MICRO HEALTH INSURANCE IN BANGLADESH: PROSPECTS AND CHALLENGES

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DEDICATION

I dedicate this thesis to my parents whose unconditional love, support and inspiration has brought me to where I am today.

Momena Khatun

And

Brigadier General Abdus Salam Mahmood

DECLARATION

Except where otherwise indicated this thesis is my own original work.

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ABSTRACT

Micro health insurance (MHI), a healthcare financing tool in the developing world, is the focus of this thesis. MHI is increasingly being seen as a transitional mechanism to establish large-scale health insurance systems, which can potentially turn out-of-pocket (OOP) payments into a pre-payment system that spreads the financial risks associated with ill health across a wide range of clients. Globally, developing countries have the largest proportion of healthcare spending financed by OOP payments. Bangladesh displays characteristics typical of the developing world, including low public spending on health, high OOP expenses, inadequate coverage for quality healthcare and inefficiency in resource use. The current national health financing strategy thus highlights the need for an alternative financing tool that can ensure efficiency by simultaneously increasing the pool of resources available for funding healthcare and reducing dependency on OOP payments. The strategy aims to achieve universal health coverage (UHC) by means of a social health insurance scheme, and MHI has been identified as an intermediate step that will facilitate transition towards this goal.

In this context, the thesis aims to explore the prospects and challenges of implementing MHI in rural Bangladesh based on national and international evidence. Using both primary and secondary data, the experience of, and prospects for, MHI in Bangladesh is assessed from the viewpoint of three major stakeholders: the consumer, the insurance provider and policy makers. The Chakaria Health Card Scheme of Chakaria, a remote rural area in Bangladesh, and the population of Chakaria were studied to obtain data for this research. In addition, international experience regarding the prospects and challenges of implementing MHI in a low-income country like Bangladesh is reviewed to provide insights into useful lessons for Bangladesh in progressing its UHC agenda.

Among the three players, findings from consumers and providers showcase significant learnings on the level of understanding about MHI, factors influencing demand for MHI, and people's preferences for alternative health financing mechanisms. The opinions of those responsible for program implementation

highlight challenges in implementing MHI on the ground, difficulties in making MHI popular, MHI standing in the face of competitors in the market, and other technological and operational challenges.. Finally, the opinions of the policy makers give a flavor of the policy environment around MHI and its implementation in Bangladesh. The international experience from three other countries of similar socio-economic context, using a health financing framework offers valuable learnings for Bangladesh if it is to implement a social health insurance scheme en route to its journey towards universal health coverage.

The research findings help understand the acceptability of, and interest in, MHI among the common people of Bangladesh, and the programmatic challenges in designing an MHI scheme to attract clients and protect them from the potentially impoverishing effects of healthcare costs. The policy implications of these findings are highly relevant to Bangladesh at a time when the government is in a trial phase for introducing an insurance mechanism to move the country towards universal health coverage.

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BPL: Below poverty line
CBHI: Community Based Health Insurance
CCHP: Chakaria Community Health Project
CGHS: Central Government Health Scheme
CSMBS: Civil Servants Medical Benefits Scheme
DG Health/DGHS: Directorate General of Health Services
DGFP: Directorate General of Family Planning Services
DNS: Directorate of Nursing Services
DRG: Drug Related Grouping
DSS: Demographic Surveillance System
EPI: Expanded Program on Immunization
FP: Family Planning
GoB: Government of Bangladesh
HH: Household
HNP: Health, Nutrition, and Population
IMR: Infant Mortality Rate
MCWC: Maternal and Child Welfare Centre
MDG: Millennium Development Goal
MFI: Micro Finance Institute
MHI: Micro health Insurance
MIS: Management Information System
MMR: Maternal Mortality Ratio
MoHFW: Ministry of Health and Family Welfare
MWS: Medical Welfare Scheme
NGO: Non-Government Organization
NHIS: National Health Insurance Scheme
OOPs: Out-of-pocket payments
PHC: Primary Health Care
PPS: Purchaser Provider Split
RSBY: Rashtriya Swasthya Bima Yojana
SES: Socioeconomic Status
SID: Supplier Induced Demand
SIP: Strategic Investment Plan
SSS: Social Security Scheme
TB: Tuberculosis
TFR: Total Fertility Rate
THE: Total Health expenditure
U5MR: Under-five Mortality Rate
UHC: Universal Health Coverage
UHFWC: Union Health and Family Welfare Centers
VHP: Village Health Post

CHAPTER 1: INTRODUCTION

Health is one of the major factors that dictate the direction of economic and other development of any country, be it developed or developing. Poor population health contributes to social and economic instability and undermines development efforts (1, 2). Time and again, ensuring quality healthcare for every human being has therefore remained central to the global development actions. The 'health for all' agenda set at the Alma Ata declaration of 1978 (3), the Millennium Development Goal of year 2000 (4), WHO and UN endorsed agenda of Universal Health Coverage primarily set in 2005 (5) and finally the resolution at UN general assembly in 2015 on sustainable development goals (6) all bear testimony to the quest for improving health and access to health for people all around the globe.

The millennium development goals brought about unprecedented progress in many of the health indicators worldwide, particularly in the developing regions. Globally, under-five mortality rate declined more than half between 1990 and 2015 (90 deaths/ 1,000 live births in 1990 vs. 43 deaths/1,000 live births in 2015), and maternal mortality dropped by 45% between 1990 and 2013 (7). The proportion of under-five children who are underweight has reduced by almost a half between 1990 and 2015 (7). Besides health, achievements were also visible in other development areas where extreme poverty (defined by people living below $1.25 a day) dropped from nearly half the population of developing world in 1990 to 14% in 2015 and gender disparity was eliminated for primary, secondary and tertiary education between 1990 and 2015 (7). However, significant obstacles still persist in terms of equitable distribution of gains. This poses a particular threat to the health systems and overall socioeconomic development of developing countries against which growth is biased. For example, despite the good progress achieved in reduction of maternal mortality worldwide (an estimated 523 000 deaths in 1990 to 289 000 in 2013), the rate in the developing regions is 14 times higher than in the developed regions (7). Current estimates show about 795 million people are undernourished globally

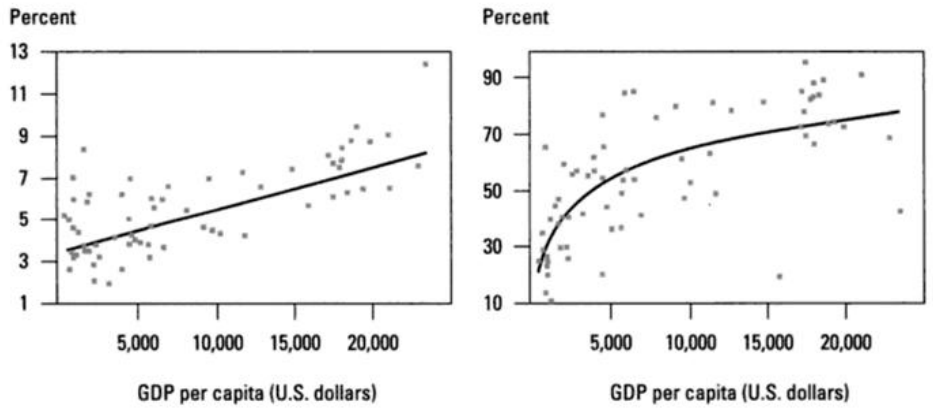
and the majority of these people (780 million) live in the developing region (7). Although impressive reduction in under-five mortality has been observed about half the burden of world's under-five death falls on the Sub-Saharan Africa region (7). Furthermore, the worst effect of the situation falls increasingly on the rural areas of the developing countries, which have very low standards of well-being (7, 9) and quality health care (10, 11). As a post MDG agenda, the goal of universal health coverage (UHC) set in 2005 aims to tackle the existing health systems challenges which include among others universal access to quality healthcare and its affordability. The world health report 2010 explained universal health coverage from three dimensions: the health services that are needed, the number of people that need them, and the cost to whoever must pay (12). Accordingly in reaching universal coverage a country need to ensure equitable access to quality healthcare for all and at the same time provide financial protection while accessing healthcare. Any country, no matter what its stage of development, can instigate the journey towards UHC. However, the challenges in achieving UHC and the efforts to combat them will vary depending on the level of development, national capacity and other structural differences between the various countries.

Reports on the global burden of illness reveal that 84% of the world's poor shoulder 93% of the burden and only 11% of total healthcare reaches low and middle income countries (13). In the quest for achieving UHC particular attention is thus required on improving access and affordability of quality healthcare in developing countries. Studies have shown that the state in most low-income countries has not been able to fulfill the health care needs of the poor, and especially of the rural population. Shrinking budgetary support for health care services, inefficiency in the public provision of health services, and unacceptably low quality of those services all demonstrate the state's inability to meet health care needs of the poor (14). The health systems of developing countries are typically characterized by low revenue, low investment in health, high out-of-pocket expenses for healthcare, low accessibility to qualified healthcare, and lack of effective governance. At the same time, these countries are experiencing demographic trends which, when coupled with unequal

development, are increasing the burden of poverty, particularly the proportion of people living below the extreme poverty line. Further to this, out-of -pocket expenses for healthcare comprise more than 50% of total health expenditure in many low-income countries including Bangladesh (15). A study of 89 countries suggested that the more a country relies on OOP, the more its households face financial catastrophe (16, 17). In general, the higher the share of OOP in total health expenditure, the more households face catastrophic expenditure and impoverishment . Health related costs have indeed been found to be a primary cause of impoverishment in many countries (14). The impoverishing effect of catastrophic healthcare cost pushes about 100 million people below the poverty line each year. The high out-of-pocket expense for healthcare in Bangladesh pushed around 3.5% people under the poverty line in 2010 (18). Further, high out-of-pocket expenses discourage use of needed health services, particularly by the poor (19). This situation is aggravated by the virtual absence of an effective risk pooling mechanism to spread the risk of financial catastrophe between the ill and the healthy and between the poor and the rich. This puts a huge burden on the people who are delayed in accessing, or denied access to, health care. A WHO study reports that, health impoverishment results from lack of risk pooling and insurance (13, 20). Globally, the estimate for the share of total health expenditure funded by health insurance reveals that spending on healthcare channeled through risk sharing is more in rich countries compared to the low and middle income ones (see Figure 1) (21). In the absence of any risk management mechanism or cushion to counter the backlash of catastrophic expenses for healthcare, people in low and middle-income countries, particularly the poor, rely on various coping mechanisms. Strategies to cope with financial shock include, among others, borrowing money (often at very high interest rates at informal money markets), selling precious assets (22), and compromising consumption (23). These coping strategies, in one way or another, expose people to further financial hardship. Sudden catastrophic health expenses can thus make poor families lose, in a matter of hours, assets that took them years to accumulate (15).

FIGURE 1: SPENDING AND RISK SHARING ARRANGEMENTS

A. Total health spending as a share of GDP B. Spending Channeled through risk-sharing arrangements



Source: (3)

In May 2005, in their 64th session, the WHO passed a policy resolution where they suggested health insurance as one of the solutions to counter the health systems challenges in developing countries (24-26). Health insurance is a financial instrument that can generate adequate resources for health care, pool risk, and provide more equitable and better quality healthcare (14). The advantage of using health insurance as a financing tool for healthcare is that it does not put the whole financial burden on the government but spreads it around different partners (27). In 2010 the WHO report added, investing in the development of prepayment and pooling, as opposed to simply funding projects or programmes through separate channels, is one of the best ways donors can help countries move away from user fees and improve access to health care and financial risk protection (21, 22). Paul Mosley, in his study on micro insurance for the poor, also mentioned that insurance is one such institution that can protect people, particularly those whose existing coping strategies are failing, from social and financial exclusion (28). The potential of micro health insurance in providing financial protection to the poor in low-income countries has been highlighted in other studies as well (29) (10, 30). In addition, studies have shown that the "health care crisis" in the last decade has led to the emergence of many

micro health insurance schemes or community financing schemes in different regions of the developing world, particularly in sub-Saharan Africa (29, 31, 32). The role of micro health insurance has been pivotal in countries that have a national health insurance system (e.g. Thailand, Ghana, Philippines, Vietnam, India). Evidence so far exhibits that, with a built in characteristics of flexibility in terms of its role, a micro health insurance scheme can serve as a transitional mechanism for countries that have chosen to take the path of a national insurance system to achieve universal health coverage (33-39). When public funding in health is low, micro health insurance can assist countries to build capacity and provide financial protection for a certain segment of the population. Skills gained in running micro health insurance schemes particularly in low income setting, such as developing an effective information system, and skills involved in regulating health insurance, may later be useful in managing publicly funded schemes as they expand. Above all, these small-scale schemes can help build a culture of insuring against the risk of ill health in countries where the concept of health insurance is comparatively new (17). Having said this, it is also worth discussing the financing mechanism of varied types of health insurance and their potential impact on equity which is key to achieving UHC. Mandatory health insurance (commonly known as national health insurance, social health insurance) and voluntary for profit (e.g. private health insurance) and not for profit health insurances (e.g. micro health insurance, community based health insurance) are the different types of health insurances offered in different parts of the world. Depending on how these insurance schemes are financed or in other words, how revenue is collected under the schemes have implications for both equity in financing and financial protection and equity in health service use (40, 41). The more progressive the financing mechanism, the greater the potential to reach equity and ensure financial protection as people with least ability-to-pay will then bear the lowest burden of healthcare cost (40). Health insurance schemes that charge a flat rate usually results in levying regressive burden on people as everyone irrespective of their ability-to-pay contributes the same amount. Schemes charging a fixed rate of salary can also be regressive in cases where it is levied on only salary and not on total income. However, schemes with sliding scale contribution with higher income group paying higher

percentage of income and those that have built in exemption for vulnerable groups can potentially be progressive and equity enhancing (40). Health insurance schemes with a progressive financing mechanism thus can provide financial security for the poor in developing countries and improve access and equity in health service utilization, which constitutes one of the major goals under UHC.

Bangladesh, the country which is the focus of the current thesis, is a low-income country and shares many of the challenges of health systems faced by countries in similar settings. Although the 'health for all' mission appeared in the country's policy document as early as the 1990s, its proper implementation in the field has so far been missing. The essential service package for health of the government of Bangladesh is supposed to provide free health care regardless of cost or ability to pay. However, public healthcare often involves unofficial payments and the benefits from these services are mostly concentrated among the better-offs (Begum and Ensor 2007) (42). A study on the cost of public health facilities showed that the out-of-pocket expenditure on primary healthcare for a patient at sub-district level could be around 200% higher than the cost of service delivery of the facility itself (43). This extra share of OOP constitutes expenses like drug costs, costs of medical investigations, and unofficial payments to access healthcare (42, 44). To tackle the existing challenges posed by difficulty in access, uncertainty around quality of care and the financial constraints, the government of Bangladesh has recently embarked on the mission towards achieving universal health coverage. The country is planning to move towards a system of social health insurance to reach UHC. The current national health financing strategy 2012-2032 documents this commitment and has also highlighted the role of community or micro health insurance to gradually build a social health insurance mechanism that would protect its people from the financial catastrophes resulting from sudden illness and at the same time ensure access to quality healthcare (45). The following section gives a synopsis of the health system of Bangladesh, its achievements and current state of health, the challenges faced and the role of micro health insurance in reaching a solution to the existing challenges.

HEALTH IN BANGLADESH

CURRENT STATE OF HEALTH

The health gains in Bangladesh achieved since its independence in 1971 have been applauded in the global development arena in recent times (46-55). Even with a very low level of public expenditure the general health indicators returned a relatively higher value for the resources invested over the years. The under-five (U5MR) and infant mortality (IMR) has declined impressively by 57% and 46% respectively during 1990/1-2007 which has set the country on track to meet the Millennium Development Goal (MDG) of reducing U5MR and IMR to no more than 31 and 50 deaths per 1,000 by the year 2015. The Total Fertility Rate (TFR) plateaued around 3.3 between the years 1993-94 and 2004 but has now come down to the replacement rate target of 2.2 children per woman of reproductive age (56). Life expectancy has increased over 50% from 45 years in 1970. Now an average person can expect to live 70 years according to the 2011 WHO data (56). More impressive is the achievement that women in Bangladesh now are expected to live longer than men, which is the biological standard and experienced around the world. The Maternal Mortality Ratio and the nutritional status of children still remain a challenge for Bangladesh even though the MMR has declined to the level of 240 per 100,000 live births in 2010 from 322 in 2001 (57, 58).

The following table gives a comparative picture of health attainments of a few of the countries in the region alongside Bangladesh:

TABLE 1: SELECTIVE HEALTH INDICATORS, BANGLADESH AND OTHER SOUTH ASIAN COUNTRIES, 2011

Health indicators	Bangladesh	Maldives	Sri Lanka	India	Nepal	Pakistan	Myanmar
Total fertility rate (TFR) per woman	2.2	1.7	2.3	2.6	2.7	3.3	2
Maternal Mortality Ratio (MMR) per 100,000 live birth, 2010	240	60	35	200	170	260	200
Life expectancy at birth (years)	70	77	75	65	68	67	65
Under-five mortality rate per 1,000 live births	46	11	12	61	48	72	62

Source: (56)

HEALTH SERVICE DELIVERY

Health services in Bangladesh are delivered through a mix of public-private institutions and Non-government Organizations (NGOs). The public sector provides both curative and preventive care and is considered to be the key source of care for the majority of the population. The private sector, on the other hand, mostly provides curative care while NGOs provide preventive and basic primary level care (60).

ORGANIZATIONAL STRUCTURE AND GOVERNANCE OF HEALTH SERVICE DELIVERY

Public health services in Bangladesh are provided through a four -tier system of extensive facilities which are setup at union (lowest level administrative and local government unit), *Upazila* (sub-district), district and regional level (60, 61). A total of 4,400 Union Health and Family Welfare Centres (UHFWC) are located at the union level to deliver primary healthcare (PHC) and each of these UHFWCs cover a population of around 30,000. At the ward level (9 wards make up a union), community clinics serve 6,000 people each. *Upazila* level facilities include 417 Upazila Health Complexes (UHCs) with 31-50 bed capacity. Both in-patient and out-patient care, PHC, family planning services and some referral services

are provided through these settings. The Union Health and Family Welfare Centres and the Upazila Health Complexes are the key facilities to provide healthcare to the rural population of the country. At the district level there are 59 District Hospitals and some general hospitals with bed capacities ranging from 50 to 350. Primary and tertiary level care for in-patient and out-patient services are provided through these hospitals. At the regional level 13 Medical College Hospitals are responsible for delivering tertiary level care with bed capacities ranging from 250-1,700. In addition, specialized laboratory facilities are also provided for treating complicated cases (60, 62). Complementing these four-level facilities are the six postgraduate institutions providing both in-patient and out-patient specialized care at the national level. The private sector, on the other hand, is diverse, ranging from modern facility-based services to indigenous medical practitioners, village doctors/drug sellers and other non-qualified practitioners (63).

All of these health sector institutions belonging to the public and private sector are managed and controlled centrally under the policy guidelines of the government (64) (65). The Ministry of Health and Family Welfare (MoHFW) is the highest authority, headed by a Cabinet Minister, responsible for policy formulation, planning, implementation and decision-making regarding the health sector activities of Bangladesh. The secretary is the administrative head of MoHFW (64). The MoHFW operates through four implementation wings: Directorate General of Health Services (DGHS) and Directorate General of Family Planning (DGFP), Directorate of Nursing Services (DNS) and Directorate General of Drug Administration (DGDA). The DGHS provides technical support to the ministry and is responsible for implementation of the health programmes/services. The DGFP oversees the operations of district-level Maternal and Child Welfare Centres (MCWCs) and union-level health centres. At the most peripheral areas both wings work to provide healthcare at the domiciliary level (60). The DGDA supervises and implements drug regulations in the country and the DNS contributes in policy making related to nursing, health and family planning (65).

Cost of Healthcare

The constitution of Bangladesh entitles its citizens to primary healthcare free of charge. In the rural areas the Upazila Health Complexes (UHC) and facilities below this level are meant to provide both curative and preventive healthcare free of charge. Similarly in the urban context the government dispensaries are to provide curative and preventive healthcare free of charge to the urban population. Fees like registration fees for in-patient and out-patient services are fixed and fees for services including surgery, ambulance, radiological tests, etc are variable (42). Although there is provision of free of charge primary healthcare at the public facilities of the rural and urban areas, services most often involve unofficial payments (23, 66). First and foremost is the expense for medicine. Other unofficial payments include bribes to receive better care (including good behaviour towards patients), and to secure drug and other supplies for the patient. Studies have found these unofficial payments to be higher than the official payments in most instances (44, 66, 67). Unfortunately it has been observed that patients of lower socioeconomic status bear a higher percentage of these illegal payments compared to the better-off patients (67).

The private health facilities including the NGOs, on the other hand, provide healthcare on a fee-for-service basis. However, most of the NGOs have safety net programmes where they provide healthcare at free of cost or at a minimal charge to patients with limited ability to pay, particularly patients of lower socioeconomic status. In addition the NGOs are running a few micro health insurance schemes in parts of the country to provide healthcare (26).

Healthcare Financing

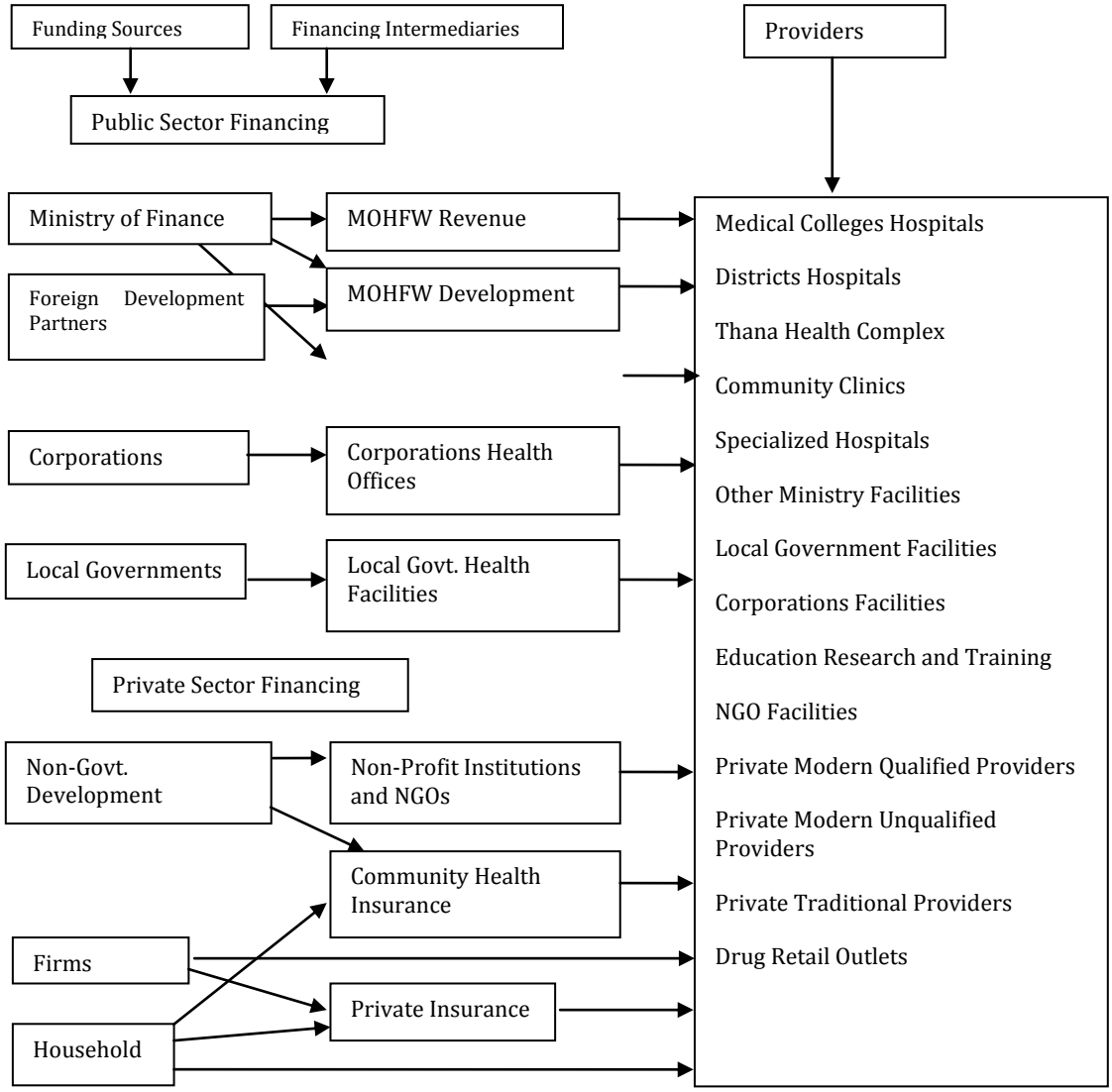
In Bangladesh per capita expenditure on health is very low at US$ 27 which constitute 3.8% of its GDP(68). The major financing agents in Bangladesh health systems are households, the government, NGOs and foreign Development Partners (DP) (69). Households are the largest source of financing and about 64% of the total national health expenditure is financed privately through out-of-pocket (OOPs) payments (69). This share is far too high compared to the global

level where OOPs account for about 32% of total health expenditure (17). Government with a share of 26% is the second largest financing source for healthcare in Bangladesh (69). Development partners contribute a sizable amount of their assistance for health through government and the NGOs. While funds provided to the government from development partners is combined in the government expenditure statistics, direct assistance to the NGOs for health related activities varied from 5% to 9% of total health expenditure during the period 1997-2007 (69). Public expenditures and funds from development partners are primarily used to finance the public provider system whereas the OOPs are mostly used to finance pharmaceutical products and diagnostic tests.

HEALTH FINANCING VIA HEALTH INSURANCE

Private health insurance, even though it exists in Bangladesh, is accessible for a limited number of the population engaged in formal sector employment. A large segment of the population is involved in informal employment, which is largely characterized by the absence of any collective arrangements to pay for healthcare. Community financing mechanisms, used in some parts of the world to serve the informal sector, are nearly non-existent in Bangladesh except for a few attempts by NGOs on a limited scale and contribute less than 1% of the total health expenditure (62, 70). Analysing the shares of the various financing agents for the country it has been observed that the role of insurance companies as a financing agent is very limited. Health care spending by insurance companies, which are mostly private sector firms, was Taka 314 million in 2007, or less than 0.2% of total health expenditure (69, 70). However, about one-third of private health insurance expenditures are for health insurance administration, and almost all the rest is used to pay for services at private hospitals. Figure 2 illustrates the flow of funds to the health system of Bangladesh from sources of financing to the entities that manage health funds to the providers of services.

