Health and health care in Rajasthan: Identifying Problems, Designing Solutions

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The 2004 World Bank Development Report opened on the statement that the “social services fail the poor”. There are few contexts where this failure is more apparent than in the case of health care in India. The recent launching of the National Rural Health Care Mission reflects the widely held view that the Indian government needs to do more about health-care. The question then, however, is what? What are the most important problems, and how can we solve them? This case study is based on a survey conducted in rural Rajasthan. The survey was a joint enterprise of Seva Mandir, an NGO active in the area, Vidya Bhavan, a consortium of schools and colleges in Udaipur, and the researchers. Its main objective was to gather the evidence necessary for starting to think about solutions to the main problems.

The Udaipur rural health survey

Seva Mandir is a very well established NGO that has operated for over 50 years in Udaipur district, Rajasthan. Seva Mandir’s work in several areas: education, environment, microfinance, and health. The health unit was organizing health camps in villages, training traditional birth attendants and paid them to perform deliveries. It was also training village health workers who could administer the villagers some advice and provide basic medicine. Around 2001, the organization started feeling quite frustrated with the impact of the work it was doing on health. Many within Seva Mandir felt that while the unit was working hard, it was merely managing to scratch the surface of the problem, and that it was necessary to completely re-think the priorities of the unit, interact more closely with the government, and pilot successful, replicable models that other NGOs or the government could be inspired by.

Seva Mandir approached Abhijit Banerjee to help them think about new interventions. However, he felt that too little was known about the situation for him to make any reasonable recommendation. Therefore it was decided that the project should start by collecting a rich data set on health care and health care behavior in the area where Seva Mandir’s works, with the figuring out the main problems, and thinking about possible solutions. The solutions would then be implemented in the Seva Mandir village, and evaluated using the methodology

of randomized evaluation. Vidya Bhavan, a consortium of schools, teaching colleges and agricultural colleges in Udaipur, agreed to host and supervise the survey team. Abhijit Banerjee, Angus Deaton, and Esther Duflo, led the research effort.

The data collection took place between January, 2002 and August, 2003 in 100 hamlets in Udaipur district, Rajasthan. Udaipur is one of the more backward districts of India, with a large tribal population and an unusually high level of female illiteracy (at the time of the 1991 census, only 5% of women were literate in rural Udaipur). The sample frame consisted of all the hamlets in the 362 villages where Seva Mandir operates in at least one hamlet.[2] This implies that the sample is representative only of the population served by Seva Mandir, not of rural Udaipur district as a whole; Seva Mandir tends to operate in poorer villages, with a larger tribal population. Seva Mandir's relation with the villages ensured collaboration with survey, and allowed us to collect very detailed information at the village and household level. Seva Mandir's long standing relationship with the health authorities also gained us their full collaboration, making possible a weekly survey of all public health facilities. Finally, the extensive network of Seva Mandir's employees in the district allowed us to hire 130 reliable employees. The sample was stratified according to access to a road (out of the 100 hamlets, 50 hamlets are at least 500 meters away from a road). Hamlets within each stratum were selected randomly, with a probability of being selected proportional to the hamlet population.

The data collection had four components: a village survey, where we obtained a village census, a description of the village's physical infrastructure, and a list of health facilities commonly used by villagers (100 villages); a facility survey, where we collected detailed information on activities, types and cost of treatment, referrals, availability of medication and quality of physical infrastructure in all public facilities (143 facilities) serving the sample villages, all "modern" private facilities mentioned in the village surveys or in the household interviews (we have surveyed a total of 451 facilities), including a sample of the bhopas (traditional healers) mentioned in the village surveys (98 traditional healers were surveyed); a weekly visit to all public facilities serving the villages (143 facilities in total, with 49 visits

[2] A hamlet is a set of houses that are close together, share a community center, and constitutes a separate entity. A village is an administrative boundary. One to 15 hamlets constitute a village (the mean number of hamlets in a village is 5.6). Seva Mandir in general operates in the poorest hamlets within a given village.

per facility on average); and a household and individual survey, covering 5759 individuals in 1024 households.

The data collected in the household survey include information on economic well being using an abbreviated consumption questionnaire previously used by the National Sample Survey in their 1999-2000 survey (the 55th Round), measures of integration in society, education, fertility history, perception of health and subjective well being, and experience with the health system (public and private), as well as a small array of direct measures of health (hemoglobin, body temperature, blood pressure, weight and height, and a peak flow meter measurement of lung capacity).

The Continuous Facility Survey (CFS) may be the most original part of the project. We identified all the public facilities (143) serving the sample villages, and hired one para-worker who lives close to each facility, who was given the responsibility of checking the facility every week. The para-worker pays an unannounced visit to the facility during opening hours, checks whether the facility is open, and counts the number of doctors, nurses, other medical and non-medical personal, as well as of clients present in the facility. If the facility is closed, because the staff is performing a scheduled village visit, the para-worker goes to the village that the staff is supposed to be visiting, and checks whether he or she can be found in that village. To ensure the quality of the data collected in the Continuous Facility Survey, we have put in place a strictly enforced monitoring system: every four weeks, all the CFS para-workers of a block met, and we collected their data entry forms. They were also given a schedule indicating on which day they must complete their visit in each week of the following month. Two members of the team of investigators used motorcycle transport to visit several facilities every day, following the schedule given to the CFS para-worker. The para-workers were paid only if their visits have been completed on the planned day, and if there were no unexplained discrepancies between their report and that of the CFS monitor. The CFS monitors also visited the facilities on different days, so that we could check that there was no collusion between the para-worker and the facility staff. This survey took place for 13 to 14 months, including a “pilot period” of one to two months in each facility, where the system was fine-tuned. We report data for 12 months for each facility. The survey is complemented by a detailed one time facility survey, which, among other things, will allow

us to identify correlates of absenteeism in the centers.

Health status

The households in the Udaipur survey are poor, even by the standards of rural Rajasthan. Their average per capita household expenditure (PCE) is 470 rupees, and more than 40 percent of the people live in households below the official poverty line, compared with only 13 percent in rural Rajasthan in the latest official counts for 1999-2000. Only 46 percent of adult (14 and older) males and 11 percent of adult females report themselves literate. Of the 27 percent of adults with any education, three-quarters completed standard eight or less. These households have little in the way of household durable goods and only 21 percent of households have electricity.

