates highlight that almost all households, regardless of their socio-economic status, can access some form of care. However, variables such as household consumption and non-SC/ST status and education were associated with an increase in the probability of using care. We found clear evidence of gender differences in access to care, at least in the case of acute illnesses: men are more likely to access care and to seek private care, and male children (age 0-13) are far more likely to have access to private care compared to adult females.

Given the paper's focus on households where women are affiliated to self-help groups, the generalizability of the findings may be limited. This limitation notwithstanding, our findings confirm that in the locations studied there is a tendency to seek care from allopathic providers, mostly unqualified, mostly working as private for-profit providers, and that publicly provided services are chosen less, even by a relatively poor population in two of India's poorest states. This study has



been done within the framework of a larger study looking at CBHIs in rural India. It is therefore also interesting to consider the findings reported in this paper on insurance related aspects. For one, is the evidence on health-seeking patterns useful to inform the effective choices this target group made when designing benefit packages? One obvious issue is that since proximity is such an important factor influencing healthcare-seeking, it may be interesting to explore whether CBHI schemes would or should consider reimbursement for transportation costs and/or reimbursement of foregone earnings as part of the insurance cover. Some experiments with CBHI in India and Nepal have already reported doing just that (Acharya, Vellakkal et al. 2013, Devadasan, Ranson et al. 2006)) and have also included benefits for testing and imaging, which presumably indicate healthcare seeking with more qualified professionals. Finally, one cannot ignore the preponderant role of NDAPs in provision of primary care. The debate over their role in the Indian rural medical provision system is well known (Kanjilal, Mukherjee et al. 2007, De Costa, Diwan 2007).

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**Table 1: Description and means of covariates**

Variable name	Description	Mean			
		Pooled	Kanpur Dehat	Pratapgarh	Vaishali
<b>Demographics</b>					
Fhhh	female headed household (1/0)	0.19	0.09	0.19	0.21
fem0to13	female children 0-13 (1/0)	0.18	0.15	0.16	0.20
<u>fem14to55</u>	female aged 14-55 years (1/0)	0.29	0.27	0.31	0.27
fem55	female older than 55 years (1/0)	0.04	0.04	0.04	0.04
men0to13	male aged 0-13 years (1/0)	0.19	0.16	0.19	0.21
men14to55	male aged 14-55 years (1/0)	0.26	0.31	0.26	0.23
men55	male older than 55 years (1/0)	0.04	0.05	0.04	0.04
hsize	household size	6.77 (2.75)	6.94 (2.64)	7.28 (3.22)	6.10 (2.07)
EQ5D	Self-assessed health measure increasing in health (-1 to +1)	0.76	0.77	0.79	0.72
<b>Education</b>					
<u>edunone</u>	no education (1/0)	0.38	0.34	0.35	0.44
eduprim	primary education (1/0)	0.26	0.24	0.26	0.28
edumid	secondary education (1/0)	0.28	0.33	0.30	0.23
eduhigh	higher secondary education (1/0)	0.08	0.10	0.09	0.05
<b>Education of household head</b>					
<u>edunone</u>	no education (1/0)	0.37	0.31	0.33	0.46
eduprim	primary education (1/0)	0.17	0.14	0.19	0.17
edumid	secondary education (1/0)	0.35	0.40	0.37	0.28
eduhigh	higher secondary education (1/0)	0.11	0.15	0.11	0.09
<b>Socioeconomic Status</b>					
totalexp	annual per capita expenditure (INR)	13588 (17329)	15922 (25338)	11368 (10095)	13961 (14688)
scst	household belongs to a scheduled tribe/caste (1/0)	0.30	0.28	0.33	0.29
<b>Occupation</b>					
<u>self_emp_ag</u>	self-employed in agriculture (1/0)	0.11	0.19	0.07	0.07
self_emp_non-ag	self-employed in non-agriculture (1/0)	0.04	0.03	0.05	0.06
other_emp	other employment (1/0)	0.02	0.02	0.04	0.01
casual_wage_	casual wage labourer (1/0)	0.09	0.05	0.09	0.11
not_working	not working (1/0)	0.05	0.05	0.07	0.04
homemaker	doing housework (1/0)	0.20	0.21	0.20	0.19
student	student (1/0)	0.48	0.45	0.48	0.51
<b>Occupation of household head</b>					
<u>self_emp_ag</u>	self-employed in agriculture (1/0)	0.34	0.63	0.22	0.21
self_emp_non-ag	self-employed in non-agriculture (1/0)	0.14	0.07	0.17	0.18
other_emp	other employment (1/0)	0.08	0.04	0.12	0.05
casual_wage_	casual wage laborer (1/0)	0.26	0.13	0.29	0.35
not_working	not working (1/0)	0.07	0.05	0.11	0.04
homemaker	doing housework (1/0)	0.12	0.09	0.09	0.17
student	student (1/0)	0.00	0.00	0.00	0.00
<b>Location</b>					
Kanpur Dehat	household located in Vaishali site (1/0)	0.29			
Pratapgarh	household located in Pratapgarh site (1/0)	0.37			
<u>Vaishali</u>	household located in Vaishali site (1/0)	0.34			