FIGURE 2: FLOW OF FUNDING IN HEALTH SYSTEMS OF BANGLADESH



Source: (59)

THE CURRENT HEALTH FINANCING STRATEGY AND ITS LINK TO MICRO HEALTH INSURANCE

There are inefficiencies in the way funds are managed or allocated within the ministry of health and family welfare (MoHFW) of Bangladesh. Within the current system every Upazila (sub-district) level facility receives the same amount of fund irrespective of the need of the catchment population. Per capita spending on health, as a result, varies across the different divisions(45). The government subsidies for health do not fully reach the targeted population with more than 30% of the subsidies going to the richest quintile. In most cases

subsidies to hospital care are pro rich while for non-hospital care they are pro poor (O'Donnell et al, 2007). Until 201`2, Bangladesh had no formal health financing strategy, which could be targeted to minimize these types of inefficiencies in fund management and allocation. In 2012, the government implemented the health financing strategy 2012-2032 and the mission of this strategy is to achieve universal health coverage by means of establishing social protection for health (45). The major objective of the financing strategy is to halve the out-of-pocket expenses for healthcare at point of service from the current level of 64% to 32% by the year 2032. The strategy further aims to ensure efficiency in resource allocation within the MoHFW in order to attain maximum value for money and an equitable and sustainable financing mechanism. Indeed the success of any health financing strategy depends not only how the resources are accumulated but also on how the collected revenues are spent and allocated (45). Risk pooling through an insurance mechanism has proved to be an efficient health financing mechanism, which possesses the ability to ensure higher value for money for healthcare. The government of Bangladesh is also inclined towards testing social health insurance schemes in this regard. The current strategy plans to combine funds from tax-based budgets with the social health protection scheme, existing community-based and other prepayment schemes, and donor funding to ensure financial protection against health expenditures for all segments of the population (45). The importance and interest in testing social health protection schemes was also highlighted in the country's health sector Strategic Investment Plan (SIP) of 2003-2010. This Plan identified seven long-term strategic priorities, and accruing additional funds for the Health, Nutrition, and Population (HNP) services of the government was among these seven. Alternative financing mechanisms like social (payroll) insurance and community financing schemes were considered as mechanisms to raise funds in the SIP (World Bank 2010). The current health financing strategy of Bangladesh further elaborates on the path towards universal health coverage where it includes small scale health insurance schemes like micro health insurance or community health insurance as an intermediary step towards establishing a social health insurance mechanism to cover the risks of ill-health nationwide.

Although in Bangladesh the Gono Shasthya Kendra initiated a micro health insurance scheme in the mid 1970s, it was limited to a small areas and the culture of insuring against the risk of health was, and continues to be, quite alien for the population of Bangladesh (71). Even with a few other NGOs in the field, the experience with health insurance so far has remained mostly limited to small-scale community based or micro health insurance schemes. The history of micro health insurance in Bangladesh is closely linked with that of micro finance. Bangladesh is a pioneer in making a credit market accessible to the poor through micro finance. As a part of the micro finance program, the NGOs in some parts of the country initiated micro health insurance to ensure good health for their clients. As a result most of the existing micro health insurance schemes are found to be tied with a micro finance program. Some of the major players in the micro health insurance market of Bangladesh that have initiated MHI as a part of their MFI program include Sajida Foundation, BRAC, Dhaka Community Hospital, Grameen Kalyan, Integrated Development Foundation and Society for Social Development and Dushtha Shasthya Kendra. Nari Uddug Kendra and ICDDR,B are among those organizations that initiated MHI without any link with MFIs. Most of these schemes provide out-patient services including limited curative care, ANC, PNC services, annual health checkups along with medicine and pathological services to some extent. Some also provide referral services. BRAC and ICDDR,B has in-patient care included in their packages. All the schemes provide a fee waiver for those not able to pay. However, despite several years of operation, these schemes could cover only one-third of their catchment area. Further modifications with regards to operational technique, marketing, client retention and financial management are required for the schemes to achieve their full potential. In this regard, factors such as pre requisite to introduce prepayment for health, diversifying source of funding, monitoring of dynamics of health insurance market and ensuring easy access to health service for the poor demand deeper understanding. For this the country needs to accumulate findings from the existing trials and or programs to build a system that would

allow efficient risk pooling and fund allocation under a well managed national insurance scheme.

SCOPE AND OBJECTIVES OF THESIS

The current thesis is an attempt to assist the government in its endeavor towards establishing a nationwide insurance mechanism for health and feed the national system with learnings gathered from national as well as international experiences.

Insights based on national experience will be gleaned from data on a previous micro health insurance scheme in Bangaladesh, to inform the design and development of micro health insurance schemes within the broader context of the national health insurance scheme to which the country is committed. This micro health insurance scheme was implemented in Chakaria, a sub-district under Cox's Bazar district of Bangladesh during 1998-2005. The scheme operated with technical support from an international research organization based in Dhaka, Bangladesh, namely the ICDDR,B. The rationale behind choosing the micro health insurance scheme in Chakaria lies with the existence of a demographic surveillance system within the study area, which among other reasons, allowed us to investigate the demand influencing factors of the micro health insurance scheme. It is true that there were a few other micro health insurance schemes operating in the country at the time when this analysis was carried out, quality data were not available from those schemes that would have served the purpose of this study. As a result even though the data were comparatively old we decided to choose the scheme in Chakaria for our analysis. Detailed methodology of the study is presented in chapter 2. For international experience the thesis focuses on three countries with similar socioeconomic and or cultural context as that of Bangladesh, namely India, Thailand and Ghana. A health-financing framework based on the three essential roles of health financing, namely revenue collection, pooling and purchasing, was used to study the experience in each of these countries. In addition, the enabling factors for the

national health financing system in each of these countries were explored. The experiences offer valuable learnings for Bangladesh.

Given the potential micro health insurance holds as an efficient health financing tool, comparatively little effort has been made so far to understand the challenges that face the schemes in rural Bangladesh. A few studies have attempted to investigate the market. However, none of them to my knowledge, have integrated the different segments of the market. Some expresses the challenges faced by the clients and some by the providers. The current study is expected to bridge this gap and provide a comprehensive analysis of factors that interact among all the major stakeholders, i.e. beneficiaries, non-beneficiaries, provider organization, policy makers, involved in the health financing mechanism of the country. In particular the thesis aims at exploring the feasibility of micro health insurance in Bangladesh from the point of view of the three different players in the insurance market: the consumer, the provider and the policy maker. In addition, the findings from international experience will highlight prospects and challenges of implementing micro health insurance in a low-income country like Bangladesh. At the end the thesis will showcase salient learnings, including good practices and challenges, based on national and international evidence and a possible roadmap for Bangladesh if it is to implement a social health insurance scheme en route to its journey towards universal health coverage.

The thesis is segregated into 8 chapters. Chapter 2 gives an elaborated description of the methods and materials used in conducting the research for this thesis. Chapter 3 elaborates the theories around demand for health insurance and links these with demand for micro health insurance in particular. The theory lends explanations to the factors that influence demand for micro health insurance and in the current thesis we try to link our findings with the established theories. The characteristics of micro health insurance and the influence of insurance market failure on MHI are also explored in this chapter. Chapter 4 elaborates on the relationship between MHI and micro finance, which is considered to be an important one in shaping MHI schemes in developing countries. Chapters 5 and 6 present the analytical section of the thesis, which are

driven from both quantitative and qualitative sources. The quantitative findings in chapter 5 present evidences on the factors influencing demand for micro health insurance in Chakaria using logistic regression analyses. The qualitative findings in chapter 6 highlight the opinions of villagers who comprised the clientele of the micro health insurance scheme in Chakaria, the programme personnel in charge of running the scheme, and the policy people from the ministry of health and family welfare of the government of Bangladesh. Chapter 7 is devoted to the international experience around MHI in India, Thailand and Ghana, while chapter 8 formulates the discussion around learnings from this thesis for Bangladesh and the policy implications of the study.

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CHAPTER 2: METHODS AND MATERIALS

This chapter of the thesis presents a broad overview of the methods that have been used in carrying out the current study. Some background materials that explain the health insurance scheme under investigation and the health systems of the area are also included in this section. The current study includes both qualitative and quantitative analysis of data and the methods used for each are elaborated in this section. A brief summary of the methods is also provided at the beginning of the corresponding chapters.

THE STUDY AREA: CHAKARIA

The area under investigation for the current study is Chakaria, a remote rural area of Bangladesh where a micro health insurance scheme was in operation during the time period 1998-2005. The scheme was supported by an international organization of Bangladesh, namely ICDDR,B. In addition, Chakaria is one of the field sites of ICDDR,B where they run a regular health and demographic surveillance system (CHDSS) and this site is a member of the INDEPTH network (1). As a result socioeconomic and demographic data of the study participants was readily available from the CHDSS database.

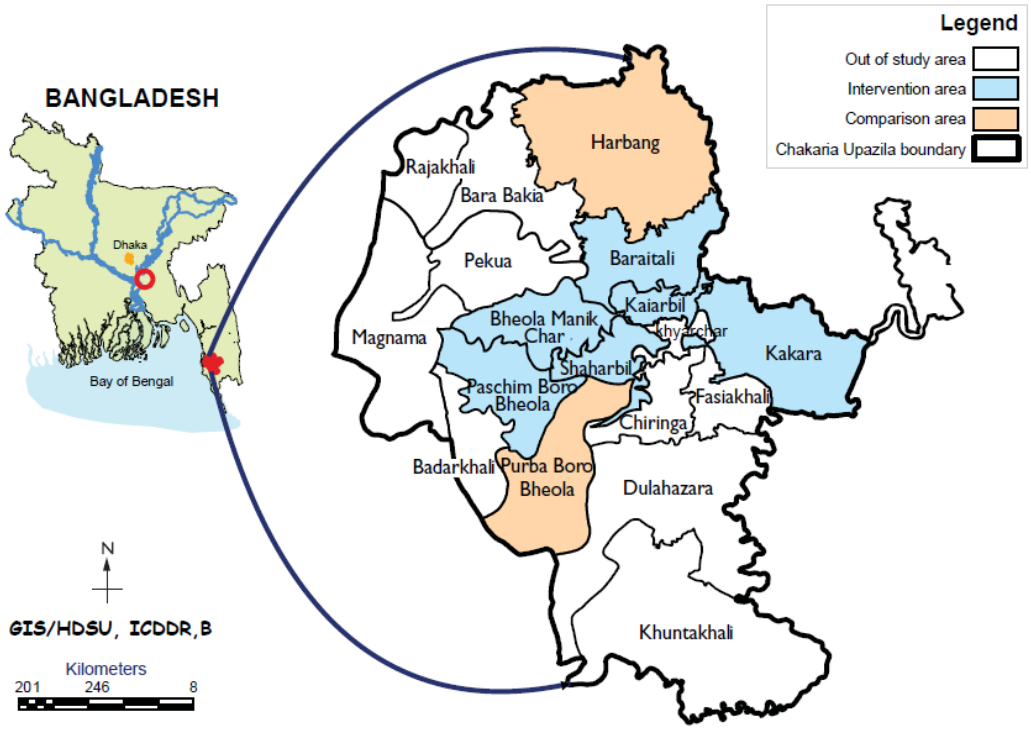
The study area Chakaria is an *Upazila*, sub-district, under the Cox's Bazar district of Chittagong Division of Bangladesh. Characterizing rural Bangladesh, Chakaria, is situated in the southeast part of the country and is home to a population of around 500,576 (2012 est)(2). The east side of Chakaria is hilly, while the west side towards the Bay of Bengal is lowland (2, 3).

The health and development indicators of the area lag behind that of the rest of the country. The healthcare provision in the area is comparable to the national system and the common health system challenges that face the nation are also true for Chakaria. The results presented in this thesis can thus be generalized to represent the country (4). Some of the unique features of the area include

malaria endemicity, prevalence of rickets, exposure to natural disasters like cyclone and tidal surges and other climate change related issues.

The *Upazila* comprises of a municipality and Unions. Unions and municipalities are lowest level of civil administration for rural and urban areas respectively. Chakaria municipality area came into existence in 1994 covering an area of 15.4 square km with a population of approximately 85,000(5).

FIGURE 3: Map Of Chakaria And The Working Area Of ICDDR,B



Source: (6)

HEALTH SYSTEMS OF CHAKARIA

EXISTING HEALTHCARE FACILITIES

The health facilities in Chakaria are comprised of government and private hospitals/clinics, private chambers of MBBS doctors, dentists, diagnostic centres, and allopathic and homoeopathic pharmacies. The facilities can be divided into ones that are inside the municipality area and the ones that are outside. There are in total 161 fixed health facilities located within the municipality area of Chakaria and the pharmacies/drugstores are the most dominant type (see Box 1 for details). The Upazila Health Complex (UHC) established in 1973 is the only

government facility in the area and there are 3 private sector hospitals which were established during 1997, 2005 and 2007. The other facilities include NGO clinics, private chambers of doctors, private chambers for dental services and diagnostic centres providing pathological and biochemical services in the area (5).

Box 1: Health Services in Chakaria Municipality Area, 2007

Health Facilities	No.	Type
Served by graduate doctors		
Upazila Health Complex		Government
Zam Zam Private Hospital	1	Private
Life Center Hospital	1	Private
Maa-Shishu Hospital	1	Private
SARPV clinic	1	NGO
MBBS Private chamber	37	Private
Served by trained healthcare professional		
Diploma Dentists	7	Private
Diagnostic Center	17	Private
ICDDR,B Diagnostic Center	1	NGO (discontinued since 2007)
Served by untrained healthcare providers		
Allopathic Pharmacy	76	Private
Homeopathic Pharmacy	18	Private
Total	161	
Public	1 (0.6%)	

Source: (5)

Outside the municipality area there is only one hospital namely the Christian Missionary Hospital (see Box 2 for details) established in 1966 and providing mainly orthopedic healthcare, maternity services with provision of caesarean section. The pharmacies/drug stores are also occupying the major share in the outside municipality area.

Box 2: Health Services outside Chakaria Municipality Area, 2007

Health Facilities	No.	Type
Served by graduate doctors		
Missionary Christian Hospital	1	Missionary
Village Health Posts	7	Community
MBBS Private chamber	6	Private
Served by trained healthcare professional		
Rural Dispensary	2	Government
Family Welfare Center	13	Government
Satellite Clinic	96	Government
NGO satellite clinic	21	NGO
SBA satellite clinic	3	Private
Diploma Dentists chamber	1	Private
Served by untrained healthcare providers		
Allopathic Pharmacy	297	Private
Homeopathic Pharmacy	62	Private
Total	509	
Public	111 (21.8%)	
Private	398 (78.2%)	

Source: (5)

In total, there are 2564 health care providers practicing in Chakaria and only 4% of them are working in the formal sector. The informal healthcare providers dominate the health market of Chakaria. A study on health seeking behaviour of villagers in Chakaria has revealed that people seek care from these informal healthcare providers in 65% of the cases (7, 8). Village doctors and drug sellers with questionable quality of care make up majority of the share for informal healthcare providers in the area (3, 5). Physical access to the available formal health services and the physicians is a major concern for the villagers in Chakaria as the trained healthcare providers are mostly based at the Upazila headquarters. Given the economic condition of the villagers and the direct and indirect costs involved in visiting a healthcare provider, access to modern health services is a major challenge for villagers.

TABLE 2: DISTRIBUTION OF HEALTH FACILITIES BY TYPE WITHIN AND OUTSIDE THE MUNICIPALITY AREA OF CHAKARIA, 2007.

Type of health service	Within Municipality area	Outside Municipality area	Total
Formal	67	359	426
Informal	94	150	244
Total	161	509	670
Public	1	111	112
Private	160	398	558
Total	161	509	670

Source: (5)

AVAILABLE HEALTH SERVICES

Both inpatient and outpatient services are available in Chakaria. However, provision of inpatient services is limited to a few of the facilities. The Upazila health complex is the only public facility providing both inpatient and out-patient services from the 31 bed hospital which includes an operation theatre. Safe motherhood services, immunization, child health services, and family planning related services are also provided from this facility. The other private facilities providing in-patient and out-patient services include the Zam Zam Private Hospital, Life Centre Hospital, Maa-shishu General Hospital and the Missionary Christian Hospital. The rest of the facilities are mostly involved in out-patient service provision.

COST OF HEALTH SERVICE: COMPARATIVE PICTURE

Table 3 gives a comparative picture of expenses for health service at government facilities and at private health facilities. As it looks most of the services mentioned are provided free of charge in the public hospitals. The private hospitals are for fee and expensive and thereby are mostly accessed by the better offs. Even though the public hospitals provide services free of charge issues like supply shortage, under the table payment, provider absenteeism, and favorable treatment towards the better-offs make health service from public hospitals not as accessible as it should be for the poor and disadvantaged.

TABLE 3: AVAILABLE HEALTH SERVICE AT THE PUBLIC AND PRIVATE HOSPITALS IN CHAKARIA AND THEIR RESPECTIVE COSTS, 2007

Health services	Inside municipal area				Outside municipality area	
	Union Health Centre	Cost (TK) (1 USD= 69 TK approx 2007 price)	ZamZam (private hospital)	Cost (TK)	Christian Missionary Hospital	Cost (TK)
Outpatient care	X	5	X	100-120	X	50-110(rego)+ 50-60 (consultation)
Indoor patient care	X	Free	X	200-500		
EPI	X	Free		None		
Contraceptives	X	1/doz		None		
Medicine	X	Free	X	Actual	X	Actual
Antenatal care	X	Free	X	60-120		
Postnatal care	X	Free	X	60-120		
Delivery service	X	Actual	X	2,000-2,800	X	2,000-2,500
C- section	NA		X	7,000-9,500	X	15,000-25,000
Minor surgery	X	Actual	X	200-800		
Accident management	X	Free	X	100-200		

Source: (5)
*NA= service not available; X=service available; Blank cell= data not available; EPI= Expanded program on immunization

HEALTH FINANCING THROUGH MICRO HEALTH INSURANCE IN CHAKARIA:

Health financing through any sort of health protection scheme is not common in Bangladesh and for that matter in Chakaria. The Chakaria Health Card scheme is the only MHI scheme that offered healthcare in Chakaria. The scheme was initiated in 1998 on voluntary basis and it was known as the "CCHP Health Card" (referred as chakaria health card from now on). However, the scheme was presented to the villagers in the form of a pre-payment based family health card which delivered primary healthcare services for the whole household in exchange of an annual fee paid in advance. The reason the scheme was not introduced as an insurance product explicitly is the lack of trust among villagers towards the mechanism of "insurance". Villagers had experienced fraud in buying insurance products, though not for health, previously and therefore were not comfortable with the word "insurance" which is called "Beema" in Bangla. The operational process of the health card was however the same as that of a micro health insurance scheme where members pay a yearly premium at a certain point of time irrespective of the health status to receive primary healthcare for the rest of the year at a discounted rate.

The scheme was introduced by the self help organizations formed by the local villagers with technical support from the Chakaria community health project (CCHP) of ICDDR,B in Chakaria. The Chakaria Community Health Project was an initiative of ICDDR,B to facilitate local initiatives for the improvement of health of the villagers in general and of children, women, and the poor in particular (details on the project activities can be found elsewhere (9)). The project engaged with villagers from 6 of the 19 unions of Chakaria and 2 other unions served as comparison areas to monitor changes over time. The intervention and the comparison areas were selected purposively considering mode of communication between the unions. The project theme was community participation where the villagers themselves worked for the betterment of the health and health services in their area. They mobilized local resources to establish health centres known as the "village health posts" that would provide healthcare in their vicinity. The "CCHP Health card" was one of the major productive outcomes of this initiative. The villagers established 7 village health posts covering 6 unions of Chakaria.

The health card scheme operated taking household as a unit such that a single premium would cover the whole household irrespective of its size. The premium was heavily subsidized and was set according to ability to pay of the patients/households. Better-off families could buy a health card for an annual rate of taka 50 (equivalent of approx. US$1, 1999 value) which would cover the whole family. A safety net was built into the system to protect the poor where the households could buy a health card for their family at the rate of taka 10 per annum (20 cent 1999 value). Households that had atleast one member involved in menial labor were identified as being poor. The rest of the fund to operate the scheme came from the Chakaria Community Health Project (CCHP), which received donor support for their activities. From the donor fund a drug revolving fund was created at the beginning of the scheme to maintain supply of drug at a discounted (10% lower than market price) rate for members. Details of the scheme can be found in the following table (

Table 4):

TABLE 4: THE SCHEME AT A GLANCE

Key features of the scheme					
Coverage	Peak coverage achieved in 2004 was 1,396 households in 8 unions of Chakaria				
Nature of Membership	Voluntary				
Facility	7 Village Health Posts established within the boundary of the villages				
healthcare provider	1 MBBS physician assisted by 1 paramedic				
Frequency of service provided at each facility	Once a week for half a day				
Type of services covered	Primary healthcare Safe motherhood services including ANC, PNC, Skilled birth attendant Immunization				
Fee structure					
Socioeconomic status	Health card cost in BDT (US $1= 51 BDT, 1999)	Consultation fees in BDT		Subsidies and OOP expenses for cardholders (in BDT)	
		Non card holders	Card holders	Subsidy	OOP expenses
Poor	10	40	25	20*	5
Non-poor	50	40	25	0	25
Source of financing	Major share in financing the scheme comes from donor agency. Earnings from premium collection, diagnostic and medicine charges also contribute to the resource pool.				

Note: * poorest of the poor receive subsidy of TK25 with no OOP expenses (10)

The services that were covered under the scheme included primary healthcare, safe motherhood services like ANC, PNC and delivery with skilled birth attendant. However, due to human resource shortage the services were available to the villagers once a week at each village health posts for half a day. Medicine was provided at a discounted rate and sugar and albumin tests were done free of charge. For all other diagnostic tests patients had to pay out of pocket. Cases that required further specialized care were referred to concerned health service providers. The cost of healthcare for referred cases was not covered under the scheme.

STUDY POPULATION

The study was carried out among respondents from the Chakaria Demographic Surveillance (DSS) area. The Chakaria DSS of ICDDR,B covers a population of

26,979 in eight of the 19 unions of Chakaria and has been in operation since 1999 (2, 6). Additional respondents were selected from programme personnel involved in running MHI schemes in Chakaria, Bangladesh and from policy makers in the health sector to study the challenges facing MHI schemes and the policy environment around MHI in Bangladesh respectively.

VARIABLES

Socioeconomic status: Socioeconomic status (SES) was defined in terms of engagement in menial labour of any household member for making a living. Households that had at least one member selling menial labour were identified as poor. The rest were categorized as non-poor. This is a proxy measure for SES as the standard indicators of SES like income, is not easy to measure in Bangladesh where a large majority of the population is engaged in informal economy which lack reliable income data (REF). Also in places where unemployment is high the assumed association between education, occupation and income does not always hold (11). In the context of rural Bangladesh households that make their living by selling menial labour belong to lower socioeconomic status. This is due to the seasonality of income that is inherent in this type of employment. This is why we used presence or absence of menial labor to indicate a household's SES. This categorization has been used in other studies looking at effect of socioeconomic status on development indicators and the like (12, 13).

Household: A household is defined as a unit comprising of a single individual or a group of blood or otherwise related or unrelated individuals who live in the same compound and share food from the same kitchen. Individuals who live outside the household but spend at least one night every month at the household are also considered members of the household (10).

Household head: A household head is defined as the key decision-maker and the leader of the household (10).

SOURCE OF DATA

The study compiles both primary and secondary level data. The primary level data is qualitative in nature and the secondary sources are quantitative data using 3 surveys carried out in 1999, 2004 and 2005. It should be mentioned that although data from the year 2005 is comparatively old, we did not have more recent data relevant to the analysis of the thesis. The scheme seized operation in 2005 and no additional data was collected after that.

PRIMARY LEVEL QUALITATIVE DATA

The qualitative data were collected with the aim to understand the factors influencing demand for micro health insurance (MHI), programmatic challenges in implementing MHI schemes and the policy environment around MHI in Bangladesh. Data were gathered from three different groups of respondents, namely the community members forming the client base for MHI in Chakaria, the programme personnel, and the policy makers. Information on programme related issues and on policy environment was collected through key informant interviews. Attempt was made to select key informants who are most knowledgeable on the concerned issues and are able to guide us in understanding the programmatic challenges and opportunities facing MHI industry in Bangladesh and the prospect of MHI from policy perspective. The programme personnel who ran the health card scheme in Chakaria were interviewed. The health card scheme was one of the activities of an ongoing project in Chakaria and that project was still in operation during our current study. Most of the programme people involved with the health card scheme were available at the project field office and we could get information from them. However, for respondents on policy issues interviews were limited to those who were available during the data collection period due to the busy schedule of the policy makers.

Semi structured interviews were conducted amongst the villagers to delve deeply into the factors that influenced the uptake of MHI scheme in Chakaria during 1998-2005. Using semi structured interviews allowed to discuss particular topics, like people's understanding about MHI, preference between paying in advance for healthcare and paying as and when need arise etc., in

detail. More on the use of semi structured interviews and key informant interviews as qualitative research tool can be found elsewhere (14, 15). Complementing the interviews, a hypothetical scheme was presented to the community members using the Vignette method to understand factors that influence their decision to enroll in health insurance schemes (16) (17). Vignettes can be described as "stories about individuals, situations and structures, which can make reference to important points in the study of perceptions, beliefs and attitudes" (17). The Vignette to describe the hypothetical micro health insurance scheme was developed taking into account the demand for specific healthcare services, the current market rate for these services, and people's average healthcare expenditure. For all the interviews, the interviewer, the transcript writer, and the translator were the same person. As a result the views expressed by the respondents are accurately presented in this thesis.

Development of questionnaire

The guidelines for the interviews were developed in consultation with experts in the field and by studying published literature related to micro health insurance and its market in developing countries. Guidelines for each of the respondent groups are provided in appendix 5,6 and 7.

Respondents

In order to understand the influencing factors driving uptake of MHI in Chakaria key informant interviews were carried out among the household heads i.e. the decision makers. Villagers had experience with the health card scheme that operated in Chakaria during 1998-2005. The interviews were carried out amongst the members and non members of this scheme. The respondents were selected purposively to include members and non members, households living close to and distant from the VHPs and an equal distribution of respondents from rich and poor households.

Respondents for the key informant interviews on operational issues of MHI included programme personnel of Chakaria Health Card Scheme.

Respondents for assessing the policy environment for MHI included high officials from the Ministry of Health and Family Welfare (MoHFW), the Health Economics Unit (HEU) of the MoHFW and the Directorate General of Health Services (DG Health).

SAMPLE SIZE

For client level data a total of 40 semi structured interviews were carried out. Twenty were with the members and the rest 20 with the non-members of the Chakaria Health Card Scheme. A socioeconomic difference in opinion was expected and thus we further divided the interview participants into poor and non-poor groups. Households, members and non members, were randomly selected from the DSS database of Chakaria. Number of interviews continued till the point of saturation where no more new theme could be detected from the data.

Six programme personnel from the Chakaria health card scheme were interviewed.

Policy level data were collected through five key informant interviews from the government high officials involved in health sector. Due to the busy schedule of the high officials it was not possible for us to increase the number of respondents in our limited time frame.