In terms of measures of health, 80 percent of adult women, and 27 percent of the adult men have hemoglobin levels below 12 grams per deciliters. 5 percent of adult women and 1 percent of adult men have hemoglobin levels below 8 grams per deciliters. Strikingly, using a standard cutoff for anemia (11 g/dl for women, and 13 g/dl for men), men are almost as likely (51%) to be anemic as women (56%) and older women are not less anemic than younger ones, suggesting that diet is a key factor. The average body mass index is 17.8 among adult men, and 18.1 among adult women. 93 percent of adult men and 88 percent of adult women have BMI less than 21, which is the cutoff for low nutrition status in the US (Fogel, 1997). We also used peak-flow meter measurement to measure lung capacity in an attempt to detect asthma or other respiratory disorders (chronic bronchitis, etc..). Among adults, the average peak flow meter measurement is 316 ml per expiration (anything below 350 for an adult 1.60 meters tall is considered to be an indicator of respiratory difficulties).

Symptoms of disease are widespread, and adults (self) report a wide range of symptoms: a third report cold symptoms in the last 30 days, and 12 percent say the condition was serious. 33 percent reported fever (14 percent serious), 42 (20 serious) percent reported “body ache” 23 (7) percent reported fatigue, 14 (3) percent problems with vision, 42 (15) percent headaches, 33 (10) percent back aches, 23 (9) percent upper abdominal pain, 11

(4) percent had chest pains, and 11 (2) percent had experienced weight loss. Few people reported difficulties in taking care of themselves, such as bathing, dressing, or eating, but many reported difficulty with the physical activities that are required to earn a living in agriculture. Thirty percent or more would have difficulty walking 5 kilometers, drawing water from a well, or working unaided in the fields. Eighteen to twenty percent have difficulty squatting or standing up from a sitting position.

In table 1, we show number of symptoms reported in the last 30 days, Body Mass Index, fraction of individuals with hemoglobin count below 12, peak flow meter reading, high blood pressure, low blood pressure, broken down by third of distribution of the monthly per capita expenditure, which we collected using the abbreviated consumption questionnaire. Individuals in the lower third of the per capita income distribution have, on average, a lower body mass index, lower lung capacity, and are more likely to have a hemoglobin count below 12 than those in the upper third. Individual in the upper third report the most symptoms over the last 30 days, perhaps because they are more aware of their own health status; there is a long tradition in the Indian and developing country literature of better-off people reporting more sickness (see for example Murray and Chen (1992) and Sen (2002)).

Yet when asked to report their own health status, shown a ladder with 10 rungs, 62 percent place themselves on rungs 5 through 8 (more is better), and less than seven percent place themselves on one of the bottom two rungs. Unsurprisingly, old people report worse health, and women at all ages also consistently report worse health than men, which appears to be a worldwide phenomenon (Sadana et al (2002)), and richer people report better health than poorer people. However most people report themselves close to the middle. Nor do our life-satisfaction measures show any great dissatisfaction with life: on a five point scale, 46 percent take the middle value, and only 9 percent say their life makes them generally unhappy. Such results are similar to those for rich countries; for example, in the United States, more than a half of respondents report themselves as a three (quite happy) on a four-point scale, and 8.5 percent report themselves as unhappy or very unhappy. These people are presumably adapted to the

sickness that they experience, in that they do not see themselves as particularly unhealthy nor, in consequence, unhappy. On the other hand it is not that they never complain: When asked about their financial status, which was also self-reported on a ten-rung ladder, the modal response was the bottom rung, and more than 70 percent of people live in households that were self-reported as being on the bottom three rungs.

Box 1: Health and Wealth: A nutrition-productivity trap?

The high rate of anemia suggest a close relationship between health and wealth: anemia can be caused by nutritional deficits (and is particularly likely to be in this context, since both men and old women have high rates of anemia). In turn, it weakens the body and makes people less productive, which limit their capacity to earn a living. This possibility of a "nutrition-productivity trap" has been discussed extensively in the literature, notably by Das Gupta and Ray. Our data shows a strong relationship between self reported health and income, as shown in figure 1.

Study questions

1. From this figure, can we infer which is the stronger relationship: the effect of health on wealth or the effect of wealth on health?

2. Thomas et al. (2002), in randomized experiment in Indonesia, find that regularly administered iron pill lead to a reduction in anemia rates and an increase in labor supply, wages, self reported health, and even self reported happiness. Is the regular delivery of iron pills a sustainable, scalable option for India? Why or why not? What other solutions can be thought of to reduce anemia levels? How to ensure that the poor are not excluded from these systems?

Health-care facilities

Types of facilities

There are three broad categories of facilities: Public, private and traditional. The official policy on public facilities requires that there should be one subcenter, or sometimes an aid-post, staffed by one trained nurse (ANM), for every 3,000 individuals. These sub-centers, provide the first point of care, the PHCs or CHCs the next step, and the referral hospitals dealing with the most serious health problems. In our data, each subcenter serves 3,600 individuals on average, and is usually staffed by one nurse. Almost none of the subcenters report vacancies: i.e. there are as many nurses posted to the subcenter as there are posts. A primary health center serves 48,000 individuals and has on average 5.8 medical personnel appointed, including 1.5 doctors. Once again very few of the PHCs report vacancies.

What we include as private facilities are all the places that our respondents report as private providers that they have visited. Private facilities include a wide range of options ranging from facilities run by people who have completed their medical training and have additional post-graduate medical degrees, to traditional birth attendants (TBAs/"Daima"s) and pharmacists who in most cases have no formal medical training whatsoever.

Within traditional healers there are two main categories: Out of the 98 we have in our sample, 63 are jhad-fook practitioners who focus mainly on exorcisms and prayers, 5 just do desi ilaaj (they give traditional, usually herbal, medicines) and the rest do both.