**Notes: Underlined categories are used as reference categories in the regression models. The health status indicator EQ5D only pertains to those above the age of 12. Standard deviation provided in parentheses for continuous variables. N = 21,366.**

**Table 2: Distribution of self-reported symptoms for acute and chronic conditions.**

Category		Means			
		Pooled	Kanpur Dehat	Allahabad	Vaishali
acute (N=4183)	stomach	0.53	0.57	0.57	0.47
	fever/flu	0.08	0.06	0.05	0.14
	<u>lungs/respiratory</u>	0.20	0.15	0.21	0.22
	muscular/bone	0.04	0.03	0.05	0.03
	other	0.16	0.19	0.13	0.15
chronic (N=3595)	lungs/respiratory	0.15	0.18	0.10	0.20
	stomach	0.15	0.13	0.13	0.18
	<u>muscular/bone</u>	0.23	0.18	0.34	0.10
	allergies/infections	0.11	0.10	0.09	0.13
	other	0.27	0.33	0.24	0.30
	internal organs	0.10	0.09	0.10	0.08

**Notes: Underlined categories are used as reference categories in the regression models**

**Table 3: Determinants of the probability of seeking outpatient care for acute and chronic conditions and of seeking inpatient care.**

Variable	Acute Illness		Chronic Illness		Inpatient Care	
	Marginal Effects	Standard Error	Marginal Effects	Standard Error	Marginal Effects	Standard Error
fhhh	0.002	0.018	-0.033*	0.018	-0.000	0.003
fem0to13	0.035**	0.015				
fem55	0.012	0.026	0.016	0.024	-0.011**	0.005
men0to13	0.050***	0.015				
men14to55	0.060***	0.015	-0.017	0.021	-0.006*	0.003
men55	0.042	0.033	0.012	0.026	-0.010**	0.005
lnhhsiz	0.058***	0.017	0.107***	0.020	-0.003	0.003
eduprim	0.017	0.017	0.026	0.021	0.007*	0.003
edumid	-0.016	0.013	-0.003	0.019	0.005*	0.003
eduhigh	0.022	0.020	0.131***	0.031	0.004	0.004
Intotalex	0.037***	0.013	0.069***	0.019	0.005*	0.003
Scst	-0.004	0.012	-0.008	0.015	-0.001	0.003
emp_self_non_ag	0.002	0.018	0.041	0.032	-0.005	0.005
emp_other	-0.066***	0.022	0.080**	0.038	0.005	0.006
emp_day_labourer	-0.017	0.015	0.003	0.026	0.003	0.004
emp_unemp	-0.033	0.022	-0.015	0.027	0.000	0.005
emp_hh_chores	-0.011	0.022	0.001	0.022	0.000	0.004
emp_students			-0.033	0.031		
kanpur dehat	-0.098***	0.015	-0.087***	0.019	-0.006**	0.003
pratagarh	-0.029**	0.014	-0.101***	0.017	-0.007***	0.003
acute_stomach	-0.032**	0.015				
acute_fever/flu	-0.093***	0.022				
acute_muscular	-0.136***	0.026				
acute_other	-0.020	0.019				
eq5d			-0.150***	0.024	-0.049***	0.004
chronic_lungs/resp			0.043*	0.023		
chronic_stomach			0.061***	0.023		
chronic_allergies			-0.004	0.026		
chronic_other			0.008	0.019		
chronic_internal_o			0.021	0.027		
rgans						
N	4,180		3,618		19,807	

**Notes:** Tables shows marginal effects from probit models. Models for outpatient care only use the sample of respondents that report to have suffered from an illness. Employment and occupation variables presented for acute illness are of the household head. \*, \*\*, \*\*\* indicate significance at the 10, 5 and 1 per cent respectively.

