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Evidence from 3 randomized control trials in rural India

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Abstract

In a number of developing countries, including India, a large share of health spending is paid for out of pocket, leading to impoverishment and limited access to health care, especially for poorer segments of the population. Since the 1990s, Community Based Health Insurance (CBHI) schemes have been proposed as an approach which has the potential to reduce the financial consequences of illness and enhance access to health care. However, convincing empirical evidence on the ability of such schemes to meet their objectives is limited. This paper uses data from three randomized control trials conducted in rural Uttar Pradesh and Bihar to evaluate the effects of CBHI on health care utilization and financial protection. The findings reveal limited positive effects of CBHI on health care utilization and out of pocket spending, and even negative effects in one of the sites. The results suggest that in the absence of subsidised premiums, voluntary CBHI schemes operated by local NGOs offer limited benefit packages and face managerial challenges, especially related to the reimbursement of providers, which limits the impact of such schemes on access to care and financial protection.

1. Introduction

Private health expenditure constitutes 81 per cent (pc) of total health expenditure in India of which 94pc is paid for out of pocket (Berman, Ahuja *et al.,* 2010). Less than 15 pc of the population is covered by health insurance (Berman, Ahuja *et al.,* 2010, World Health Organization 2012).The absence of pre-financing arrangements for health care exposes many households to financial hardship when confronted with ill-health, or causes them to forego care altogether (Bonu, Bhushan *et al.,* 2009, Binnendijk, Koren *et al.,* 2012, Murray, Vos *et al.,* 2012). The impoverishing effects of catastrophic health care expenses have been highlighted by Devadasan, Ranson *et al.* (2006).

Until relatively recently, in India, large scale public schemes to alleviate the burden of health care expenses on the poor have been largely absent. However, in 2008, the government launched the Rashtriya Swasthya Bima Yojana (RSBY) which targets those below the poverty line and provides coverage for inpatient care (IP). Following the criticism that the scheme does not cover the costs of outpatient (OP) care, a handful of pilots providing coverage for both IP and OP care have been initiated (Bonu, Bhushan *et al.,* 2009, ICICI Foundation 2012). Notwithstanding such national schemes, since the 1990s, Community Based Health Insurance Schemes (CBHI) which involve potential beneficiaries in scheme design and management have been proposed as an option to enhance access to care and provide financial protection (Aggarwal 2010, Dror, Radermacher *et al.,* 2007, Devadasan, Criel *et al.,* 2010).

Matching the spread of such schemes, not only in India but also in other developing countries, the number of studies assessing scheme effects has also proliferated. Ekman (2004) provides a systematic review of 36 studies published between 1980 and 2002 and

concludes that the evidence base is limited in scope and questionable in quality. While there is evidence that CBHI leads to increases in utilization of health care and financial protection, the effects are small and only serve a limited section of the population. More recently, Mebratie *et al.* (2013) provide an updated systematic review, and confirm that most of the studies find that access to CBHI is associated with increasing utilization (26 out of 35 studies), but that the effects of financial protection are more limited (7 out of 16 studies find no effect on financial protection). This is further compounded by the fact the 61pc of the studies investigated conclude that the respective schemes exclude the ultra-poor. While Mebratie *et al.* (2013) do acknowledge a clear increase in the quality of the recent empirical database; the potential selection bias because of the voluntary nature of these schemes is a limitation in many studies and limits claims of causality.[1]

For papers that focus on the Indian context, the evidence suggests that CBHI schemes have positive effects on access and financial protection. Ranson *et al.* (2006) evaluate the effects of a CBHI scheme implemented by Self-employed Women's Association (SEWA) in Gujarat on inpatient care utilization and financial protection. The scheme provides integrated coverage of life, hospitalization and asset insurance. Using 3-rounds of data, the authors find that although the programme does not exclude the poorest, access to care is largely inequitable in rural areas and that financially better-off households are more likely to submit claims. Aggarwal (2010) investigates the effects of the Yeshasvini CBHI programme in Karnataka. The voluntary programme offers low cost prepayment insurance coverage for outpatient diagnosis, lab tests and inpatient surgical procedures to rural farmers and informal sector workers. Using propensity score matching, the author concludes that

[1] 8 of 46 studies take into account potentially confounding factors that influence uptake using econometric techniques and address issues related to self-selection in an experimental or pseudo-experimental setting.

despite reducing catastrophic spending (up to 74pc lower for the enrolled), both uptake and effects favour those in higher income groups. Devadasan *et al.* (2010) explore the effects of a pro-poor government run CBHI in Gudalur, Andhra Pradesh that provides hospitalization coverage. Using propensity matching, authors find enrolment to be associated with increased hospital care (2.2 times more), but also acknowledge problems of adverse selection. Dror *et al.* (2009) compare utilization and financial protection of two member-operated (UpLift Health and Nidan in Pune and Patna, India respectively) and one commercially-operated (Bharatiya Agro Industries Foundation in Pune, India) micro-insurance scheme providing inpatient coverage. All three schemes were inclusive of the poor and were associated with increased use of hospital services. The difference in reporting an incidence of hospitalization between insured and uninsured was highest in UpLift (0.033 percentage points (pp) versus 0.029pp and 0.021pp in BAIF and Nidan respectively). Impact on financial protection for consultations and medications however was found to be insignificant.

This study adds to this body of literature by evaluating the effects of three CBHI schemes in northern rural India set up as step-wise clustered randomized control trials (RCT). This is the first study we are aware of in India that uses an experimental approach to evaluate impact of CBHI. The insurance was offered to a population of self-help group members and their households, and schemes operated in the absence of subsidies. Benefit packages varied across sites, reflecting local preferences. We use the randomized rollout of the schemes to identify their impact on health care utilization and financial protection, while distinguishing between outpatient care and hospitalizations. The paper is arranged as follows: Section 2

describes the CBHI schemes, followed by the data and the methods in Section 3. Section 4 describes the results followed by a discussion and concluding remarks in section 5.

2. CBHI Schemes

The CBHI scheme was introduced in 2010 under the oversight of the Delhi-based Micro Insurance Academy in partnership with three local NGOs in *Kanpur Dehat* and *Pratapgarh* districts in Uttar Pradesh and in *Vaishali* in Bihar. The two states have been characterized as amongst India's most populated and least educated with large gender disparities (Planning Commission, Government of India 2011). CBHI was offered to households which were connected to Self Help Groups (SHG). SHGs are groups of 10-20 women living in the same village who come together and agree to save a specific amount each period and are generally trained and supported by NGOs (Fouillet, Augsburg 2008).