Doctor's qualifications

Providers in the public facilities almost always have the appropriate formal qualification. The ANM in a sub-center is someone who has at least a high-school degree and has then undergone training to be an ANM (in Rajasthan the training lasts a year and a half). They are trained to handle a limited set of heath conditions and to identify a wider set, which

get referred to the PHC/CHC or to the referral hospital. The doctors in the PHC/CHC's are fully qualified to practice as general practitioners and might have some specialized degrees (87% of the CHCs and 13% of the PHCs have one or more specialists)

Table 2a reports that 27% of the private doctors who are described as the main provider in their facility claim to have some kind of specialist degree over and above the standard medical college degrees. Another 28% self-report a medical college degree, though this includes a sizeable fraction who have degrees in Ayurvedic (traditional Hindu) medicine (BAMS) or Unani (traditional Islamic) medicine (only 10.7% have an MBBS, i.e. are qualified in conventional modern medicine). The rest do not claim medical college degrees. They may however be trained as a compounder (what in the United States would called a pharmacist) or have attended some course that gives them some medical training. In the local parlance these doctors are referred to as Bengali doctors.

However looking only at the main providers in the facility may be misleading. Each facility reports 2.6 staff members, of which only one can be the main provider (by definition). However 87.8% of all the staff members are reported to see patients: This implies that most of these other staff members also see patients. Among them 67.2% have no formal qualifications, and less than 3% are qualified as an MBBS. Whether this is a problem depends on whether they are just helping the main doctor or whether they actually independently deal with patients. The anecdotal evidence suggests that they do act as independent providers: one hears about the doctor's son who now takes care of the practice because the older doctor who has the qualifications is now retired. This is an area where we clearly need more data.

The fraction of these doctors who claim to have an MBBS (37.7%) is slightly higher than the corresponding fraction in low income neighborhoods in Delhi (34% according to Das and Hammer (2004). Given how backward this area is in other ways compared even to the poorer parts of Dehli, this might suggest that the self-reports tend to exaggerate the qualifications.

Apart from those described as private doctors there are also self-described compounders, nurses and pharmacists, who also practice medicine. About 10% of the compounders and nurses claim to have a degree from medical college, and this is always an Ayurvedic college. The rest have no college degrees though more than half the nurses claim to have been trained to be an ANM,

About 36% of the private doctors do not have a college degree in any subject (Table 2b). Among them the average years of schooling is 11 years, which is a year less than what it takes to graduate from schooling. The education level among the nurses and compounders/pharmacists is very similar.

Table 2a also shows that traditional healers do not claim to have any formal medical training. They are also less educated than the private doctors, with an average schooling level of between 4 and 5 years (Table 2b).

Box 2: What is competence?

Having a degree is not necessarily evidence that the doctor knows what he is doing. In an recent innovative study, Das and Hammer (2004) attempt to quantify the competence of doctors in seven Delhi neighborhoods using a combination of vignettes and item responses. They started with a sample of 205 public and private providers from 7 Delhi neighborhoods. The original sample frame was the set of providers who were visited by anyone in the Delhi healthcare survey (Das and Sanchez (2004), which was a representative sample of 1641 individuals from these 7 neighborhoods. They then added a certain number of additional providers who were in the same neighborhoods, but had never been visited by those in the survey.

Each of these providers was presented with 5 vignettes representing the symptoms of 5 common health problems and asked what questions they would ask about the patient's history if someone showed up with the symptoms described in the vignette, what steps they would to examine the patient and what treatment would they recommend. The

answers were then compared to the "ideal" answers to these questions and an item-response methodology was used to extract a single parameter that predicts the ability of the provider to give a correct answer to each of these questions. This is what they call the doctor's competence.

The average competence in the sample was remarkably low. Even in the top quintile of the competence index, doctors asked no more than 48% history questions that they were supposed to ask, which went down to 15% at the lowest quintile. In the case of the treatment, doctors had to be between 0.6 to 1.3 standard deviations above the mean in competence before their recommendation had a more than 50% chance of not doing harm.

They go on to correlate competence with doctor characteristics. They find that public doctors in hospitals are 0.4 standard deviations better than public doctors in small clinics, while private MBBS doctors are more than one standard deviation better than private non-MBBS doctors. Both types of public doctors are located between the two types of private doctors in terms of competence. Doctors located in the poorest neighborhoods are one full standard deviation worse than doctors located in the richest neighborhoods and this is as true of public providers as it is of the private. This inequality is compounded by the fact that the fraction of MBBS private providers is only half as high in the poorer neighborhoods as it is in the richer ones.

Study Questions

1. What does this measure of competence measure?
2. What could explain the pattern of allocation of competent and less competent private and public doctors across the richer and poorer neighborhoods?
3. Why would people go to these doctors?

Distance to facilities

The median distance to the closest public facility is 1.53 Km while the mean is 2.09 Km. The mean distance to the closest PHC/CHC I s 6.7 Km. The median distance to the closest private provider that anyone in our sample has reported using is 2.83 Km and the average is 3.78 Km. The median distance to the closest self-described qualified private doctor (once again that anyone has reported using) is 6.72 Km while the mean is 8.01 Kms. Traditional healers are much closer. The closest traditional healer in our sample is 0.62 Km away (this is the median, the mean is 1.53 Km), and this probably understates how close they are since we only have sample of the traditional healers.

Cost of treatment

The services of the government doctors are supposed to be free, though everyone who is above the poverty line is required to pay for medicines, tests, etc. Nevertheless visits to sub-centers are cheap: Table 3 reports that the average visit to a subcenter/aidpost is only Rs. 33, whereas visiting a Bengali doctor costs Rs. 105. The average cost of visiting a PHC/CHC is Rs. 138 (only Rs. 100 if we leave out operations and tests) while visiting a qualified private doctor costs Rs. 179 (not including operations and tests).[3] Surprisingly visiting a traditional healer is also quite expensive---the average visit costs Rs. 131 (typically because you have to bring a chicken or a goat).

Equipment and Infrastructure

Every public health facility has syringes and needles, but beyond this equipment availability is patchy. About 20% of the aidposts and one-thirds of the subcenters lack a stethoscope, or a blood pressure instrument, or a thermometer or a weighing scale, and only a quarter of the sub-centers have a sterilizer. Since every facility is supposed to have at least one of each of these there is some concern that the practitioners might have "privatized" the equipment that was provided to them.