**Table 4: Determinants of provider choice for outpatient care for acute conditions.**

Variable	Other		Pharmacy		Private		Public		NDAP	
	Odds Ratio	Standard Error	Odds Ratio	Standard Error	Odds Ratio	Standard Error	Odds Ratio	Standard Error	Odds Ratio	Standard Error
fhhh	1.599	0.510	1.140	0.220	0.960	0.156	0.883	0.207	1.077	0.150
fem0to13	1.099	0.443	0.839	0.201	1.397	0.286	0.685	0.185	1.132	0.193
fem55	1.632	0.805	1.397	0.390	1.387	0.317	0.785	0.281	1.257	0.249
men0to13	1.351	0.530	0.761	0.179	1.880***	0.374	0.855	0.217	1.270	0.212
men14to55	1.804**	0.527	1.399**	0.233	1.606***	0.218	1.140	0.213	1.380***	0.163
men55	1.575	0.799	1.504	0.493	1.201	0.329	1.426	0.513	1.515*	0.350
lnhhsz	1.253	0.415	1.463**	0.275	1.894***	0.277	1.816***	0.366	1.895***	0.248
eduprim	1.052	0.325	0.991	0.183	1.220	0.186	1.314	0.266	1.254*	0.163
edumid	0.944	0.236	0.847	0.125	1.186	0.142	0.765	0.132	0.900	0.091
eduhigh	1.367	0.497	1.221	0.258	1.951***	0.328	1.275	0.295	0.967	0.148
Intotalex	0.778	0.222	1.277	0.197	1.609***	0.186	1.497**	0.250	1.467***	0.157
Scst	0.674*	0.161	0.871	0.115	0.719***	0.078	0.835	0.124	1.064	0.096
emp_self_non_ag	1.220	0.398	1.497**	0.286	1.193	0.194	0.729	0.169	0.844	0.123
emp_other	0.973	0.390	0.948	0.213	0.691*	0.134	0.676	0.171	0.524***	0.087
emp_day_labourer	0.982	0.285	0.928	0.159	1.094	0.150	0.911	0.171	0.919	0.108
emp_unemp	0.636	0.302	0.661	0.177	1.458*	0.289	0.710	0.198	0.860	0.147
emp_hh_chores	0.897	0.375	0.789	0.203	1.311	0.269	0.988	0.295	0.924	0.164
emp_students	1.277	0.437	1.309	0.260	0.796	0.138	1.336	0.294	1.182	0.170
kanpur dehat	0.389***	0.097	0.253***	0.044	0.326***	0.046	0.734	0.151	0.713***	0.092
pratagarh	0.300***	0.090	0.893	0.143	0.445***	0.064	2.390***	0.452	0.986	0.132
acute_stomach	0.754	0.209	0.956	0.154	0.636***	0.085	0.763	0.138	0.915	0.107
acute_fever/flu	0.595	0.313	0.652*	0.159	0.527***	0.099	0.739	0.201	0.561***	0.094
acute_muscular/bone	0.875	0.417	0.702	0.197	0.439***	0.107	0.234***	0.103	0.348***	0.074
acute_other	1.245	0.406	0.844	0.182	1.237	0.203	1.282	0.294	0.871	0.129
Log cost	1.007	0.068	1.007	0.068	1.007	0.068	1.007	0.068	1.007	0.068
Log time	0.739***	0.076	0.739***	0.076	0.739***	0.076	0.739***	0.076	0.739***	0.076

*N=4180*

**Notes:** Tables shows odds ratios from Mixed Multinomial Models, reference category is using no care. Models only use the sample of respondents that report to have suffered from an acute illness (4184 obs). Employment and occupation figures presented are of the household head. \*, \*\*, \*\*\* indicate significance at the 10, 5 and 1 per cent respectively.



