Impact Evaluation of Health Micro Insurance Through Randomized Controlled Trials

Two interventions targeting renewal rates & health outcomes

Tilak Mukhopahyay[1] and Akhil S. Behl[2]

Centre for Insurance & Risk Management, IFMR

---

[1]Consultant Researcher, Centre for Insurance & Risk Managementat IFMR, Chennai, India.

[2]Analyst, Centre for Insurance & Risk Managementat IFMR, Chennai, India.

Abstract

Use of Randomized Controlled Trial methodology for assessing the impact of health micro insurance on low income households is not common in the space of health micro insurance research. This paper details the research methodology of using RCTs which the Centre for Insurance and Risk Management (CIRM, India) has adopted, as the action research partner, in two health micro insurance projects in two states of India. The paper discusses the rationale and the need for randomized controlled trials to assess the impact of the health micro insurance and allied services on chosen indicators in the subject population. This paper explores the theoretical nuances of the research methodology, and lists the outcomes expected from the interventions based on the current status of the projects.

Acknowledgements

List of Abbreviations

BPL	Below Poverty Line
CARE	CArdiac Research and Education
CHW	Community Health Worker
CK	Calcutta Kids
FGD	Focussed Group Discussions
HMI	Health micro insurance
MIS	Management Information System
MYCHI	Mother and Young Child Health Initiatives
NGO	Non-Governmental Organization
OOP	Out Of Pocket (payment)
OPCS	Out-Patient Counselling Service
RCT	Randomized Controlled Trial
VHC	Village Health Champions

Contents

1 Introduction

Health micro insurance (HMI) is a comparatively new phenomenon compared to micro finance, in India as well as the rest of the world. The literature on micro insurance, therefore, comprises of a variety of case studies, process evaluations and theoretical expositions on clients' behaviour, but not rigorously obtained experimental results. While the use of randomized controlled trials to evaluate impact is quite common in the space of micro finance, there are not enough attempts to study the impact of micro insurance on behavioural and other outcomes through RCT experiments. Also, eclipsing other experimental techniques, RCTs have lately become a *de facto* 'gold standard' in evaluating the impact of policies and in generating more informed advocacy in decision making at the policy level.

As a part of its broader mandate, 'safety nets for all', CIRM believes in innovating and exploring novel methods and interventions to develop sustainable risk-transfer mechanisms for low income households. The health research team at CIRM is currently engaged in various innovative health micro insurance projects in different parts of India. These projects aim to address pertinent sector level questions in the global micro insurance space, and try to find solutions for various bottlenecks in both the demand and supply side of the industry.

In the two projects, research methodologies of which are being detailed in this paper, CIRM has brought in the practice of rigorous impact evaluation through RCTs. The evaluations are aimed at validating the hypotheses based on which the interventions were designed. The results from these experiments will be used to inform advocacy and reforms in product design, innovation, policy making and regulation in the sector.

2 Literature on the RCT methodology

Randomized controlled trial technique is now extremely popular among researchers all over the world for evaluating the impact of an intervention. Researchers like Dr. Abhijit Banerjee, Dr. Esther Duflo, Dr. Rachel Glennerster and others at the Jameel Poverty Action Lab at MIT have played a major role in popularizing this technique. Previous papers on impact evaluations by Duflo, Glennerster & Kremer [2006], evaluation of education policy (Balasakhi programme, India) by Banerjee, Cole, Duflo & Linden [2005], and impact evaluation of treatment externalities on health and education by Miguel and Kremer [2004] paved the way for a robust understanding of the process of evaluation of any kind of intervention targeting the improvement of public health or education

systems. Randomized controlled trial methodology has also been successfully used to assess behavioural changes in employees when they are exposed to an intervention like financial education as reported by Bayer, Bernheim & Scholz, [1996]. Another interesting work on the effects of education, financial literacy and cognitive ability on financial market participation uses RCT as a tool to assess the impact of the interventions on the behaviour of human subjects (Cole and Shastry, [2009]). The use of RCT methodology to assess the behavioural changes of human subjects is now recognized as a successful technique in research on development economics.