The quality of the infrastructure is also unimpressive: none of the subcenters have a water

[3] In a previous paper we had said that visits to public and private facilities cost more or less the same. The difference comes from a relatively small number of operations/tests in public facilities which were very expensive. Our interpretation is that these procedures are inherently expensive and the government facility may well be the least expensive and perhaps the only place to get them done.

supply, 7% have a toilet for patients and 8% have electricity. It is therefore not surprising that only 3% rooms have fans, despite the 50 degrees centigrade plus weather in the summer. Finally 45% of the rooms leak when it rains.

Unfortunately we do not have comparable data on private facilities. Casual observation suggests that the infrastructure is not much better there but almost all of them seem to have a stethoscope and a thermometer (this is part of what makes them credible as doctors).

Absence rates

Public subcenters and Primary Health Centers are supposed to be open 6 days a week, 6 hours a day. In the Udaipur survey Public health facilities were surveyed weekly, and we have on average 49 observations per facility. Table 7 summarizes the main results. It conveys the impression that things are not working the way they are supposed to be. On average, 45% of the medical personnel are absent in subcenters and aid posts, and 36% are absent in the (larger) Primary Health Centers and Community Health Centers. These high rates of absences are not due to staff outreach activities since, whenever the nurse was absent from a subcenter, we made sure to look for her in the community. Since subcenters are often staffed by only one nurse, this high absenteeism means that these facilities are often closed: we found the subcenters open only 44% of the time during regular opening hours. In an additional 12% of the cases, the nurse was found in the catchment area of her sub-center.

Table 8 reports results on the kinds of facilities we are most likely to find closed. The 6% of subcenters that are far from the road have only 38% of the personnel present, compared to about 55% for the average. Facilities that are closer to Udaipur or to another town do not have lower absenteeism. The available amenities (water, electricity) do not seem to have a large impact, except for the presence of living quarters, which has a large impact on the fraction of personnel present, particularly in subcenters. Reservations of the position of chairperson (Sarpanch) of the panchayat to a woman have no impact on subcenters, and seem to be associated with increased presence in PHCs.

The weekly survey allows us to assess whether there is any predictability in the fraction of

staff present at a center or subcenter. For each center, we ran a regression of the fraction of personnel missing on dummies for each day of the week, time of the day, and seasonal dummies. We find that the day of the week dummies are significant at the 5% level in only 10% of the regressions for the subcenters, and in none of the regression for the PHC and CHC; the time of the day dummies are significant only in 17% of the regressions for the PHC, and 9% for the subcenters. The public facilities are thus open infrequently and unpredictably, leaving people to guess whether it is worth their while walking for over half an hour to cover the 1.4 miles that separate the average village in our sample from the closest public health facility.

Patterns of health-care use

How frequent are health-care visits?

In the household survey we asked where people go to get health care. Table 4 shows these results. We see that adults visit a health facility on average 0.51 times a month. The poor, defined here as people who are in households in the bottom third of the distribution of PCE (average Rs. 219) per month, visit a facility 0.43 times in a month, while an adult in the middle third of the distribution (average PCE Rs. 361) visits a facility 0.54 times a month and an adult in the highest group (average PCE Rs. 770) visits the facility 0.55 times a month. The difference between the top third and the middle third, on the one hand, and the bottom third on the other, is significant, and remains so with village fixed effects.

Each adult interviewee was also asked what symptoms of ill-health he/she had had in the past month and what he/she did about it. Table 5 reports the results. When they report a symptom they visit some facility 31% of the time on average. The frequency however varies substantially by disease: They will see a provider more than 50% of the time for hot fever and more than 45% for diahrrea, but less than 20% of the time for chest pains, trouble breathing, genital ulcers, blood in spit, worm in stool, weight loss, night sweats and hearing and eye-sight problems. The pattern seems to be that they are more likely to see someone for relatively short-duration morbidities than for more chronic problems (other conditions which make them go to the doctor include vomiting (40% of time), cold

symptoms, headaches and productive coughs (about a third of the time each)). This is especially striking given that most of the short-duration morbidities tend to get cured on their own, or in the case of acute diarrhea, with help of some simple home remedies, while many of the chronic conditions are either potentially debilitating (hearing problems, eye-sight problems, etc.) or possible symptoms of some grave condition (chest pains, breathing problems, blood in sweat etc.)

Box 3: Low immunization rates: Supply or demand?

In contrast to the frequent visits to health facilities in responses to symptoms, a very small number of health visits take place to obtain preventive care. As a case in point, immunization rates are extremely low. When the questions on immunization are asked with care (they are not in most surveys!), the rate of full immunization for children aged 1-5 turn out to be only 2.5%.

Study questions: What can explain these low rates? Supply or demand? What interventions could improve both supply and demand? Does this very low level of immunization necessarily imply that parents strongly resist immunization, and that it would be really hard to improve the immunization level significantly?

Choice of health-care providers

Where do these people get the health-care they are buying? In the Udaipur survey, of the 0.51 visits to a health facility that the average person in our survey reports in a month, only 0.12 visits (i.e. less than quarter) are to a public facility. The fraction of visits to a public facility is highest for the richest group, and lower for the other two groups, but about the same for each.. Overall, the rich have significantly more visits to public facility than the poor. No one uses public facilities very much, and if anything, the poor use them less than the non-poor. The majority of the rest of the visits (0.28 visits per adult per month) are to private facilities. The rest are to Bhopas (0.11 visits per adult per month), who are the traditional healers. For the poor, the fraction of visits to a Bhopa is well over a quarter of all visits, while for the

richest group it is about an eighth of all visits.

Patients also seem to associate specific diseases with specific providers. Table 5 lists the conditions in the order of how likely it is that the person will see a doctor for them. When we compare public versus private facilities there is no discernable pattern, except that those who have blood in cough tend to go to the public facility relatively more often. This might reflect the success of the government TB program. On the other hand, it is clear that the person is somewhat less likely to see a bhopa for the conditions at the top of the Table, which are the conditions which the patient presumably takes most seriously (since he goes to the doctor more for them).

Box 4: Is absenteeism responsible for the low use of the facilities?