**Table 5: Determinants of provider choice for outpatient care for chronic conditions.**

Variable	Other		Pharmacy		Private		Public		NDAP	
	Odds Ratio	Standard Error	Odds Ratio	Standard Error	Odds Ratio	Standard Error	Odds Ratio	Standard Error	Odds Ratio	Standard Error
fhhh	0.711	0.200	0.721**	0.111	0.859	0.095	0.861	0.140	0.904	0.108
fem55	1.343	0.453	0.845	0.168	1.033	0.153	0.964	0.204	1.230	0.185
men14to55	1.488	0.477	0.714*	0.129	0.989	0.129	0.841	0.153	1.013	0.142
men55	1.920*	0.650	0.800	0.169	1.050	0.168	1.010	0.223	1.128	0.190
lnhhsz	1.656*	0.453	1.449**	0.253	2.104***	0.266	1.541**	0.283	1.754***	0.239
eq5d	1.045	0.378	0.437***	0.086	0.402***	0.060	0.323***	0.063	0.594***	0.097
eduprim	1.532	0.465	1.162	0.203	1.212	0.158	1.336	0.248	1.019	0.142
edumid	1.009	0.266	0.856	0.138	1.139	0.131	1.317*	0.209	0.860	0.106
eduhigh	2.291**	0.959	1.552*	0.410	2.788***	0.519	3.152***	0.764	1.143	0.249
Intotalexpr	1.649**	0.403	1.318*	0.214	1.665***	0.190	1.282	0.219	1.302**	0.165
scst	0.783	0.169	0.992	0.122	0.845*	0.079	0.920	0.120	1.133	0.108
emp_self_non_ag	1.869	0.766	0.930	0.242	1.308	0.251	0.901	0.253	1.409*	0.291
emp_other	2.080	1.024	1.598*	0.449	1.452	0.353	1.749*	0.523	1.526*	0.387
emp_day_labourer	1.180	0.453	0.772	0.162	1.132	0.176	0.967	0.209	1.003	0.170
emp_unemp	1.978**	0.686	0.791	0.176	1.041	0.171	0.728	0.169	0.988	0.170
emp_hh_chores	1.654	0.562	0.649**	0.117	1.128	0.155	0.965	0.181	1.109	0.161
emp_students	0.665	0.329	0.508**	0.147	0.933	0.179	0.927	0.235	0.894	0.188
kanpur dehat	1.230	0.376	0.358***	0.068	0.471***	0.060	0.905	0.170	1.281*	0.179
pratapgarh	1.143	0.331	0.799	0.119	0.344***	0.039	0.745	0.135	0.882	0.117
chronic_lungs/respiratory	1.785*	0.608	0.754	0.150	1.690***	0.247	1.102	0.228	1.215	0.180
chronic_stomach	2.448***	0.825	1.228	0.216	1.657***	0.247	0.841	0.184	1.440**	0.213
chronic_allergies/infection	1.647	0.627	0.737	0.157	1.310	0.215	1.130	0.244	0.863	0.148
chronic_other	1.568	0.469	0.589***	0.095	1.625***	0.204	1.360*	0.224	0.856	0.110
chronic_internal_organs	2.580***	0.944	0.622**	0.151	1.753***	0.300	1.537*	0.349	0.959	0.176
Log cost	0.926	0.062	0.926	0.062	0.926	0.062	0.926	0.062	0.926	0.062
Log time	0.841**	0.074	0.841**	0.074	0.841**	0.074	0.841**	0.074	0.841**	0.074

N=3618

**Notes:** Tables shows odds ratios from Mixed Multinomial Models, reference category is using no care. Models only use the sample of respondents that report to have suffered from a chronic illness (3618 obs). \*, \*\*, \*\*\* indicate significance at the 10, 5 and 1 per cent respectively.

**Table 6: Predicted probabilities of the effect of travel time to the provider**

	Acute Illness	Chronic Illness
No care	-0.03***	-0.04**
Other	-0.01***	-0.01**
Pharmacy	-0.02***	-0.02**
Private	-0.04***	-0.04**
Public	-0.02***	-0.02**
NDAP	-0.07***	-0.03**

**Notes: \*, \*\*, \*\*\* indicate significance at the 10, 5 and 1 per cent respectively.**

Figure 1: Health care seeking behaviour in the sample.