At each site, the target group is defined as all members of households with at least one woman registered by March 2010 as a member of a SHG. In each of the sites, the population of SHG households was divided into clusters (typically villages or groups of villages) and then randomly assigned to one of the three implementation waves (2011-2012-2013). The 91 villages in the target areas were grouped into 48 clusters (15 in Pratapgarh, 17 in Kanpur Dehat and 16 in Vaishali) comparable in social, economic, demographic, and health infrastructure related characteristics. In each of the waves, one-third of the clusters (randomly drawn in each site) was offered the possibility of enrolling in the CBHI scheme. By the end of the project the entire target population had been offered a chance to enter the scheme. More details on the design of the experiment are available in Doyle *et al.* (2011).

The preparation for the scheme started in the second half of 2010 with a campaign to raise insurance awareness including the commission and screening of a movie in the intended treatment areas and numerous meetings held at the SHG level. From June to December 2010, the intended subscribers of the first wave engaged in Choosing Health Plans Altogether (CHAT) exercises to choose a benefit package, followed by scheme rollout in February 2011 in Vaishali and Pratapgarh and in March of the same year in Kanpur Dehat.[2] The package options are predetermined through calculations based on local attributes and baseline data collected in 2010. Prior to scheme rollout, SHG members are chosen to form parts of the claims committees and governing bodies that steer the day to day operation of the insurance scheme. The claims committees meet every three weeks to a month to decide on claims and pay-outs, which are settled on a cash basis.

Table I shows the benefit packages chosen across the three sites in the first year of the project (2010). Although the annual premiums among the sites are not entirely dissimilar, the packages chosen do vary, reflecting the local priorities at each of the sites. Members in Vaishali exclusively chose cover for OP care while those in Pratapgarh only chose to purchase coverage for IP care. Members in Kanpur Dehat opted for a shallower coverage of both. A potential reason for the preference for only outpatient coverage in Vaishali could be the penetration of the government run RSBY programme that provides insurance coverage for IP care (a premium of INR 30 per person per year (PPPY) for an annual coverage of INR 30,000 (Berman, Ahuja *et al.,* 2010). The absence of OP cover in Pratapgarh was related to initial difficulties in establishing agreements with providers on the capitation amount, that is, the amount of money to be paid to the providers per insured patient.

[2] CHAT exercises are simulations where players choose what benefits they would like to be included in their insurance package (Danis, Binnendijk et al., 2007).

Changes to the benefit packages could be made annually (prior to the next enrolment wave) but were mainly limited to the inclusion of outpatient care in Pratapgarh (see Annex A1 and A2 for coverage in 2012 and 2013).

It is important to note that throughout all sites and years, coverage for outpatient care was restricted to care provided by Rural Medical Providers (RMPs).[3] While not necessarily licensed, these providers are an integral component of the rural Indian healthcare scenario and are responsible for a majority of health care visits for outpatient care (Raza, van de Poel *et al.,* 2013, Gautham, Binnendijk *et al.,* 2011). RMPs are contracted on a yearly capitation basis, with monthly instalments, and should provide care and medicines free of charge to insured. For other covered expenses, receipts are provided by the beneficiaries and the reimbursements are decided upon by the claims committees.

During the first wave of implementation in 2011, from those offered insurance, 39pc of the households had at least one individual who purchased insurance (23pc of individuals), while the numbers for the second wave were 45pc at the household level (24pc of individuals). Analysis of enrolment decisions from the first wave revealed little evidence of adverse selection, or socioeconomic inequality in enrolment but did point to gender inequities (Panda, Chakraborty *et al.,* 2013). Dropout rates are quite considerable with 54pc of the households (42pc of individuals) who enrolled in the first wave renewing in the second, followed by a renewal of 25pc of those originally enrolled households (16pc of individuals) during the third wave.[4]

[3] By 2013, the Kanpur CBHI scheme is extended with a MBBS doctor who visits the office of the local partner NGO and other previously identified places once a week for consultation.

[4] Initially the project required en bloc household enrolment, but this condition had to be relaxed to ensure a higher enrolment rate. On average among the households that did enrol, 60% of the members got insurance

3. Data

We use three rounds of household panel data collected in each of the three sites. The baseline survey was canvassed between March and May 2010 and covered 3,686 (21,366 individuals) households. The second survey was conducted between March and April in 2012 during which 3318 households (18403 individuals) were re-interviewed, of whom 1596 individuals were new to the households by means of marriage, birth and split households. Finally the third and last round of the survey was held between March and April of 2012 comprising of 3307 households (18322 individuals) of whom 4285 individuals were new additions over the two previous years, thus arriving at a balanced panel of 3027 households (14037 individuals). The primary respondents were the SHG members themselves or the head of the household if the member was unavailable. By the last round of survey, a random two-thirds of the sample (2516 households) had been offered to enrol in CBHI. Additional details on potential problems due to attrition bias are provided in the Methods section.

The main outcome variables of interest relate to health care utilization and health care expenditures. Detailed information was collected about care sought in the 30 days preceding the survey for OP care and for 1 year preceding the survey for IP care. For OP conditions, a distinction is made between acute and chronic ones (symptoms persisting less or more than 30 days preceding the survey).[5]

Regarding health care utilization, we begin by estimating the effects of CBHI on the probability of seeking any care conditional on reporting an illness. Subsequently we

cover in wave 1 (this dropped to 50pc in wave 2). Detailed numbers on enrolment and dropout are in the Annex.

[5] Chronic conditions in this context refer to illnesses may therefore also include more acute conditions that have been mistreated and thus have persisted.

investigate the effect of enrolment on whether or not care (for the first visit) is sought from a formal provider, defined as RMPs or qualified doctors (public/private general practitioners and specialists). Strictly speaking, RMPs are not formal providers, but the distinction we are trying to make here is between allopathic providers which include RMPs and qualified doctors as opposed to no care which also includes care from nurses/pharmacists or traditional healers or priests. Subsequently, we look at the choice of formal provider (RMPs or qualified doctors) conditional on use to explore whether the CBHI schemes precipitates changes in the choice of healthcare provider. For IP care, we first model the probability of being hospitalized followed by whether the individual seeks private or public hospital care (conditional on hospitalization).

Regarding financial protection, we look at the effect of insurance on direct out of pocket healthcare costs (consultation fees, costs of medicine and lab/imaging tests) conditional on reporting an illness and on hospitalization. We define hardship financing as an individual reporting having to borrow from high interest rate lenders, cutting back on essential costs or selling off assets to service the costs in case of an ill health event (Binnendijk, Koren *et al.,* 2011). The exact definitions of outcome variables can be found in Tables 2 and 3.

All models control for demographic (age/gender indicators, household size, gender of household head), socioeconomic (educational attainment, occupational status, scheduled caste/tribe status and per capita household expenditures) and health related characteristics. Information on per capita consumption (net of healthcare spending, in constant 2010 numbers) is 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. The health related characteristics are captured by indicator variables for

symptoms experienced in the past 30 days and a generic quality of life instrument (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 ranges between -1 to +1 (Dolan 1997). As this information is not collected for children under the age of 12, this variable is only included in models pertaining to chronic illnesses or inpatient care as these include a very low proportion of children. Annex A3 provides exact definitions of the covariates.