Finally, the poor appear less likely to use the facilities that are close often. The probably that a center is open more often is correlated with lower utilization of these facilities: in random visits, we find that, on open days, public facilities where the personnel are present more often have significantly more patients than those where the personnel is present less often. In the household survey, we find that, in villages that are served by a facility that is closed more often, the poor (though not the middle class or the rich) are less likely to visit the public facilities, and more likely to visit the bhopa.

Study question: how should we interpret this correlation: does absenteeism forces the poor to choose other, inferior form of providers? Or is it the low demand in some villages that cause the high absence rate? How can we tell?

Box 5: How to provide incentives in the public health service

How to deal with absence in public facilities. Local control is the one solution that is being widely discussed these days: This was the main approach advocated by the World Bank (2004) Development Report on social services delivery. Shanta Devarajan, who directed the report, summarizes the idea: "Services can work when poor people stand at the center of service provision - when they can avoid poor providers, while rewarding good providers with their

clientele, and when their voices are heard by politicians - that is, when service providers have incentives to serve the poor."

The Udaipur survey offered an opportunity to try out this class of recipes: In the government health clinics in Udaipur district a member of the community was paid to check one a week, on unannounced days, whether the auxiliary nurse-midwife assigned to the health subcenter was present in the center and, if she wasn't there, whether she could be found in the village. A parallel system (a monthly visit by a member of the survey team, on the same day) confirmed that this system of local monitoring was properly implemented: external monitors and community members found similar absence rates. However, no attempt was made to impose an external reward system for the nurse-midwives based on the monitoring information.

The weekly local monitoring system was put in place in 143 randomly selected clinics for eight months. Then, for the next four months, attendance was measured by external monitors carrying out monthly checks in a randomly chosen sample of 80 comparison health centers drawn from the same population from which the treatment centers were previously drawn. Attendance was also measured by external monitors in the treatment centers in each of these four months, while the weekly local monitoring of the treatment centers continued. During those four months, the absence rates turned out to be almost exactly the same in the program and in the comparison facilities (44 and 42 percent respectively).

Study Question:
1.Why did this solution fail? What could other solutions to the problem of absenteeism be?

2. (Please read the rest of the case before answering this question) Will solving the absence problem be enough? How do other countries provide incentives to public doctors? Can some of these solutions be adapted to India? What would be the caveats and the areas to watch?

How much do they spend?

In terms of health expenditure, Columns 1 and 2 of Table 6 shows the monthly expenditure on health in the Udaipur survey, calculated in two ways: from the expenditure survey, and from the expenditures reported in the adult and children survey. The numbers are similar, except for the rich where the expenditure derived from the expenditure survey is much larger

than the expenditure calculated from the addition of last month's visit. Column 3 shows the expenditure as a fraction of household total expenditures, and from the expenditures reported in the adult and children survey, as a fraction of personal expenditures. The average household spends 7% of its budget on health. While the poor spend less in absolute amount, they spend the same amount as a share of their budget. Column 4 shows the average health expenditure for adults. It is about 60 rupees, or 13% of the monthly PCE of his family. This fraction is highest for the poorest (15%) and lowest for the richest group (11%).

In terms of expenditures poor adults in the Udaipur survey spend 13% of their total health expenditures at public facilities, 23% on Bhopas, and the rest at private facilities. The rich spend 23% of their total health expenditures at public facilities, and less than 10% on Bhopas, while the middle group spends more than 17% of their health expenditures on Bhopas and 13% at the public facilities.[4] The rich therefore spends a significantly larger fraction of their health rupees on public facilities than do the poor, and a significantly smaller fraction on bhopas. Part of the difference in the consumption of public health care can be attributed to where the rich live, since, once we control for village fixed effects, the difference is smaller (5%) and insignificant.

The treatments

Patients are given a shot in 68% of the visits to a private facility and a drip in 12% of the visits. A test is performed in only 3% of the visits. In public facilities, they are somewhat less likely to get an injection or a drip (32% and 6% respectively) but no more likely to be tested. Among private doctors, in this sample, it does not appear that more qualified doctors are less likely to administer shots: if anything, we seem to find the opposite. Given the evidence on the nature of the ailments that people see doctors for (mostly short-term self-limiting diseases) it does seem likely that shots and drips are being overused, at least by the private doctors, and perhaps even by the public providers.

It is not clear that the public facilities are delivering what the patients want. Out of 898

[4] The percentage do not necessarily add up to 100, because some people did not know whether some facilities were public or private.

people who could not remember ever going to a public facility the most common answer, chosen by over 250 people, was "no proper treatment at government facilities". Another 60 people said that "better treatment (was) available elsewhere". The other most common answers were "I did not need to go" (roughly 175 people), followed by "too far" (roughly 100 people), "too expensive", "do not know where it is" (roughly 50 people each), and "do not know about government hospitals" (roughly 35 people). There is clearly a large group that feels that they are not getting the care they want. Among these there are some who do say that it is because they do not get a shot when they go to the public facility, but most just say that they do not like the treatment.

Box 6: The patients-Doctor interaction in public and private facilities

In Udaipur, we did not collect any data on the quality of the patient-doctor interaction, but Das and Hammer (2005) did. One of the interview team sat with the provider for a whole day, recording details of their interaction with each patient. They recorded details about the transaction including the number of questions concerning the history of the problem, examinations performed, medicines prescribed and (for the private sector) prices charged. Finally, they noted the medication given, including the names and types of medicines dispensed or prescribed along with the dosage. In total, they observed 4,108 doctor/patient interactions for 193 providers. The overall sense we get about health-care in India that we get from their study is nothing short of frightening. In the median interaction the provider then asks 3 questions regarding the illness and performs some examinations (which would probably involve using a stethoscope and checking the patient's temperature). The patient is then provided with 3 different medicines (providers dispense rather than prescribe medications in 69 percent of all interactions) and the interaction is over in 3 minutes. Patients are seldom referred (less than 7 percent), given instructions (50 percent of the time), or offered guidance regarding follow-up (35 percent of the time). However things are much worse in the public sector. Among the worst providers in terms of competence (as measured by the vignette method presented in box 1), private providers spend almost four and half minutes per interaction, while public providers spend only two minutes. In the highest quintile the private providers spend 6

minutes per patient, while the public providers spend only three and a half. The probability of any physical exam is less than 30% for public providers in the bottom quintile and remains not much higher than 40% in every quintile except the highest. Private providers in every quintile do a physical exam at least 70% of the time. Public providers also ask fewer questions. This can have terrible consequences: the study concludes that a public provider would probably be unable to differentially diagnose dysentery from viral diarrhea, with potentially life threatening consequences. However, they also find that the public doctors are less likely to over-medicate.