However, there have been few attempts, and *none in India*, to assess the impact of HMI and related add on services on the behaviour of the target population. Since India is considered an incubator for micro insurance initiatives, the impact assessment of health micro insurance programs become important from the perspective of various stakeholders in the HMI sector across the world.

Part I

Calcutta Kids

Enhancing and sustaining HMI through out-patient counselling

3 Brief Description of the Project

Calcutta Kids (CK) is a Non-Governmental Organization (NGO) with the mandate of making quality health care affordable and accessible to all through use of well trained Community Health Workers (CHW) trained by CK.

3.1 Hypothesis & Rationale of the Project

Hypothesis: Creation of *demand* and *value* for HMI among clients

It has been observed that one of the major challenges for health micro insurance programmes is the low renewal/retention rate. The wisdom in the sector is that one of the prime causes driving this behaviour is the lack of understanding of the nature and importance of insurance. It is surmised that non-claimants do not see much value in a health insurance product due to not receiving any service against the payment of premiums. Therefore it is assumed, that giving

an add-on service such as outpatient counselling along with the inpatient health insurance will change the behaviour of the clients, as it may create more value for the health micro insurance product from the client's perspective.

3.2 Description of the Command Area

Fakir Bagan in Salkia, Howrah, is one of the largest slums in the East Indian state of West Bengal. Calcutta Kids started its intervention in Fakir Bagan through their Maternal and Young Child Health Initiatives (MYCHI) programme in 2005. The programme had a significant impact in reducing malnutrition and maternal mortality, through counselling and monitoring the progress and health parameters of a mother during pre and post natal phases. These community level interventions are carried out by the Community Health Workers (CHWs) trained by CK.

3.3 The Intervention

Calcutta Kids started a HMI scheme providing in-patient healthcare in its catchment area in March 2009. The scheme also provided Out-Patient Counselling Services [OPCS] to increase renewal rates for the HMI scheme. Through this service, insurance clients that access outpatient care at a network facility will be visited in their home by a health worker of Calcutta Kids two days after consultation. The health worker will:

› Ensure that the client is following the doctor's prescription.

› Provide simple behavioural advice to the client regarding treatment.

› Record the client's health status, and present this information to a doctor who will advise on follow-up options.

4 Learning agenda & Research Methodology

4.1 Learning Agenda

The project has received an innovation grant from the micro insurance Innovation Facility (MIF) of the International Labour Organization (ILO). The research questions, therefore, have been framed by aligning the learning objectives of the multiple partners with the need for research in the sector. The research questions are as follows:

1. What is the effect of the OPCS on client retention (renewal rate)?

2. What is the effect of the OPCS on the claims expense?

3. Why, and how much do clients value the OPCS?

4. Why, and how much do clients value the insurance product as a whole?

5. Is the OPCS self-financing? Can it cross-subsidise the insurance premium, either in this scheme or elsewhere?

4.2 Research Methodology

4.2.1 Rationale for RCT Methodology

As the key question of this project is to *evaluate the impact* of an add-on service (OPCS) for an inpatient scheme on client behaviour, it becomes imperative to use randomized controlled trial methodology. This is because other available techniques like before-after differencing, multivariate regression, etc fail to capture the effect of 'behavioural change' in the subject population due to the introduction of the intervention. Since 'behaviour' is an essential, yet inevitably immeasurable variable in decision-making, these techniques suffer from the problem of 'omitted variable bias'. Moreover, the bias is not easily estimable. In this case, since the counterfactual is difficult to observe or construct, it is appropriate to use the randomization technique. This is because a control and a treatment group, *randomly selected and therefore statistically identical in behaviour*, when subjected to differential treatment, allow us to measure *the differential outcome in the variables of interest as a direct result of the differential treatment, without the effect of behaviour, that being a confounding variable, biases the estimation.* These variables of interest may be the subjects' 'understanding of the risk', 'risk mitigating behaviour', 'value of insurance', etc. However, for the sake of observation, we condense these outcomes and/or behavioural aspects into an objectively observable and easily measurable variable, viz., 'higher renewal rate' for the insurance scheme.