4. Methods and Specification

We first investigate whether being offered CBHI membership has an effect on healthcare utilization and financial protection, i.e. the intention-to-treat effect (ITT). For binary outcomes (y_{itv} of individual *i* in village *v* at time *t*) we use a conditional logit model with the following specification of the latent index:

$$y^*_{itv} = \gamma offer_{tv} + x'_{itv}\beta + t_t \ + v_i + \varepsilon_{itv} \quad (1)$$

The model includes year indicators (t_t) to capture time trends in healthcare use, individual fixed effects (v_i) to capture time invariant heterogeneity, a set of time varying individual variables (x_{itv}) and the key variable of interest ($offer_{tv}$) which is switched on if households in village *v* are offered the possibility of enrolling in the CBHI program at time *t*. The error term (ε_{itv}) is drawn from a logistic distribution such that (1) is a logit model with individual fixed effects. To ease interpretation we provide marginal effects rather than coefficient estimates.

To assess the effect of being offered CBHI on healthcare spending, we apply fixed effects Poisson models (FEP). These are well suited to deal with skewed outcomes and avoid

retransformation problems (Mihaylova, Briggs *et al.,* 2011, Buntin, Zaslavsky 2004, Manning, Mullahy 2001). While Poisson models are typically used for count data, they do not require the variable of interest to follow a Poisson distribution, only that the conditional mean is correctly specified (Santos Silva J.M.C., Tenreyro 2006, Wooldridge 2001).[6] If y_{itv} represents healthcare expenditures of individual *i* at time *t* in village *v*, then the FEP model is written as:

$$E(y_{itv}|offer_{vt}; x_{itv}; t_t; v_v) = \exp(\gamma offer_{tv} + x_{itv}'\beta \quad + t_t + v_i) \qquad (2)$$

In the context of incomplete uptake, ITT effects may be considered a lower bound of the effect of actual enrolment, i.e. the average treatment effect on the treated (ATET). While the offer of insurance was randomized, uptake is not exogenous. To estimate ATET while accounting for self-selection into the CBHI schemes we estimate models that are similar to (1) and (2) but use the randomized offer of CBHI as an instrument for actual uptake (Imbens, Wooldridge 2009). The first stage of these IV models can be written as:

$$uptake_{itv} = \gamma offer_{tv} + x_{itv}'\beta + t_t \quad + v_i + \mu_{itv} \qquad (3)$$

Models for binary outcomes are estimated with IV-probit, using simultaneous maximum likelihood estimation, and those for expenditures with IV-Poisson, using the two-step GMM estimator.

Since the IV versions of the non-linear models cannot accommodate individual fixed effects, we estimate these including village fixed effects.[7] Standard errors are adjusted for clustering on the cluster level in all models to allow for possibly serially and/or spatially correlated shocks that would result in overstatement of the precision of the estimate

[6] The FEP is optimal when the conditional variance is proportional (not equal) to the conditional mean, but also consistent when this is not the case.

[7] Results from the ITT models were found to be robust to using village rather than individual effects, suggesting limited evidence of unobserved individual level heterogeneity.

(Bertrand, Duflo *et al.,* 2004, Angrist, Pischke 2009). Models are estimated first on the pooled data, followed by site specific estimates. All statistical analysis is done in Stata 13.

The rate of attrition from 2010 to 2012 was 21.36pc and from 2012 to 2013 17.91pc, or a total attrition rate of 39.21pc at the individual level. To diagnose potential problems of attrition bias, we calculate the inverse Mills ratio (IMR) from a probit model of attrition that includes all covariates as shown in (1) and binary indicators of enumerator codes to aid identification.[8] We then include the IMR in our outcome models (1) and (2). Coefficients of the IMR were found to be significant in the models of the probability of seeking formal care, but the coefficient on the treatment variable of interest (offer of insurance) remained relatively unchanged, suggesting limited problems of attrition bias. Furthermore, we construct inverse probability weights by running wave-specific probit models of remaining in the sample on baseline covariates (Jones, Rice *et al.*, 2013). Including these in our regression models again revealed minute changes (the results are available on request).

5. Results

5.1 Summary Statistics

Summary statistics for all control variables for the pooled and site specific samples across the three waves are presented in Annex A4. Half of the sample consists of women, while children younger than 13 account for around 40pc of the sample across the waves respectively, with the highest proportion in Vaishali. Working aged men and women (age 14-55) account for approximately 50pc of the sample. Across the three waves, the average household size is a little less than 7 members. The proportion of the Scheduled

[8] The p-value of a test of the null hypothesis of all coefficients of the enumerator codes being equal to zero was <0.00, suggesting that indeed respondents' probability of participating in the following surveys is associated with their experiences with the enumerators.

Castes/Scheduled Tribes (SCST) is higher than the state average (17pc in Bihar and 23pc in Uttar Pradesh (Planning Commission, Government of India 2011)). The average annual per capita consumption rose from INR 14,728 (PPP $743.83) during wave 1 to INR 16,375 in 2013 and was highest in Kanpur Dehat (2010 constant INR). Around 39pc of the respondents have no educational attainment (the highest proportion in Vaishali). Around 10pc of the respondents reported working as day-labourers while the self-employed in agricultural and non-agricultural sectors constitute nearly 15pc, and the unemployed around 5pc. Nearly half of the sample consists of students while a fifth is homemakers.

While most of the control variables remain stable over the survey years, we find some trends in the outcome variables (Table II). The proportion of the sample reporting an acute illness increases from 20pc in the first two years to 29pc in the last survey, and is driven by increases across all sites. A similar increase is observed for chronic conditions (from 17pc in the baseline to 23pc in the end line), but only in Kanpur Dehat and Vaishali. The probability of hospitalization remains constant at around 2pc. As for healthcare seeking behaviour for acute illnesses, during the baseline, half of those who reported an acute illness sought care from RMPs. A quarter of the individuals either self-medicated through pharmacists, went to traditional healers/priests or forewent care altogether, while 27pc sought care from qualified doctors.

There appears to be an overall decline in healthcare utilization for both acute and chronic illnesses reflected by the rise in proportions of those not seeking any care between the baseline and the endline (an increase of 7pp for acute and 12pp for chronic illnesses respectively). Foregoing care for chronic conditions is more common than for acute (42pc at baseline), and this increases in subsequent waves, especially in Kanpur Dehat. About a fifth

of the sample seeks care from RMPs, a proportion that remains steady over the years, but the proportion of those seeking care from qualified doctors or specialists drops by 7pp between 2010 and 2013. The choice for inpatient care provider remained relatively stable throughout the waves and sites with about 20pc of the respondents opting for public facilities and 80pc for private ones.