Study questions: The two studies from Delhi shows that despite having more formal competence, the treatment offered by public doctors seems worse than the treatment offered by private doctors. The qualifications of the private doctors in the Udaipur sample is however much worse than in Delhi, and we saw that even qualified doctors seem to widely overmedicate. Given this, should a government try to drive out the unqualified providers, or should they try to regulate the private sector? What could the India government do to regulate the private sector and encourage better care giving and care seeking practices? Why is the overmedication problem particularly hard to address? What are solutions?

The next steps

After the first result of the survey came out, Seva mandir convened a meeting in Udaipur, where government representatives, members from NGOs working in the areas, and academics, discussed the findings and discussed of way forward.

Study question: What priority areas emerged? What decisions did they take?

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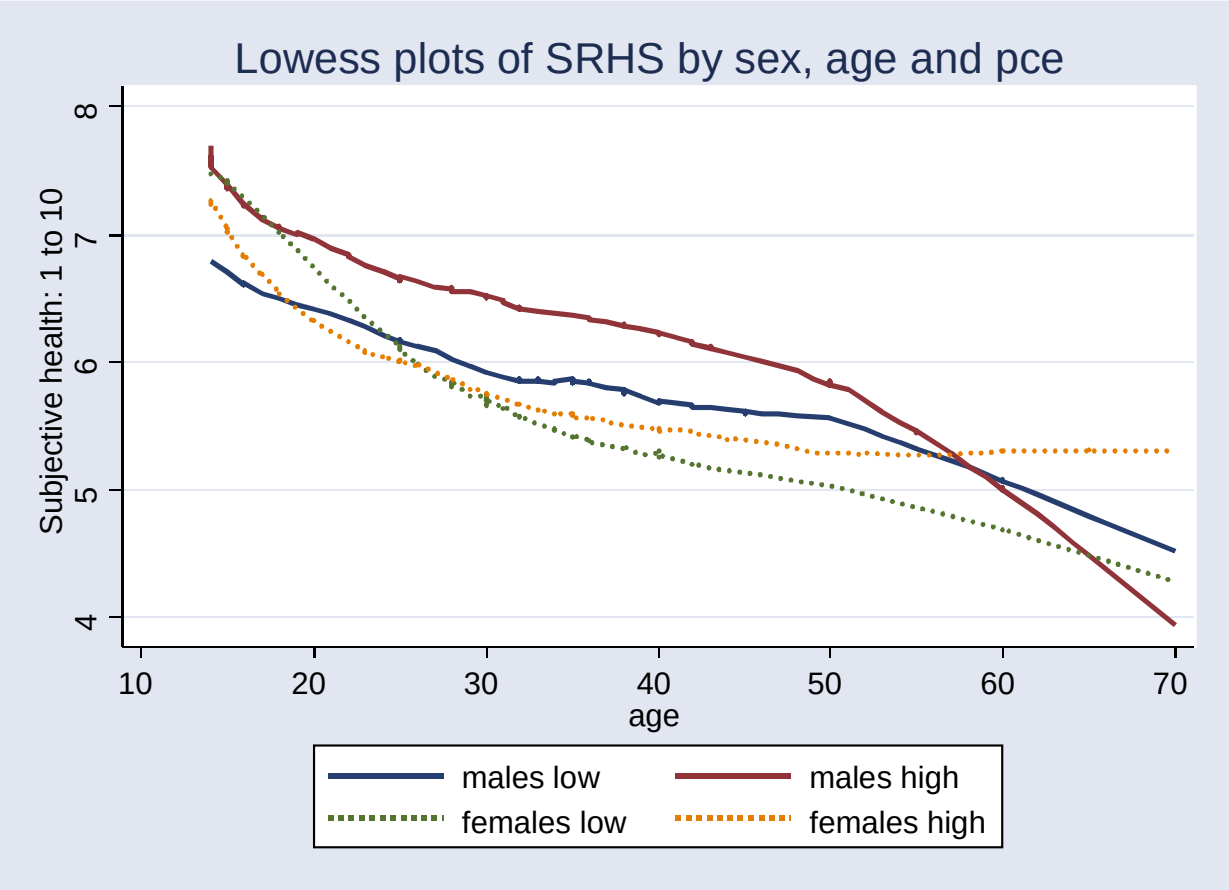
Lowess plots of SRHS by sex, age and pce
Subjective health: 1 to 10
4
5
6
7
8
10
20
30
40
50
60
70
age
males low
males high
females low
females high

Table 1: Selected health indicators, by position in the per capita monthly expenditure distribution

group	reported health status	No. of symptoms self reported in last 30 days	BMI	hemoglobin below 12 g/dl	peak flow meter reading	high blood pressure	low blood pressure
bottom third	5.87	3.89	17.85	0.57	314.76	0.17	0.06
middle third	5.98	3.73	17.83	0.59	317.67	0.15	0.08
top third	6.03	3.96	18.31	0.51	316.39	0.20	0.09

Note:
Means based on data collected by the author from 1024 households. See text for survey and variable description