DATA COLLECTION

Data were collected during February-March 2012.

The interviews with the program personnel and policy makers were scheduled for 20 minutes in total. For the villagers the total time allotted to interviews were 30 minutes each. We approached the household heads or any other informed member available for interview at a time convenient for the respondents. Informants for programmatic issues were contacted in person or via telephone prior to the interview for scheduling appointments. For policy related interviews the higher officials (respondents) or their personal assistants were contacted for scheduling interview times via telephone.

Written consent was taken from all the respondents involved in the study before initiating data collection. The consent form contained information on the purpose of the study, the right of the person as a respondent, privacy of the data collected, and on use of data. Sample consent forms for the three groups of respondents are presented in appendix 8, 9 and 10.

DATA ENTRY AND ANALYSIS

Hand written detailed notes were taken during the interviews. Transcripts were prepared from the notes soon after data collection to ensure more accurate recording of information. Transcripts were then analysed manually. A thematic analysis approach was taken to identify the different patterns in the data. Data were then coded according to the specific themes that were developed in the interview guidelines and then analysed. Finally the findings from these themes have been presented in this thesis. The findings of the qualitative analysis can be found in chapter 6.

SECONDARY LEVEL QUANTITATIVE DATA

The secondary level quantitative data were used to determine the factors influencing decision to enroll into the Chakaria health card scheme. The findings from this analysis are presented in chapter 5.

THE 1999 CENSUS

The information in the 1999 census include but are not limited to: demographic and socio-economic profile of household members in Chakaria, membership status of households for the health card scheme, known as the CCHP health card scheme, membership status of households in the non-government organizations (NGOs), water and sanitation system of household, pregnancy related information for pregnant women in the households, feeding habit and vaccination status of under five children (The 1999 census questionnaire has been added in appendix 2).

Sample size: The 1999 dataset used in this study is a census that includes information on all the 26,352 households in Chakaria *Upazila.*

Respondents: Interviewers collected data either from the head of each household or from other informed members of the household.

Data collection period: The 1999 census was carried out during April 1999-February 2000.

Data collection: Thirty-three data collectors, with at least 12th grade of schooling and some experience in health and demographic data collection, were recruited from the locality to collect data.

A six-member supervisory team, consisting of a statistician and 4 social science graduates, supervised the fieldwork. The supervisors randomly checked the quality of data by re-interviewing 5% of the respondents within two days of data collection.

The field research supervisors observed at least one interview of each of the interviewers daily. Collected data with errors or inconsistencies were marked and documented in a structured form. These errors or inconsistencies were discussed among the team members in a group and sent back to the field for correction. The field supervisor compared the data of interviews with that of the re-interviews and provided necessary feedback. The field supervisors also made random spot checks to ensure the quality of data. To cover absentees, at least two re-visits were made during the time when they were likely to be at home according to their neighbours (10).

Data entry: A team of data-management personnel examined the data manually for apparent inconsistencies or errors. Open-ended questions were then coded, and data were entered into a relational database created using the FoxPro software (10).

THE 2004 AND 2005 SURVEY:

The 2004 and the 2005 surveys are follow-up surveys after the 1999 census to track changes in the membership status of the health card scheme. Households included in the 2004 and 2005 surveys were included in the 1999 census. Information on demographic and socio-economic profile of household members in Chakaria, membership status of households for the health card scheme,

membership status of households in the non-government organizations (NGOs) were again collected through these two subsequent surveys. Therefore, one could easily track changes in membership status of health card scheme overtime combining the three datasets (2004 and 2005 survey questionnaires are attached in appendix 3 and appendix 4).

Sample size: The 2004 and the 2005 surveys are part of the demographic surveillance system (DSS) that is in existence in Chakaria. The 2004 and 2005 surveys collected data from 7042 systematically randomly chosen households in Chakaria.

Respondents: Interviewers collected data either from the head of each household or from other informed members of the household.

Data collection: In total 24 field trained data collectors collected data. The data collectors were provided with written instructions on questions that required additional explanations.

Six supervisors supervised the data collection process. Supervisors re-visited 5% randomly chosen households within 2 days of data collection to check for any anomalies. Later on supervisors and the data collectors together sorted out any inconsistencies in data collection.

Data entry: All the questionnaires were manually checked for completeness and inconsistencies. Computer based data editing procedures were used to ensure quality of data is maintained (18).

PANEL DATASET:

The 2004 and 2005 surveys were carried out among households that were included in the 1999 census. All the three datasets had unique identifiers for the households (household ID) and it was possible to identify each household in the three different surveys. This allowed us to create a panel dataset. However, it was an unbalanced panel data set as after 1999 newer households were added in 2004 and in 2005. We used this panel dataset to analyse the influence of factors on membership decision over time.

SELECTED DESCRIPTIVE STATISTICS OF THE THREE SURVEYS

Some selected descriptive statistics from 1999, 2004 and 2005 surveys are presented in the following tables (Table 5, Table 6, Table 7).

TABLE 5: DESCRIPTIVE STATISTICS FOR 1999 CENSUS

Variable Type and level	Variable name	n	%	Mean	Min	Max
Individual level						
Continuous	Average age of HH members (years)	163,081		21	0	132
Continuous	Average education of HH members aged >=6 years (years passed)	132,350		2.51	0	19
Categorical	Religion					
	Muslim	152,028	93.5			
	Hindu	8,816	5.4			
	Buddhist	1,793	1.09			
	Christian	10	0.01			
Categorical	Nationality					
	Bengali	160,906	99.4			
	Tribal	1,038	0.6			
Household level						
Continuous	Average HH size	26,267		6.2	1	43
Categorical	HH size grouped					
	1-5 members	11,534	43.9			
	6-10 members	13,237	50.4			
	10+ members	1,496	5.7			
Categorical	Sex of main earner					
	Male	1,158	95.5			
	Female	24,787	4.5			
Categorical	Socioeconomic status					
	Better-off HH	13,380	51.4			
	Poor HH	12,675	48.6			
Categorical	NGO membership					
	Member HH	5,916	23.4			
	Non member HH	19,399	76.6			
Categorical	Presence of pregnant women					
	At least 1 pregnant woman	3,210	12.2			
	No Pregnant woman	23,142	87.8			
Categorical	Presence of VHP					
	VHP village	24,658	93.6			
	Non-VHP village	1,693	6.4			
Categorical	Presence of <5 children	18,012				
	Atleast one <5 child	8,339	68.4			
	No <5 child		31.6			

TABLE 6: DESCRIPTIVE STATISTICS FOR 2004 SURVEY

Variable type and level	Variable name	%	n	Mean	Min	Max
Individual level						
Continuous	Average age of HH members (years)		47,727	22.2	0	122
Continuous	Average education of HH members aged >=6 years (years passed)		24,264	5	0	18
Categorical	Religion					
	Muslim	91.1	43,474			
	Hindu	6.1	2912			
	Buddhist	2.8	1310			
Categorical	Nationality					
	Bengali	98	46,729			
	Tribal	2	967			
Household level						
Continuous	Average HH size		7,211	6.62	1	31
Categorical	HH size grouped					
	1-5 members	34.8	2,514			
	6-10 members	58.6	4,223			
	10+ members	6.6	474			
Categorical	Sex of main earner					
	Male	90.2	6,502			
	Female	9.8	709			
Categorical	Socioeconomic status					
	Better-off HH	67.4	4,862			
	Poor HH	32.6	2,349			
Categorical	NGO membership					
	Member HH	34.8	2,501			
	Non member HH	65.2	4,679			
Categorical	Presence of pregnant women					
	At least 1 pregnant woman	14	1,009			
	No Pregnant woman	86	6,202			
Categorical	Presence of VHP					
	VHP village	4.8	349			
	Non-VHP village	95.2	6,862			
Categorical	Presence of <5 children					
	Atleast one <5 child	67.2	4,845			
	No <5 child	32.8	2,366			

TABLE 7: DESCRIPTIVE STATISTICS FOR 2005 SURVEY

Variable type and level	Variable name	%	n	Mean	Min	Max
Individual level						
Continuous	Average age of HH members (years)		53,790	23	0	117
Continuous	Average education of HH members aged >=6 years (years passed)		36,925	2.8	0	18
Categorical	Religion					
	Muslim	91.6	49,281			
	Hindu	6.1	3,284			
	Buddhist	2.3	1,225			
Categorical	Nationality					
	Bengali	98.3	52,875			
	Rakhain (tribal)	1.7	915			
Household level						
Continuous	Average household size		7,855	6.9	1	38
Categorical	Household size grouped					
	1-5 members	32.7	2,571			
	6-10 members	57.9	4,548			
	10+ members	9.4	736			
Categorical	Sex of main earner					
	Male	89.8	7,044			
	Female	10.2	803			
Categorical	Socioeconomic status					
	Better-off HH	34.5	2,707			
	Poor HH	65.5	5,134			
Categorical	NGO membership					
	Member HH	44.6	3,494			
	Non member HH	55.4	4,342			
Categorical	Presence of pregnant women					
	At least one pregnant woman	16.8	1,316			
	No Pregnant woman in HH	83.2	6,531			
Categorical	Presence of Village Health					
	Post	4.8	377			
	VHP village	95.2	74,78			
	Non-VHP village					
Categorical	Presence of under-five					
	children	65.2	5,113			
	Atleast one under-five child	34.8	2,734			
	No under-five child					

DATA ANALYSIS FOR 1999, 2004 AND 2005 SURVEYS

Both bivariate and multivariate analysis was carried out in investigating the factors that influence membership in the health card scheme. Bivariate analysis was carried out to observe one-to-one relationship between membership status and the influencing factors. Data was analysed using STATAIC 12 software. The list of influencing factors included socioeconomic and demographic profile of the household, proximity of the households to the health centres, presence of pregnant women in household, presence of under-five children in household, and

membership at development programmes offered by non-government organizations. These factors were chosen, based on literature review on this field and on suggestion by the programme people of the MHI scheme. Variables were mostly at household level as membership at the scheme was per household.

The scheme as mentioned above was household based and for that we expected household size to play a role in decision to enrol. Comparatively larger households had to pay no extra fee for getting the regular services under the healthcare scheme for each of the household members. Among the other factors socioeconomic status was included as a person's current wealth is expected to influence his or her decision to invest in any scheme. At the same time its important to judge whether the scheme is able to address issues with social exclusion from access to social protection (like MHI) and the influence of socioeconomic status on membership can help us understand this aspect (19-22). Education provides access to information that helps people to understand the importance of securing oneself against the uncertain health risks (20, 23). For this we included the mean level of household education as one of the independent variables. As official age of children joining school in rural Bangladesh is six years we excluded members aged less than six years in calculating mean household education. Age has been found to play important role in individual's decision to insure against health risks (24). Ill health is most often found to be positively correlated with age and therefore we presumed that households with higher mean age of its members would have greater incentive to join the scheme. The other demographic factor included was the sex of the main income earner of a household. It's been found that male-headed households are comparatively in better-off socioeconomic position which gives them access to fund needed to join MHI schemes (25, 26). However, its also true that women participation in development programmes has been encouraging (27-29). Therefore the interest to observe the impact of gender in decision to enroll in MHI scheme, lead us to include this variable in our analysis. The services provided at the VHPs were mainly primary level care. However, vaccination and healthcare for the children were also provided at the VHPs. We anticipated this aspect of service provision would attract families with children under the age of

five to become members of the health card scheme. Travel distance to the healthcare centre has historically played a deciding role in seeking healthcare from any particular facility (30-34). The health card scheme operated through 7 VHPs covering 8 villages. Thus the presence of VHP in a village is expected to influence household membership in the health card as the scheme only provided services through these health centres. Presence of pregnant women in the household was included in the list as the scheme benefits included pregnancy and delivery related care in addition to the primary healthcare services. Membership of households in development programmes offered by NGOs was taken as an influencing factor. Studies conducted earlier have shown that households with membership of the development programmes especially the micro finance ones are more likely to join MHI programmes in developing countries (35).

The multivariate analysis to show the influence of each of the explanatory variables on the response variable holding all other variables constant is explained in the following section.

Analytical Model for Multivariate Analysis

From economic perspective the villagers' choice to enroll in the health card scheme can be explained by the expected utility theory where they compare the expected utility from having health insurance with that of not having any insurance. According to the theory the villagers will enroll into the scheme only when they find the expected utility of joining at a given premium to be greater than that of not joining. Based on the choice villagers make all our study participants can be grouped into two categories 'members' and 'non-members'. In search of factors that influence uptake of health insurance scheme the dependent variable of concern in our current study is therefore defined as a binary choice variable. A logistic regression model has been used in explaining the relationship between the dependent variable and the explanatory variables as the dependent variable in our case has a binary distribution and not a normal distribution. Our variable of interest is a probability, i.e. we are interested in finding out how the independent variables are linked with the probability of a

household being member of the health card scheme or not. Probabilities are different from continuous variables in the sense that they are bounded by the values 0 and 1. Therefore we can not assume normality for a probability. The logistic regression model analyses the influence of various independent variables on a dichotomous/binary outcome by estimating the probability of the event occurring. It does so by examining relationship between the independent variables and the log odds of the dichotomous variable by estimating changes in the log odds of the dependent as opposed to the dependent variable itself. The log odds ratio is a summary measure of the relationship between the two variables and is expressed as the ratio of two odds.

The central mathematical concept underlying logistic regression model is the logit, known to be the natural logarithm of an odds ratio. It takes the following form:

Logit (Y)= natural log (odds) = ln $[p/(1-p)]$ = $\alpha + \beta_i X_i$----------(1)

Where

Y=outcome of interest, i.e. in our case health card membership

X_i= i number of independent variables, i.e. influencing factors for membership

p=probability of event occuring, i.e. in our case probability of households having health card membership

α = intercept

β_i = regression coefficients

Taking antilog of equation (1) on both sides we can predict the probability of occurrence of the outcome of interest, i.e probability of households having health card membership. This would look like:

p=Probability (Y=outcome of interest | $X_i=x_i$, values of X_i) = $\frac{exp(\alpha+\beta ixi)}{1+exp(\alpha+\beta ixi)}$

In this model the value of the coefficient β determines the strength of relationship between the independent variable(X) and the logit of the dependent

variable (Y). When β is greater than zero, larger (or smaller) X values are associated with larger (or smaller) logits of Y. Conversely, if β is less than zero, larger (or smaller) X values are associated with smaller (or larger) logits of Y (36).

Details on logistic regression analysis can be found elsewhere (36-38).

INDEPENDENT VARIABLES INCLUDED IN THE LOGISTIC REGRESSION MODEL

The influence of various indicators on uptake of the MHI scheme in Chakaria was analyzed taking health card membership as the dependent variable. The independent variables were the same set of factors that has been used in the bi-variable analysis. These were a mix of categorical and continuous variables. A summary of the dependent and independent variables used in the multivariate analysis is given in Table 8.

TABLE 8: DEFINITION OF VARIABLES IN THE ANALYSIS

Variable	Operational definition
Dependent variable	
Enrolment in CCHP health card	Yes=1 and No=0
Independent variables	
Sex of main earner	Male =1 and Female=0
Socioeconomic status*	Poor=1 and better-off=0
Proximity to health center (VHP villages)	VHP villages=1 and non-VHP villages=0
Membership in NGOs	Yes=1 and No=0
Presence of under-five children in household (categorical)	Yes=1 and No=0
Presence of under-five children in household (continuous)	Continuous variable ranging from
Presence of pregnant women in household	Yes=1 and No=0
Household size	Continuous variable ranging from 1-43
Household size grouped	HHsize 1-5 =1; HHsize 6-9= 2; HHsize 10+=0
Mean household education	Continuous variable ranging from 0-14
Mean household age	Continuous variable ranging from 5.25-100
Aggregated education level of household	Continuous variable ranging from
Aggregated age of household members	Continuous variable ranging from

*Note: socioeconomic status of household is based on engagement in daily labor work. If any of the household members are involved in day labor that household was characterized as being poor and the rest were categorized as better-offs.

The model used in analysis therefore takes the following form,

logit (hcard) = $\alpha + \beta_1 HHSize + \beta_2 Sex + \beta_3 SES + \beta_4 VHPVill + \beta_5 NGO + \beta_6 U5 + \beta_7 Preg + \beta_8 Age + \beta_9 Edu$

where

hcard= membership in MHI scheme

HHSize= household size

Sex= sex of main earner

SES= socioeconomic status

VHPVill= Presence of Village Health Post (VHP) in the village

NGO= membership in NGOs

U5= presence of under-five children in the household

Preg= presence of pregnant women in the household

Age= Age of household members

Edu=Education level of household members

The βs are the regression coefficients and indicate the direction of relationship between the independent variables and the logit of health card membership. A positive relationship hold between the independent variable and the logit of health card membership when β is greater than zero. Conversely, values of β smaller than zero indicate a negative relation between the two.

In total 21 models were analyzed using various forms of the set of independent variables to reach the best fitted regression model for our analysis. The variables relating to household size, education level of household members and age of household members were used in more than one form to observe the variance in outcome. Findings from all these 21 models are presented in chapter 5.

Influence of the explanatory variables on the MHI membership overtime was analyzed using a panel logistic regression model. Results of panel logistic regression models are presented in chapter 5.

EVALUATION OF THE MODEL

To assess the effectiveness of the logistic regression models used in our analysis the following aspects were investigated:

- Overall model evaluation: in a logistic model a better fit to data is indicated by the fact that the said model demonstrates an improvement over the intercept-only model. The intercept-only model serves a good baseline as it involves no predictors. This improvement is measured using the likelihood ratio test.
- Statistical significance of individual predictors, i.e. independent variables: the individual significance of each of the independent variables in our analysis is tested using the z-test.
- Goodness-of-fit statistics: this statistics measures the fit of a model against actual outcomes. In our analysis we used Hosmer and lemeshow goodness-of-fit test.
- Percentage of correct prediction.

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CHAPTER 3: THEORIES IN HEALTH INSURANCE

Health insurance has proved to be an efficient tool in ensuring health care coverage by pooling risks across a large group of people in the developed world of today. According to Bennett (2004), the primary purpose of any insurance scheme, in principle, is to share risk between individuals and hence extend financial protection to members of the scheme (1, 2). The developed countries have been proved to possess the capacity to pool resources across a wide range of individuals. The significant existence of formal sector together with the effective regulatory mechanism in health systems of developed world make it feasible to collect the revenues that are required to build a large enough resource pool. This ultimately results in efficient cross subsidization between the ill and the health, the rich and the poor (3). However, the developing world is yet to gain from the comparative advantage of health insurance. A concept that is widely becoming popular in the developing country context is micro health insurance (MHI). Despite its huge potential to ensure access to and provision of healthcare for the people, particularly the poor, there remains debate around feasibility and sustainability issues. A concern that is central to the MHI literature in developing countries is why its demand has remained relatively low over the years. Studying theories of demand for health insurance can help us understand the market for MHI. However, providing empirical evidence to come to a decision on which theory is correct in determining the demand for health insurance is very difficult and that is not the intension of the present chapter. We will, in this section, consider two facets of health insurance markets: theories around decision making and the demand for health insurance, and market failures that influence supply and demand of health insurance. The discussion will delve into the various theories that have contributed to the literature on health insurance and will study the relevance of each for MHI.

THEORIES OF DECISION MAKING: APPLICATION FOR HEALTH INSURANCE AND HEALTHCARE MARKETS

Healthcare, when considered as a commodity, has been identified to have some distinct economic features. According to Folland, Goodman, and Stano, uncertainty, incomplete and asymmetric information, and the prominence of insurance are among the key economic features of healthcare markets (4, 5).

Uncertainty in healthcare comes with respect to both the incidence of disease and the efficacy of treatment (6). This gives rise to financial uncertainty which results from cost of treatment and loss of income ensuing from workdays lost due to illness. Arrow argues that the existence of uncertainty implies that risk bearing and information become commodities (7). Thus uncertainty gives rise to a demand for health insurance. Through insurance people have the choice to level off their income between two states-ill and healthy. Although health insurance does not typically provide income protection directly, it can ensure access to treatment on time which in turn reduces wage loss resulting from illness. This increases utility of the insured and provides some level of certainty making them better off than those who are not insured at that time. It therefore follows that theories of decision making under uncertainty are required to understand the demand for health insurance as that decision is based on an expectation about future health.

Expected utility theory (EUT) has so far been the most widely used theory in explaining the demand for health insurance (7-9). The expected utility hypothesis (due originally to Daniel Bernoulli 1738) states that individuals choose between alternatives so as to maximize expected utility(10). In general, if is the probability of the state of the world i occurring in the forthcoming time period (i = 1, …, n) , and is the utility of income in state i, then expected utility (EU) is given by the probability-weighted sum of utilities across all possible states:

$$EU = \sum_{i=1}^{n} p_i u(y_i) \quad \text{... (1)}$$

The individual's objective is assumed to be the maximization of expected utility. EUT states that a person's demand for insurance is reflected in their degree of risk aversion and preference for income certainty. The demand for insurance arises out of a choice between an uncertain loss with a probability when uninsured, and a certain loss in the form a premium when insured. EUT assumes that individuals are normally risk-averse indicating that they have diminishing marginal utility of income. A person is said to be risk averse if he or she, starting from an initial income, prefers not to face a zero mean risk (a risk that has positive variance but expected value of zero)(11). It follows from this assumption that if an individual is given a choice between a probability distribution of income, with a given mean income m, and the certainty of income m, then he/she would prefer the latter. Given this preference, if an insurance company offers insurance against the full value of a medical cost for an actuarially fair premium (i.e. if the full value of the medical cost is a random variable with a mean m, the company will charge a premium equal to m), the individual will prefer the certain outcome involving the payment of the premium and will therefore take out a policy, giving rise to a welfare gain (7). This theory also states that, if the amount of the loss to be covered can be chosen by the individual, then the more risk averse a person is, the more coverage he or she will buy.

EUT is silent in explaining how the demand for insurance varies with varying socioeconomic status.

Prospect theory put forward by Tversky and Kahneman (1981) questions the assumption of expected utility theory that expected utility is linear in the probability of loss. This assumption implies that marginal expected utility is constant as the probability of loss varies. However, individuals may experience

increasing marginal disutility as the probability of loss increases, placing a greater weight on changes in the probability of loss for higher probabilities of loss (Tversky and Kahneman refer to these weights as "decision weights"). In this case, EU becomes non-linear in the probability of loss as reflected in the following formulation of the EU function:

$$EU = \sum_{i=1}^{n} w(p_i)u(y_i) \quad \ldots (2)$$

The weighting function w reflects the allowance for differing (i.e. non-linear) effects of the probability of loss on expected utility. The resulting EU function (or value function in the parlance of prospect theory)can therefore be asymmetric and steeper for losses than gains, indicating displeasure for losses to be more than pleasure for gain(6, 12).People choose between prospects through weighted probabilities of loss or gain. In the health insurance market this theory suggests that people insure if they overweight the probability of illness. To the extent that the poor underweight their probability of illness as they cannot afford to get ill and lose their wages, they will therefore remain uninsured. However, this theory is again silent on the relation between socioeconomic status and its influence on degree of risk aversion.

Regret and disappointment theory introduced simultaneously by Loomes and Sugden (1982) and David Bell (1982) is based on the notion that a person's objective is to minimize regret and disappointment(13, 14). In the health insurance market, people may remain uninsured to avoid disappointment from failing to receive a payoff and regretting the decision to insure, or they may insure to avoid regret if they fall ill while being uninsured. Again this theory does not explain the difference in degree of regret and disappointment between rich and poor (15).

A few economic and social theories have contributed to the understanding of demand for health insurance by different socioeconomic strata which would be more relevant in understanding the market for micro health insurance, as MHI is

more popular in the developing world. Among these theories are: state-dependent utility, endowment effect, status quo bias, regret and disappointment paradigms, prospect theory, and theories related to trust and social capital.

State dependent theory says that consumers' utility or taste is influenced by their state, i.e. socioeconomic status, health status and at the same time by their degree of risk aversion. Demand for health insurance depends to some degree on the anticipation about need for medical care and the magnitude of insurance payoff(16). Participants in the famous RAND study (15, 17) revealed that their demand for health insurance was influenced more by the payoff offered by the scheme than the premium level and their income.

Cumulative prospect theory developed by Kahneman and Tversky is a combination of state dependent and prospect theory (18). It states that people assign different weight to the probability that an event will occur.

Endowment effect theory assumes that peoples' decision making is influenced by their risk aversion about something new. They place a larger value on giving something up for gaining benefit from something new (19). On this approach poor people will insure only if they perceive the benefit of being insured to be greater than the cost of giving up being uninsured. The implication of this theory in practice is that, for insurance to be attractive to the poor, it needs to ensure access to healthcare and to reduce unofficial payments. This is particularly important for MHI where the poor are asked to make out-of-pocket payments, which give mathematical discretion to the provider. In cases where people have mistrust of the provider, this scheme will not be attractive.

Status-quo bias theory argues that the 'veil of experience' determines peoples' choices–people prefer to be in familiar status quo situation if there are

increasing alternatives and the choices are complicated (20). This arises particularly when there is incomplete information in the market. Therefore, to attract poor people in the health insurance market, they need to be fully informed about the operation of the scheme and its benefits (21).

The poverty literature says poor may not insure, as out of necessity they value present consumption more over future anticipated consumption. The poor may choose to find alternatives to replace insurance, such as money lenders, diversification of income, increasing earning members of household, etc. Even though these are important coping mechanisms where premiums are unaffordable or insurance is not desired, there are limits to what these mechanisms can achieve.

A study on Vietnam showed that the demand for health insurance was influenced by the absence of an informal credit market and strong financial networks(22).

Trust is one important factor in determining the demand for health insurance, particularly in a low income setting (23, 24). Medical care is a commodity where customers cannot test the product before consuming it and therefore there is an element of trust in this relationship. It is worth mentioning that trust, being an unobservable element, has been measured from different aspects throughout the literature. Patt et.al 2009 has identified trust in three different dimensions: trust in the product itself, trust in the institution and the degree of interpersonal trust. Patt et.al 2009 showed that trust in the health insurance market operates in 3 dimensions: patient's trust in provider, trust in insurer, and trust in control mechanisms for law enforcement (25, 26). Insurers can build reputation by demonstrating expertise, responsiveness to consumers, and ensuring quality care in contracting health facilities and thereby attracting more clients. These trust issues are particularly important for MHI. Weak legal and political systems, mutual non-written contracts, managers' lack of technical expertise, and providers' inferior quality of care can negatively affect membership of MHI.

The practical implication of these theories helps identify factors that may influence demand for health insurance in general and MHI in particular. What follows from the above discussion is that, to make health insurance attractive in low income settings, the programme managers should concentrate on insurance design, information context, and the socioeconomic status of their clientele. To attract the poor and win their trust in the MHI schemes, they will have to be provided with complete information about the insurance package and at the same time the financial management of the scheme has to be accountable and transparent.