As shown in Table III, there is a decline in healthcare spending across the waves, which is especially pronounced for chronic illnesses (from INR 954 in the baseline to INR 332 in the endline). Expenses pertaining to inpatient care increase from INR 12,367 in the baseline to INR 18,124 during the midline and fall back to INR 16,614 during the last year. The probability of having to resort to hardship financing also drops quite substantially in the midline and remains relatively constant thereafter for all types of care. Inpatient care is most likely to result in hardship financing.

While we observe some variation, both across waves and sites, amongst the various outcomes of interest, the trends are relatively similar within both control and treated groups (see Annex A4 and A5). Next we establish which part of the difference in trends between two groups can be causally attributed to CBHI.

5.2 Intention to treat effects

Table IV shows three sets of results: the impact of the offer of insurance on the probability of seeking OP care (conditional upon reporting an illness) and IP care; followed by the impact on the probability of seeking care from formal providers for OP care versus informal

providers or no care at all, and a detailed analysis of the choice of OP care provider.[9] In terms of the overall impact on the probability of seeking OP care, the only significant result is for Pratapgarh where the probability declines by 10.6pp. No statistically significant effects are found for OP care for acute or chronic diseases, nor for the use of IP care. The centre panel of Table IV reveals that the drop in the use of care in Pratapgarh is caused by a reduction in the probability of visiting a formal provider, especially for chronic conditions (8.7pp). In Kanpur Dehat, we find that the probability of using formal care for acute conditions increases by 9.8pp. A further provider-specific breakdown reveals an increase in the probability of seeking care from RMPs in Kanpur Dehat (9.4pp). In Pratapgarh however, results show a significant drop in the probability of seeking care for chronic illnesses from GPs or specialists by 10.4pp as a result of the offer of insurance.

Given the limited evidence of ITT effect of the CBHI schemes on healthcare utilization, it is not surprising that we do not find significant effects on healthcare expenditures. Detailed results can be found in Appendix A6.

5.3 Average treatment effects on the treated

Table V shows effects of the uptake of CBHI. Based on the pooled data, we find no statistically significant effect of CBHI uptake on the probability of seeking healthcare. Site-specific estimates show offsetting effects for Kanpur Dehat and Pratapgarh. In the former, CBHI membership causes a 23pp increase in the probability of seeking care for acute conditions, while it leads to a decrease in the probability of seeking any care by 58pp (driven by decreases for both acute and chronic conditions) for the latter. No significant impact is

[9] It is important to note that conditional logit models only consider part of the sample that switches between 0 and 1 across waves, which explains the smaller sample size for IP models even though they do not condition on illness

found for Vaishali, or for any of the models for IP care. The centre panel of Table V shows effects on the choice of formal versus informal providers, conditional on seeking care. The positive effect in Kanpur Dehat seems to be driven by an increase in the use of formal care for acute conditions (25pp), while the negative effect in Pratapgarh is caused by a decrease in formal care for both acute (51pp) and chronic conditions (39pp).[10]

In a subsequent step, the analyses above are broken down for the specific providers. Results in the lower panel of Table V reveal that the decline in formal care use in Pratapgarh is driven mainly by a decrease in GP/specialist care (42.9pp) in comparison to informal or no care. The positive effects on utilization in Kanpur Dehat seem to be driven by an increase in the probability of using both GPs/specialists (9pp) and RMPs (3pp) although neither is statistically significant. The probability of seeking IP care from private hospitals versus public hospitals revealed no discernible impacts (results available on request).

Effects of CBHI on healthcare expenses and hardship financing are consistent with those for healthcare utilization. Typically, we find a reduction in healthcare expenses and hardship financing in Pratapgarh and increases in spending in Kanpur Dehat (see Table VI). CBHI has a large negative effect on spending for OP care in Pratapgarh (81.6pc) which is mainly driven by a reduction in spending on chronic conditions. Although positive, no significant changes are reported for IP care. The lower panel of Table VI shows that CBHI causes a 5pp reduction in hardship financing in Pratapgarh. These decreases are most likely due to the large reduction in healthcare utilization and at least in the case of this site should not be

[10] Analysis of the impact of CBHI on the number of OP visits for acute conditions reveal a significant decline of 0.54 visits. The effect for Kanpur Dehat was positive but not significant (0.22 visits).No discernable impact was noticed on the number of times a patient sought inpatient care. Results are available upon request.

interpreted in terms of enhanced financial protection. [11] On the other hand, the higher utilization of OP healthcare due to CBHI in Kanpur Dehat and the statistically insignificant effect on spending or financial hardship for OP care suggests that CBHI may indeed be offering some financial protection. Despite no changes in healthcare spending for IP care, offsetting results are once more noticeable with an increased probability of hardship financing in Kanpur Dehat (52pp) and a 21pp decrease in Pratapgarh. Given the limited sample size, these results should be interpreted with caution.

6. Discussion and concluding remarks

This paper utilizes data from a randomly rolled out community based health insurance (CBHI) scheme in India to draw causal inferences on its impact on healthcare utilization and financial protection. The CBHI was offered to households belonging to women's self-help groups in three sites in rural parts of Bihar (Vaishali) and Uttar Pradesh (Pratapgarh and Kanpur Dehat).

Intention to treat effects show a significant reduction in the probability of seeking formal care in Pratapgarh (driven by a drop in the utilization of GPs or specialists) while the opposite was found to be true for patients in Kanpur Dehat, driven by an increase in the utilizations of RMPs. Intention to treat effects on healthcare spending and financial protection were limited.

The effects of actual enrolment into the CBHI scheme are in line with this. While we see no discernible impact on healthcare utilization at the aggregate level, results reveal significant offsetting results with substantial magnitudes for Kanpur Dehat and Pratapgarh. While CBHI

[11] Analyses of the effects of CBHI on healthcare expenses, conditional on seeking formal care, revealed no significant results.

membership leads to a surge in the probability of seeking outpatient care from formal sources in Kanpur Dehat, the opposite is true for Pratapgarh where CBHI membership causes a drop in the probability of seeking care. No changes in the behaviour were noted for members in Vaishali or for inpatient care in any of the three sites. In line with healthcare utilization, we found that participation had large negative impacts on out-of-pocket payments for members in Pratapgarh, driven by lower utilization, while the opposite pattern was found for Kanpur Dehat, though insignificant. This resulted in a lower probability of hardship financing in Pratapgarh, driven by lower healthcare utilization.