4.2.2 Description of Research Methodology

Learning Agenda	Data Source & Methodology
Client Retention	Data on client retention through CK's MIS
Claims Expenses	Data on number of claims and payout made based on CK's MIS and data from insurance company.
Client Value	FGDs and semi structured and structured interviews of the clients at predefined intervals. Behavioural study cases through PRAs.
OPCS/OPD Financing	Operational cost data, revenue data from internal audit reports of CK and investment-premium data from insurance company. Also check for possibility of cross subsidization in the portfolio.

Table 1: CK Research. Expected data sets and research techniques.

4.2.3 Randomization Design[3]

Since the research is focussed on the change in demand for insurance, and the renewal of insurance which is mostly determined by conditions at the level of a family, or of the insurance policy, the level of randomization must also be the same. However, the randomization needs to be *stratified* to control for the different levels of past interventions by CK in the command area.

This is necessary due to a number of reasons. As discussed earlier, CK has been conducting the MYCHI programme in some parts of the command area, though not throughout. Therefore, we can anticipate the population of the command area to be of two different types; those that have been exposed to MYCHI, and those that have not. This distinction is important to consider in the randomization design since being exposed to MYCHI policies in the past can be expected to have changed certain behavioural attributes like understanding of health risk, health-seeking behaviour etc. Since these behavioural differences of the two categories of the population can not be filtered away through randomization, the randomization needs to be stratified to account for these differences. Moreover, since the community health workers of CK provide counselling for the MYCHI scheme in the command area, there is a possibility that it may have an influence on the decision of insurance renewal as the clients may be influenced by this

---

[3]We are obliged to Dr. Clara Delavallade [J-PAL] for her feedback on planning of randomization

service.

In addition to this, there is a need to further stratify the population. This is explained thus.

CK was initially operating in one segment of the slum (Fakir Bagan), but they have now expanded their work to a new area in the slum. While CK has provided counselling under the MYCHI project only in the old area, there are families in the old area without the presence of any MYCHI beneficiaries. In the new area, since CK started its interventions only with the health insurance scheme, the clientÃĺle only comprises of insured families, and no MYCHI beneficiaries.

Because CK has been operating in the old area for almost 3 years, one may anticipate peer influence and a high level of *trust* among people in the old area when compared to those in the new area. As this level of trust and peer influence is not to be expected in the new area, one can expect behavioural differences among the beneficiaries across the two areas.

Therefore, to control for these effects, we designed a 'two stage stratified randomized controlled trial' to create control and treatment groups among the insured clients. The families/households in the treatment group will receive OPCS, and households in the 'control' group will not receive OPCS.

The plan for the randomized controlled trial experiment is represented below where:

› **MYCHI family**: An insured family and any one member of the family is current MYCHI beneficiary as well.

› **Non-MYCHI family**: Pure health insurance clients with no MYCHI beneficiary in the family.

› **CK's old operation area**: Area of the slum where CK was initially operating with their OPCS scheme and micro health insurance scheme afterwards.

› **CK'S new operation area**: Newly penetrated area in the slum and CK is offering micro health insurance to the families in this area and no MYCHI.

Area Stratification / Previous Intervention	CK's OLD area of operation		CK's new area of operation	
MYCHI family	C1 MYCHI + No OPCS	T1 MYCHI + OPCS	There is no MYCHI beneficiary in the new area. There are only clients of Micro Health insurance program.	
Non-MYCHI family	C2 No MYCHI + No OPCS	T2 No MYCHI + OPCS	C3 No MYCHI + No OPCS	T3 No MYCHI + OPCS
Non Insured clients (Out of our study)				

Sample of insured families

Figure 1: Randomization Design for the CK experiment

In this stratification scheme with MYCHI/non-MYCHI and Old area/New area, the control groups will be C1,C2 and C3 (randomly selected), and the treatment group will be T1, T2 and T3 (randomly selected). The randomization will be carried out after each enrolment phase when the policy number/Calcutta Kids id (unique identification number) will be available for each insured household. Six sub-groups (C1, C2, C3 and T1, T2, T3) were created to observe the influence of other activities of CK on the policy renewal decision. If it is found that behaviour of the groups is not significantly different, then we could bundle the results together by having only C (C1+C2+C3) and T (T1+T2+T3).