Further, the theories around attitude towards risk and people's decision making under uncertainty bear important implication in terms of marketing the product that is offered under any insurance scheme. For marketing a health insurance product that will attract sufficient clients it would require a strong value proposition. If the value proposition for the product focuses on people's preference towards risk (i.e. risk lover, risk averse or risk neutral) the product might succeed in increasing the demand for health insurance. A strong value proposition backed by knowledge of the clients' need and preference can potentially help people understand the real value of the product. Increasing the demand for MHI thus warrants further research in this area.

The Law of large numbers is the fundamental principle underlining insurance mechanism (27). This law for insurance implies that as the number of mutually independent risk in a risk pool increases, the variance of mean losses tend to decrease. As a result actual claim runs much closer to projected claim making insurance policies more viable (28, 29). In other words, if the insurance scheme has enough number of policies then according to the law of large numbers it becomes highly unlikely that the insurer will face an extremely large amount of loss relative to the premium they collected (30).

INSURANCE MARKET FAILURE

There exist a number of practical limitations in using insurance to share risk and reduce uncertainty (7).Given that the assumption of risk aversion holds, everyone offered health insurance should theoretically insure themselves provided premiums are not too actuarially unfair. However, in reality, the percentage of individuals remaining uninsured is quite significant. Arrow states "If consumers are risk averse, the fact that the uninsured exist implies that the market has not succeeded in meeting this demand and that market failures exist"(6, 7). Having said that, it is also possible that in places where there is public insurance or publicly funded healthcare, it would provide a disincentive for people to buy additional private health insurance.

Nevertheless, the financial incentives under insurance can affect consumer and producer behaviour and result in market failure in the form of moral hazard and/or supplier induced demand (SID) and adverse selection and/or cream skimming (31-33).

ADVERSE SELECTION

In insurance it is desired that the probability of the event covered by insurance occurring is outside the control of the individual. In reality this is not always possible – an individual's risk taking behaviors (e.g. smoking, dangerous driving) can influence their health outcome. If the individual knows their actual health risk (e.g. high blood pressure, diabetes etc) but this information is not known by the insurer, this can give rise to adverse selection(31).It arises when asymmetric information exists between the insurer and the person buying the insurance and that information asymmetry favours the person buying the insurance.

Adverse selection is a general problem in the insurance context. It refers to "a state in which a disproportionate share of people from the scheme's total target group are insured who are relatively more likely to fall ill/injured and need more care compared to their uninsured counterparts"(34). If the same insurance premium is offered to all potential purchasers of a given policy, this is likely to attract a disproportionate number of high-risk individuals into the insurance

pool. Such high risk individuals would not meet the actuarial break-even price as their expected payoffs would be greater than the premium. Consequently, they would constitute a net drain on the insurance funds as their payoffs from the fund would exceed their contribution to the fund. On the other hand, setting a premium which is too high would only attract people with high health risk and would thus end up undermining the risk pooling function of insurance. The works of Akerlof 1970,Miyazaki 1977,Rothschild and Stiglitz 1976,and Wilson 1979 have shown that the ability of the consumer to withhold information from the insurer impedes the formation of different types of insurance market (7, 34-38).

Market failure arising from adverse selection can be rectified by making health insurance compulsory for all. Adverse selection can also be reduced by risk-rating premiums where premiums vary depending on the level of coverage offered (32). Enforcing waiting periods before someone who buys insurance can begin claiming is another mechanism enforced by many schemes to counter the impact of adverse selection (39).

CREAM-SKIMMING

A different form of selection bias can occur in insurance markets which is not attributable to asymmetry of information. A profit-motivated insurer may opt for a strategy called cream-skimming, or favorable selection, where they seek to enroll low-risk individuals given that they can identify subgroups of consumers with different expected medical costs. For example, they might want to exclude the elderly, people with previous illness and the like, from the insurance pool to avoid high risks. This selection problem can be tackled with regulatory frameworks prohibiting such type of exclusion by the insurers.

MORAL HAZARD

In economic theory moral hazard refers to the change in unobservable human behavior in response to the provision of a contract that protects against specific risks (40). Moral hazard (or unobservable action) in health insurance has been

defined as “the likely behaviour changes of users and providers in terms of over-utilization as well as over-provision of health care due specifically to health insurance coverage which allows healthcare bills to be partly or fully paid by a third party which does not provide or receive the services” (7, 33, 37, 41, 42).

Demand-induced moral hazard: The fact that the insurer cannot fully monitor the medical need of its client and that insurance contracts are based on incurred health expenses not on actual health needs, gives rise to demand induced moral hazard (31). With insurance the cost of healthcare at point of service for the patient is well below the personal marginal valuation which induces increased utilization by the insured members.

Supplier induced demand (SID): The cost of healthcare does not always solely depend on the illness suffered by individuals but also to some extension the choice of the doctor and his willingness to use medical services. Certain payment structures can encourage providers to over-prescribe healthcare. This can result in “supplier induced demand” (SID). Arrow (1963) indicated that, in the relation between healthcare provider and the patient, it is most likely that the patients have significantly less information about the type of care that is needed for a particular condition(7). As the actual health condition of concern to the patient is not always known to the insurer, the provider does have the leverage to over-provide care. SID was first observed in case of hospital services, now enshrined in what is known as Roamer's Law which states that “a bed built is a bed filled” (43).Incentives associated with remuneration for services are a key factor in causing supplier-induced moral hazard. Co-payments and deductibles have been introduced into many policies to tackle market failure stemming from moral hazard (44, 45).

MHI AND ITS EXPOSURE TO INSURANCE MARKET FORCES:

WHAT IS MICRO HEALTH INSURANCE (MHI)

Before we try to understand how far MHI schemes are exposed to the classical problems of health insurance markets, we need to delineate the basic characteristics of MHI and the contractual terms under which MHI schemes

operate. MHI schemes are a part of micro insurance schemes. According to Churchill 2006 micro insurance is "the protection of low-income people against specific perils in exchange for regular premium payments proportionate to the likelihood and cost of the risk involved" (28). It is worth mentioning that this definition of micro insurance indicates that the premium is risk-rated whereas literature has shown that premium in micro health insurance is often community-rated. Following the definition of Churchill, CGAP (the Consultative Group to Assist the Poor) (46) defined micro health Insurance as "a type of insurance where accessibility to essential health services is made available to individuals and families, who are unable to afford formal health insurance schemes, through affordable premiums and low prices for health services"(47).

WHAT IS MICRO IN MICRO HEALTH INSURANCE?

One obvious question that may arise is, what is micro about MHI? "Micro" in MHI does not refer to the level of risk covered or the size of the insurance pool. Rather, it refers to "the level of society where the interaction is located, i.e. smaller than national schemes, and "insurance" refers to the economic instrument"(48, 49).

DESIGNING MHI SCHEMES

MHI schemes may vary in their design from one to the other but some of their features are common across all the schemes: MHI schemes target low income individuals and households in the informal sector and are designed as not-for-profit entities. Various models of MHI schemes have been tried out in different parts of the world depending on who insures whom and who absorbs risk (45). These models can be group into four major categories:

1. Community based models: community members act both as owners of the insurance scheme and are insured by the scheme.

2. Partner-agent models: links with an insurance company and then the MHI unit acts as the distribution point.

3. Full service model: local institutes become insurance providers and bear underwriting risks as long as there is a source to cross subsidize.

4. Provider-driven model: an existing provider of a health service, such as a hospital, initiates the insurance scheme.

CALCULATING PREMIUM:

MHI schemes face a major challenge in calculating premiums that would attract sufficient numbers of clients for the scheme to survive. Unlike private insurance, MHI often charges its clients the same premium irrespective of their level of health risk, age, sex, occupation etc. i.e. the premiums are community-rated. Under community rating the premium is based on the health and demographic profile of the target population or the region where the policy is being offered (50, 51). In this process higher cost groups (people more prone to illness and requiring treatment more frequently) are included with lower cost groups (healthier people requiring comparatively less treatment) in calculating the average or community-rated premium for the group as a whole. However, one needs to be careful about introducing flat rate premiums as it can exacerbate inequity in the community (3). In a scheme with flat rate premium people with low ability-to-pay end up paying a larger share of their income compared to those with higher ability-to-pay. Safe-nets where premium for those with lower ability-to-pay are subsidized or exempted have been useful in brining in the desired level of equity (3).

DEMAND FOR MHI

Demand for MHI has remained historically low in the developing countries(52-54). Affordability of premiums, access to the health services provided under MHI, benefit packages, trust in provider organizations, and understanding of the health insurance mechanism are some of the major determinants of demand for MHI (39, 45, 55, 56). Along with other factors the extent to which the population is already covered by the public health schemes also affects the ultimate demand

for MHI. People may choose to remain uninsured when offered MHI coverage due to the presence of such publicly funded schemes. If MHI is offering coverage which duplicates these public schemes, there may be little incentive to purchase it. Demand for MHI will build only when it provides cover for expenses or for better quality services (e.g. lower waiting time, access to better quality service, coverage against any out-of-pocket expenses, and easier geographic access to clinics) that are not offered under existing government insurance schemes. In short, the "value proposition" of MHI vis-à-vis other competitors needs to be considered as a determinant of demand for MHI.

LAW OF LARGE NUMBERS AND MHI

The law of large number is of particular concern in operating MHI schemes. The ever existing low demand for MHI leads to the concern that, if only small numbers enrol, the economic or actuarial basis of the scheme is undermined. Several studies have found that risk pooling remains limited for MHI schemes due to their small size (57). On the other hand, when a sufficiently large number of people join a scheme then, following the law of large numbers, projected claims can be estimated with high degree of confidence. This allows the insurer to keep the premium more affordable for their clients, particularly for the poor, as now they do not have to include a large margin for error in their product pricing (28).

Having said this it is also true that the very nature of MHI prevents it from achieving economy of scale. This is in contrast with mandatory health insurance where only one or a small number of pooling mechanisms exist. The number of pooling mechanism involved in a system bears significant importance as this determines the ability of the insurance mechanism to redistribute risk. Fragmentation of pooling mechanisms limits the ability to provide health service benefits to members due to limited resources in each pool (58, 59).

INSURANCE MARKET FAILURE AND MHI

MHI being an insurance mechanism is exposed more or less to the classical insurance market challenges mentioned above in the insurance market failure section of this chapter.

MORAL HAZARD AND MHI

Studies have found the existence of moral hazard in MHI schemes (57). Deductibles and co-payments as mentioned above have been introduced to minimize the effect of moral hazard (45). On the other hand, studies have also shown that MHI schemes are safeguarded from the effect of moral hazard to some extent. It is partly due to the fact that these schemes operate on micro level where members of the schemes are usually known to each other. The possibility that overutilization by any particular member may result in expulsion from the group limits the existence of demand-induced moral hazard (48).

ADVERSE SELECTION AND MHI

MHI schemes experience adverse selection and many empirical studies have documented the presence of adverse selection in operating MHI schemes in various parts of the world (60, 61). In the context of MHI, adverse selection arises not so much due to lack of information on risk probabilities at the insurers end (which is usually the case for health insurance markets) but because of the need to keep the insurance contract simple. The simplicity objective overrides the efficiency objective, so preventing the insurer charging different premium to different group of people. Additionally the high cost of obtaining statistical information prevents MHI units from risk rating their premiums. Instead premiums for MHI schemes as mentioned above are community rated. This discourages low risk groups from joining such schemes as the premium may seem costly for them. On the other hand, high risk groups might get attracted to the scheme as the premium would most likely be below their expected level of claims. This can provide strong incentives for adverse selection and also for cream-skimming by insurers to counter the incentives for adverse selection. However, the scheme can be modified to rectify the problem by varying premiums on the basis of one of the variables (such as age, excluding pre-existing condition etc.) to adjust premiums accordingly (51).

Additionally, in many countries health insurance in the formal sector has been made compulsory to avoid adverse selection, and subsidies have been introduced to those who lack the financial resources to pay the premium to buy the specific coverage. Studies carried out in developing countries suggest that educating people on the adverse effect of health risk and the need for insurance could also counter the effects of adverse selection (39, 60).

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CHAPTER 4: LINK BETWEEN MICRO HEALTH INSURANCE AND MICRO FINANCE

For the purpose of the current thesis it is imperative to study the evolution of micro health insurance (MHI). The concept of MHI has its close link with that of micro finance (MF), which is another financial tool to improve the economic condition of the poor and disadvantaged people of the developing countries. A few studies have found that reduction in out-of-pocket expenses for healthcare and improved financial protection for health coincided with both health reform such as health financing schemes and with economic recovery and poverty alleviation schemes like micro-finance (1). Due to the very importance of the relationship between MHI and MF this brief chapter aims to provide an overview of the similarities and links between MF and MHI.

The chapter will mainly focus on issues related to what links micro finance and micro health insurance, the similarities between the two, effects of bundling micro health insurance with micro finance on development indicators particularly in a developing country context, and finally what leanings of micro finance can be tailored to serve the purpose of establishing micro health insurance in a developing country like Bangladesh.

EVOLUTION OF MICRO FINANCE AND ITS INVOLVEMENT IN HEALTH SECTOR

Micro finance, also popularly known as micro credit, has its root in Bangladesh and was initiated as early as in 1970s by experimenting with microloans for the rural poor. Micro finance aims to fulfill the credit needs of the poor and disadvantaged population and thereby give them an opportunity to use the credit in a productive manner to improve their economic condition. Money lending in traditional markets is characterized by the provision of collateral by the borrower in exchange for which the lender provides a loan. Those lacking any collateral are therefore often denied access to credit. The micro finance

organizations evolved to address the difficulty in obtaining credit by those without collateral and reverse the ideology prevailing till then that the poor are un-bankable and uninsurable(2, 3) . With an aim to improve the economic condition of the poor, micro finance organizations provided loans and other financial services to help their clients initiate and grow a business and thereby enable them to better manage financial shocks.

Micro finance is a comparatively well established entity in many developing countries (4-7). In the past few years it has been applauded for its successful contribution towards alleviating poverty worldwide. A World Bank study of three MFIs in Bangladesh, for example, found that 40% of the entire reduction of rural poverty over 14 years was directly attributable to microfinance (8). This is one of the biggest achievements of MFIs, made possible by the extent of their reach. Through their programs, MFIs have reached the segment of the population who were unreachable and left out of the periphery of any development intervention. By the end of 2010, 137.5 million of the total 205 million clients of micro finance belonged to the poorest group (9).

Despite its positive effects, it is true that micro finance is not a development panacea. For this MFIs have added service components to their existing programs with a vision to ensure financial security and social protection for the poor and disadvantaged population (10). While analyzing the major reason behind delays in loan repayments by their clients, micro finance organizations found that health-related reasons (e.g. workdays lost for illness, reduced productivity due to illness) were among the top ones. The micro finance organizations then opted for tagging health promoting products with the existing micro finance program which they believed would help their clients fight against the risk of ill health and uncertainty arising from it (11). Likewise, the micro finance institutes in Bangladesh introduced micro health insurance to protect their clients from the financial consequences of health shocks and resulting loss in productivity. This would also minimize the default risk and help MFIs to maintain a more stable client pool. To some extent the importance of micro health insurance emanates from the limitation of micro finance programs in protecting the poor from all sorts of vulnerabilities (11). A varied combination of

these two products has been tested in different places around the developing world. These include MHIs being offered by the MFIs or other insurance organizations as a bundle product with MF (MHI being a prerequisite for MF in cases where the insurance is provided through other organizations) or as an independent product. No matter whether MHI is implemented as a bundle product with MFIs or an independent scheme, it can always tap into the advantages of MFIs and increase efficiency in service delivery.

FEATURES OF MFI THAT CAN AID MHI IMPLEMENTATION

MHI is implemented through a delivery channel which is responsible for taking the product to the people, selling it and providing after sales services. It would work best when the entities included in the channel are those who are close to the people and the market for micro health insurance (12). MFIs potentially offer a robust platform for delivery of complementary services that are required and demanded by the poor. MFIs serve millions of poor people, especially women, on a regular basis and often extend their services to isolated, hard-to-reach places. Therefore, the wider coverage is one advantage the micro health insurance schemes can bank on either by tagging along with the micro finance programmes, i.e. bundling micro finance with micro health insurance, or by utilizing the network of MFIs. In addition the type of clients micro finance originations serve make it all the more important for them to provide services at an affordable cost while ensuring administrative sustainability which makes them an efficient organization producing maximum output at the lowest possible cost. The financial know-how of micro finance organizations could prove to be beneficial for micro health insurance. Micro health insurance and micro finance shares some inbuilt similarities. Both the entities deal with managing risk in programme operations, MFI managing default risks and MHIs managing health risks of the clients. It would be very useful, for example, to understand how MFIs have managed their choice of clients to whom they extend credit in the absence of collateral and how do they assess default risk. Trust, another important element in implementing any financial instrument including micro health

insurance, is a strength of MFIs which they have built through their regular communication with the locals (8).

The local influence of MFIs and their business acumen can help MHIs to establish an efficient link with the healthcare providers, negotiate rates between provider and insurer, and ensure quality of services (8). In Philippines the largest MFI, known as CARD, negotiated special discounts for its clients with the private healthcare providers in the rural areas which has improved accessibility and affordability of health care for their clients (13). Similarly in Cambodia, the GRET_SKY health insurance program tagged with an MFI uses its leverage to improve the quality of care at the public health facilities. This gives the people access to quality care at an affordable price and channel poor people away from expensive private health care (14).

Besides these MFIs could also support MHIs by introducing complementary services that can encourage uptake of health insurance and improved health habits resulting in lower risk of illness. Health education is one such product that has been identified by different studies to improve health knowledge leading to behavioral change and positive health outcomes (10, 15-18).

For a long time it was believed that the poor are too poor to save and contribute towards meeting their healthcare needs. This belief has been questioned in the recent past particularly in countries like Bangladesh, and there is now a growing realization that even the poor can make small, periodic contributions that can secure healthcare for them (19). Micro finance has contributed in building this culture of saving and investing among the poor. As a result, risk management techniques from other sectors to health is now taking place within many micro finance and other development organizations in low and middle income countries (20, 21).

Although bundling health products, particularly health insurance, with micro finance looks promising and aligns well with MFI's core competencies, the challenges in doing so are not trivial. There is a dearth of expertise within the MFIs in terms of analyzing health-seeking behavior, needs and costs, additional types of communication and education capabilities, and developing efficient

monitoring and management mechanism to prevent fraud, and avoid the classic insurance market failures (e.g. adverse selection, moral hazard etc.) (10). The technical complexities around operation of micro health insurance schemes therefore require additional investments and experiments to come up with a design which is replicable and scalable. It is not necessary that MHIs are implemented through MFIs only. In cases where MHIs are introduced as independent products they could use the advantages that the MFIs have already acquired.

BUNDLING MHI AND MF: WHAT CAN WE LEARN?

Developmental goals cannot be achieved by actions in any single area. Their achievement demands coordinated initiatives in the different sectors of development. Many-a-times improvement in one is linked to, or even dependent upon, the other. MHI and MFIs are examples of such dependence. On one hand, the microfinance framework could facilitate implementation of MHI through their involvement at community level and with informal sectors of the economy in which the financial infrastructure of banking and insurance has not been established. So far it was believed that poor are too poor to save and contribute towards meeting their healthcare needs. The culture of saving and investing among the poor has been established through the MFIs (19). This is expected to have a catalytic effect on building the concept of insuring against health risk particularly among the poor. Furthermore, MFIs can leverage the social capital that exists in smaller and more destitute communities, which would ease adoption of the insurance concept. At the same time, MFIs work on low resource settings and have the technical know-how on efficient operation at minimum cost which can benefit the MHIs where financial sustainability is a major challenge. MFIs also have expertise on marketing products to the community depending on their socioeconomic status and the demand of the people. Micro health insurance being a newly experimented concept, proper marketing is essential in making the product sellable and popular. Otherwise, the concept of

paying an upfront premium for future financial protection for healthcare is not a wholly known or accepted concept (22).

On the other hand, incorporating MHI within MFI program by bundling the two products can help MFIs to improve their portfolio by insuring their clients against health risks and associated loss in income and productivity. Experiments with bundling MHI with MFIs, indeed, have demonstrated positive outcomes in places, particularly in terms of increased utilization of health services, reduction in time gap between onset of illness and treatment seeking, improved productivity, poverty level (11).

Having said this, requiring consumers to purchase MHI with MFI can at times result in unforeseen complications. Including MHI bundled with MFI can increase costs of services and thereby the interest rate charged on loan disbursed (23). MFIs are widespread in many countries but face serious competition and are continuously under pressure to offer products at prices prevailing in the market. One of the MFIs in Bangladesh, the Dushtha Shasthya Kendra (DSK), that added MHI to their services were at one point of service forced to abandon MHI and continue with MFI services alone due to the lower rate of interest offered by other competitors in the market. It is true that there are instances where bundling MHI with existing MFI schemes has led to a loss of clients for MFI due to the higher interest rate charged on loans disbursed to pay for the premium for health insurance (24). Thus, although at a first glance bundling MHI with MFIs may appear lucrative, further research is needed to find alternative ways to benefit from the learnings of MFI that are useful for the implementation of MHI. At the very least the MHIs could use the vast reach of MFIs to expand their network and create a client pool that is large enough to efficiently spread the risk of ill-health between the rich and the poor, and between the ill and the healthy, and ensure higher value for money.

The discussion above presents the features of MHI and MFI and the comparative advantage of each. Whether it is beneficial to offer the two in a single bundle or to use the advantage of each to better equip the other in terms of serving the poor is a decision that will be based on the specific context of each country.

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CHAPTER 5: FACTORS INFLUENCING DECISION TO ENROLL INTO THE CHAKARIA HEALTH CARD SCHEME: FINDINGS FROM THE QUANTITATIVE SURVEYS

BACKGROUND

Health risk sharing through health insurance, as mentioned earlier, is not common in Bangladesh. For a country like Bangladesh where people experience a very high share of out-of-pocket expenses for healthcare one might expect health insurance to be an effective solution to manage the private expenditure on health and ensure quality healthcare at the same time (1). However, through times development organizations have struggled to introduce and sustain health insurance in Bangladesh to minimize the financial burden on people resulting from sudden health shocks. Majority of the organizations followed the model of micro health insurance with an aim to support the poor and disadvantaged (2, 3). However low level of uptake remain a major challenge in using MHI as an alternative health financing mechanism (3, 4). Thus, it is important to understand the determinants of enrolment in the MHI programs.

This chapter aims to explore factors that influence peoples' decision in rural Bangladesh to enroll in MHI schemes or pre-payment based health services. In doing so we take the case of the "Chakaria Health Card" scheme (sharing characteristics of an MHI scheme) that operated in Chakaria, a rural area of Bangladesh, during the time period 1998-2005 (details of the scheme can be found in chapter 2 'Methods and Materials'). The influence of each of the factors was explored using both bivariate and multivariate analysis.

For the bivariate analysis cross-tabulation was carried out treating membership at the health card scheme as dependent variable. List of independent variables influencing membership included household size, sex of main earner in the household, mean age of household members, mean education level of household members, membership in NGO development programs, existence of health

service facility (the Village Health Posts) in the villages, socioeconomic status of the household, presence of under-five children in the household, presence of pregnant women in the household. The rationale for including each of these variables is given in the Methods and Material chapter (Chapter 2). As the 1999 dataset was a census data we used it to conduct the bivariate analysis, which included 26,352 households that existed in the catchment area in 1999. Chi square test was carried out to test significance of each of the relationships.

All the variables used in the bivariate analysis were included in the multivariate analysis. The relationship between health card membership and the nine independent variables was analyzed using logistic regression. Household enrollment status in the scheme was treated as dichotomous dependent variable (1=yes; 0=no) and membership was treated as outcome variable in the analysis. The model was first run at individual level. Later on due to the fact that membership was at household level we decided to run the regression model at household level. The individual level analysis was carried out on 1999 data and for household level analysis all the model variations were implied on each of the three survey years (i.e. 1999, 2004, 2005) and the panel data comprising data from 1999, 2004, and 2005. For models at both levels we started our analysis by keeping all the independent variables and later on adding variations to our analysis, which included dropping variables to observe the effect of multi-collinearity and changing the summery measures (e.g. mean, aggregate) for some of the variables. The analysis included 26,352 households for 1999 and 7,042 households for 2004 and 2005 survey years. More details of the methods used in carrying out the data analysis presented in this chapter are provided in the "Methods and Materials" chapter (see chapter 2).

FINDINGS

A total of 1265 households (4.9% of the total in the catchment area) covering a population of 26,352 was enrolled in the scheme in 1999. Membership increased to 5.3% in 2004 and then went to 1.9% in 2005.

Findings From Bivariate Analysis

This section of the chapter gives an account of how all the nine influencing variables included in the analysis interacted with the dependent variable of membership of health card scheme. The results from cross tabulation are presented in Table 9.

Average household size of members and non-members

The scheme was offered to the villagers taking households as the unit of membership. For this we looked into the relationship between household size and membership. In 1999 the average family size of health card members was greater than that of non-members (7.2 vs. 6.1). Analysing the association between membership status and household size reveals a positive linear relationship between the two variables with proportion of membership increasing as household size increases (Table 9).

Households with membership in development programs offered by NGO:

5.7% of the households having membership at any NGO offered development programs were members of the health card scheme whereas, 4.6% of the households not having any NGO membership were enrolled in the health card scheme (Table 9). This indicates a positive impact of NGO membership on health card enrolment.

Distance to health facilities

Enrolment of health card scheme was 3 times higher among households that lived close to the Village Health Posts (VHPs) than those who lived further away. 13.4% of the households living in close-by areas were members of health card scheme compared to only 4.3% of the households living in distant places (p=0.000) (Table 9).

Enrolment by socioeconomic status

Data shows that uptake of health insurance was significantly higher (p=0.000) amongst the non-poor compared to the poor. In 1999, 3% of the poor population

in Chakaria joined the health insurance scheme whereas among the non-poor membership was 6.6%.

GENDER GAP

Culturally in rural areas of Bangladesh important household decisions, particularly the financial ones, are mostly taken by the male members. We investigated the influence of gender in the decision to join the Chakaria health card scheme. We took sex of main earner to look into this factor. Findings showed that a significantly higher percentage of households with male main earner (4.9%) joined the health card scheme compared to the female main earner households (2.4%). However, it should be mentioned that majority of the households (89.8%) are male headed which might have influenced the outcome observed (Table 9).

HOUSEHOLD AGE AND HOUSEHOLD EDUCATION

Membership in health card scheme varied across different level of household education. Member households of health card scheme had higher mean level of education compared to the non-members (3.7 years vs. 2.1 years)(Table 9).

Mean age of member and non-member households was quite similar, 21.8 years for member households and 22.03 years for non-member households (Table 9).

PRESENCE OF PREGNANT WOMEN AND CHILDREN UNDER FIVE YEARS OF AGE IN THE HOUSEHOLD

Enrolment of heath card scheme was significantly higher for households having at least one child aged five years or less than those having no children under the age of five (5.1% vs. 4.3%). No significant difference was observed in enrolment status between households having atleast one pregnant woman compared to those who had none (Table 9).