In sum, these results suggest limited success of the CBHI schemes on healthcare use and financial protection, with offsetting effects between two sites. The negative effects in Pratapgarh are surprising and may be related to several factors. Most importantly, the capitation payment system could incentivize RMPs to provide lower amounts of care or drugs as compared to a situation before CBHI when they were paid on a fee-for-service basis. Qualitative field work revealed that a number of insured respondents were dissatisfied with the RMPs affiliated with the CBHI scheme as they had been providing insufficient care and medications as a result of which many had to pay additional fees or preferred to seek care elsewhere. Of the 33 CBHI households that were interviewed at regular intervals about their satisfaction with the CBHI, more than half (16) reported that they still had to pay for services/medicines provided by the RMPs. Ten of those households dropped out of the scheme at some point, and 6 of them reported the low quality of care provided by the RMPs to be the main reason. These samples are too small to allow for any generalization, or disaggregation by site, but they do suggest that lack of control of the quality of care provided and that the incentives created by the provider payment system

might be contributing to the limited impact of CBHI, and low renewal rates. Furthermore, a low degree of competition between providers might exacerbate the incentives to underprovide in a capitation system. Indeed the density of RMPs was lowest in Pratapgarh (e.g. in wave 2 the ratio of RMP/village equalled 0.28 in Pratapgarh while it was 0.5 in the other two sites). Problems related to the capitation system have also been mentioned as the main reason for the absence of positive effects of CBHI in Burkina Faso (Fink, Robyn *et al.,* 2013).

For inpatient care, the lack of tangible effects of the CBHI scheme is likely to be related to the small sample size given the infrequency of hospitalizations in our target population. Furthermore, coverage for inpatient care could be considered relatively shallow and, as noted by Dixit and Panda (2013), physical accessibility to the healthcare facilities within the catchment area of this programme is relatively low. The problem of shallow coverage is a more general one in the context of community based schemes that operate in the absence of subsidies. In the schemes studied here, RMPs are only expected to provide care for minor ailments, and would need to refer to GPs or specialists, who are not covered under the schemes, for more serious conditions, which in any case limits the effects they can have on financial protection. Another reason for limited impact might be related to problems of managerial oversight in small scale locally run schemes, as also noted by De Allegri *et al*. (2009).

There are some limitations to this study. Most importantly, the variation in the design of the CBHI schemes across sites requires separate analyses which limit power of the study design. Second, the three year period might be relatively short to establish effects, as a considerable group in the sample has been insured for less than three years. Third, the focus

on SHG households limits the generalizability of our findings. One would expect these households to be more likely to enrol in CBHI schemes given their established connections with the NGOs, but the relative homogeneity in their socioeconomic status limits the scope for risk pooling and cross subsidization. Notwithstanding these limitations, the results of this study suggest that voluntary CBHI schemes, at least of the type set up in the current experiment, which offer limited cover are unlikely to have a large effect on enhancing access to care and providing financial protection.

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Tables

Table I: CBHI package details in 2011 (wave 1)

Sites	Pratapgarh	Kanpur Dehat	Vaishali
Annual CBHI premium per person/per year (Rs.)	176	192	197
Coverage for hospitalization			
Fees (maximum coverage per episode, Rs.)	6000	3000	-
Wage loss (per day, Rs.)[1]	100	75	100
Transport (maximum coverage per episode, Rs.)[2]	100	100	-
Coverage for outpatient care			
Fees (Rs.)	-	Unlimited	Unlimited
Lab tests (per year, Rs.)[3]	-	-	200
Imaging tests (per year, Rs.)[4]	-	-	300
Coverage for maternity care			
Caesarean (per episode, Rs.)	5000	-	-

"-" indicates "Not Included in package"

[1] *For Pratapgarh wages losses covered for the 3rd-6th day, for Kanpur Dehat 4th-13th day, for Vaishali 4th-9th day*

[2] *For hospitalization of more than 24 hours.*

[3, 4] *Maximum amount, per person per year*

Table II: Summary statistics of healthcare seeking behaviour

Variable name	Description	Baseline (Mean)				Midline (Mean)				Endline (Mean)			
		Pooled	Kanpur Dehat	Pratapgarh	Vaishali	Pooled	Kanpur Dehat	Pratapgarh	Vaishali	Pooled	Kanpur Dehat	Pratapgarh	Vaishali
care_hw_a	Probability of reporting an acute illness (1/0) (past month)	0.20	0.22	0.18	0.19	0.21	0.22	0.20	0.22	0.29***	0.32***	0.26***	0.30***
care_hw_c	Probability of reporting a chronic illnesses(1/0) (past month)	0.17	0.13	0.22	0.14	0.21	0.21	0.19	0.24	0.23***	0.26***	0.22	0.23***
care_hw_i	Probability of seeking inpatient care (past year) (1/0)	0.03	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
hwseen_a	*Type of health worker seen for acute illnesses (categorical var: 0-3)*												
0	None	0.14	0.19	0.14	0.10	0.24	0.24	0.22	0.25	0.21**	0.21	0.19*	0.22***
1	Pharm/Other	0.11	0.06	0.13	0.14	0.12	0.06	0.19	0.10	0.12	0.08	0.20**	0.10***
2	RMP	0.48	0.52	0.47	0.44	0.39	0.52	0.28	0.40	0.45***	0.55	0.38***	0.43
3	Qualified Doctor (GP and specialist)	0.27	0.23	0.26	0.32	0.26	0.19	0.31	0.25	0.22***	0.17***	0.23**	0.25***
hwseen_c	*Type of health worker seen for chronic illnesses (categorical var: 0-3)*												
0	None	0.30	0.30	0.34	0.24	0.42	0.51	0.33	0.44	0.42***	0.46***	0.40	0.39***
1	Pharm/Other	0.12	0.06	0.15	0.10	0.07	0.03	0.11	0.05	0.07*	0.06	0.11	0.06**
2	RMP	0.21	0.25	0.21	0.18	0.20	0.23	0.15	0.22	0.21	0.25	0.19	0.18
3	Qualified Doctor (GP and specialist)	0.37	0.38	0.30	0.48	0.32	0.23	0.41	0.29	0.30***	0.23***	0.30	0.38***
hwseen_i	*Type of health worker seen for inpatient care(categorical var: 0-4)*												
1	Public Facility	0.20	0.28	0.25	0.10	0.16	0.15	0.20	0.13	0.24	0.31	0.29	0.15
2	Private Facility	0.80	0.72	0.75	0.90	0.84	0.85	0.80	0.87	0.76	0.69	0.71	0.85

NOTE: UNDERLINED VARIABLES REPRESENT THE BASE CATEGORIES. *. **, * INDICATE STATISTICAL SIGNIFICANCE OF THE DIFFERENCE BETWEEN ENDLINE AND BASELINE AT THE 1, 5 AND 10% LEVEL RESPECTIVELY. CHI SQUARED TESTS ARE PERFORMED FOR BINARY VARIABLES WHILE T-TESTS ARE PERFORMED FOR CONTINUOUS ONES. N=21,372 in 2010, 16,807 in 2012 and 14,037 in 2013.**