Appendices

Table 2a: Medical Training

Facility Type	No Formal Qual	RMP	BAMS	BIMS	BUMS	MBBS	BHMS/ DHMS	MBBS + Spec	ANM	Pharm	Seva Mandir	Other NGO Training	Govt Training	Other Training	Total
private doctor	13.9%	21.3%	6.6%	0.8%	0.0%	10.7%	10.7%	27.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.8%	105.7%
nurse/MPW	0.0%	0.0%	11.1%	0.0%	0.0%	0.0%	0.0%	0.0%	55.6%	0.0%	0.0%	0.0%	0.0%	33.3%	100.0%
compounder	15.6%	6.3%	12.5%	0.0%	3.1%	0.0%	0.0%	1.6%	6.3%	3.1%	0.0%	0.0%	6.3%	45.3%	100.0%
pharmacist	75.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.3%	18.8%	0.0%	0.0%	0.0%	100.0%
TBA/Dai	76.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	22.5%	0.0%	0.0%	0.0%	99.1%
VHW	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	86.4%	9.1%	4.5%	0.0%	104.5%
Commmunity Health Worker	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%	50.0%	100.0%
Home Remedy Worker	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Trad healer/ desi ilaj practitioner	60.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	20.0%	20.0%	0.0%	0.0%	100.0%
jhaad fonk practitioner	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
desi ilaj and jhadd fonk	96.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.3%	0.0%	0.0%	100.0%
private hospital	0.0%	2.4%	0.0%	2.4%	0.0%	9.5%	0.0%	63.1%	2.4%	0.0%	0.0%	0.0%	0.0%	27.4%	107.1%
ayurvedic	50.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
non medical profession	75.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%	100.0%
other	28.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.6%	0.0%	0.0%	42.9%	100.0%

Main Provider Education Table 2b

Main Providers						
factype	Percentage Educated People	Percentage Educated in NFE	Percentage Who Went To School	Percentage Graduate People	Percentage Who Went To School But Not Graduates	Mean Class Reached By People Who Went To School and Do Not Have Grad Diploma
private doctor	100.0%	0.0%	100.0%	63.1%	36.9%	11.1
nurse/MPW	100.0%	0.0%	100.0%	22.2%	77.8%	11.4
compounder	100.0%	3.1%	96.9%	34.4%	62.5%	11.5
pharmacist	100.0%	0.0%	100.0%	6.3%	93.8%	9.3
TBA/Dai	7.2%	5.4%	1.8%	0.0%	1.8%	2.5
VHW	95.5%	4.5%	90.9%	0.0%	90.9%	6.4
Commmunity Health Worker	100.0%	0.0%	100.0%	0.0%	100.0%	10.0
Home Remedy Worker	100.0%	0.0%	100.0%	50.0%	50.0%	11.0
Trad healer/desi ilaj practitioner	60.0%	20.0%	40.0%	0.0%	40.0%	4.5
jhaad fonk practitioner	23.8%	6.3%	17.5%	0.0%	17.5%	5.0
desi ilaj and jhadd fonk	40.0%	10.0%	30.0%	0.0%	30.0%	3.7
private hospital	97.6%	0.0%	97.6%	92.9%	4.8%	12.0
ayurvedic	100.0%	0.0%	100.0%	0.0%	100.0%	11.0
non medical profession	75.0%	0.0%	75.0%	0.0%	75.0%	8.0
other	85.7%	14.3%	71.4%	14.3%	57.1%	8.8

Table 3: Health-care costs

Total Health Visit Cost (w/o Transportation)	Visit Cost (average of all) According To					Costs with Test/Ope		Cost Without Test/Ope
	Clients	Private Provider		Public Provider		Client	Provider	Client
Facility type	Average cost	Total Consultation Fee (Poor)	Total Consultation Fee (Rich)	Percentage of Facilities Who Charge Any Fee	Maximum Fee That Can be Charged	Cost of Visits with Tests or Operations	Amount for Lab Test + Operation+ InpatientStay	Cost of Visits Without Tests or Operations
CHC/	138.1			87.50%	17.3	683.0	14	100.2
PHC				0.0%				
Government referral hospital	1217.2					3145.2		555.0
Private hospital	889.5	1364.1	1344.5			3106.4		462.4
Ayurvedic hospital	1981.4			0.0%		29326.7		73.6
TB hospital	401.0					6667.0		.
dispensary	0.0					0.0		.
aidpost/subcenter	32.8			0.0%		300.0		32.5
angawadi	0.0					.		0.0
health camp	0.0					0.0		0.0
Ngo clinic	121.8					774.0		78.5
private qualified doctor	178.6	107.4	130.0			1788.0		145.3
private nurse/	157.9	53.3	61.7			4410.0		91.4
componder		44.0	46.9					
private pharmacist	16.7	38.5	37.3			.		16.7
bengali doctor	105.2					394.7		99.5
government doctor, private practice	179.2					3383.3		132.9
practitionner, private practice	103.7					540.0		93.5
TBA/Dai	103.3	6.2	10.7			.		103.3
VHW/	0.9	4.0	4.5			.		0.9
CHW		42.5	50.0					
HRW	33.2	767.5	767.5			.		33.2
bhopa	130.8							
(desi ilaj/		11.9	11.9					
jhaad fonk/		8.0	8.0					
both)		7.4	12.0					
OTHER	16.1	18.6	27.1			0.0		17.1
Don’t know	144.5					2050		103.8
ayurvedic		30.0	30.0					
non medical profession		2.8	2.8					

Note: we do not have detail on operations/lab test for private providers

Table 4: frequency of health care visits

	Per capita monthly expenditure	Total number of visits in the last 30 days			
		ALL	Public	Private	Bhopa
PANEL A: MEANS					
ALL	470	0.51	0.12	0.28	0.11
poor	219	0.43	0.09	0.22	0.12
middle	361	0.54	0.11	0.29	0.13
rich	770	0.55	0.15	0.33	0.07
PANEL B: OLS REGRESSIONS: dependent variable: number of visits					
Middle		0.11	0.02	0.07	0.01
		(.052)	(.023)	(.034)	(.027)
Rich		0.12	0.06	0.11	-0.05
		(.05)	(.024)	(.034)	(.022)
PANEL C: OLS REGRESSIONS, WITH VILLAGE FIXED EFFECTS					
Middle		0.14	0.02	0.09	0.02
		(.047)	(.024)	(.033)	(.023)
Rich		0.13	0.04	0.11	-0.03
		(.05)	(.026)	(.036)	(.025)
Villages Fixed effects		yes	yes	yes	yes

Note: Omitted dummies in panel B and C: poor
Standard errors in parentheses below the coefficients