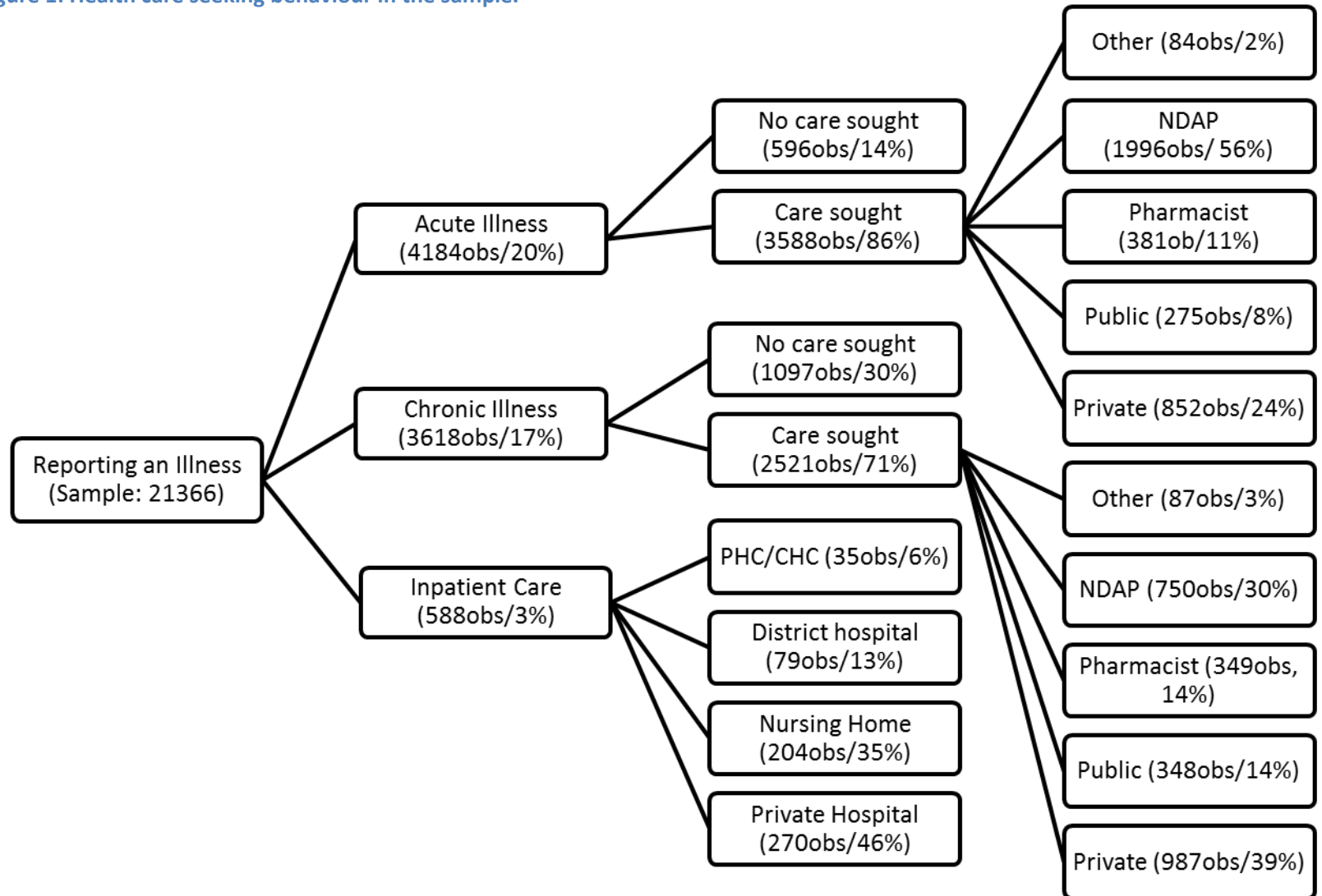