Table III: Summary statistics of healthcare expenses and coping mechanisms

Variable name	Description	Baseline (Mean)				Midline (Mean)				Endline (Mean)			
		Pooled	Kanpur Dehat	Pratapgarh	Vaishali	Pooled	Kanpur Dehat	Pratapgarh	Vaishali	Pooled	Kanpur Dehat	Pratapgarh	Vaishali
expout_a	Individual acute care expenses for users (past month)	₹295	₹331	₹234	₹323	₹268	₹287	₹241	₹282	₹ 267***	₹ 259***	₹ 206	₹ 330**
expout_c	Individual chronic care expenses for users (past month)	₹954	₹1,286	₹644	₹1,205	₹242	₹192	₹291	₹234	₹ 332***	₹ 267***	₹ 262	₹ 465***
expout_i	Individual inpatient care expenses for users(past year)	₹12,367	₹19,691	₹11,125	₹8,671	₹18,124	₹26,656	₹17,034	₹13,738	₹ 16,614***	₹ 22,125	₹ 17,638	₹ 12,252***
copmech_a	*Individual has to resort to hardship financing for acute illness (1/0)*	0.16	0.21	0.06	0.23	0.06	0.07	0.05	0.07	0.06***	0.07***	0.03	0.09
copmech_c	*Individual has to resort to hardship financing for chronic illness(1/0)*	0.20	0.26	0.07	0.37	0.07	0.07	0.07	0.08	0.10***	0.10***	0.05	0.15
copmech_i	*Individual has to resort to hardship financing for inpatient care (1/0)*	0.52	0.49	0.29	0.71	0.30	0.41	0.18	0.36	0.36***	0.40*	0.18	0.45

NOTE:*. **, * INDICATE STATISTICAL SIGNIFICANCE OF THE DIFFERENCE BETWEEN ENDLINE AND BASELINE AT THE 1, 5 AND 10% LEVEL RESPECTIVELY. CHI SQUARED TESTS ARE PERFORMED FOR BINARY VARIABLES WHILE T-TESTS ARE PERFORMED FOR CONTINUOUS ONES. N=21,372 in 2010, 16,807 in 2012 and 14,037 in 2013.**

Table IV: Effects of the randomized offer of insurance on probability of seeking care

	OP	*N*	Acute	*N*	Chronic	*N*	IP	*N*
Probability of seeking any care from any provider [α]								
Pooled (Pertinent Sites)	-0.018	***6057***	0.051	***1682***	-0.027	***3420***	-0.015	***2113***
Kanpur Dehat	0.038	***1782***	0.132	***519***	-0.001	***988***	0.011	***977***
Pratapgarh	-0.106***	***2197***	-0.032	***526***	-0.056	***1308***	-0.023	***1136***
Vaishali	0.052	***2078***	0.086	***637***	-0.005	***1124***		
Probability of seeking any formal care [α]								
Pooled	-0.015	***7202***	0.011	***2258***	-0.018	***3749***		
Kanpur Dehat	0.024	***1980***	0.098*	***650***	-0.006	***1025***		
Pratapgarh	-0.094***	***2776***	-0.043	***801***	-0.087*	***1499***		
Vaishali	0.050	***2446***	0.006	***807***	0.044	***1225***		
Probability of seeking formal care (base category: informal or no care) [Ω]								
Pooled								
RMP	-0.002	***6935***	0.021	***2627***	0.007	***2565***		
GP & Specialist	-0.023	***6676***	-0.028	***1957***	-0.029	***3417***		
Kanpur Dehat								
RMP	0.027	***2157***	0.094**	***851***	0.015	***795***		
GP & Specialist	-0.023	***1683***	-0.063	***493***	-0.001	***839***		
Pratapgarh								
RMP	-0.038	***2430***	-0.064	***836***	0.002	***996***		
GP & Specialist	-0.078	***2537***	0.018	***710***	-0.104**	***1346***		
Vaishali								
RMP	0.004	***2348***	0.013	***940***	0.023	***774***		
GP & Specialist	0.014	***2456***	-0.065	***754***	0.027	***1232***		

NOTE: TABLE SHOWS MARGINAL EFFECTS OF CONDITIONAL LOGIT MODELS WITH INDIVIDUAL FIXED EFFECTS. THE SAMPLE IS RESTRICTED TO THOSE WHO REPORTED AN ILLNESS* P<0.1; ** P<0.05; *** P<0.01.

[α] Sample for OP, acute and chronic models are restricted to those who reported an illness.

[Ω] Sample restricted to those who sought some form of care

Table V: Effects of the Uptake of insurance on the probability of seeking healthcare

	OP	*N*	Acute	*N*	Chronic	*N*	IP	*N*
Probability of seeking any care from any provider [α]								
Pooled	-0.066	***22635***	-0.009	***13327***	-0.107	***11802***	-0.007	***37959***

Kanpur Dehat	0.149	***6506***	0.230***	***4112***	0.032	***3240***	0.003	***16393***
Pratapgarh	-0.581***	***8185***	-0.566**	***4560***	-0.446**	***4545***	-0.009	***21566***
Vaishali	0.001	***7944***	-0.021	***4655***	-0.008	***4016***		
Probability of seeking formal care[α]								
Pooled	-0.050	***22635***	-0.045	***13353***	-0.057	***11801***		
Kanpur Dehat	0.177*	***6506***	0.254***	***4112***	0.049	***3240***		
Pratapgarh	-0.449***	***8185***	-0.514***	***4560***	-0.391***	***4545***		
Vaishali	0.005	***7944***	-0.117	***4681***	0.078	***4016***		
Probability of seeking formal care (base category: informal or no care) [Ω]								
Pooled	0.004	***10195***	0.041	***7275***	0.138	***3360***		
RMP								
GP & Specialist	-0.086	***9087***	-0.224	***4715***	0.020	***4825***		
Kanpur Dehat								
RMP	0.035	***3149***	0.045	***2320***	0.045	***921***		
GP & Specialist	0.094	***1923***	0.031	***965***	0.031	***1005***		
Pratapgarh								
RMP	-0.197	***3655***	-0.358	***2486***	0.124	***1397***		
GP & Specialist	-0.429*	***3803***	-0.347	***1995***	-0.332	***2072***		
Vaishali								
RMP	-0.021	***3387***	-0.106	***2465***	0.120	***1042***		
GP & Specialist	-0.011	***3361***	-0.309	***1755***	0.133*	***1748***		

NOTE: RESULTS SHOW MARGINAL EFFECTS OF AN IV PROBIT MODEL WITH VILLAGE FIXED EFFECTS. * P<0.1; ** P<0.05; *** P<0.01.

[α] Sample restricted to those who reported an illness.