5 Way Forward

5.1 Current Status of the Research programme

CK started their insurance operations in March 2009, and the enrolment for the insurance programme takes place three times in a year. Therefore in April 2010 the phase 1 of renewal and fresh enrolment took place. The total number of families enrolled (both renewals and fresh enrolment) constituted the sample for the first baseline survey. The baseline data collection for the families who enrolled in April 2010 has been completed and CIRM has done the previously stated randomization on the complete list of enrolled families in phase 1. There were a total of 225 families enrolled in phase 1, and CK has started providing OPCS following the list of treatment and control households given by CIRM (generated through a randomization programme in STATA). The collected data

of phase 1 is now under analysis and a complete baseline report will be generated once the data collection for phase 3 will be over by December 2010. After one year, CIRM will do a follow up survey of the treatment and control households who were selected in successive phases at the baseline in 2010.

5.2 Challenges

Though RCT as a research tool theoretically seems to be quite appealing in nature, its implementation has remained a challenge for live projects in our experience. As the slum is very closely nested, there is a serious possibility of 'contamination' of the treatment and control. Therefore there is a possibility of upward bias or over estimation of the treatment effect.

As the enrolment for the insurance scheme is not high till now, there is a possibility of ending up with a lower sample size for this experiment. As provision of OPCS is contingent on people in the treatment group falling sick and going to the empanelled doctor, the actual treatment group will be the households (in the treatment group) with at least one member who received OPCS during the study period. Therefore by the virtue of the effect of 'treatment on treated', the sample size will be lower than the initial sample of treatment households. This means that if the enrolment for the insurance scheme is not high, then the probability of observing more cases of OPCS also goes down as OPCS is an add-on service exclusively for insured clients. CK is trying its level best to boost the enrolment numbers through various innovative marketing strategies, thereby trying to ensure the minimum sample size for the research.

5.3 Expected Outcome

The OPCS module now consists of audio-visual counselling tools along with the routine follow up on medicine, hygiene and health conditions. Therefore it should possess more value from the perceptive of a client. As CK and CIRM are closely monitoring the OPCS operation and making sure that the treatment and control groups are properly maintained, CIRM expects that at the end of the study period in December 2011, there is a possibility of observing differential renewal rates among the insured beneficiaries. It may establish that giving an additional service along with the micro health insurance scheme incentivizes the non-claimants to remain in the scheme and hence result in a better renewal rate. If this study shows that the effect of the OPCS is positive on the renewal rate, then it will create a rationale for the insurance companies as well to invest more on add on services so that the overall scheme becomes economically sustainable in the long run.

Part II

CARE Foundation

Insuring Primary Care - Sustainable Financing for Rural Primary Health

6 Brief Description of the Project

CARE Hospitals was established in 1997 and currently has a network of 11 hospitals with more than 2000 beds across five states in India, viz., Maharashtra, Andhra Pradesh, Gujarat, Orissa and Chhattisgarh. CARE Foundation has been actively involved in research, education and technology for making healthcare affordable and accessible for low income households.

6.1 Hypothesis & Rationale of the Project

Hypothesis 1: Providing outpatient insurance schemes to rural low income households has been a great challenge due to high probability of adverse selection, lack of proper gate keeping mechanisms, and high transaction costs. It is possible to use a technology driven health care delivery model to solve these problems in a cost effective and sustainable way.

Hypothesis 2: Referral mechanism: Interventions in primary care through primary health financing mechanisms (Out-patient insurance), and preventive and promotive interventions will reduce out-of-pocket health expenditure on regular illnesses (fever, cold, diarrhoea, etc.), and will reduce incidence of hospitalization.

Hypothesis 3: Providing quality health care services at the door step at the village level will change the perception of people about the quality of health care. This will lead to a behavioural change, and enhance the health seeking behaviour of people in rural areas. This change in perception will also help fight against spurious drugs and quacks in villages.