TABLE 9: MEMBERSHIP AT CHAKARIA HEALTH CARD SCHEME BY SOCIO-DEMOGRAPHIC, ECONOMIC AND GEOGRAPHIC CHARACTERISTICS OF HOUSEHOLDS, CHAKARIA 1999.

Variables	**Health card member % (n=26,352)**		**p**
Socioeconomic status			
Better-off	6.6		0.000
Poor	3.0		
Sex of main earner			
Male	4.9		0.000
Female	2.5		
Presence of children aged under the age of 5 years?			
Yes	5.1		0.002
No	4.3		
Presence of pregnant women?			
Yes	4.6		0.466
No	4.9		
Existence of VHP?			
Yes	13.4		0.000
No	4.3		
NGO membership?			
Yes	5.7		0.000
No	4.6		
	Member Mean	Non member Mean	p
Mean household size	7.2	6.1	0.000
Mean household age	21.8 years	22.03 years	0.328
Mean household education	3.7 years	2.1 years	0.000

FINDINGS FROM THE MULTIVARIATE ANALYSIS

INDIVIDUAL LEVEL ANALYSIS

MODEL 1:

Individual level analysis was run based on data from the 1999 census. As the 1999 dataset was a census data this gave us findings that incorporated all the households in Chakaria. We included the variables that we identified or assumed to have influence on membership status (see chapter 2 for details). The current model has been identified as the initial model for the rest of this chapter.

The following model was run:

Logit (health card membership)= f(sex of main earner, household size, socioeconomic status of household, presence of Village Health Posts in the

village, membership in NGOs, presence of children aged under five years in the household, presence of pregnant women in the household, mean age of household members, mean level of education of household members)

Membership in health card scheme was significantly influenced by household size, socioeconomic status of household, existence of VHPs in the villages, membership in NGO development programs, presence of at least one child under the age of five in the household and mean education level of households. Influence of having at least one pregnant woman in household and mean household age on membership status was found to be insignificant.

Households with larger family size were significantly more likely to join the health card scheme than those with comparatively smaller family size. Households with male main earner were more likely to join the scheme than those with female main earner. However this relationship was not statistically significant. The odds of poor households joining the health card scheme were lower than the better-off households (odds ratio 0.68) indicating poor households being less likely to join. Households that lived in villages with VHPs were more likely to join the scheme compared to those who lived in villages with no VHPs (odds of households living in villages with VHPs being 4.3 times of households not living in VHP villages). Participation in development programmes offered by local NGOs played a significant role in influencing people to join the health card scheme. Those who were members of NGO development programmes were more likely to join the Chakaria scheme compared to those who were not. The odds of households with at least one child aged under five years joining the scheme were 1.22 times that of households with no children under the age of five. Households with high mean education level were significantly more likely to be members of Chakaria scheme than the households who had lower level of mean education (Odds ratio 1.20).

Detailed output of the analysis is presented in Table 10.

TABLE 10: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT INDIVIDUAL LEVEL (MODEL 1)

Variables	**Membership status of health card scheme (yes=1; no=0)**		
	Co-efficient (S.E.)	**z (p value)**	**Odds ratio (95% CI)**
Constant	-4.24	-36.45	0.01
	0.116	0.000	(0.01-0.02)
Household size	0.06	18.14	1.06
	0.003	0.000	1.05-1.07
Sex of main earner	0.15	1.50	1.16
(binary – 'female' is ref cat)	0.097	0.134	0.96-1.40
Socioeconomic status	-0.38	-12.04	0.68
(binary – 'better-off' is ref cat)	0.032	0.000	0.64-0.73
Village has VHP?	1.46	42.40	4.30
(binary – 'no' is ref cat)	0.034	0.000	4.02-4.60
Any NGO membership in HH?	0.39	13.76	1.48
(binary – 'no' is ref cat)	0.029	0.000	1.40-1.57
Presence of children <5 years of age in	0.20	5.86	1.22
HH? (binary – 'no' is ref cat)	0.034	0.000	1.14-1.30
Presence of pregnant women in HH	-0.04	-0.97	0.96
(binary- 'no' is ref cat)	0.039	0.333	0.89-1.04
Mean household education	0.18	35.52	1.20
	0.005	0.000	1.19-1.21
Mean household age	0.00	0.36	1.00
	0.002	0.721	0.10-1.01
Test			
Overall model evaluation			
Likelihood ratio χ^2 (9)	4633.88***		
Goodness-of-fit test			
Hosmer and Lemeshow χ^2 (8)	52.79***		
Correct classification	94.3%		

Note: *** indicates significant at 5% level.

HOUSEHOLD LEVEL ANALYSIS

Household level analysis was carried out for all the survey years separately and then for the panel data that incorporated data from all the three years. Similar models were run for all the survey years and eventually for panel data which would indicate the change in influence of the independent variables on the probability of enrollment over time. We will report the results sequentially starting from the base year 1999 followed by 2004, 2005 and then the panel data combining data from years 1999, 2004 and 2005.

RESULTS FROM 1999 SURVEY:

MODEL 2:

The household level analysis was initiated by keeping all the independent variables that were originally identified. The model took the following form:

logit (health card membership)= f(sex of main earner, household size, socioeconomic status of household, presence of Village Health Posts in the village, membership in NGOs, presence children aged under five years in the household, presence of pregnant women in the household, mean age of household members, mean level of education of household members)

Results showed that the findings in the individual level model hold for the household level analysis. Household size, socioeconomic status of households, presence of VHP in the villages, membership in NGOs, presence of children aged under five years in the household, and mean level of education in the household continued to have significant impact on the decision to enroll into the Chakaria health card scheme.

Holding all other variables constant larger households were significantly more likely to join the health card scheme compared to the smaller households. The odds of a poor household joining the scheme were lower than that of better-off households (odds ratio 0.71) indicating that poorer households were less likely to join the health card scheme. Households situated in villages with VHPs were more likely to join than those situated in villages without VHPs. Membership in NGO programmes influenced decision as households with NGO membership was found to be more likely to join the Chakaria health card scheme than those without any NGO membership. The odds of households with atleast one child under the age of five years was 1.21 times the households without any children below the age of five years. Mean education level of households again was an important determinant. Households with higher mean education level were significantly more likely to join the scheme than those with comparatively lower level of mean household education. Sex of main earner, presence of at least one pregnant woman in household, and mean household age, on the other hand, did

not have any significant impact on membership at the Chakaria health card scheme (See Table 11).

TABLE 11: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 2), CHAKARIA 1999

Variables	**Membership status of health card scheme (yes=1; no=0)**		
	Co-efficient (S.E.)	**z (p value)**	**Odds ratio (95% CI)**
Constant	-4.48	-17.37	0.01
	(0.258)	(0.000)	(0.01-0.02)
Household size	0.08	8.90	1.09
	(0.009)	(0.000)	(1.07-1.11)
Sex of main earner	0.23	1.10	1.25
(binary – 'female' is ref cat)	(0.206)	(0.273)	(0.84-1.88)
Socioeconomic status	-0.34	-4.50	0.71
(binary – 'better-off' is ref cat)	(0.075)	(0.000)	(0.62-0.83)
Village has VHP?	1.36	16.01	3.90
(binary – 'no' is ref cat)	(0.085)	(0.000)	(3.30-4.61)
Any NGO membership in HH?	0.38	5.46	1.46
(binary – 'no' is ref cat)	(0.070)	(0.000)	(1.28-1.68)
Presence of children <5 years of age in HH? (binary – 'no' is ref cat)	0.19 (0.084)	2.30 (0.021)	1.21 (1.03-1.43)
Presence of pregnant women in HH (binary- 'no' is ref cat)	-0.09 (0.097)	-0.96 (0.335)	0.91 (0.75-1.10)
Mean household education	0.18	14.78	1.19
	(0.012)	(0.000)	(1.17-1.22)
Mean household age	-0.00	-0.13	1.00
	(0.005)	(0.896)	(0.99-1.01)
Test			
Overall model evaluation			
Likelihood ratio test χ^2 (9)	749.4***		
Goodness-of-fit test			
Hosmer and Lemeshow χ^2 (8)	17.56***		
Correct classification	95.2%		

Note: ***significant at 5% level

MODEL 3:

The model was then modified to eliminate the probability of multicollinearity. The correlations between the independent variables were tested and it was found that the correlation between all the variables are below 0.5 except for correlation between 'presence of children aged under five years' and 'mean household age' which was 0.52. Models were then run excluding the two

variables, one at a time. Model 3 excludes the variable for 'presence of children under the age of five' in household and keeps all other variables the same.

The model looked like:

logit (health card membership)= f(sex of main earner, household size, SES of household, presence of Village Health Posts in the village, membership in NGOs, presence of pregnant women in the household, mean age of household members, mean education level of household members)

Results of model 3 are presented in Table 12. Dropping the "presence of children under the age of five in household" variable did not result in any significant change in the parameters compared to those in model 2. The P value for variable "mean household age" improved from 0.896 in model 2 to 0.122 in model 3, but was still insignificant.

TABLE 12: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 3; DROPPING "PRESENCE OF CHILDREN AGED UNDER FIVE" VARIABLE), CHAKARIA 1999

Variables	**Membership status of health card scheme (yes=1; no=0)**		
	Co-efficient (S.E.)	**z (p value)**	**Odds ratio (95% CI)**
Constant	-4.26	-17.81	0.01
	(0.239)	(0.000)	(0.009-0.023)
Household size	0.09	9.70	1.09
	(0.009)	(0.000)	(1.074-1.113)
Sex of main earner	0.25	1.19	1.28
(binary – 'female' is ref cat)	(0.206)	(0.234)	(0.853-1.913)
Socioeconomic status	-0.34	-4.56	0.71
(binary – 'better-off' is ref cat)	(0.075)	(0.000)	(0.614-0.823)
Village has VHP? (binary – 'no' is ref	1.37	16.13	3.93
cat)	(0.085)	(0.000)	(3.329-4.644)
Any NGO membership in HH?	0.37	5.37	1.45
(binary – 'no' is ref cat)	(0.070)	(0.000)	(1.268-1.667)
Presence of pregnant women in HH	-0.08	-0.81	0.92
(binary- 'no' is ref cat)	(0.097)	(0.417)	(0.764-1.118)
Mean household education	0.17	14.56	1.19
	(0.012)	(0.000)	(1.161-1.217)
Mean household age	-0.01	-1.54	0.99
	(0.004)	(0.122)	(0.985-1.002)
Test			
Overall model evaluation			
Likelihood ratio test χ^2 (8)	744.03^{***}		
Goodness-of-fit test			
Hosmer and Lemeshow χ^2 (8)	8.88^{ns}		
Correct classification	95.2%		

Note: ***significant at 5% level; ns: not significant

MODEL 4:

We then dropped the variable "mean household age" instead of "presence of children aged under five" and ran the logistic regression. The model took the following form:

logit (health card membership)= f(sex of main earner, household size, socioeconomic status of household, presence of Village Health Posts in the village, membership in NGOs, presence children aged under five years in the household, presence of pregnant women in the household, mean level of education of household members)

Again no significant change from model 2 was observed. Dropping the variable "mean household age" did not alter any of the relationships analyzed.

Detailed results are presented in Table 13.

TABLE 13: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 4; DROPPING "MEAN HOUSEHOLD AGE" VARIABLE), CHAKARIA 1999

Variables	**Membership status of health card scheme (yes=1; no=0)**		
	Co-efficient (S.E.)	**z (p value)**	**Odds ratio (95% CI)**
Constant	-4.50	-20.86	0.01
	(0.216)	(0.000)	(0.007-0.017)
Household size	0.08	8.90	1.09
	(0.009)	(0.000)	(1.068-1.108)
Sex of main earner	0.23	1.10	1.26
(binary – 'female' is ref cat)	(0.206)	(0.271)	(0.838-1.879)
Socioeconomic status	-0.34	-4.50	0.72
(binary – 'better-off' is ref cat)	(0.075)	(0.000)	(0.617-0.827)
Village has VHP?	1.36	16.01	3.90
(binary – 'no' is ref cat)	(0.085)	(0.000)	(3.303-4.61)
Any NGO membership in HH?	0.38	5.47	1.46
(binary – 'no' is ref cat)	(0.070)	(0.000)	(1.277-1.679)
Presence of children <5 years of age in	0.20	2.77	1.22
HH? (binary – 'no' is ref cat)	(0.072)	(0.006)	(1.060-1.406)
Presence of pregnant women in HH	-0.09	-0.97	0.91
(binary- 'no' is ref cat)	(0.097)	(0.334)	(0.752-1.102)
Mean household education	0.18	14.82	1.19
	(0.012)	(0.000)	(1.165-1.220)
Test			
Overall model evaluation			
Likelihood ratio test χ^2 (8)	749.39***		
Goodness-of-fit test			
Hosmer and Lemeshow χ^2 (8)	16.81***		
Correct classification	95.2%		

Note: ***significant at 5% level

Variance Inflating Factor (VIF): Test of multicollinearity

In addition to altering the model we calculated the Variance Inflating Factor (VIF) for our household level model (Model 2) which was below 2 indicating no evidence of multicollinearity. Literature has shown, as a rule of thumb, VIF>4 warrants further investigation for collinearity and VIF>10 is a sign of serious multicollinearity (5).

These results together indicate there is no multicollinearity in the estimated model.

MODEL 5:

Further to the analysis of effect of having children under the age of five we were interested to know whether this effect varied with difference in total number of children under the age of five within a household. So we replaced "presence of children aged under five years" (a binary response variable) by total number of children aged under five years in any household (a continuous variable). The following model was used:

logit (health card membership)= f(sex of main earner, household size, socioeconomic status of household, presence of Village Health Posts in the village, membership in NGOs, total number of children aged under five years in the household, presence of pregnant women in the household, mean age of household members, mean level of education of household members)

Results showed that total number of children aged under five years in any household did not have significant effect on membership status. However, 31% of the households did not have any children under the age of five and this might have some influence on the outcome of the model.

All other findings remained the same as that of model 2 (Table 14).

TABLE 14: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 5; IMPACT OF TOTAL NUMBER OF CHILDREN AGED UNDER FIVE YEARS IN HOUSEHOLD), CHAKARIA 1999

Variables	**Membership status of health card scheme (yes=1; no=0)**		
	Co-efficient (S.E.)	**z (p value)**	**Odds ratio (95% CI)**
Constant	-4.23	-17.17	0.014
	(0.247)	(0.000)	(0.009-0.023)
Household size	0.09	8.56	1.10
	(0.011)	(0.000)	(1.073-1.119)
Sex of main earner	0.25	1.19	1.28
(binary – 'female' is ref cat)	(0.206)	(0.233)	(.854-1.914)
Socioeconomic status	-0.34	-4.57	0.71
(binary – 'better-off' is ref cat)	(0.075)	(0.000)	(0.614-0.823)
Village has VHP?	1.37	16.13	3.93
(binary – 'no' is ref cat)	(0.085)	(0.000)	(3.331-4.647)
Any NGO membership in HH?	0.37	5.33	1.451
(binary – 'no' is ref cat)	(0.070)	(0.000)	(1.265-1.664)
Total number of children under	-0.02	-0.43	0.99
the age of 5 in household	(0.036)	(0.667)	(.917-1.057)
Presence of pregnant women in	-0.08	-0.79	0.93
HH (binary- 'no' is ref cat)	(0.097)	(0.429)	(0.765-1.121)
Mean household education	0.17	14.36	1.19
	(0.012)	(0.000)	(1.160-1.216)
Mean household age	-0.01	-1.56	0.99
	(0.005)	(0.119)	(0.983-1.002)
Test			
Overall model evaluation			
Likelihood ratio test χ^2 (8)	744.22^{***}		
Goodness-of-fit test			
Hosmer and Lemeshow χ^2 (8)	10.51^{ns}		
Correct classification	95.2%		

Note: ***significant at 5% level; ns: not significant

MODEL 6

In dealing with the high percent of households with no children under the age of five we grouped the households according to total number of children aged under five years. The households were categorized into 4 groups: households with no children under the age of five, households with 1 child under the age of five, households with 2 children under the age of five, and households with 3 or more children under the age of five. We then ran the logistic regression with presence of children under the age of five years as a categorized variable.

The following model was used:

logit (health card membership)= f(sex of main earner, household size, socioeconomic status of household, presence of Village Health Posts in the village, membership in NGOs, household group based on total number of children aged under 5 years, presence of pregnant women in the household, mean age of household members, mean level of education of household members)

TABLE 15: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 6; HOUSEHOLD CATEGORIZED ACCORDING TO TOTAL NUMBER OF CHILDREN UNDER THE AGE OF FIVE YEARS), CHAKARIA 1999

Variables	**Membership status at CCHP health card scheme (yes=1; no=0)**		
	Co-efficient (S.E.)	**z (p value)**	**Odds ratio (95% CI)**
Constant	-4.49	-17.34	0.01
	(.259)	(0.000)	(0.007-0.019)
Household size	0.09	8.91	1.10
	(0.010)	(0.000)	(1.074-1.118)
Sex of main earner	0.21	1.03	1.24
(binary – 'female' is ref cat)	(0.206)	(0.304)	(0.825-1.852)
Socioeconomic status	-0.34	-4.55	0.71
(binary – 'better-off' is ref cat)	(0.075)	(0.000)	(0.615-0.824)
Village has VHP? (binary – 'no' is ref cat)	1.36	16.01	3.90
	(0.085)	(0.000)	(3.305-4.613)
Any NGO membership in HH?	0.38	5.40	1.46
(binary – 'no' is ref cat)	(0.070)	(0.000)	(1.272-1.672)
HH category based on total number of children under the age of five years: (categorical-'no HH member under the age of five years')			
HH with 1 child under the age of 5	0.18	2.01	1.20
	(0.089)	(0.044)	(1.004-1.422)
HHwith 2 children under the age of 5	0.24	2.47	1.28
	(0.098)	(0.013)	(1.052-1.547)
HH with 3 or more children under the age	-0.03	-0.20	0.97
of 5	(0.141)	(0.839)	(0.737-1.281)
Presence of pregnant women in HH	-0.09	-0.94	0.91
(binary- 'no' is ref cat)	(0.098)	(0.346)	(0.754-1.104)
Mean household education	0.18	14.61	1.19
	(0.012)	(0.000)	(1.163-1.219)
Mean household age	-0.00	-0.22	1.00
	(0.005)	(0.823)	(0.989-1.009)
Test			
Overall model evaluation	754.75***		
Likelihood ratio test χ^2 (8)			
Goodness-of-fit test			
Hosmer and Lemeshow χ^2 (8)	14.82**		
Correct classification	95.2%		

Note: *** significant at 5% level ** significant at 10% level; HH: Household

As we can see from Table 15 households with 1 and 2 children aged under five years are significantly more likely to join the health card scheme compared to those with no children under the age of five. The odds of households with 1 child aged five or less years joining the scheme was 1.2 times of households with no children under the age of five. For households with two children under the age of five the odds of joining the scheme was 1.3 times of households with no children under the age of five.

RESULTS FROM 2004 SURVEY:

The models that we ran for 1999 dataset were then run for 2004 data. The outcomes are reported in the following section.

MODEL 7:

The following model was used to analyze influencing factors for membership at Chakaria health card scheme in 2004. Model 7 includes all the independent variables originally identified.

logit (health card membership)$_{2004}$= f(sex of main earner, household size, socioeconomic status of household, presence of Village Health Posts in the village, membership in NGOs, presence children aged under five years in the household, presence of pregnant women in the household, mean age of household members, mean level of education of household members)

Results from the logistic regression showed that household size, existence of VHP in the villages and mean household education continued to have significant positive influence on membership status even in 2004. Households with higher number of members are more likely to join health card scheme than those with fewer members. The odds of households living in villages with VHPs being a member of the health card scheme was 3.7 times that of households in villages without any VHPs. Higher educated households were more likely to join the scheme than those with a low level of mean household education. On the other hand, the influence of socioeconomic status, NGO membership and presence of children under the age of five in the household cease to have significant influence on membership of the health card scheme. Sex of main earner, presence of pregnant women and mean household age also did not have significant impact

on household membership of the health card scheme which follows the trend observed in 1999 (Table 16).

TABLE 16: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 7), CHAKARIA 2004

Variables	**Membership status of health card scheme (yes=1; no=0)**		
	Co-efficient (S.E.)	**z (p value)**	**Odds ratio (95% CI)**
Constant	-3.90	-11.99	0.020
	(0.325)	(0.000)	(0.011-0.038)
Household size	0.08	4.58	1.087
	(0.018)	(0.000)	(1.049-1.126)
Sex of main earner	-0.22	-1.15	0.800
(binary – 'female' is ref cat)	(0.193)	(0.250)	(0.549-1.170)
Socioeconomic status	-0.21	-1.50	0.815
(binary – 'better-off' is ref cat)	(0.136)	(0.133)	(0.624-1.064)
Village has VHP?	1.31	7.73	3.700
(binary – 'no' is ref cat)	(0.170)	(0.000)	(2.653-5.150)
Any NGO membership in HH?	0.09	0.82	1.100
(binary – 'no' is ref cat)	(0.114)	(0.411)	(0.880-1.373)
Presence of children <5 years of age in HH?	0.24	1.54	1.273
	(0.156)	(0.123)	(0.937-1.729)
(binary – 'no' is ref cat)			
Presence of pregnant women in HH	0.20	1.30	1.216
(binary- 'no' is ref cat)	(0.151)	(0.195)	(0.905-1.633)
Mean household education	0.19	6.62	1.203
	(0.028)	(0.000)	(1.139-1.271)
Mean household age	-0.02	-1.46	0.985
	(0.010)	(0.145)	(0.966-1.005)
Test			
Overall model evaluation	146.24^{***}		
Likelihood ratio test χ^2 (8)			
Goodness-of-fit test			
Hosmer and Lemeshow χ^2 (8)	7.68^{ns}		
Correct classification	94.6%		

Note: ***significant at 5% level; ns: not significant

MODEL 8:

As we did with 1999 data set it was assumed mean household age and presence of children under the age of five could be correlated. The correlation was found to be 0.5. So we ran logistic regressions dropping each of these two variables, one at a time. Model 8 excludes 'presence of children under the age of five'.

logit (health card membership)$_{2004}$= f(sex of main earner, household size, socioeconomic status of household, presence of Village Health Posts in the

village, membership in NGOs, presence of pregnant women in the household, mean age of household members, mean level of education of household members)

Table 17 shows that as the variable "presence of children under the age of five" was taken off the model, mean household age began to have significant negative impact on membership. This indicates that households with lower mean age were more likely to join the scheme.

All other variables remained to have similar effect on membership status as that of model 7.

TABLE 17: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 8; DROPPING PRESENCE OF CHILDREN UNDER THE AGE OF FIVE), CHAKARIA 2004

Variables	**Membership status of health card scheme (yes=1; no=0)**		
	Co-efficient (S.E.)	**z (p value)**	**Odds ratio (95% CI)**
Constant	-3.657	-12.86	0.026
	(0.017)	(0.000)	(0.015-0.045)
Household size	0.092	5.31	1.096
	(0.192)	(0.000)	(1.060-1.134)
Sex of main earner	-0.198	-1.03	0.820
(binary – 'female' is ref cat)	(0.192)	(0.304)	(0.563-1.196)
Socioeconomic status	-0.221	-1.63	0.801
(binary – 'better-off' is ref cat)	(0.136)	(0.103)	(0.614-1.046)
Village has VHP?	1.310	7.75	3.706
(binary – 'no' is ref cat)	(0.169)	(0.000)	(2.660-5.163)
Any NGO membership in HH?	0.086	0.76	1.090
(binary – 'no' is ref cat)	(0.114)	(0.449)	(0.872-1.363)
Presence of pregnant women in HH	0.229	1.53	1.257
(binary- 'no' is ref cat)	(0.149)	(0.126)	(0.938-1.685)
Mean household education	0.171	6.45	1.187
	(0.027)	(0.000)	(1.127-1.250)
Mean household age	-0.019	-1.99	0.981
	(0.010)	(0.047)	(0.962-1.000)
Test			
Overall model evaluation	143.83***		
Likelihood ratio test χ^2 (8)			
Goodness-of-fit test	8.90^{ns}		
Hosmer and Lemeshow χ^2 (8)			
Correct classification	94.6%		

Note: ***significant at 5% level; ns: not significant

MODEL 9:

Model 9 excludes mean household age and keeps the variable 'presence of children under the age of five' in the model.

The model:

logit (health card membership)$_{2004}$= f(sex of main earner, household size, socioeconomic status of household, presence of Village Health Posts in the village, membership in NGOs, presence children aged under five years in the household, presence of pregnant women in the household, mean level of education of household members)

In this current model once 'mean household age' was taken off 'presence of children under the age of five' began to have significant effect on decision to enroll in health card scheme. All other variables have the same effect as they did in model 7 where all the initial variables were included (Table 18).

TABLE 18: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 9; DROPPING MEAN HOUSEHOLD AGE), CHAKARIA 2004

Variables	**Membership status at CCHP health card scheme (yes=1; no=0)**		
	Co-efficient (S.E.)	**z (p value)**	**Odds ratio (95% CI)**
Constant	-4.193	-16.26	0.015
	(0.258)	(0.000)	(0.010-0.025)
Household size	0.085	4.67	1.088
	(0.018)	(0.000)	(1.050-1.128)
Sex of main earner	-0.249	-1.30	0.780
(binary – 'female' is ref cat)	(0.192)	(0.194)	(0.535-1.135)
Socioeconomic status	-0.214	-1.57	0.808
(binary – 'better-off' is ref cat)	(0.136)	(0.117)	(0.618-1.055)
Village has VHP?	1.309	7.74	3.703
(binary – 'no' is ref cat)	(0.169)	(0.000)	(2.658-5.160)
Any NGO membership in HH?	0.094	0.82	1.098
(binary – 'no' is ref cat)	(0.114)	(0.410)	(0.878-1.374)
Presence of children <5 years of age in	0.309	2.07	1.362
HH? (binary – 'no' is ref cat)	(0.150)	(0.039)	(1.016-1.826)
Presence of pregnant women in HH	-0.191	1.27	1.210
(binary- 'no' is ref cat)	(0.151)	(0.206)	(0.901-1.626)
Mean household education	0.167	6.70	1.181
	(0.025)	(0.000)	(1.125-1.241)
Test			
Overall model evaluation			
Likelihood ratio test χ^2 (8)	144.04***		
Goodness-of-fit test			
Hosmer and Lemeshow χ^2 (8)	6.33^{ns}		
Correct classification	94.6%		

Note: ***significant at 5% level; ns: not significant

MODEL 10:

To observe the impact of total number of children under the age of five within a household instead of looking only at presence of them the following model was tested:

logit (health card membership)$_{2004}$= f(sex of main earner, household size, socioeconomic status of household, presence of Village Health Posts in the village, membership in NGOs, total number of children aged under five years in the household, presence of pregnant women in the household, mean age of household members, mean level of education of household members)

Results showed that total number of children had positive significant effect on enrollment. Households with higher number of children under the age of five were more likely to join the scheme than their counterpart. Effect of the other variables remained to be the same compared to model 7 (Table 19).