[Ω] Sample restricted to those who sought some form of care upon reporting an illness

Table VI: Effects of the uptake of insurance on healthcare expenses and hardship financing

	OP	*N*	Acute	*N*	Chronic	*N*	IP	*N*
Healthcare Expenses [α]								
Pooled	-0.212	***22635***	-0.120	***13353***	-0.295	***11801***	0.154	***912***
Kanpur Dehat	0.294	***6505***	0.824	***4112***	0.151	***3240***	0.139	***416***
Pratapgarh	-0.816**	***8185***	-0.469	***4560***	-1.008**	***4545***	0.876	***496***
Vaishali	-0.028	***7944***	-0.402	***4681***	0.202	***4016***	NA	***NA***
Hardship financing [β]								
Pooled	0.002	***22635***	0.096	***13199***	-0.048*	***10463***	0.118	***723***
Kanpur Dehat	0.076	***6505***	0.143	***4113***	0.068	***2912***	0.524***	***321***
Pratapgarh	-0.034	***8185***	0.195	***4465***	-0.048***	***4140***	-0.214*	***402***
Vaishali	0.014	***7944***	0.046	***4622***	-0.123	***3411***		

NOTE: * P<0.1; ** P<0.05; *** P<0.01. SAMPLE RESTRICTED TO THOSE WHO REPORTED AN ILLNESS.

[α] Results show coefficients of a IV Poisson model with village fixed effects

[β] Results show marginal effects of a IV probit model with village fixed effects

Annex

A1: Benefit packages in 2012

Sites	Pratapgarh	Kanpur Dehat	Vaishali
Annual CBHI premium per person/per year (Rs.)	250	192	197
Coverage for hospitalization			
Fees (maximum coverage per episode, Rs.)	4000	3000	-
Family Coverage	30,000	25,000	-
Wage loss (per day, Rs.)[1]	100	50	100
Transport (maximum coverage per episode, Rs.)[2]	100	250	-
Accident Coverage	-	400	-
Family Coverage	-	1000	-
Coverage for outpatient care			
Fees (Rs.)	Unlimited	Unlimited	Unlimited
Lab tests (per year, Rs.)[3]	-	-	200
Imaging tests (per year, Rs.)[4]	-	-	300
Coverage for maternity care	-	-	-
Caesarean (per episode, Rs.)	-	-	-

"-" indicates "Not Included in package"

[1] For Pratapgarh wages losses covered for the 3rd-7th day, for Kanpur Dehat 3rdh-6th day, for Vaishali 4th-9th day

[2] For hospitalization of more than 24 hours.

[3, 4] Maximum amount, per person per year

A2: Benefit packages in 2013

Sites	Pratapgarh	Kanpur Dehat	Vaishali
Annual CBHI premium per person/per year (Rs.)	250	199	197
Coverage for hospitalization			
Fees (maximum coverage per episode, Rs.)	4000	4000	-
Family Coverage	30,000	30,000	-
Wage loss (per day, Rs.)[1]	100	50	100
Transport (maximum coverage per episode, Rs.)[2]	100	300	-
Accident Coverage	-	-	-
Family Coverage	-	-	-
Coverage for outpatient care			
Fees (Rs.)	Unlimited	Unlimited	Unlimited
Lab tests (per year, Rs.)[3]	-	-	400
Family Coverage	-	-	2000
Imaging tests (per year, Rs.)[4]	-	-	500
Family Coverage	-	-	2000
Coverage for maternity care	-	-	-
Caesarean (per episode, Rs.)	-	-	-

"-" indicates "Not Included in package"

[1] For Pratapgarh wages losses covered for the 4th-7th day, for Kanpur Dehat 3rdh-7th day, for Vaishali 4th-9th day

[2] For hospitalization of more than 24 hours.

[3, 4] Maximum amount, per person per year

A3: Summary statics of control variables

Variable name	Description	Baseline (Mean)				Midline (Mean)				Endline (Mean)			
		Pooled	Kanpur Dehat	Pratapgarh	Vaishali	Pooled	Kanpur Dehat	Pratapgarh	Vaishali	Pooled	Kanpur Dehat	Pratapgarh	Vaishali
Demographics													
fem0to13	female children 0-13 (1/0)	0.18	0.16	0.17	0.21	0.20	0.18	0.18	0.23	0.20	0.18	0.19	0.23
fem14to55	female aged 14-55 years (1/0)	0.29	0.29	0.31	0.27	0.29	0.28	0.31	0.27	0.28	0.28	0.31	0.26
fem55	female older than 55 years (1/0)	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.04	0.04	0.04	0.04
men0to13	male aged 0-13 years (1/0)	0.19	0.17	0.19	0.22	0.22	0.19	0.21	0.24	0.22	0.20	0.21	0.24
men14to55	male aged 14-55 years (1/0)	0.26	0.31	0.25	0.23	0.23	0.27	0.23	0.19	0.22	0.27	0.21	0.20
men55	male older than 55 years (1/0)	0.04	0.04	0.04	0.04	0.04	0.03	0.04	0.03	0.04	0.04	0.04	0.03
hhsize	household size	6.78	6.94	7.28	6.10	6.53	6.52	7.11	5.92	6.49	6.51	6.86	6.08
Education													
edunone	no education (1/0)	0.38	0.32	0.35	0.45	0.38	0.34	0.35	0.46	0.37	0.32	0.35	0.45
eduprim	primary education (1/0)	0.27	0.25	0.26	0.29	0.25	0.23	0.23	0.27	0.25	0.24	0.25	0.26
edumid	secondary education (1/0)	0.28	0.33	0.31	0.22	0.28	0.32	0.31	0.21	0.28	0.32	0.29	0.23
eduhigh	higher secondary education (1/0)	0.07	0.10	0.08	0.04	0.09	0.11	0.11	0.06	0.10	0.13	0.11	0.06
Socioeconomic Status													
totalexp	Annual per capita households expenditure (Rs.)	14728 (14497)	18903 (20041)	12432 (12432)	13602 (10288)	14783 (12326)	15652 (10416)	14067 (15459)	14893 (9465)	16374 (16151)	19141 (16737)	14587 (14586)	15980 (17341)
scst	household belongs to a scheduled tribe/caste (1/0)	0.33	0.26	0.37	0.33	0.32	0.27	0.37	0.32	0.32	0.27	0.35	0.34
Occupation													
self_emp_ag	self employed in agriculture (1/0)	0.11	0.20	0.07	0.07	0.10	0.19	0.07	0.06	0.10	0.18	0.07	0.07
self_emp_non-ag	self employed in non-agriculture (1/0)	0.04	0.03	0.05	0.06	0.04	0.02	0.05	0.04	0.04	0.02	0.04	0.04
other_emp	other employment (1/0)	0.02	0.02	0.04	0.01	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02
casual_wage_	casual wage labourer (1/0)	0.09	0.05	0.10	0.11	0.10	0.08	0.09	0.12	0.09	0.06	0.09	0.11
not_working	not working (1/0)	0.05	0.05	0.07	0.04	0.04	0.04	0.05	0.04	0.05	0.06	0.06	0.05
homemaker	doing housework (1/0)	0.20	0.21	0.20	0.19	0.21	0.21	0.23	0.19	0.21	0.21	0.22	0.21
student	student (1/0)	0.48	0.45	0.48	0.51	0.49	0.45	0.49	0.53	0.49	0.45	0.50	0.51
Location													
Kanpur Dehat	household located in Patna site (1/0)	0.37				0.38				.37			
Allahabad	household located in Allahabad site (1/0)	0.29				0.27				.29			
Vaishali	household located in Patna site (1/0)	0.34				0.35				.34			

NOTE: UNDERLINED VARIABLES REPRESENT THE BASE CATEGORIES. FIGURES IN PARENTHESES SHOW STANDARD DEVIATIONS. N=21,372 in 2010, 16,807 in 2012 and 14,037 in 2013.