6.2 Description of the Command Area

This project was piloted in Yavatmal district of Maharashtra. The district is prone to drought, and the bulk of the rural population live below the poverty

line (BPL). The delivery model of this pilot resembles a 'hub and spoke' structure. The CARE foundation has established an out-patient clinic at Yavatmal town and health care will be delivered through the Village Health Champions (Community health workers of CARE) in 30 villages surrounding the town.

6.3   The Intervention

› **Out-Patient services** (consulting, diagnostics and drugs) through a hub and spoke model with the clinic at the backend, and Village Health Champions (VHC) (Community health worker of CARE) with hand-held devices at the frontend in the villages.

› **Technology leveraged delivery of primary healthcare**, financed through health micro insurance, and delivered at the village level through the VHC. The VHC at the village level provides:

» Consulting services through a diagnostic tree

» Generic drugs at the village, and other drug subsidies at the clinic

» Diagnostics at the village level, and follow up care at the clinic

› **Preventive and promotive services** at the village level for OP insured clients.

7   Learning Agenda & Research Methodology

7.1   Learning Agenda

This project has received an innovation grant from the micro insurance Innovation Facility of the International Labour Organization. The research questions were framed in accordance with the learning objectives of the implementation partner, and considering other sector level questions. The research questions are as follows:

1. Is the technological intervention of introducing a hand held device cost-beneficial for the sustainability of the scheme?

2. Does purchasing the insurance package increase access to health care, enhance health outcomes, and mitigate the financial risk of the insured participants?

3. What is the likely impact of public health interventions (preventive and promotive interventions) on health outcomes, and expenditures in the population of interest?

4. Does the CARE intervention improve the quality of health services to its users?

7.2 Research Methodology

7.2.1 Rationale for RCT methodology

If our goal is to assess the impact of the insurance plan on subscribers, it is necessary to know what the outcomes (say in terms out-of-pocket (OOP) spending, proportion of illnesses for which treatment was sought, etc.) for subscribers would be, in the absence of such a plan. This 'counterfactual' is difficult to observe/construct.

However, unlike the CK project, *vanilla* randomization does not provide us sufficient controls to create the counterfactual. It must be noted that the objective of this experiment is to evaluate the impact of *insurance* on various behavioural, financial and health attributes of the family buying the policy. However, one must remain aware that buying insurance is a *voluntary* decision, and therefore any sampling technique used in this case would be subject to **self-selection bias**. This is because one expects that people who buy insurance are those who know themselves to be of high-risk or of being highly risk-averse. Therefore, this category of people who choose to buy insurance can not be considered behaviourally identical to the parent population.

We will now discuss this problem in more detail.

Consider that we want to evaluate the impact of insurance on the incidence rate of common illnesses in the community. Suppose we consider setting up a multivariate regression model to estimate this effect as thus:

$$incidence = \beta_0 + \beta_1 * insurance + ... + behaviour^4$$

Here we need to be aware that the problem above is prone to **omitted variable bias** (due to the same reason that the sample is prone to self-selection bias). Since the regression equation can not include the unobservable behaviour, the

---

[4]'behaviour' in the equation above replaces the error term ϵ. This is because assuming that there are no other important unobserved variables in the equation, and that all observables have been explicitly included in the regression, the residual term should primarily be comprised of 'behaviour'.

unobserved heterogeneity leads to a biased estimation of the regression coefficients since the same omitted variable is also correlated with the decision to buy insurance. There are two standard ways to deal with the problem of unobserved heterogeneity or omitted variable bias. These are, to find a proxy variable for the unobserved, which in this case is very difficult, or to assume that the omitted variable does not change over time, and use the first-differencing or fixed-effects method. The second method also does not work in our case because we know that introducing insurance is going to affect the behaviour of the clientÃĺle, which is indeed a subset of the changes that we desire to measure through this intervention.

Therefore we find that both the standard techniques in this case fail. However one technique that can be used to solve this problem is the use of an **Instrumental Variable** or in our case, **discount-vouchers**. This is the pivotal attribute of the randomization design in this case.