TABLE 19: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 10; IMPACT OF TOTAL NUMBER OF CHILDREN AGED UNDER FIVE YEARS IN HOUSEHOLD), CHAKARIA 2004

Variables	**Membership status of health card scheme (yes=1; no=0)**		
	Co-efficient (S.E.)	**z (p value)**	**Odds ratio (95% CI)**
Constant	-3.885	-13.04	0.021
	(0.298)	(0.000)	(0.011-0.037)
Household size	0.062	2.93	1.064
	(0.021)	(0.003)	(1.021-1.109)
Sex of main earner	-0.212	-1.10	0.809
(binary – 'female' is ref cat)	(0.192)	(0.271)	(0.555-1.180)
Socioeconomic status	-0.195	-1.43	0.823
(binary – 'better-off' is ref cat)	(0.136)	(0.154)	(0.630-1.076)
Village has VHP?	1.312	7.75	3.715
(binary – 'no' is ref cat)	(0.169)	(0.000)	(2.666-5.178)
Any NGO membership in HH?	0.105	0.92	1.111
(binary – 'no' is ref cat)	(0.114)	(0.357)	(0.888-1.390)
Total number of children under the age of 5 in household	0.166	2.46	1.180
	(0.067)	(0.014)	(1.034-1.347)
Presence of pregnant women in HH	0.164	1.08	1.178
(binary- 'no' is ref cat)	(0.152)	(0.280)	(0.875-1.587)
Mean household education	0.195	6.92	1.215
	(0.028)	(0.000)	(1.150-1.284)
Mean household age	-0.013	-1.31	0.987
	(0.010)	(0.190)	(0.968-1.006)
Test			
Overall model evaluation	149.82***		
Likelihood ratio test χ^2 (8)			
Goodness-of-fit test	12.24ns		
Hosmer and Lemeshow χ^2 (8)			
Correct classification	94.6%		

Note: ***significant at 5% level; ns: not significant

MODEL 11:

We then categorized households according to the total number of children under the age of five years and ran a model with this new variable along with the other independent variables for the year 2004. The assumption was that number of households with no children under the age of five might have influenced the results we got for the variable representing total number of children under the age of five within a household. Therefore we categorized households into the following groups: 'no child under the age of five', '1 child under the age of five', '2 children under the age of five' and '3 or more children under the age of five'. This way it was possible to separate the effect of no children under the age of five from the other categories. Results are presented in Table 20.

The following model was used:

logit (health card membership)$_{2004}$= f(sex of main earner, household size, socioeconomic status of household, presence of Village Health Posts in the village, membership in NGOs, household group based on presence of children aged under 5 years, presence of pregnant women in the household, mean age of household members, mean level of education of household members)

TABLE 20: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 11; HOUSEHOLD CATEGORIZED ACCORDING TO TOTAL NUMBER OF CHILDREN UNDER THE AGE OF FIVE YEARS), CHAKARIA 2004

Variables	Membership status at CCHP health card scheme (yes=1; no=0)		
	Co-efficient (S.E.)	z (p value)	Odds ratio (95% CI)
Constant	-3.959	-12.09	0.020
	(0.327)	(0.000	0.011-0.036
Household size	0.073	3.66	1.075
	(0.020)	(0.000)	1.034-1.117
Sex of main earner	-0.230	-1.19	0.798
(binary – 'female' is ref cat)	(0.193)	(0.233)	0.547-1.165
Socioeconomic status	-0.195	-1.43	0.822
(binary – 'better-off' is ref cat)	(0.137)	(0.153)	0.629-1.074)
Village has VHP?	1.310	7.74	3.704
(binary – 'no' is ref cat)	(0.170)	(0.000)	(2.659-5.161)
Any NGO membership in HH?	0.102	0.089	1.107
(binary – 'no' is ref cat)	(0.114)	(0.373)	(0.885-1.385)
Household category based on total number of children under the age of five years: (categorical-'no household member under the age of five years' is ref cat)			
Household with 1 child under the age of 5	0.190	1.15	1.210
	(0.166)	(0.251)	(0.874-1.674)
Household with 2 children under the age of 5	0.368	1.95	1.445
	(0.189)	(0.051)	(0.998-2.091)
Household with 3 or more children under the age of 5	0.470	1.95	1.599
	(0.241)	(0.052)	(0.996-2.567)
Presence of pregnant women in HH	0.172	1.13	1.187
(binary- 'no' is ref cat)	(0.152)	(0.258)	(0.882-1.598)
Mean household education	0.194	6.79	1.214
	(0.029)	(0.000)	(1.148-1.283)
Mean household age	-0.012	-1.21	0.988
	(0.010)	(0.228)	(0.968-1.008)
Test			
Overall model evaluation Likelihood ratio test χ^2 (11)	148.58***		
Goodness-of-fit test Hosmer and Lemeshow χ^2 (8)	12.57ns		
Correct classification	94.6%		

Note: ***significant at 5% level; ns: not significant

Once we categorized the households according to the number of children aged under five years we found that households with greater number of children under the age of five (atleast 2) were more likely to join health card scheme than those with none. However, this result was significant only at 10% level. The odds of membership in households with 2 children under the age of five was 1.4 times of those having none and the odds of membership in households having 3 or more children under the age of five was 1.6 times of those with no children

under the age of five. Household size, existence of VHPs in villages and mean household education remain to have significant effect on enrolment decision.

RESULTS FROM 2005 SURVEY

The initial model with all the variables was then run with 2005 data to observe whether the effect of the independent variables on enrolment decision changed during 2005.

MODEL 12:

The following model including all the initial independent variables was run for 2005 data:

logit (health card membership)$_{2005}$= f(sex of main earner, household size, socioeconomic status of household, presence of Village Health Posts in the village, membership in NGOs, presence children aged under five years in the household, presence of pregnant women in the household, mean age of household members, mean level of education of household members)

TABLE 21: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 12), CHAKARIA 2005

Variables	Membership status at CCHP health card scheme (yes=1; no=0)		
	Co-efficient (S.E.)	z (p value)	Odds ratio (95% CI)
Constant	-4.089	-7.64	0.017
	(0.535)	(0.000)	(0.006-0.048)
Household size	0.042	1.58	1.043
	(0.027)	(0.115)	(0.990-1.100)
Sex of main earner	-0.298	-1.03	0.743
(binary – 'female' is ref cat)	(0.288)	(0.302)	(0.422-1.307)
Socioeconomic status	-0.919	-4.48	0.399
(binary – 'better-off' is ref cat)	(0.205)	(0.000)	(0.267-0.596)
Village has VHP?	1.207	4.63	3.342
(binary – 'no' is ref cat)	(0.261)	(0.000)	(2.005-5.571)
Any NGO membership in HH?	0.616	3.47	1.851
(binary – 'no' is ref cat)	(0.177)	(0.001)	(1.308-2.620)
Presence of children <5 years of age in	0.307	1.23	1.359
HH? (binary – 'no' is ref cat)	(0.249)	(0.219)	(0.833-2.215)
Presence of pregnant women in HH	0.268	1.22	1.307
(binary- 'no' is ref cat)	(0.220)	(0.224)	(0.849-2.012)
Mean household education	0.189	4.56	1.207
	(0.041)	(0.000)	(1.113-1.309)
Mean household age	-0.029	-1.80	0.972
	(0.016)	(0.072)	(0.942-1.003)
Test			
Overall model evaluation	112.11^{***}		
Likelihood ratio test χ^2 (8)			
Goodness-of-fit test	5.23^{ns}		
Hosmer and Lemeshow χ^2 (8)			
Correct classification	98.1%		

Note: ***significant at 5% level; ns: not significant

Results showed more similar trends with 1999 findings. Socioeconomic status, existence of VHPs in villages, membership in NGO development programs, and mean household education had significant impact on decision to enroll for a household in 2005. The odds of a poor household joining the health card scheme were lower than that of better-off households (odds ratio 0.4). Households living in villages that had a VHP within its boundary were more likely to join with odds being 3.34 times that of households living in villages without any VHPs. Membership in NGO development programmes influenced enrolment positively (odds were 1.85 times of non NGO-member households). Households with higher mean education were as always more likely to join the scheme. Household size, presence of pregnant women, presence of children under the age of five, sex of main earner, and mean household age did not influence membership significantly (Table 21).

MODEL 13:

We then excluded presence of children under the age of five from our model to observe if correlation between mean household age and presence of children under the age of five has any effect on the estimated coefficients.

The model:

logit (health card membership)$_{2005}$= f(sex of main earner, household size, SES of household, presence of Village Health Posts in the village, membership in NGOs, presence of pregnant women in the household, mean age of household members, mean education level of household members)

TABLE 22: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 13; DROPPING "PRESENCE OF CHILDREN AGED UNDER FIVE" VARIABLE), CHAKARIA 2005

Variables	**Membership status at CCHP health card scheme (yes=1; no=0)**		
	Co-efficient (S.E.)	**z (p value)**	**Odds ratio (95% CI)**
Constant	-3.77	-8.08	0.023
	(0.467	(0.000)	(0.01-0.06)
Household size	0.051	2.02	1.05
	(0.025	(0.044)	(1.00-1.11)
Sex of main earner	-0.263	-0.91	0.77
(binary – 'female' is ref cat)	(0.287	(0.360)	(0.44-1.35)
Socioeconomic status	-0.944	-4.62	0.39
(binary – 'better-off' is ref cat)	(0.204	(0.000)	(0.26-0.58)
Village has VHP?	1.197	4.59	3.31
(binary – 'no' is ref cat)	(0.261	(0.000)	(1.99-5.52)
Any NGO membership in HH?	0.615	3.47	1.85
(binary – 'no' is ref cat)	(0.177	(0.001)	(1.31-2.62)
Presence of pregnant women in HH	0.317	1.46	1.37
(binary- 'no' is ref cat)	(0.218	(0.145)	(0.90-2.10)
Mean household education	0.173	4.37	1.19
	(0.040	(0.000)	(1.10-1.29)
Mean household age	-0.035	-2.31	0.97
	(0.015	(0.021)	(0.94-1.00)
Test			
Overall model evaluation	110.57***		
Likelihood ratio test χ^2 (8)			
Goodness-of-fit test	5.05^{ns}		
Hosmer and Lemeshow χ^2 (8)			
Correct classification	98.1%		

Note: ***significant at 5% level; ns: not significant

Mean household age was found to have significant negative effect on membership once the variable "presence of children under the age of five" was dropped indicating a fall in membership with increasing mean household age. (detailed results are presented in Table 22). One other change observed was that

household size was no more insignificant. Larger households were found to be more likely to join the scheme than the smaller ones. All other findings remained the same compared to model 12.

MODEL 14:

Model 14 excludes 'mean household age' and plugs back 'presence of children under the age of five' in the regression analysis for the year 2005.

The model:

logit (health card membership)$_{2005}$= f(sex of main earner, household size, socioeconomic status of household, presence of Village Health Posts in the village, membership in NGOs, presence children aged under five years in the household, presence of pregnant women in the household, mean level of education of household members)

TABLE 23: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 14; DROPPING MEAN HOUSEHOLD AGE), CHAKARIA 2005

Variables	**Membership status of health card scheme (yes=1; no=0)**		
	Co-efficient (S.E.)	**z (p value)**	**Odds ratio (95% CI)**
Constant	-4.795	-12.39	0.01
	(0.39)	(0.000)	(0.00-0.02)
Household size	0.041	1.52	1.04
	(0.027)	(0.128)	(1.00-1.12)
Sex of main earner	-0.318	-1.10	0.728
(binary – 'female' is ref cat)	(0.288)	(0.270)	(0.41-1.28)
Socioeconomic status	-0.910	-4.45	0.40
(binary – 'better-off' is ref cat)	(0.204)	(0.000)	(0.27-0.60)
Village has VHP?	1.223	4.70	3.40
(binary – 'no' is ref cat)	(0.260)	(0.000)	(2.04-5.66)
Any NGO membership in HH?	0.630	3.55	1.88
(binary – 'no' is ref cat)	(0.177)	(0.000)	(1.33-2.70)
Presence of children <5 years of age in	0.469	2.00	1.60
HH? (binary – 'no' is ref cat)	(0.234)	(0.045)	(1.01-2.53)
Presence of pregnant women in HH	0.278	1.26	1.32
(binary- 'no' is ref cat)	(0.220)	(0.207)	(0.86-2.03)
Mean household education	0.169	4.35	1.18
	(0.039)	(0.000)	(1.10-1.28)
Test			
Overall model evaluation	108.52^{***}		
Likelihood ratio test χ^2 (8)			
Goodness-of-fit test	5.56^{ns}		
Hosmer and Lemeshow χ^2 (8)			
Correct classification	98.1%		

Note: ***significant at 5% level; ns: not significant

Presence of children under the age of five years was found to have significant positive effect on enrolment once the variable "mean household age" was dropped. The odds of households with atleast one child under the age of five joining the health card scheme was 1.6 times of those having none. All other variables continue to have similar effect as found in model 12 (Table 23).

MODEL 15:

The following model was run to observe the impact of total number of children aged under five years in 2005:

logit (health card membership)$_{2005}$= f(sex of main earner, household size, socioeconomic status of household, presence of Village Health Posts in the village, membership in NGOs, total number of children aged under five years in the household, presence of pregnant women in the household, mean age of household members, mean level of education of household members)

TABLE 24: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 15; IMPACT OF TOTAL NUMBER OF CHILDREN AGED UNDER FIVE YEARS IN HOUSEHOLD), CHAKARIA 2005

Variables	Membership status at CCHP health card scheme (yes=1; no=0)		
	Co-efficient (S.E.)	z (p value)	Odds ratio (95% CI)
Constant	-4.05	-8.34	0.018
	(0.486)	(0.000)	(0.01-0.05)
Household size	0.016	0.52	1.02
	(0.031)	(0.605)	(0.956-1.08)
Sex of main earner	-0.300	-1.02	0.746
(binary – 'female' is ref cat)	(0.29)	(0.308)	(0.425-1.311)
Socioeconomic status	-0.900	-4.36	0.408
(binary – 'better-off' is ref cat)	(0.21)	(0.000)	(0.272-0.610)
Village has VHP?	1.203	4.61	3.33
(binary – 'no' is ref cat)	(0.26)	(0.000)	(2.00-5.55)
Any NGO membership in HH?	0.62	3.49	1.86
(binary – 'no' is ref cat)	(0.18)	(0.000)	(1.31-2.63)
Total number of children under the	0.220	1.94	1.25
age of 5 in HH	(0.113)	(0.052)	(0.997-1.56)
Presence of pregnant women in HH	0.195	0.86	1.215
(binary- 'no' is ref cat)	(0.23)	(0.391)	(0.78-1.90)
Mean household education	0.198	4.79	1.22
	(0.04)	(0.000)	(1.12-1.32)
Mean household age	-0.026	-1.64	0.975
	(0.02)	(0.101)	(0.945-1.00)
Tests			
Overall model evaluation	114.29^{***}		
Likelihood ratio test χ^2 (8)			
Goodness-of-fit test	7.30^{ns}		
Hosmer and Lemeshow χ^2 (8)	0.42		
Correct classification	98.1%		

Note: ***significant at 5% level; ns: not significant

Changing the variable to demonstrate the effect of children aged under five years in household into a continuous variable did not alter the relationships in the model (Table 24).

MODEL 16:

Again for 2005 data households were grouped according to the total number of children under the age of five within a household. A model including this categorized variable was then run.

The model:

logit (health card membership)$_{2005}$= f(sex of main earner, household size, socioeconomic status of household, presence of Village Health Posts in the village, membership in NGOs, household group based on total number of children aged under 5 years, presence of pregnant women in the household, mean age of household members, mean level of education of household members)

TABLE 25: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 16; HOUSEHOLD CATEGORIZED ACCORDING TO TOTAL NUMBER OF CHILDREN UNDER THE AGE OF FIVE YEARS), CHAKARIA 2005

Variables	**Membership status of health card scheme (yes=1; no=0)**		
	Co-efficient (S.E.)	**Z (p value)**	**Odds ratio (95% CI)**
Constant	-4.130	-7.67	0.016
	(0.540)	(0.000)	(0.006-0.046)
Household size	0.031	1.06	1.032
	(0.030)	(0.289)	(0.974-1.093)
Sex of main earner	-0.307	-1.06	0.735
(binary – 'female' is ref cat)	(0.289)	(0.287)	(0.418-1.295)
Socioeconomic status	-0.906	-4.40	0.404
(binary – 'better-off' is ref cat)	(0.206)	(0.000)	(0.270-0.605)
Village has VHP?	1.207	4.63	3.342
(binary – 'no' is ref cat)	(0.261)	(0.000)	(2.006-5.570)
Any NGO membership in HH?	0.619	3.49	1.860
(binary – 'no' is ref cat)	(0.177)	(0.000)	(1.312-2.629)
HH category based on total number of children under the age of five years: (categorical-'no HH member under the age of 5 years' is ref cat)			
HH with 1 child under the age of 5	0.270	1.04	1.310
	(0.260)	(0.299)	(0.787-2.180)
HH with 2 children under the age of 5	0.432	1.42	1.540
	(0.303)	(0.154)	(0.850-2.792)
HH with 3 or more children under the age of 5	0.570	1.40	1.767
	(0.408)	(0.163)	(0.795-3.930)
Presence of pregnant women in HH	0.216	0.95	1.241
(binary- 'no' is ref cat)	(0.228)	(0.342)	(0.794-1.939)
Mean household education	0.195	4.66	1.215
	(0.042)	(0.000)	(1.120-1.319)
Mean household age	-0.026	-1.61	0.974
	(0.016)	(0.107)	(0.944-1.006)
Test			
Overall model evaluation Likelihood ratio test χ^2 (11)	113.03***		
Goodness-of-fit test Hosmer and Lemeshow χ^2 (8)	4.00ns		
Correct classification	98.1%		

Note: ***significant at 5% level; ns: not significant ; HH: Household

Changing the variable "total number of children under the age of five" into a categorized one to reflect household groups according to total number of children aged five or less did not change the outcome of the model compared to model 12 (Table 25).

Results from panel data analysis (combining 1999, 2004, and 2005 datasets)

In order to observe whether the relationship between enrolment decision and the influencing factors change over time we created a panel dataset comprising of data from all the three surveys, i.e. 1999, 2004 and 2005. The models that we used previously were then run for the panel data. The results are presented in the following section:

Model 17:

The initial model results for the panel data showed that household size, socioeconomic status, presence of VHP in villages, membership in NGO development programs, mean household age and mean household education continue to have significant impact on membership at the health card scheme over the years. On the other hand, sex of main income earner, presence of children under the age of five and presence of any pregnant women in household did not have any significant influence on membership status over time (Table 26).

Similar to the findings of each year the panel data results showed that households with increased number of members, those with higher mean education level, and households with lower mean age were more likely to join the scheme. The odds of poorer households joining the scheme was lower than the better-off households (odds ratio 0.58) indicating poorer households being less likely to enroll compared to the better-offs. The odds of households living in villages with VHPs enrolling into the scheme were 5.18 times that of households living in villages without any VHPs. Over time the odds of households having membership in NGO development programs being member of the health card scheme was found to be 1.23 times of those not being a part of any NGO programs.

TABLE 26: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 17), CHAKARIA (1999, 2004, 2005)

Variables	Membership status of health card scheme (yes=1; no=0)		
	Co-efficient (S.E.)	z (p value)	Odds ratio (95% CI)
Constant	-5.08	-19.82	0.006
	(0.256)	(0.000)	(0.004-0.010)
Household size	0.082	7.87	1.085
	(0.010)	(0.000)	(1.063-1.107)
Sex of main earner	0.193	1.30	1.212
(binary – 'female' is ref cat)	(0.148)	(0.195)	(0.906-1.622)
Socioeconomic status	-0.545	-7.56	0.580
(binary – 'better-off' is ref cat)	(0.072)	(0.000)	(0.503-0.668)
Village has VHP? (binary – 'no' is ref cat)	1.644	15.61	5.175
	(0.105)	(0.000)	(4.210-6.362)
Any NGO membership in HH?	0.208	3.18	1.232
(binary – 'no' is ref cat)	(0.066)	(0.001)	(1.083-1.400)
Presence of children <5 years of age in	0.121	1.48	1.127
HH? (binary – 'no' is ref cat)	(0.082)	(0.139)	(0.960-1.322)
Presence of pregnant women in HH	-0.093	-1.05	0.911
(binary- 'no' is ref cat)	(0.089)	(0.296)	(0.765-1.085)
Mean household education	0.182	14.07	1.20
	(0.013)	(0.000)	(1.169-1.230)
Mean household age	-0.013	-2.69	0.987
	(0.005)	(0.007)	(0.977-0.996)
Tests			
Overall model significance			
Wald $\chi2(9)$	578.07***		
Likelihood ratio test $\overline{\chi2}$ (01)	100.72***		

Note: ***significant at 5% level

MODEL 18:

The correlation between independent variable presence of children under the age of five and mean household age was found to be 0.56 and hence we decided to run a model excluding the two variables one at a time. Model 18 drops 'presence of children under the age of five in the households' and keeps 'mean household age' variable in the model.

The results remained unchanged and factors that had significant relationship with membership status continue to do so (Table 27).

TABLE 27: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 18), CHAKARIA (1999, 2004, 2005)

Variables	Membership status of health card scheme (yes=1; no=0)		
	Co-efficient (S.E.)	z (p value)	Odds ratio (95% CI)
Constant	-4.959	-20.69	0.007
	(0.239)	(0.000)	(0.004-0.011)
Household size	0.085	8.45	1.089
	(0.010)	(0.000)	(1.068-1.110)
Sex of main earner	0.205	1.38	1.228
(binary – 'female' is ref cat)	(0.148)	(0.166)	(0.918-1.643)
Socioeconomic status	-0.546	-7.56	0.579
(binary – 'better-off' is ref cat)	(0.072)	(0.000)	(0.503-0.667)
Village has VHP? (binary – 'no' is ref cat)	1.647	15.63	5.191
	(0.105)	(0.000)	(4.223-6.381)
Any NGO membership in HH?	0.206	3.15	1.229
(binary – 'no' is ref cat)	(0.065)	(0.002)	(1.081-1.398)
Presence of pregnant women in HH	-0.079	-0.90	0.923
(binary- 'no' is ref cat)	(0.088)	(0.368)	(0.776-1.098)
Mean household education	0.181	13.99	1.198
	(0.013)	(0.000)	(1.168-1.229)
Mean household age	-0.017	-3.89	0.983
	(0.004)	(0.000)	(0.975-0.992)
Tests			
Overall model significance			
Wald $\chi2(8)$	576.11***		
Likelihood ratio test $\overline{\chi2}(01)$	100.70***		

Note: ***significant at 5% level

MODEL 19:

Model 19 drops 'mean household age' to observe whether the correlation between 'presence of children under the age of five' influences the relationship between the independent variables and membership status.

Results show that 'presence of children under the age of five' now has significant influence on enrollment, which was insignificant in our initial model that included both "presence of children under the age of five" and "mean household age" variables. All other variables continue to hold the same relationship with decision to enroll (Table 28).

TABLE 28: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 19), CHAKARIA (1999, 2004, 2005)

Variables	**Membership status of health card scheme (yes=1; no=0)**		
	Co-efficient (S.E.)	**z (p value)**	**Odds ratio (95% CI)**
Constant	-5.440	-23.87	0.004
	(0.228)	(0.000)	(0.003-0.007)
Household size	0.082	7.87	1.085
	(0.010)	(0.000)	(1.063-1.107)
Sex of main earner	0.194	1.31	1.214
(binary – 'female' is ref cat)	(0.148)	(0.191)	(0.908-1.622)
Socioeconomic status	-0.541	-7.52	0.582
(binary – 'better-off' is ref cat)	(0.072)	(0.000)	(0.505-0.670)
Village has VHP? (binary – 'no' is ref cat)	1.645	15.65	5.182
	(0.105)	(0.000)	(4.217-6.367)
Any NGO membership in HH?	0.210	3.21	1.234
(binary – 'no' is ref cat)	(0.066)	(0.001)	(1.085-1.403)
Presence of children <5 years of age in	0.232	3.25	1.261
HH? (binary – 'no' is ref cat)	(0.071)	(0.001)	(1.096-1.449)
Presence of pregnant women in HH	-0.096	-1.08	0.909
(binary- 'no' is ref cat)	(0.089)	(0.281)	(0.763-1.082)
Mean household education	0.176	13.94	1.192
	(0.013)	(0.000)	(1.163-1.222)
Tests			
Overall model significance			
Wald $\chi 2^*(8)$			578.53***
Likelihood ratio test $\overline{\chi 2}(01)$			100.47***

Note: ***significant at 5% level

MODEL 20:

Model 20 tests whether total number of children in a household has any impact on decision to enroll instead of only looking into the impact of presence of children under the age of five.

Total number of children under the age of five was not found to have any significant impact on decision to enroll. All other results remain the same (Table 29).

TABLE 29: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 20), CHAKARIA (1999, 2004, 2005)

Variables	Membership status of health card scheme (yes=1; no=0)		
	Co-efficient (S.E.)	z (p value)	Odds ratio (95% CI)
Constant	-4.979	-20.15	0.007
	(0.247)	(0.000)	(0.004-0.011)
Household size	0.083	7.27	1.087
	(0.011)	(0.000)	(1.063-1.111)
Sex of main earner	0.204	1.38	1.227
(binary – 'female' is ref cat)	(0.148)	(0.169)	(0.918-1.641)
Socioeconomic status	-0.545	-7.56	0.581
(binary – 'better-off' is ref cat)	(0.072)	(0.000)	(0.504-0.669)
Village has VHP?	1.647	15.63	5.168
(binary – 'no' is ref cat)	(0.105)	(0.000)	(4.207-6.348)
Any NGO membership in HH?	0.207	3.16	1.230
(binary – 'no' is ref cat)	(0.066)	(0.002)	(1.082-1.399)
Total number of children under the age of 5 in household	0.012	0.34	1.012
	(0.036)	(0.736)	(0.943-1.086)
Presence of pregnant women in HH	-0.083	-0.93	0.921
(binary- 'no' is ref cat)	(0.089)	(0.352)	(0.773-1.096)
Mean household education	0.181	13.98	1.198
	(0.013)	(0.000)	(1.168-1.229)
Mean household age	-0.016	-3.31	0.984
	(0.005)	(0.001)	(0.975-0.993)
Tests			
Overall model significance			
Wald $\chi 2(9)$	576.05***		
Likelihood ratio test $\overline{\chi 2}(01)$	100.80***		

Note: ***significant at 5% level

MODEL 21:

The fact that 32% of the households did not have any children under the age of five might influence the impact of the variable "total number of children under the age of five" on enrollment decision. As a result we decided to group households according to the total number of children under the age of five. Households as before were categorized into 4 groups: "households with no children under the age of five", "households with 1 child under the age of five", "households with 2 children under the age of five", "households with 3 or more children under the age of five".