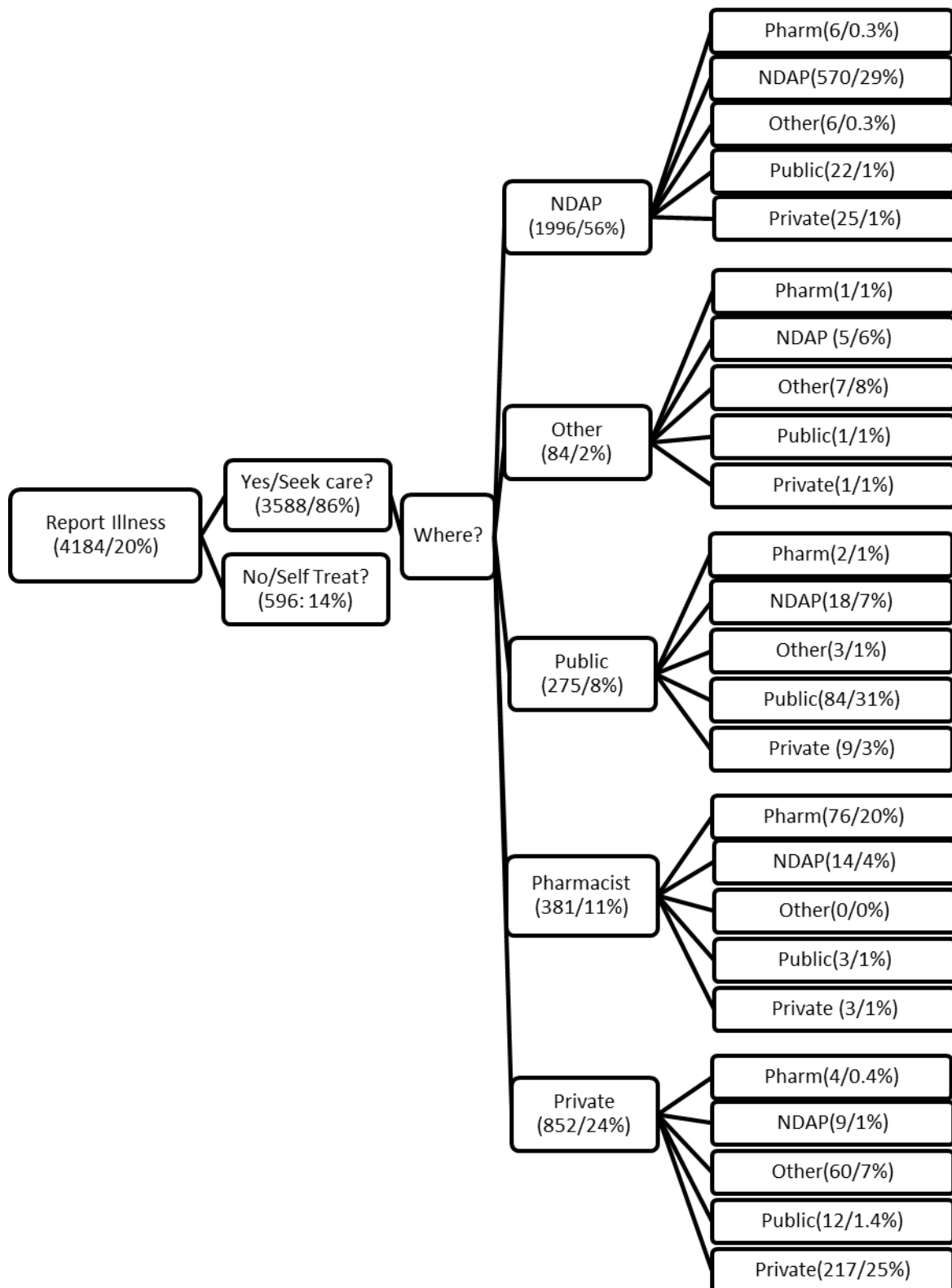