7.2.2 Research Methodology - Voucher Based Randomization

Suppose we can find (or create) a variable with the following properties:

$$Cov(insurance, variable) \neq 0, \&$$

$$Cov(behaviour, variable) = 0$$

If this can be done, we would know that this variable is an instrumental variable that can be used to find unbiased estimates in the above regression equation. Note here that the second property is easily achievable through randomization. One may create a variable through randomization of the sample of possible families (units of decision-making) that is completely uncorrelated to the behavioural aspects of these decision-making units. On the other hand, to ensure compliance with the first property, one may create this variable in such a way that the state of this variable is correlated with the uptake of insurance. One can easily see that a discount-voucher can be used to induce buying of insurance and create correlation between the voucher and insurance.

A voucher is essentially an entitlement that provides an 80%[5] discount on the premium that a household would ordinarily pay to get CARE insurance cover

---

[5] The choice of 80% is not trivial. When using an Instrumental variable, one would generally desire a high level of correlation b/w the endogenous variable and the instrumental variable. Therefore one would want to give heavy subsidy to ensure that take up with vouchers is high creating high correlation. One may as well argue then, that the voucher be given free of cost. However, there is literature that documents that the behavioural impact of receiving a 'free gift' is different from the behavioural impact of buying a heavily subsidized product.

for the first year of the programme. A sample of 30 households per village is chosen for the baseline survey. Our aim is to provide vouchers to 20 of these survey households. The remaining 10 households will be provided with a slip that entitles the recipient to one free visit to the village health champion. Let us term the households in each village that get the voucher 'treatment households' and the 10 households that get the slip for one free visit to the village health champion as 'control households'. Note that anybody outside this group of 30 in each village is irrelevant for the sake of our research whether or not they choose to buy insurance.

As the voucher is randomly assigned, on 'average' or in a 'statistical sense' the treatment and control households are basically the same. Thus, differences in the behaviour/outcomes of the treatment and control households can be assumed to be an effect of the voucher.

Recall that we are interested in the impact of the 'insurance/CARE scheme'. (Impact can be measured in several ways: increased use of services by household members, financial risk protection, quality of care, etc). The question here is: to what extent can the impact of the voucher programme be considered the same as the impact of the insurance programme? We can expect that not all voucher recipients may purchase insurance, and some non-recipients may also purchase insurance. Thus one could also refer to the effect of the voucher programme as the effect of 'intent to insure[6].'

The key take-away from the discussion above is that we have essentially solved the problem of self-selection bias. This is because, it is due to our intent to insure (the heavy discount) that people choose to buy insurance and not due to their behavioural affinities (although not true in all cases). However, once the insurance product has already been bought, one can argue that, *on an average*, the differences observed between an insured person (from the treatment group) and a non-insured person (from the control group) from the point of intervention onwards are because of the insurance/CARE scheme.

Replicating the same discussion as above, one can also randomize to evaluate the impact of the preventive promotive package on health and other outcomes. We do this by dividing the sample of 30 households into 10 who get only the one-time free visit (the control group), 10 households who receive the discount voucher on the premium of the insurance cover (the first treatment group), and 10 households who receive the discount voucher on the premium and another 80% discount voucher on the preventive-promotive package.

In this study the impact will be observed through three difference effects:

---

[6]Note that this is analogous to 'intent to treat' in standard RCT literature

1. **C - T2** : Impact of OP insurance on insured people vs. uninsured people.

2. **C - T1**: Impact of combined intervention (OP insurance + preventive and promotive package) on insured people vs. uninsured people

3. **T1 - T2**: Impact of combined intervention (OP insurance + preventive and promotive package) on insured people vs. people with only OP insurance.

8 Way Forward

8.1 Current Status of the Research programme

The baseline survey before launching the technology leveraged insurance scheme is now complete. The data is currently under preliminary analysis by the data collection agency. At the end of the data cleaning and data entry process, CIRM will produce a baseline survey report which will provide more insight on the clientÃĺle. As the survey has been conducted using the list of households that were assigned specific discount vouchers, (the list is generated through a randomization programme in STATA) the randomization is now implemented in the field. CARE is about to start the enrolment for the out-patient insurance programme of which CIRM will closely monitor the process to rule out any chance of mixing between control and treatment households. The discount vouchers are designed in such a manner that the treatment and control households can be easily identified from a unique code assigned to each type of voucher. CARE and CIRM will try to ensure that the recipients of the discount vouchers actually use it to buy the insurance product. In that case it will create a true control and treatment group with differential rate of discount on the insurance premium and on the preventive package. As a result it would successfully serve the purpose of an 'instrumental variable', and the vouchers will show the 'intent to insure' effect.