Logistic results including this grouping did not show any significant difference. Only the households that had 2 children under the age of five showed positive influence on membership but at 10% level of significance. None of the household categories showed any significant impact on membership at 5% level. All other results remained the same (Table 30).

TABLE 30: RESULTS FROM LOGISTIC REGRESSION ANALYSIS AT HOUSEHOLD LEVEL (MODEL 21), CHAKARIA (1999, 2004, 2005)

Variables	**Membership status of health card scheme (yes=1; no=0)**		
	Co-efficient (S.E.)	**z (p value)**	**Odds ratio (95% CI)**
Constant	-5.099	-19.80	0.01
	(0.257)	(0.000)	0.00-0.01)
Household size	0.085	7.72	1.09
	(0.011)	(0.000)	(1.07-1.11)
Sex of main earner	0.185	1.25	1.204
(binary – 'female' is ref cat)	(0.148)	(0.213)	(0.900-1.611)
Socioeconomic status	-0.547	-7.58	0.58
(binary – 'better-off' is ref cat)	(0.072)	(0.000)	(0.50-0.67)
Village has VHP?	1.644	15.62	5.18
(binary – 'no' is ref cat)	(0.105)	(0.000)	(4.21-6.37)
Any NGO membership in HH?	0.207	3.15	1.23
(binary – 'no' is ref cat)	(0.066)	(0.002)	(1.08-1.40)
HH category based on total number of children under the age of 5 years: (categorical-'no HH member under the age of 5 years' is ref cat)			
HH with 1 child under the age of 5	0.101	1.17	1.11
	(0.086)	(0.242)	(0.93-1.31)
HH with 2 children under the age of 5	0.171	1.77	1.19
	(0.096)	(0.076)	(0.98-1.43)
HH with 3 or more children under the age of 5	-0.007	-0.05	0.99
	(0.133)	(0.959)	(0.76-1.29)
Presence of pregnant women in HH	-0.087	-0.98	0.92
(binary- 'no' is ref cat)	(0.090)	(0.328)	(0.77-1.09)
Mean household education	0.182	14.04	1.20
	(0.013)	(0.000)	(1.17-1.23)
Mean household age	-0.013	-2.64	0.99
	(0.005)	(0.008)	(0.98-1.00)
			Test
Overall model significance			
Wald $\chi2(11)$			579.51***
Likelihood ratio test $\overline{\chi2}(01)$			100.61***

Note: ***= significant at 5% level; **= significant at 10% level, ns= not significant; HH=Household

SUMMARY FINDINGS:

The following table (Table 31) provides a snapshot of the 21 models that were run as a part of quantitative analysis.

TABLE 31: SUMMARY TABLE OF VARIABLES INCLUDED IN EACH OF THE MODELS

List of Independent Variables	**Model no. (year)**					
	1 (1999)	**2 (1999) 7 (2004) 12 (2005) 17 (1999,2004,2005)**	**3 (1999) 8 (2004) 13 (2005) 18 (1999,2004,2005)**	**4 (1999) 9 (2004) 14 (2005) 19 (1999,2004,2005)**	**5 (1999) 10 (2004) 15 (2005) 20 (1999,2004,2005)**	**6 (1999) 11 (2004) 16 (2005) 21 (1999,2004,2005)**
	Individual level	Household level	Household level	Household level	Household level	Household level
Household Size	√	√	√	√	√	√
Sex of main earner	√	√	√	√	√	√
Socioeconomic status	√	√	√	√	√	√
Village has VHP?	√	√	√	√	√	√
Any NGO membership in household?	√	√	√	√	√	√
Any child under the age of 5?	√	√	×	√	×	×
Total number of children under the age of 5	×	×	×	×	√	×
Household category based on total number of children under the age 5	×	×	×	×	×	√
Any pregnant woman in household	√	√	√	√	√	√
Mean household education	√	√	√	√	√	√
Mean household age	√	√	√	×	√	√

The results from the 21 models run are summarized in the following table (Table 32) to provide an overview of variables that had significant influence on membership of health card scheme in each of these models.

TABLE 32: SIGNIFCANCE OF IMPACT OF INDEPENDENT VARIABLES ON MEMBERSHIP OF HEALTH CARD SCHEME

Year of survey (level of analysis)	Models	Independent variables										
		HH size	Sex of main earner	SES	Village has VHP?	Any NGO membership in HH?	Any child<5 yrs ?	Total children< 5 yrs	HH category based on total children < 5yrs	Any pregnant woman in HH?	Mean HH education	Mean HH age
1999 (individual level)	Model 1	***	NS	***	***	***	***	-	-	NS	***	NS
1999 (household level)	Model 2	***	NS	***	***	***	***	-	-	NS	***	NS
	Model 3	***	NS	***	***	***	-	-	-	NS	***	NS
	Model 4	***	NS	***	***	***	***	-	-	NS	***	-
	Model 5	***	NS	***	***	***	-	NS	-	NS	***	NS
	Model 6	***	NS	***	***	***	-	-	*** for upto 2 children<5 yrs in HH NS for 3 or more children<5yrs in HH	NS	***	NS

Year of survey (level of analysis)	Models	Independent variables										
		HH size	Sex of main earner	SES	Village has VHP?	Any NGO membership in HH?	Any child<5 yrs ?	Total children< 5 yrs	HH category based on total children < 5yrs	Any pregnant woman in HH?	Mean HH education	Mean HH age
2004 (household level)	Model 7	***	NS	NS	***	NS	NS	-	-	NS	***	NS
	Model 8	***	NS	NS	***	NS	-	-	-	NS	***	***
	Model 9	***	NS	NS	***	NS	***	-	-	NS	***	-
	Model 10	***	NS	NS	***	NS	-	***	-	NS	***	NS
	Model 11	***	NS	NS	***	NS	-	-	** for 2 or more children<5yrs in HH NS for 1 child<5yrs in HH	NS	***	NS
2005 (household level)	Model 12	NS	NS	***	***	***	NS	-	-	NS	***	**
	Model 13	***	NS	***	***	***	-	-	-	NS	***	***
	Model 14	NS	NS	***	***	***	***	-	-	NS	***	-
	Model 15	NS	NS	***	***	***	-	**	-	NS	***	NS
	Model 16	NS	NS	***	***	***	-	-	NS	NS	***	NS
1999, 2004, 2005 (household level)	Model 17	***	NS	***	***	***	NS	-	-	NS	***	***
	Model 18	***	NS	***	***	***	-	-	-	NS	***	***
	Model 19	***	NS	***	***	***	***	-	-	NS	***	-
	Model 20	***	NS	***	***	***	-	NS	-	NS	***	***
	Model 21	***	NS	***	***	***	-	-	NS	NS	***	***

Note: ***= significant at 5%; **=significant at 10%; NS= not significant; HH=household; SES=socioeconomic status

As we can see from Table 32 the 21 models that were run to observe the effect of the socio-economic and demographic variables on the decision to enroll into the Chakaria health card scheme showed a few salient patterns. From the nine independent variables that were included in our analysis we found that two, namely existence of Village Health Post in the villages and mean level of household education, continued to have statistically significant impact on membership decision across all the survey years and over the 3 year time period as evident from the panel data analysis. This leads us to conclude that these two variables impact the decision to enroll irrespective of time and variation in models.

Membership at the health card scheme increased with increasing household size. Larger households were significantly more likely to join the scheme compared to the smaller ones. Travel time and cost influenced decision to enroll as reflected by the significant positive impact of presence of VHP within the villages where the households are located. Among the socioeconomic characters, mean household education had positive influence on enrollment where households with higher mean education were more likely to join the scheme compared to households with lower mean education.

Household size was found to have significant effect on membership in 1999 and in 2004 and in panel data. However, the effect was not significant in the year 2005. Two other variables showed significant influence on membership status in both 1999 and 2005 and also over time as found in panel data. These variables were socioeconomic status of the household and membership at any NGO development program. Poor households were less likely to join the health card scheme compared to the better-offs and households with NGO membership were more likely to join than their counterpart. However, none of these variables showed significant impact on membership in the year 2004. The fact that SES did not have significant influence on membership in 2004 indicates that in 2004 there were no differences in membership based on SES. This could be a result of the additional effort that was taken in 2004 in Chakaria to boost up membership of health card scheme. As a result households from all SES joined the scheme and the SES difference was minimized.

Among the other variables 'presence of children under the age of five in household' did not show any consistent impact throughout the years except for 1999 when it had significant impact for all the models. Presence of pregnant women, mean household age, and sex of main earner are the three variables that did not conform to our hypothesis as they showed almost no statistically significant impact on decision to enroll. The fact that in Bangladesh over 90% of the pregnant women has home delivery could be an explanation behind safe motherhood services not encouraging enrollment. Sex of main earner on the other hand did not influence membership as expected. The very low share of female main earner (only 4.5%) could be a reason behind this result.

Based on the findings that evolved from our 21 models one could easily understand the multi facet nature of the demand-influencing factors of MHI. The factors are a mix of both direct and indirect determinants of micro health insurance. Factors that are not necessarily determinants of demand for any insurance mechanism have been found to influence decision to enroll. This indicates the importance of paying attention to factors that are not determinants of any financing mechanism but could be related to the client's characteristics regarding preference for certain services or providers. Its only when we incorporate all these factors in designing MHI schemes will we be able to increase enrollment and satisfy the 'law of large numbers' which is the basis of sustaining any insurance scheme.

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CHAPTER 6: PROSPECTS AND CHALLENGES OF MHI IN RURAL BANGLADESH: FROM THE EYES OF CONSUMERS, PROVIDERS AND POLICY MAKERS

One of the objectives of my thesis was to explore the various dimensions of the market for MHI in Bangladesh with a holistic approach. In particular, the study synthesized qualitative data from the three major actors in the market for micro health insurance (MHI) in Bangladesh. These include, community members who form the client base for an MHI scheme, the program people in charge of designing, implementing and troubleshooting schemes to ensure acceptability, access and sustainability, and lastly the policy makers validating the relevance, need and adoptability of MHI schemes for attaining the ultimate goal of 'health for all' in Bangladesh (1, 2). A number of distinct themes evolved from the discussion with the respondents in each of these three groups. The current chapter gives a synopsis of these themes from the interviews. The findings presented in this chapter have evolved from the indepth interviews with the community members and the key informant interviews carried out with the program personnel and the policy makers.

For community perception regarding MHI, indepth interviews with members as well as non members of the Chakaria health card scheme (1998-2005) were conducted. Even though the scheme seized operation in 2005 people were able to give information on the reasons behind their interest in the scheme or non-interest for that matter. The scheme being one of its kinds at that time in the area helped people to recall information easily. Through these interviews we tried to investigate the factors that influence people's decision to join MHI schemes in general and in Chakaria in particular. Engaging MHI members for longer terms, i.e. getting people to renew membership, has been a major challenge for sustaining such schemes in developing countries (3). Therefore with these interviews we tried to focus on factors that resulted in people to discontinue membership. Complementing the information relating to the Chakaria scheme we also presented a hypothetical scheme (Table 33) in front of the respondents using a vignette method (4) to see their present state of thought regarding MHI.

Information on preference between health service provision under the government system and the system under insurance mechanism was also collected.

Table 33: Hypothetical MHI scheme

Benefit type	Service	Cost	Payment mechanism	Benefit ceiling (1 USD=Tk. 84, 2012 est.)	Premium (1 USD=Tk. 84, 2012 est.)
Out-patient services	Consultation at designated health centres	Free of charge	No point of service payment	Maximum of 6 members per household per year is covered under the scheme Benefit ceiling of Tk. 54,000/ household/ year And individual household member ceiling of Tk. 9,000/ household/ year	Tk. 1000/ household/year
	Diagnostic tests	20% discount on market price	Patient pay 80% of the price out-of-pocket		
	Medicine	20% discount on market price	Patient pay 80% of the price out-of-pocket		
In-patient services	Hospital stay, operation, medicine and diagnostic	No out-of-pocket expenses for costs not exceeding Tk 9,000/ individual/ year	Patients pay costs exceeding the ceiling		

For program perspective we interviewed six staff members who were involved with the Chakaria health card scheme during its operation. Opinions were sought regarding the challenges they faced in implementing the scheme and introducing a new concept like insurance in a remote rural area of Bangladesh, the innovative techniques they adopted to get buy-in from the villagers, factors that helped or hindered operation of the scheme, skilled that they felt the need for to run such a scheme.

The policy perspective for health insurance (micro health insurance or national health insurance) in Bangladesh was assessed from views of five high officials involved in health policy making in Bangladesh based at the Ministry of Health and Family Welfare and the Director General Health Services within the ministry. They were asked to express their personal views regarding the scope of introducing a social health insurance as an alternate health financing mechanism

for Bangladesh, the pros and cons of introducing such a mechanism, the related legal aspects, and finally whether an insurance mechanism can make the health systems of Bangladesh, a low-income country, more efficient. Detailed methodology for the qualitative data and its analysis can be found in chapter 2.

The findings in this chapter will be presented in three separate sections: the first will focus on the opinion of the community members, the second on the findings from the interviews with the program people and third on the views of the policy makers.

COMMUNITY PERCEPTION ABOUT MICRO HEALTH INSURANCE AND IMPLICATIONS FOR MHI: FINDINGS FROM CHAKARIA

UNDERSTANDING OF MHI

Fifteen out of 40 respondents had no understanding about micro health insurance. The level of understanding was greater among the better-off[1] households. Among the 15 households who did not know what health insurance was or how it works 9 were poor households and the rest were better-off households. Those who had some degree of understanding regarding what an MHI scheme is and how it operates described it as a mechanism where people pay in advance to secure future healthcare. In expressing their understanding of MHI the respondents said:

"There is no guarantee of future. Anyone can get sick any time. So even if we have to pay something now this will secure our health for future. And this will reduce our cost of treatment in case of major illnesses."

"Good health is not a certain thing and MHI can cover this uncertainty."

"We are not sure whether there will be any natural calamity, still we store food for those difficult days. Why? Because we want assurance for our future and we want

[1] Households were categorized into two socioeconomic groups based on involvement of any of the households members in selling menial labour. Households who had atleast one member engaged in menial labour was categorized as poor and whose who had no members engaged in menial labor was categorized as better-off.

to avoid the risk of starving. To me this is what micro health insurance is. It is insuring against future financing risks resulting from illness."

Some are aware of the fact that in MHI people pay premium irrespective of their health condition at the time of payment and this in exchange covers their healthcare cost when they get sick and require healthcare. People saw MHI as a system where one can take care of a large amount of healthcare cost, which is termed as catastrophic cost of illness in literature, with a comparatively lower contribution (i.e. premium). As one of the household member puts it:

"MHI is of great help in case of major illnesses. This is because the premium will then cover a large amount of treatment cost."

Some were aware of the fact that in MHI people get treatment whenever they fall sick but on the other hand they would get nothing in exchange of the premium if they do not require healthcare. One of the respondents puts this in a very interesting manner. To her:

"MHI is like a lottery. Sometimes one can get 50,000 Tk by investing only 2,000 TK and sometimes one will get nothing out of this 2, 000 Tk."

Some were even happy to think of this premium as a donation in case they don't need healthcare during the insured period. To them: *" We have to sacrifice small things in order to get greater benefit."*

"It will benefit either me or my neighbour. It is the same to me."

Some of the respondents expressed that in MHI villagers together with each other make an arrangement for healthcare. It is a system that will work when a group of people agrees to buy into the scheme. It can not operate with only one or two members.

Some households described MHI in terms of its advantages. They could understand that once they pay the premium they don't have to worry about treatment related expenses even when they have no savings to pay for it. To them MHI eliminates the need for sudden additional cost to cover healthcare expenses. For majority of the households in the villages of a low income country

like Bangladesh having this additional fund available at all time is not common. In most cases this cost has to be recovered by withholding regular household expenses or by taking out loans.

Respondents define premium as a onetime payment that secures healthcare for the rest of the year. To their understanding MHI gives access to quality healthcare on time at a lower cost. According to one of the respondents:

"MHI is like advance payment for treatment at any time round the year."

Those who were not so much aware of the term health insurance and its mechanism saw it as a means of gaining access to quality healthcare. As they trust the provider organization (i.e. ICDDR,B) they knew that health centres operated under the supervision of this organization will be of good quality. People also calculated that the premium they have to pay to cover their entire household will most likely be lower than the amount they would have to pay taking care of a few episodes of illness of the household members. Some respondents expressed that:

"MHI will help people, it might not always be me but it will be someone living close to me"

BENEFIT OF MHI

People were asked whether they expect MHI to be beneficial for them. The reasons behind their thoughts were also looked into. Sixteen households thought MHI to be beneficial for the health of their family. Majority of the respondents who had a positive thought about MHI were from better-off households (12 vs. 4 households). Some of the respondents agreed that MHI will help them to gain access to quality healthcare at all time. However, their ability to pay for premium constrained their willingness to join such schemes.

Again the trust in provider organization played an important role in the way people thought about MHI and its benefits. Its only because they trust ICDDR,B

(the organization that would operate the MHI scheme in Chakaria) they thought MHI would be beneficial in terms of getting proper healthcare and they believed that they would get the value for money if they invest in schemes operated by ICDDR,B.

Reduction in uncertain household expenditure, access to quality treatment at all time, securing future healthcare, elimination of the need to borrow to pay for catastrophic healthcare cost, minimizing healthcare cost, having a fixed and known place for treatment, were among the benefits of MHI mentioned by these respondents.

On the other hand 4 of the respondents thought MHI can be of no use to them. They were not willing to buy any MHI scheme to avoid the risk of losing their money. They preferred paying for healthcare as and when needed to avoid any uncertainty associated with insurance packages. Others thought they would not be able to reap any benefit from the scheme as they will not be able to afford the premium. Some respondents preferred to be treated by doctors practicing in the city and therefore if MHI doesn't cover their choice of provider then it would not be beneficial for them. The rest had no opinion on whether MHI can benefit them in any ways.

Willingness To Join MHI Schemes And Reasons Behind

Willingness to join MHI schemes and the reasons behind was assessed with the help of the hypothetical scheme (Table 33) mentioned above. Securing family's future good health, minimizing healthcare cost, eliminating the need to borrow money to pay for sudden catastrophic cost, access to quality healthcare, were among the most frequently mentioned reasons for people willing to insure themselves. The respondents said:

"This will secure our future by taking care of our health"

"We wont have to sell our assets or take loan when we need treatment"

Some respondents also mentioned that with MHI they will not need any cash at the point of service and this will ease access to treatment. As the villagers of

Chakaria were exposed to the health card scheme during 1998-2005, their responses were very much influenced by their previous experience. Some of the respondents willing to join MHI scheme mentioned issues like transport cost, pediatric treatment, availability of medicine at discounted rate, reduced need for accompanying person for patients, as additional features that would attract them to the scheme. They knew that the health centers through which ICDDR,B is planning to operate the MHI scheme will be placed within the boundary of the villages. This will reduce the transport cost and the need for accompanying person when any of the family members need healthcare. This indicates that although these issues are not necessarily associated with MHI, they can play a vital role in making MHI accessible and attractive to the villagers and therefore need to be catered-for for the scheme to be successful in a developing country setting. Some respondents wanted to join simply because they trusted the provider organization and believed that whatever service they would provide would be of superior quality.

One of the respondents said:

"The healthcare center can also provide us with information as we are not aware of which place to seek treatment from in times of need."

"We will have fixed doctors which will make things easier. The doctors will know me and I will know the doctors. Will have trust on the doctors."

As membership of the hypothetical scheme was described to be at household level larger households showed more interest in joining the scheme for obvious reasons. This might give rise to moral hazard given that the provider doesn't have a built-in mechanism to counter this market failure. As one of the respondents said:

"Our family size is large and MHI will reduce our healthcare cost"

There were respondents who were willing to join in principle. But they knew that they will not be able to pay for the whole amount of premium at a time. Some even suggested that if the scheme offers payment of premium in

installments it would be accessible to many other households who otherwise will not opt for it.

On the other hand there were people who were not willing to join MHI schemes. Affordability of the premium came out to be the major reason for people not willing to join. Villagers from lower socioeconomic strata tend to depend on spiritual will and power for their day to day life including their healthcare. This is mainly due to the lack of additional fund to pay for these services. For them making both ends meal for the family is what matters the most. As the respondents puts it:

"As we have little money it is better for us to pay for healthcare only when we need it. It is difficult for us to pay the premium at a time. If we are in trouble and don't have money we will still be able to manage by borrowing from someone to pay for treatment."

"Other expenses like kid's education come first. Securing future health is not our priority"

"Allah will look after us when we get sick. We will manage somehow." (Depending on spiritual power as they can not afford to pay in advance for healthcare)

A few respondents were doubtful about how these schemes work and how their invested money is going to be utilized. They said:

" If I think the provider will cheat me then I wont join."

Another respondent said:

"I don't trust this type of schemes. I don't know what they will do with my money"

Some of the respondents were simply not comfortable with the health financing mechanism under MHI where people have to pay in advance for healthcare and return to this fund is not guaranteed. Some of the families did not experience any major illness so far and thus were not concerned about catastrophic healthcare cost. They count on their healthy state and thought that they will pay for healthcare if and when needed.

CONTINUING MHI MEMBERSHIP

For majority of the MHI schemes in developing countries high dropout rates have been a major threat to sustainability of the schemes. Even if the schemes succeed in attracting people from the various socioeconomic strata, many a times they fail to keep them interested in the scheme and renew membership. In our questionnaire we tried to investigate factors that would make people hold on to their membership year after year in the proposed scheme. In other words, we were trying to find which features of MHI ensure the right value for the money invested and therefore encourage people to continue insuring themselves with the same provider. As it turned out from the responses recorded quality of treatment and the qualification of the doctors were among the major concerns of the villagers. People prefer schemes that give them access to qualified healthcare provider and quality treatment no matter what the financing mechanism might be. To them if they insure themselves then the scheme must give them access to 24 hour medical services.

"The payment is not what we will worry about, treatment has to be effective. We will see whether the treatment is curing us or not."

It was observed that villagers want to fulfill their requirements that are not satisfied at the public healthcare centres. At public services doctors don't allow adequate time for consultation due to patient load, shortage of manpower and their behaviour towards the patients is not always acceptable (5). As a result people long for places where they will have enough time on consultation and where they will be treated with respect. This is reflected in the response regarding features of MHI scheme that would make them hold on to the membership.

Respondents also talked about shortages of medicine supply which is a common phenomenon at the public healthcare centers. Therefore people would like to attach themselves with schemes that ensure availability of necessary medicines at all times. Finally majority of the respondents said that the scheme has to keep its promise. The benefits that are mentioned in the MHI package should be real and not for the sake of attracting clients. As the respondents put it:

"Their word and work has to match"

"We will observe whether they were able to keep all their promises or some of their promises or none of their promises"

As mentioned earlier very few respondents were exposed to the concept of MHI and many are not comfortable with the fact that they would have to pay for services in advance and in the event of no illness in the family their invested money will not be returned to them. Some of the respondents said they would renew membership only if they get services in return otherwise they will quite. One of the respondents said:

"I will renew membership only if I or my family get treatment. I have to get service equal to the money invested."

Responses of some of the people from poorer SES were:

"If we don't require healthcare during the one year we wont renew membership"

" if we had money then we would have been happy to see others getting services even when we are not getting any out of it."

This shows that even if people prefer healthcare financing through insurance mechanism, lack of available fund to pay for premium holds them from being a part of it or reaping any advantage out of such schemes.

Necessity Of MHI Schemes In Provision Of Quality Healthcare

Twelve better-off households said MHI is necessary for provision of quality health service in Chakaria. Eleven respondents from the poorer households said MHI is necessary. However their opinion was only in principle. In reality they thought MHI might not be good for the poor people mainly due to their affordability. Two of the respondents from the better-off households said MHI will not be useful. The rest of the respondents from both the SES were either not

sure or not willing to comment on the necessity of MHI for healthcare provision in Chakaria.

As mentioned earlier most of the respondents don't understand what MHI is or how it's financing mechanism works. Some said MHI is necessary because the health centres through which it will operate will be nearby. What they really thought of when we talked about MHI is that the provider will setup a health center, equipped with qualified healthcare personnel, that is close to them and that will ease access to quality treatment on time. The opportunity cost of getting treatment (transport cost, lost wage and time etc) is what the villagers prioritize not so much the mechanism behind the provision of health service. This is even more explicit when we investigate the responses of those who identified MHI as necessary for healthcare provision in the area. The reasons mentioned are mostly to do with quality of treatment, access to treatment and the like and not with the efficiency of healthcare financing under MHI. Some of the responses are noted below:

"There is no added benefit when we pay in cash without insurance. MHI offers discount and other benefits. But the premium must be kept at a reasonable amount"

Some said MHI is necessary, as with this arrangement their purchasing power will enable them to demand for quality health services. Unlike the public health centres all members of the scheme will be treated with equal importance and care.

"We will have a fixed place for treatment where we will be treated with respect."

To some MHI will ease utilization of hospital services, as the scheme will have contracts with local and central hospitals.

"The insurance provider will have a deal with the hospital. This will make hospitalization easy for the insured. Utilizing hospital services will be hassle free."

Some identified MHI to provide the opportunity for the better-offs to get involved in social services as the premium they pay will help others even if it doesn't help themselves. To them, in any case if there is an emergency in a poor

family of the village the better-offs have to contribute in managing the fund for treatment. With MHI this will be done in an efficient manner. One of the respondents said:

"There will be a pool of fund that will help everyone in time of need. If for nothing else, we should join the scheme for the sake of social service "Jonokolyan".

According to some MHI will reduce the necessity for emergency fund to pay for healthcare and most likely will reduce healthcare expenses.

"Health insurance will take care of the high treatment cost which otherwise we have to bear. Now we don't have to pay that much"

"if we don't have MHI we will end up spending a lot more for healthcare in the event of a major illness in the family"

Some of the respondents who thought MHI can be beneficial and is necessary to provide quality healthcare also had concerns regarding resource allocation:

"....However if the doctors are not available on time and we don't get the benefits as promised this will be of no help"

On the other hand according to some of the poorer households:

" it (MHI) will only be beneficial if we have money to pay for premium. Otherwise we wont get any benefit out of it."

"It will also be good for those who are wealthy or have enough money to put aside for health in advance"

"MHI is not good for poor people. They are better-off paying when it is needed (nogode). They will somehow manage the money for treatment in times of emergency, be it by borrowing or by taking out loan"

Some were not sure if MHI is a better option for healthcare provision in the area. They would rather wait and observe its operation for sometime before they comment on its usefulness.

"Not sure whether this will ensure quality treatment. After some years if we see it to succeed then we will believe in it."

Some respondents opted not to comment on this, as they had no understanding of MHI.