A4: Summary of health seeking behaviour

Variable name	Kanpur Dehat						Pratapgarh						Vaishali					
	Baseline			Endline			Baseline			Endline			Baseline			Endline		
	O	C	P-value(a)	O	C	P-value(b)	O	C	P-value(a)	O	C	P-value(b)	O	C	P-value(a)	O	C	P-value(b)
care_hw_a	0.21	0.22	0.73	0.29	0.32	0.53	0.20	0.18	0.88	0.25	0.25	0.82	0.19	0.19	0.59	0.28	0.31	0.11
care_hw_c	0.12	0.14	0.14	0.24	0.26	0.16	0.24	0.21	0.93	0.22	0.22	0.56	0.13	0.15	0.06	0.23	0.23	0.76
care_hw_i	0.03	0.03	0.43	0.02	0.03	0.22	0.02	0.02	0.79	0.03	0.02	0.45	0.03	0.04	0.23	0.03	0.03	0.37
hwseen_a																		
0	0.27	0.25	0.28	0.35	0.26	0.55	0.25	0.28	0.68	0.32	0.42	0.03	0.28	0.21	0.00	0.32	0.32	0.00
1	0.50	0.53	0.14	0.51	0.56	0.89	0.50	0.45	0.74	0.41	0.36	0.39	0.37	0.49	0.00	0.44	0.42	0.23
2	0.23	0.23	0.51	0.14	0.17	0.61	0.25	0.27	0.90	0.27	0.21	0.15	0.35	0.30	0.13	0.22	0.26	0.01
hwseen_c																		
0	0.29	0.40	0.00	0.57	0.49	0.64	0.48	0.50	0.08	0.51	0.50	0.15	0.36	0.33	0.32	0.43	0.45	0.52
1	0.26	0.25	0.46	0.22	0.26	0.45	0.22	0.20	0.92	0.16	0.21	0.18	0.13	0.21	0.00	0.21	0.16	0.92
2	0.45	0.35	0.12	0.20	0.24	0.84	0.30	0.30	0.07	0.32	0.29	0.67	0.51	0.46	0.16	0.35	0.39	
hwseen_i																		
1	0.37	0.23	0.09	0.19	0.35	0.02	0.38	0.19	0.92	0.31	0.27	0.71	0.12	0.08	0.26	0.18	0.14	0.46
2	0.64	0.77	0.09	0.81	0.65	0.02	0.63	0.81	0.92	0.69	0.73	0.71	0.88	0.92	0.26	0.82	0.86	0.75

NOTE: TABLE SHOWS MEANS ACROSS HOUSEHOLDS OFFERED/NOT OFFERED INSURANCE (O/C) OVER TIME AND SITE. P-VALUE (A) REFERS TO A TEST OF THE NULL HYPOTHESIS OF EQUALITY OF MEANS ACROSS THE TWO GROUPS WITHIN EACH WAVE WHEREAS P-VALUE(B) REFERS TO A TEST OF THE NULL OF EQUALITY OF THE TREND BETWEEN BOTH GROUPS.

A5: Summary of healthcare expenses and hardship financing

Variable	Kanpur Dehat						Pratapgarh						Vaishali					
	Baseline			Endline			Baseline			Endline			Baseline			Endline		
	O	C	P-value(a)	O	C	P-value(b)	O	C	P-value(a)	O	C	P-value(b)	O	C	P-value(a)	O	C	P-value(b)
expout_a	315	342	0.591	212	279	0.485	257	223	0.903	211	204	0.953	358	300	0.125	363	317	0.261
expout_c	1346	1258	0.76	239	278	0.942	737	593	0.927	257	265	0.965	1242	1184	0.686	473	461	0.918
expout_i	17247	20125	0.412	25712	20131	0.686	7959	12420	0.228	11335	21266	0.133	8445	9219	0.58	11871	11968	0.986
copmech_a	0.17	0.23	0.11	0.06	0.07	0.69	0.05	0.06	0.89	0.02	0.03	0.52	0.19	0.19	0.99	0.07	0.09	0.23
copmech_c	0.29	0.23	0.28	0.05	0.12	0.87	0.06	0.08	0.50	0.06	0.04	0.82	0.43	0.32	0.52	0.14	0.15	0.19
copmech_i	0.51	0.50	0.80	0.28	0.45	0.01	0.30	0.29	0.40	0.17	0.19	0.40	0.79	0.68	0.06	0.45	0.45	0.27

NOTE: TABLE SHOWS MEANS ACROSS HOUSEHOLDS OFFERED/NOT OFFERED INSURANCE (O/C) OVER TIME AND SITE. P-VALUE (A) REFERS TO A TEST OF THE NULL HYPOTHESIS OF EQUALITY OF MEANS ACROSS THE TWO GROUPS WITHIN EACH WAVE WHEREAS P-VALUE(B) REFERS TO A TEST OF THE NULL OF EQUALITY OF THE TREND BETWEEN BOTH GROUPS.

A6: Effects of the randomized offer of insurance on healthcare expenses and hardship financing

	OP	*N*	Acute	*N*	Chronic	*N*	IP	*N*
Healthcare Expenses								
Pooled (Pertinent Sites)	-0.079	***13855***	0.001	***5170***	-0.069	***6668***	-0.063	***744***
Kanpur Dehat	0.108	***3917***	0.007	***1628***	0.107	***1760***	-0.067	***342***
Pratapgarh	-0.119	***5156***	-0.011	***1768***	-0.049	***2686***	-0.713	***402***
Vaishali	-0.195**	***4782***	0.005	***1774***	-0.227	***2222***	NA	***NA***
Hardship financing								
Pooled (Pertinent Sites)	-0.027	***3547***	0.027	***1007***	-0.050	***1782***	0.059	***914***
Kanpur Dehat	-0.011	***1145***	-0.060	***411***	-0.009	***532***	0.121**	***418***
Pratapgarh	-0.014	***737***	-0.012	***158***	-0.049	***404***	0.000	***496***
Vaishali	-0.009	***1665***	0.081	***438***	-0.033	***846***	NA	***NA***

NOTE: TABLE SHOWS MARGINAL EFFECTS OF CONDITIONAL LOGIT MODELS WITH INDIVIDUAL FIXED EFFECTS. SAMPLE IS RESTRICTED TO THOSE WHO REPORTED AN ILLNESS. THE SAMPLE IS RESTRICTED TO THOSE WHO REPORTED AN ILLNESS* P<0.1; ** P<0.05; *** P<0.01.

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