8.2 Challenges

Village to city migration is a very common phenomenon in the command area of this project. Therefore there is always a risk of losing control and treatment households. If this happens, the results have to be adjusted accordingly. As the recipients of the vouchers are low income households in the villages, they lack awareness about the benefits of having insurance, and there is a possibility that people may not use the vouchers to buy the out-patient health insurance scheme.

CIRM has tried to deal with this risk by providing a lump sum discount of 80% through the discount vouchers to incentivize the recipient to buy the insurance scheme.

8.3 Expected Outcome

The households which buy the insurance scheme using the discount vouchers after the baseline survey will constitute the true treatment group. As the insurance product is bundled with a preventive package and a technology leveraged health delivery model, the scheme ensures quality health services at the village level, and therefore we may observe the positive impact of CARE's scheme on the target households. It may establish that an intervention targeting out-patients with an out-patient insurance scheme eventually reduces the burden of in-patient cases, and therefore reduces the health expenditure of the household. In that case it would be a win-win situation as the out-patient health financing solution would prove beneficial for the households as well as for the insurer, as the insurer has to spend less on inpatient claims. Out-patient health risks are typically 'high frequency and low volume' risk, and therefore not commonly covered under insurance. If this out-patient health financing solution shows a positive result in terms of reduction in in-patient claims and sustainability of an out-patient cover, then the insurers will be interested in covering primary level healthcare. If this research establishes that there is a positive impact of the insurance scheme on the disease burden of the household and its health seeking behaviour, it may also successfully confirm the 'referral chain'[7] hypothesis.

---

[7]Referral chain hypothesis: Intervention in primary and secondary level health care delivery may reduce the burden of tertiary level of health provision. In that case the patient will get treated at the out-patient level and hence it may reduce the probability of hospitalization.

9 Conclusion

There have been very few attempts to measure the impact of micro health insurance on the health outcomes of low income households of a developing country. Randomized controlled trial technique to assess the impact of an intervention has been quite successful in various development projects. Though there are a few criticisms of the RCT method, it is recognized as one of the most powerful techniques for impact evaluation in development economics research. In this paper we have discussed a methodology of assessing the impact of the micro health insurance programme. In both the innovation pilots, the research methodology is now successfully implemented. However since only the baseline survey has been completed in both projects, we have to wait another year to see the final results. The primary objective of this paper was not to present the final quantitative results, but to describe plausible techniques to measure and design the randomization plan to assess the impact of health micro insurance programs. As this paper elaborates on various challenges and the risks of implementing a randomization plan in a live project, these designs and experiences will be extremely relevant for several other impact evaluation projects in other countries.

10   References

› **Duflo Esther, Glennerster Rachel, Kremer Michael [2006]**, 'Using Randomization in Development Economics Research: A Toolkit', NBER technical working paper, 333
http://www.nber.org/papers/t0333

› **Banerjee Abhijit, Cole Shawn, Duflo Esther, Linden Leigh [2005]**, 'Remedying Education: Evidence from two randomized experiments in India', NBER working paper, 11904,
http://www.nber.org/papers/w11904

› **Miguel Edward, Kremer Michael [2004]**, 'Identifying Impacts on Education and Health in the Presence of Treatment Externalities', Econometrica, Vol. 72, No. 1, (Jan., 2004), pp. 159-217

› **Bayer J. Patrick, Bernheim B. Douglas, Scholz Karl John [1996]**, 'The Effects of Financial Education in the work place: Evidence from a survey of employers', NBER Working paper, 5655
http://www.nber.org/papers/w5655

› **Cole Shawn, Shastry Kartini Gauri [2009]**, 'If you are so smart, why aren't you rich? The Effects of Education, Financial Literacy and Cognitive Ability on Financial Market Participation' , Working Paper 09-071, Harvard Business School