Table 5: Choice of Facilities

Condition	Mean	Any Visit	Fraction of Private Hosp	Fraction of Private Visit	Pub	Pvt	NGO	Bhopa
MILD AND SERIOUS								
Hot Fever	0.32	0.54	0.03	0.02	0.19	0.59	0.01	0.14
Diarrhea	0.16	0.45	0.05	0.02	0.20	0.62	0.01	0.10
Vomiting	0.09	0.40	0.02	0.01	0.18	0.61	0.00	0.16
Pain in Upper Abdomen	0.23	0.38	0.03	0.01	0.20	0.45	0.00	0.29
Body Ache	0.42	0.37	0.04	0.02	0.21	0.51	0.01	0.20
Cold Symptoms	0.33	0.35	0.03	0.03	0.20	0.61	0.01	0.10
Cough with Blood	0.01	0.34	0.20	0.00	0.30	0.40	0.00	0.10
Dry Cough	0.20	0.34	0.02	0.01	0.23	0.60	0.02	0.10
Headache	0.42	0.34	0.03	0.01	0.20	0.53	0.02	0.19
Productive Cough	0.11	0.33	0.07	0.00	0.22	0.54	0.02	0.13
Pain in Lower Abdomen	0.12	0.31	0.01	0.04	0.14	0.47	0.00	0.33
Back Ache	0.33	0.28	0.03	0.03	0.21	0.49	0.03	0.19
Weakness/Fatigue	0.23	0.25	0.05	0.02	0.18	0.53	0.02	0.19
Skin Problems	0.03	0.24	0.15	0.00	0.10	0.55	0.05	0.10
Swelling Ankles	0.01	0.24	0.00	0.11	0.22	0.33	0.00	0.33
Menstrual Problems	0.06	0.24	0.05	0.05	0.25	0.20	0.05	0.40
Painful Urination	0.10	0.21	0.04	0.00	0.23	0.52	0.02	0.19
Chest Pain	0.11	0.20	0.02	0.02	0.24	0.51	0.02	0.18
Trouble Breathing	0.07	0.19	0.03	0.06	0.17	0.57	0.03	0.14
Genital Ulcers	0.01	0.18	0.00	0.00	0.17	0.50	0.00	0.33
Blood in Spit	0.01	0.17	0.00	0.00	0.25	0.50	0.00	0.25
Worms in Stool	0.03	0.14	0.00	0.09	0.55	0.18	0.00	0.18
Weight Loss	0.11	0.07	0.05	0.05	0.26	0.42	0.05	0.16
Problems with Vision	0.14	0.06	0.05	0.00	0.30	0.45	0.00	0.20
Night Sweats	0.03	0.04	0.00	0.00	0.33	0.67	0.00	0.00
Hearing Problems	0.04	0.03	0.00	0.00	0.00	0.33	0.00	0.67

Table 6: Patterns of Health-care Spending

	household monthly health expenditure			Average adult monthly expenditure on:				Average cost per visit			
	level		share/monthly exp.								
	expenditure survey	individual surveys	individual surveys	All visits	share public	share private	share bhopa	all visits	Public	Private	Bhopa
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
PANEL A: MEANS											
ALL	286	196	0.07	59	0.18	0.66	0.15	117	113	144	74
poor	70	99	0.07	32	0.13	0.61	0.24	72	71	84	61
middle	162	195	0.09	52	0.14	0.68	0.17	95	52	130	76
rich	571	286	0.08	88	0.23	0.68	0.09	166	173	191	90
PANEL B: OLS REGRESSION											
middle	92	96	0.02	19	0.01	0.07	-0.07	23	-19	46	16
	(21)	(38)	(.018)	(8)	(.042)	(.051)	(.041)	(12)	(24)	(20)	(31)
rich	500	187	0.01	55	0.10	0.07	-0.16	94	102	107	29
	(109)	(34)	(.012)	(12)	(.042)	(.053)	(.041)	(24)	(45)	(35)	(34)
PANEL C: OLS REGRESSIONS, WITH VILLAGE FIXED EFFECTS											
middle	92	63	0.02	16	0.01	0.08	-0.07	5.7	-33	0.46	-7.9
	(21)	(39)	(.015)	(12)	(.04)	(.049)	(.039)	(26)	(78)	(42)	(36)
rich	500	135	0.01	43	0.05	0.07	-0.10	76	-21	73	81
	(109)	(42)	(.016)	(13)	(.042)	(.052)	(.041)	(28)	(86)	(43)	(49)
village fixed effects	yes	yes		yes	yes	yes	yes	yes	yes	yes	yes

Table 7: Continuous facility survey: summary statistics

	Subcenters & aidposts	PHC & CHC
doors closed	0.56	0.03
no personnel found	0.45	0.03
fraction of medical personnel found	0.55	0.64
doctor is appointed	0	0.89
fraction of doctors present	--	0.55
at least one medical personnel is missing	0.56	0.78
observations	5268	1716
number of facilities	108	35
number of visits per facility	49	49

Table 8: Where is absence higher?

		Fraction of medical personnel present	
	number of visits	Subcenters & aidposts	PHC & CHC
Distance from road			
0 Km from road	5103	0.56	0.65
>0 and <=5 Km from road	1478	0.55	0.63
>5 Km from road	403	0.38	
Distance from Udaipur			
closest to udaipur	2315	0.53	0.61
farther	2254	0.58	0.68
farthest	2415	0.54	0.66
Distance from the nearest town			
closest to town	2350	0.56	0.64
farther	2396	0.55	0.75
farthest	2238	0.54	0.59
Reservations for women			
no reservation for women	2583	0.57	0.50
reservation for women	1843	0.56	0.68
Electricity			
no electricity	3123	0.56	0.60
electricity	1564	0.52	0.65
Water			
in facility	757	0.53	0.61
less than 30 meters from facility	2365	0.57	0.68
30 to 100 meters from facility	794	0.49	0.62
more than 100 meters from facility	771	0.59	0.62
Medical personnel living in facility			
no medical personnel living in facility (with living quarters)	2640	0.56	0.80
at least one medical personnel living in facility	853	0.64	0.69
no living quarters available	3171	0.49	0.64

Note: some data covers only a subset of facilities