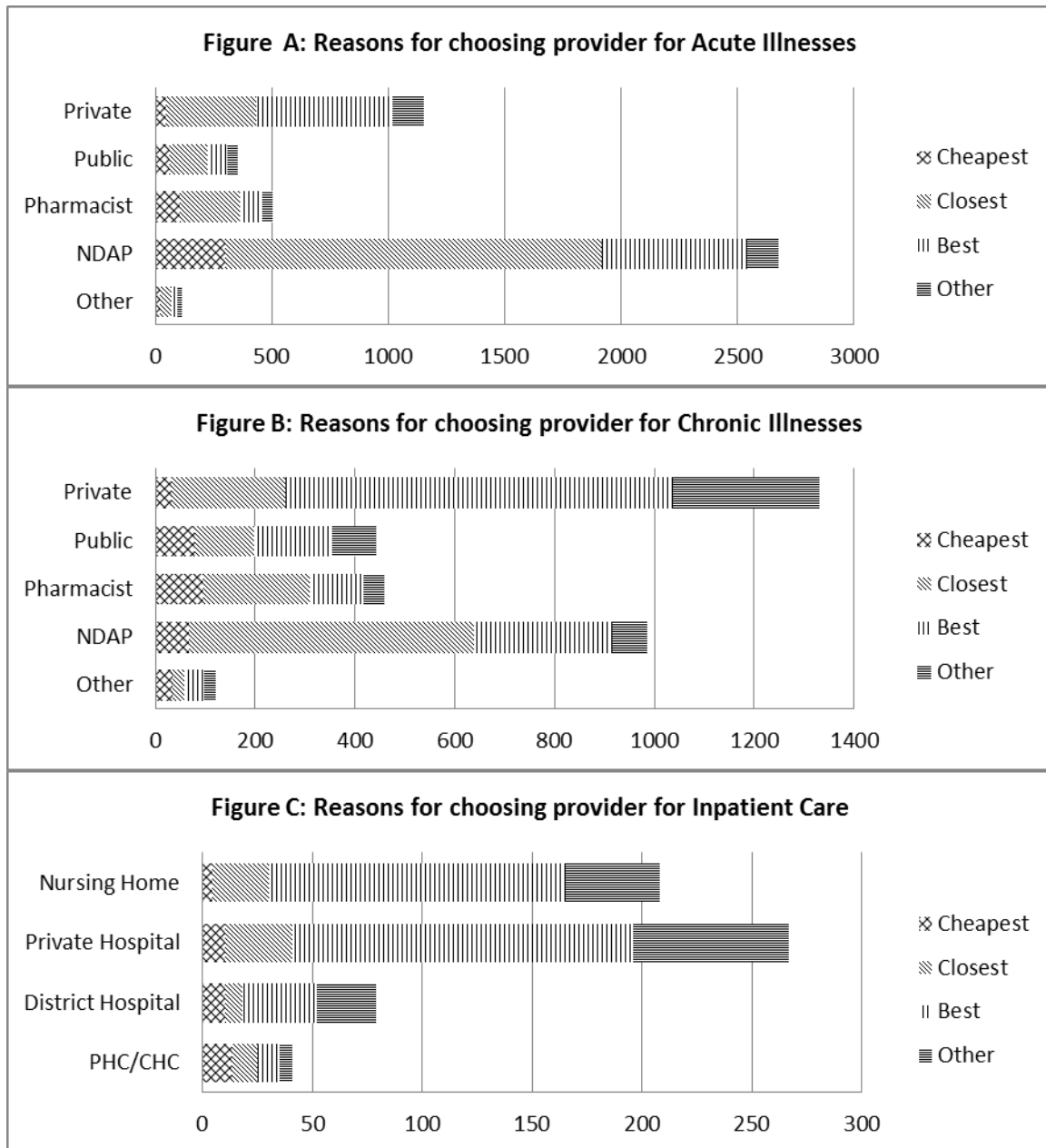


Figure 2: Healthcare seeking behavior for those suffering from an acute illness: 1st and 2nd visits



Note: “No other visits” were left out from the second visit; the percentages will not add up to 100.

**Figure 3: Self-reported reasons for choosing a healthcare provider for acute, chronic and inpatient conditions.**



Notes: Each figure for acute, chronic and inpatient care represent the total of cases (4184, 3618 and 588 respectively) reported. Responses are not mutually exclusive and can therefore sum up to more than the total of cases.

**Annexure 1: Pooled and site level pattern of healthcare seeking behavior in the sample areas**

<b>Variable name</b>	<b>Description</b>	<b>Pooled</b>	<b>Kanpur Dehat</b>	<b>Pratapgarh</b>	<b>Vaishali</b>
care_hw_a	Probability of seeking care for acute illnesses (past month) (1/0)	0.91	0.90	0.91	0.93
care_hw_c	Probability of seeking care for chronic illnesses (past month) (1/0)	0.79	0.77	0.78	0.84
hwseen_a	<i>Type of health worker seen for acute illnesses (categorical var: 0-5)</i>				
0	None	0.14	0.09	0.09	0.07
1	Other	0.02	0.03	0.01	0.03
2	NDAP	0.48	0.58	0.49	0.47
3	Pharmacist	0.09	0.05	0.13	0.11
4	Public	0.07	0.06	0.11	0.05
5	Private	0.20	0.19	0.16	0.29
hwseen_c	<i>Type of health worker seen for chronic illnesses (categorical var: 0-5)</i>				
0	None	0.30	0.23	0.22	0.16
1	Other	0.02	0.03	0.02	0.02
2	NDAP	0.21	0.28	0.24	0.20
3	Pharmacist	0.10	0.04	0.16	0.10
4	Public	0.10	0.11	0.12	0.09
5	Private	0.28	0.31	0.23	0.44
hwseen_a	<i>Type of health worker seen for inpatient care(categorical var: 0-4)</i>				
1	PHC/CHC	0.06	0.11	0.04	0.04
2	District Hospital	0.14	0.17	0.22	0.06
3	Private Hospital	0.46	0.52	0.43	0.44
4	Nursing Home	0.34	0.20	0.32	0.46

**Annexure 2: Predicted means/standard deviations (SD), and descriptions of estimated travel time and cost per provider.**

Variable name	Description	Other		NDAP		Pharmacist		Public		Private	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<b><i>Predicted Means</i></b>											
<b>Pooled Data</b>											
time	average travel time to the provider (minutes)	30	29	17	7	21	10	41	24	39	13
cost_acute	average cost for first visit (in INR) for acute illness	95	101	125	54	81	67	162	125	314	242
cost_chronic	average cost for first visit (in INR) for chronic illness	391	593	279	156	167	85	625	565	876	501
<b>Kanpur Dehat</b>											
time	average travel time to the provider (minutes)	26	29	23	4	27	8	54	20	51	9
cost_acute	average cost for first visit (in INR) for acute illness	109	103	140	56	95	61	181	117	354	236
cost_chronic	average cost for first visit (in INR) for chronic illness	553	577	360	150	198	83	599	470	1141	461
<b>Pratapgarh</b>											
time	average travel time to the provider (minutes)	32	24	18	4	19	8	33	23	33	8
cost_acute	average cost for first visit (in INR) for acute illness	116	97	103	48	37	57	93	109	171	209
cost_chronic	average cost for first visit (in INR) for chronic illness	138	477	249	143	128	73	365	469	611	415
<b>Vaishali</b>											
time	average travel time to the provider (minutes)	33	33	9	4	16	9	34	21	30	8
cost_acute	average cost for first visit (in INR) for acute illness	63	95	128	52	103	63	202	121	395	221
cost_chronic	average cost for first visit (in INR) for chronic illness	591	623	243	151	191	79	1011	553	994	469

**Annexure 3: Self-reported reasons for choosing a healthcare provider for acute, chronic and inpatient conditions by site**

	Kanpur Dehat				Pratapgarh				Vaishali			
	Cheapest	Closest	Best	Other	Cheapest	Closest	Best	Other	Cheapest	Closest	Best	Other
<b>Acute Illnesses</b>												
Private	7	94	116	28	7	78	129	8	17	118	186	67
Public	11	30	17	6	22	90	33	9	9	13	20	15
Pharma	19	28	7	2	34	113	23	9	30	67	38	13
NDAP	102	403	169	36	30	463	160	11	74	329	148	64
Other	8	18	2	2	4	6	4	1	5	9	11	10
<b>Chronic Illnesses</b>												
Private	7	51	127	44	10	70	228	28	9	60	200	149
Public	17	20	30	19	30	74	57	15	16	1	32	36
Pharma	12	10	6	2	49	124	43	11	14	32	27	18
NDAP	16	120	56	13	19	227	96	12	11	98	44	34
Other	6	6	6	5	14	8	10	7	5	1	8	6
<b>Inpatient Care</b>												
PHC/CHC	3	4	8	4	3	4	0	0	5	1	1	2
District Hospital	2	4	8	14	3	1	25	7	3	1	4	5
Private Hospital	3	10	52	27	5	9	44	16	1	13	61	28
Nursing Home	0	4	17	13	1	6	40	7	3	16	67	30

**Notes: Each figure for acute, chronic and inpatient care represent the total of cases (4184, 3618 and 588 respectively) reported. Responses are not mutually exclusive and can therefore sum up to more than the total of cases.**