CURRENT GOVERNMENT FINANCING VS. FINANCING UNDER MHI

Again responses were not so much about the financing mechanism or the technical management of health service under the two systems. For many, preference was more towards anti-government services (24 out of the total 40 respondents). The public system is not fulfilling their demand and thus they would like to opt for an alternate source of healthcare. Those who preferred MHI over public healthcare (23 out of 40) mentioned that utilizing healthcare services under the public system is a hassle for most of the people, particularly for patients belonging to the lower SES. With very high patient-doctor ratio there is always a long queue to get treated at government facilities. On top of this, absenteeism is a common feature among the doctors and staff at the public health facilities. Doctors don't have a fixed time of availability and all these make healthcare utilization time consuming. As the respondents said:

"Time is money. It's important to save time"

"....But with government services we have to queue up for a long time to get treated"

"it takes thrice the time than normal to get treated (at the government facility)"

Furthermore, with inadequate supply of medicine and human resource crisis the public healthcare suffers from corruption where under the table payment is a common practice in accessing most of its services. Some of the respondents also mentioned MHI will reduce the need for cash at the point of service. Public healthcare although is suppose to be free of cost at the primary level, it actually involves illegal payments at various stages as stated by the respondents. People

are not satisfied with the quality of treatment and even though the medicine is suppose to be provided free of cost most of the time the patients have to buy them from outside. Even when free medicine is available it is not of adequate quantity. They add:

"With government service there is under the table payment. It requires more time and the doctors are not there all the time."

"....when we need to get admitted, the admission is free but it involves other illegal payments and that increases cost."

"We have to pay extra (bribe) to get treatment."

"They (staff at the public health centers) don't give the complete dose of medicines even if they have stock"

"You are lucky if you can get medicine from a government health center"

"They only provide immunization, vitamins and family planning services."

However, many of those who preferred to have MHI for healthcare provision mentioned that the process has to be honest and transparent for them to have trust on the providers. Some even said:

"If it (public health service) was properly functional then we would prefer government service."

Public healthcare, on the other hand, were preferred over MHI by 3 of the respondents. Some of the respondents thought MHI will increase administrative difficulties and they will have to maintain proper documentation of their membership to get benefit out of the scheme. To them maintaining a card is troublesome. Also the respondents preferred not to have MHI as then they would have to pay in advance for healthcare and this money will not be returned to them in case they don't require healthcare. Some thought they are better-off using the public services and paying for healthcare as and when needed. Trust in insurance provider was also an issue for some. One of the respondents said:

"I don't trust the insurance people. I am not sure what they will do with my money."

One distinct feature was observed from the responses of the people from the two different SES. None of the respondents from the lower SES preferred government service. The 3 respondents who preferred government services over MHI were from the better-off households.

Fourteen respondents did not express their preference clearly. Nine among these 14 respondents expressed their frustration about government health service provision. However, they were not in a position to vote for MHI over government services due to lack of understanding and experience with MHI.

Findings On Chakaria Health Card Scheme

Reason for enrolment

Half of the respondents (20 out of 40) interviewed were members of the MHI scheme during 1998-2005. Among these 20 respondents 9 were from the lower SES. The interviews with the members gave information on the factors that attracted them to the scheme. Majority of the members (18 out of 20) said that they joined the scheme to receive quality treatment. They knew that the doctors were qualified and they could access healthcare without much delay. About one-third of the members mentioned no or low transport cost was another deciding factor as the healthcare centers were situated within the villages. It also made access to healthcare easy as any family member could visit the health center and there was no need for an additional person to accompany the patient in most cases. Eight of the members said that they had joined the scheme following their peers or being advised by other villagers and the volunteers of the scheme.

"Other villagers got membership. So I did too."

According to one-fifth of the members the health card scheme offered lower consultation fee and this reduced healthcare expenses for them. As the doctors were fixed and had built a good rapport with the villagers, for some this was a major reason to join the scheme. Acquaintance with the doctors and trust in

them made the villagers comfortable in utilizing healthcare at these health centres. The fact that the health centres worked as a one-stop facility for all the family members to access healthcare also helped in attracting people. Some also mentioned that availability of good quality medicine at discounted price helped them in completing treatment. Only one of the members mentioned that they became members to secure their future health need.

One of the members mentioned an interesting reason for his trust in the scheme. At times visitors from the foreign donor agency that funded the scheme used to come to Chakaria to monitor the progress of the scheme and its activities. This attracted people. As to them, visit of foreign people increases the importance of any activity in the villages.

"once a foreign doctor visited the health centers. So I decided to join the scheme"

This is a very common phenomenon in the context of the villages of Bangladesh where they rarely see people from outside the country. Therefore any affiliation of a program with a foreign country and its people makes the program lucrative to them.

BENEFIT TO THE PEOPLE

Respondents were asked what benefits they received from being member of the scheme. According to majority of the members (14 of the 21) the greatest benefit was that the scheme reduced their average healthcare cost accumulating from the lower consultation fee, provision of discount on medicine price and no or very low transport cost. Some mentioned that the health centres being nearby it gave them the option of accessing healthcare by any of the family members.

Access to quality treatment without delay was in the benefit list of 13 member respondents. Members also accrued benefit from the relationship they had with the doctors and other staff. The patients were known faces and were treated with respect at the health centres and this was a valuable feature of the scheme

according to many of the members. They also mentioned that having a health card made access to healthcare convenient as this ensured that their history of illness was recorded.

"With card we were treated as regular patients at the centers and this gave us added advantages "puran roogi, beshi shubidha"

Their trust in the doctors resulted in trusting the treatment they were receiving. One of the respondents said:

" I could rely on them in case of emergency."

Some said the scheme reduced the need for cash at the point of service. Treatment was guaranteed for people with or without money. One of the respondents mentioned that availability of consultation and medicine at a single place was very convenient for them. Also the fact that treatment was available for family members of all age group was an added advantage. The health centres provided safe motherhood and delivery services and also pediatric treatment, which were mentioned as benefits under the scheme.

However, 4 of the members mentioned that they could never reap any benefit from the membership of the health card due to the fact that the doctors were available at the health centers only twice a week for half a day. These members required treatment after hours and therefore had to consult other doctors in the city.

REASON FOR NOT JOINING

The highest response (7 respondents) in expressing reasons for never enrolling into the scheme was that people were healthy and they did not feel the need to pay in advance for healthcare. Six of the respondents mentioned that they preferred to consult doctors practicing in the cities and they had greater trust in them. They were not sure about the quality of the doctors who were providing services under the health card scheme. Some (two of the respondents) pointed out the unavailability of health service round the clock as the reason for them not

to enroll. Some thought that the health centres were good for pediatric treatment and as they had no children they were not interested to join. Village doctors are a popular option in the villages of Bangladesh and the villagers in most cases have very strong rapport with them (6-8). This was reflected in the responses as some mentioned that they preferred accessing treatment from village doctors to treatment from the doctors providing healthcare under the scheme. As the health centres provided primary healthcare, some of the respondents preferred self-medication in taking care of minor illnesses and they relied on the drug stores from where they could purchase their choice of medicine. It should be mentioned that Bangladesh having no strong regulation on authority to sell prescription medicines people can buy any medicine from the drug stores (9). A few of the respondents expressed that they were simply reluctant in joining any such schemes and therefore were unaware of its activities and benefits as such.

DISCONTINUATION OF MEMBERSHIP

Twelve of the members continued their membership for more than one year. The rest nine members opted out of the membership of the scheme. This was due to the fact that people expect to get benefit out of the premium they pay for insuring themselves and in the event of non utilization of healthcare during the specific time period they take it as a loss. For many in a developing country setting this investment is unaffordable. As mentioned by some of the respondents who did not renew membership

"Other household expenses get priority over paying for healthcare in advance. I cant afford to pay and lose the money if I don't need healthcare."

Five of the respondents said that as they did not need treatment to the extent they expected they discontinued membership. The human resource constraint of the scheme also averted people from continuing membership at the scheme. As three of the respondents mentioned that the non availability of doctors at all time was the reason for them not to renew membership.

PREFERENCE BETWEEN HEALTH SERVICE WITH OR WITHOUT HEALTH CARD

People were asked whether they would prefer a health service system with health card or not. According to half of the respondents the health card scheme provided better health service compared to the other available options of health services. Reason for preferring health card scheme was similar to the factors that attracted people to the scheme at the first place. To the respondents health card scheme reduced their overall healthcare cost by means of lower consultancy fee, discounted medicine price and reduced transportation cost. They also mentioned the lower opportunity cost in accessing healthcare from the Village Health Post as one of the beneficial aspects of the scheme. As the health centres were nearby the patient in most cases did not require an additional person to accompany him or her. And in that case income earners did not have to forego wages to arrange for treatment of their family members. Also there were no delays in receiving treatment and on time treatment saved expenses which otherwise would have accrued in terms of lost income and time. The issue of patients being treated with respect irrespective of their SES was a source of attraction for many. They said as they had a fixed place for treatment and they owned the card the doctors and staff could recognize them right away.

"if I have a card there is no additional hassle. The doctors know me. It makes getting treatment easier."

This was valued highly by the villagers who most often are deprived of proper behavior and adequate consultation time at other healthcare centers, particularly at the public health centers where primary healthcare is suppose to be free for all.

The respondents also mentioned a very useful aspect of having a fixed and known place for treatment. They said that majority of the villagers are not aware of proper places for treatment of the various illnesses they experience. The VHPs acted as sort of an information hub. People could consult with the doctors at the VHPs about where to seek higher level healthcare in case the illness was not

managed at the VHPs. This saved them from repeated visits to various providers before they could access the right kind of treatment.

Those who did not prefer healthcare under the health card scheme showed concern regarding the resource constraint of the scheme, particularly the availability of doctors for a very limited time every week. According to them

"It is not guaranteed that I will get sick the day the doctors are here."

Respondents who did not prefer the idea of paying in advance for healthcare voted against the health card scheme. To them it is better to pay for healthcare as and when needed. Respondents who considered themselves healthy and free of any diseases preferred not to go for any scheme where they need to pay in advance.

One of the respondents said there is no need for any scheme what we need is access to quality treatment and qualified doctors. As he puts it:

"If the doctors are good we don't need any special scheme. Schemes don't add any benefit"

Fourteen of the respondents were either not sure or not in a position to comment due to their unawareness about the benefits of the scheme. These respondents mostly included people who never became members of the scheme. According to some of these respondents they would prefer the system that provides them quality treatment, be it under the health card scheme or any other arrangement.

IMPLEMENTING MICRO HEALTH INSURANCE IN RURAL BANGLADESH: THE PROGRAM PERSPECTIVE

In order to understand the programmatic challenges and opportunities of implementing a micro health insurance scheme in a rural setup in Bangladesh the current study interviewed six program people who were directly involved with operating the scheme at the field level. In particular we tried to explore the

level of understanding about MHI and its mechanism amongst the program people, techniques used to explain MHI to the villagers who barely had any knowledge of health insurance and enroll them to the scheme, operational and programmatic challenges faced in implementation, their opinion on the importance of MHI or any other form of health insurance for delivering healthcare in Bangladesh and finally to their opinion what could have made the scheme more efficient.

Opinions were sought from project staff involved in all forms of operations including healthcare provision, marketing of the scheme, administrative functions including maintenance of client portfolio, transactions, organizational work including networking and organizing community groups; research related to monitoring and reporting of scheme performance and finally central management. All but one of the respondents was involved in the project during its complete span of operational, i.e. 1998-2005.

UNDERSTANDING OF HEALTH INSURANCE

HEALTH INSURANCE VS. OTHER FORMS OF INSURANCE

Questions were asked to explore how far the project people themselves understood the concept of health insurance and micro health insurance in particular. In doing so we asked them to distinguish health insurance from other forms of insurance.

The respondents viewed the difference between health insurance and other forms of insurance in terms of profitability of the insurance product and the nature and condition of benefit offered. According to the respondents, with health insurance health care is guaranteed whereas with other forms of insurance healthcare is not provided. On the other hand, with other insurance products benefit is guaranteed after a certain period of time (e.g. life insurance). However, with health insurance one only benefits when they get ill and no benefit is received in their healthy state. This might result in insured person

getting no benefit out of the premium they paid, while this is not the case for other insurance products.

One of the staff opined that if it were private health insurance then he/she would see very little difference between health insurance and other forms of insurance as all of them are for profit organizations. However, when it comes to micro health insurance there is the crucial element of community participation and ownership. Health insurance gives them a sense of right, ownership in the program and a right to decision making which he/she thinks is not offered by other forms of insurances available in the market. The other major difference identified was that micro health insurance is not for profit, it only covers the operational cost which is not the case for other insurance products.

HEALTH INSURANCE VS. SAVINGS

In many countries where health insurance is comparatively a new concept clients easily get lost between the mechanism of savings and insurance and as a result by the end of insurance period they expect a guaranteed return. Failure to explain the difference between the two to the clients would then result in serious misunderstanding and mistrust on the scheme. Thus we tried to explore whether this was carefully handled within the scheme. When asked about the difference between savings and insurance the project staff could easily distinguish the two. They said with savings one gets the money back for sure whereas with insurance you only get your money back once the incidence happens. Further they also added that with health insurance one gets a significant support in time of need. One interesting quote from a respondent was

"Insurance is like money with an expiry date"

EXPLAINING HEALTH INSURANCE TO VILLAGERS

The villagers not being familiar with the concept of health insurance, the biggest challenge for the program personnel were to get people to invest in health even when they are healthy. Furthermore, Bangladesh is a low-income country and

majority of the people in the rural areas struggle to make both ends meal. In the face of serious financial hardship paying the premium to insure against the risk of an uncertain health outcome is not easily understood. As a result the program people had to continuously look for innovative ways to explain the mechanism of the scheme and get more people interested to buy insurance. Techniques like using popular and already known concepts to explain micro health insurance was used. Instead of insurance the term that was used more commonly was 'health card'. People knew that with the premium they could buy the health card that would entitle their family with primary healthcare services at the designated health centres, namely the Village Health Posts (VHPs). At the time of operation of the scheme, the villagers were aware of the concept of life insurance due to the long presence of private life insurance companies and other NGOs offering life insurance in the area. The program people therefore also tried to use the example of life insurance and then add that unlike life insurance, micro health insurance does not promise guaranteed return. With health insurance the client will only receive benefit when they are sick and that also in terms of services. However, soon the staff realized that experience with insurance has not been very positive among the villagers and as a result the term 'health card' was more convenient to use.

Operational And Programmatic Challenges

Paying for healthcare while public healthcare is free

The program being first of its kind in the locality it was challenging for the program people to engage the villagers in any discussion about the initiative. People at the beginning expected that the health services would be provided free of charge. This is a result of the so called 'relief mentality' (10,11) that rooted from the development agencies' (e.g. United Nations, World Bank) assistance/aid during times of difficultly in Bangladesh where different services were provided free of charge. Getting people out of this mentality and actually pay for their own healthcare was a challenge even when the charge is minimal. In addition, public health service in the area was officially free. People used to question every activity related to the scheme. Extensive motivation programs had to be

designed to develop people's understanding and the necessity and benefit of insuring against the risk of ill health.

DISTANCE TO HEALTH CENTERS

The other challenge was distance to health centers from where the patients live. Even though, the health card was provided to the poor at a subsidized rate, only people living close to the health centers joined the scheme and used the health services.

SUPPLY INADEQUACY: HUMAN RESOURCE SHORTAGE

Human resource shortage was a challenge for the scheme. The available fund for the scheme allowed having only two physicians and the scheme had seven service centers covering a population of 140,000. For this the doctors were available only twice a week for half a day at each of these centers. Absence of round-the-clock availability of doctors, or at least every day of the week was a hindrance in attracting people to the scheme and retaining members.

COMPETITIVE MARKET FOR HEALTHCARE

The scheme faced competition from the village doctors who were available round-the-clock to the villagers and on top they used to provide treatment on credit. Even though the treatment provided through the scheme was from qualified physicians, villagers were inclined to take treatment from the informal healthcare providers (e.g. village doctors) mostly due to availability, familiarity with the provider and ease of payment mechanism. In addition some of the village doctors tried to convince people that the doctors at the VHPs are of poor quality as the services are being provided at a very low cost. They even said

"Low price means low quality"

CULTURAL AND OTHER COMMUNICATION BARRIERS

Some of the project staff were recruited from outside the locality. Chakaria, has a distinct culture and the dialect used is different from other parts of the country. Thus cultural adjustment and adapting to the local language and ways of communication was a challenge for some of the program people.

Lack of technical skill

The program people reported lack of trained personnel to perform the role of midwives, paramedics, pharmacists, and also lack of some specific skills like marketing, effective communication and motivation. The midwives and the paramedics were in fact local people trained at the health centers by the physicians. The training did not take place at any formal institute. One of the staff reported,

"We had lack of knowledge on proper marketing strategy and with no formal training it was difficult at the beginning to motivate the villagers to be involved with something new."

Package design

The scheme offered limited benefit which only covered primary healthcare. Not having any referral services covered by the scheme or laboratory services included in the package, was seen as a limitation by the program people to attract more villagers. As patients requiring secondary level care ultimately had to travel to other healthcare centers, they began to lose interest in the scheme.

Need of MHI for The Poor

Majority of the program people firmly believed that micro health insurance had the potential to help the poor. To them MHI can protect the poor from the adverse effect of financial catastrophe resulting from ill health. They opined that at time of need, the poor often have to sell valuable assets or borrow at high interest rates to pay for healthcare which brings further financial hardship. With MHI they will no longer have to arrange for such sudden payments and take drastic decisions like selling assets and the like. On the other hand, two of the staff thought that MHI can help the poor only when it can offer a subsidized package for them. One of them said,

"Micro health insurance can benefit poor only when the scheme is (financially) stable and is in a position to provide safety net for the poor".

So according to this staff, MHI can help poor at a later stage of scheme operation when it will have enough financial leverage to design a built-in subsidized package for the poor. One also suggested using flexible payment methods like paying premium in installment, to increase accessibility among the poor.

One of the staff pointed out that alongside subsidizing for the poor there will need to be enough cross subsidization which will ensure building an effective package. If the scheme is aimed to serve only the people with low ability to pay then it will end up being a poorly designed product and thereby get caught into a cycle where a weak financial base results in a poorly designed product and thereby not being attractive to the well-off.

NEED FOR MHI AND HOW IT SCORES AGAINST EXISTING SYSTEM OF HEALTH FINANCING

To some of the staff, MHI or some form of health insurance is necessary to ensure quality healthcare in Bangladesh. They believe MHI has the potential to reduce out-of-pocket expenses. They think that poor should have equal access to public and private services and that financial barrier should not hinder their access to quality healthcare. With MHI it is possible to design products that ensure access to quality healthcare at a rate affordable to the poor.

In comparing the existing revenue based health financing with health insurance some of the staff were skeptic about the level of acceptance of health insurance or MHI in particular, in the face of free public health provision. So even if they feel the mechanism under MHI to be efficient they are not sure how far it can attract the required number of people to keep the pool large enough for a sustainable model.

Some opined that it would have been better if we could have health financing through health insurance at the national level. But at the same time they doubt how far benefit will reach the needy. One of the staff said,

"MHI can act as complement to existing system of health financing"

According to one other staff the existing health financing system of the government is efficient which is visible from the achievements gained so far in health sector even with limited resources. However, he also added that health insurance can design its scheme in a way that has a built in incentive mechanism to attract better qualified physicians to the rural areas which currently is not the case. He thought using both the systems (current government financing and health insurance) in a complementary manner can prove to be efficient. He said,

"MHI can help raise additional fund and contribute in the total health expenditure of the country."

Level Of Skill Of Program People

Majority of the staff members felt that they did not have adequate skill to run such schemes. As mentioned above marketing techniques, motivational skill, actuarial calculation to arrive at a financially viable premium, were among the frequently mentioned expertise that the staff felt not competent in. They also felt the need for an active monitoring tool to prevent fraud and increase efficiency of the scheme.

Further, the staff members felt that they needed more theoretical knowledge on health insurance and its mechanism. Other areas of expertise mentioned by the staff members included management of primary healthcare, claim settlement, medicine dispensing.

Opportunities For MHI In Chakaria

The program people who were interviewed mentioned a few factors that made their job of convincing people to buy MHI in Chakaria easier. First and foremost, ICDDR,B had its existence in Chakaria for quite a few years before launching the health card scheme . The involvement of ICDDR,B in Chakaria was aimed at increasing community empowerment and it embedded the concept of self-help among villagers to improve their livelihood. The concept of self-help encouraged

the villagers to participate by own contribution. As a part of this initiative villagers were encouraged to work towards improving the status of their health. With technical support from ICDDR,B the villagers had established health centers and ICDDR,B assisted them by appointing physicians to serve these health centers. This was a major factor supporting introduction of health card in the area. According to the respondents, the villagers had a sense of ownership for the health centers from where the health card scheme was providing health services. The physicians at the health centers were also people they had known earlier and people who they trust. One of the respondents mentioned this trusted relationship between the community and ICDDR,B as a positive features of the scheme:

"The identity of ICDDR,B in the area was very helpful in convincing people. ICDDR,B gained popularity in the country through their ORS (Oral Rehydration Solution) programme"

In addition, a group of volunteers from the locality helped to spread the word around and convince people to join the scheme. The community health workers who took midwifery training from ICDDR,B also worked to convince people. Further, some of the staff members were from the locality making access to villagers easier for the team as one staff member said,

"As I was from the locality people were more comfortable talking to me and they trusted me."

The identity of ICDDR,B as a trusted organization therefore was a positive factor. Further, the transport system in the villages were not good during the time of the project and the health centers were constructed within the village boundaries bringing health service to people's doorstep. This attracted a lot of people to the scheme as then they would have the opportunity to get healthcare more conveniently at a reduced travel cost and time.

The package was financially beneficial as the consultancy rate was much lower than market rate and drug was also provided at a discounted price. In addition, the one stop service of consultation and drug made access to healthcare easier and cost saving. The benefit of midwifery services within the package attracted

more people towards the scheme. All these, according to the program people were opportunities that the health card scheme could bank on and thereby convince people to join the scheme.

MHI En Route To Universal Health Coverage: Policy Perspective

The opinions of the five policy makers interviewed as a part of our current study is presented in this section. The discussion mainly evolved around issue like acceptance of micro health insurance or a social health insurance as an alternate health financing tool for Bangladesh among the policy makers, readiness of health policy to embrace a new financing mechanism like health insurance, legal and other concerns regarding health insurance and its prospects and challenges in ensuring universal health coverage for Bangladesh.

MHI As An Alternate Health Financing Tool For Heath In Bangladesh: Is Policy In Favor?

When asked about whether the current health policy of Bangladesh is in favor of implementing health insurance, mixed opinions were expressed by the policy makers we interviewed. Those who thought health policy is in support of MHI or any form of health insurance for that matter were then asked to mention aspects of our health policy or health systems that they think are favorable. It is a fact that the health sector of Bangladesh suffers from insufficient resource to maintain a minimum standard of healthcare. Health insurance, to these respondents, can on one hand ensure increased resource through premium collection and efficiency through risk pooling on the other. As one of the respondent said

"Health insurance can increase resources"

Some also mentioned that the health policy of Bangladesh also gives hint about the necessity of health insurance although it is not elaborated in that particular document. The 2010 strategic paper of the government and the HPNSDP also mentions that resource in health is not enough to cover the expenses.

The respondents added that the public sector infrastructure for health in Bangladesh is very strong with facilities at the community level. This will be supportive if we wish to cover people at hard to reach areas. Without proper infrastructure and supply adequacy health insurance can not be successful.

The other factor mentioned is that the private sector is very strong in Bangladesh and some of our respondents thought that health insurance can make use of this sector to strengthen service delivery by out sourcing various services. Some opined that health insurance will contribute in reducing out-of-pocket expenses.

One of the respondents mentioned that Act 15 and 18 of health policy mentions that government is responsible to ensure healthcare for all in Bangladesh. The 6th 5-yr plan and the health policy all points out the scarcity of resources for which government alone wont be able to finance universal healthcare. According to this policy maker there is a need for alternate health financing mechanism and health insurance can be considered in this regard.

Respondents also mentioned that a health financing strategy is being planned for the country where health insurance will be provided for only the people living below the poverty line. The package will cover in-patient service only and the government will subsidize 100% of premium for these people. In a later stage there is plan to extend the services to include out-patient care and also cover rest of the population gradually.

Barriers In Implementing Health Insurance

Respondents who did not think health policy supports implementation of any form of health insurance mentioned that there not enough support for health insurance in the country and even within the government as of yet. At the user end people are not very accustomed to the concept of health insurance. In other words, the culture of insuring against the risk of ill health is widely missing in the country. They also had doubt about the financial capacity of the government to support such schemes at national level.

One of the respondent mentioned that the government of Bangladesh is planning to go for health insurance which will initiate its activities by covering people living below poverty line (BPL). Government is planning to subsidize the premium for the BPL population. This raises concern regarding available resource for health. The respondent added that whether this will put extra burden on the government budget is something we need to think about. Health insurance should not be a burden for the government.

Another concern mentioned was regarding the freedom to choose from providers available in the market. If people are allowed to choose any healthcare provider then they might opt for private healthcare providers as there is a pre existing preference for them in the market. This might take away demand from government health services, which is not what government would want. In such case, this will be a waste of resources. The respondent said

"We should put our efforts together to make the existing services more efficient and utilized."

There is concern on political ground that if the government starts charging premium then whether this will influence the ruling party's popularity. In addition, charging people according to ability to pay may create confusion and loss of support from people. Thus, the respondents were skeptic about whether government will want to continue doing this.

Furthermore to this the respondents mentioned that currently there is a program approach in carrying out public health services (TB program, EPI program, specialized hospital, high-tech hospital program, Family Planning program) in Bangladesh. One of the respondent raised the issue that when health insurance will initiate within government system whether this will take away resources from the different programs to fed the insurance system. Will the programs be then incorporated within the insurance mechanism or will the government carry on with both the approaches simultaneously was something we need to be clear about, said the respondent.

CAN MHI MAKE HEALTH FINANCING MORE EFFICIENT?

According to one of our policy respondents health insurance has the potential to use resources more efficiently given that it uses the right payment mechanism. He mentioned for example, Thailand uses a capitation method and India uses a case based payment mechanism. Bangladesh is thinking of using a case based payment method which will have 3 separate parts: hospital expenses, patient expenses and doctor's incentive. This is expected to make better use of resources. The incentive mechanism will encourage good behavior from the doctors which is currently lacking in our public health service provision. This mechanism is also expected to increase utilization and thereby make better use of resources.

Others mentioned that efficiency of health insurance will depend on a few factors. One of the factors is that whether services can be made accountable through this mechanism. At the same time the system has to ensure quality of care without which it will end up being a more expensive health financing mechanism.

One of the policy makers expressed that health insurance can make health financing more efficient as it has the ability to increase resource pool for healthcare and at the same time decrease out-of-pocket spending. However, overall economic structure has to be supportive. A social safety net to support the poor will have to be built in for health insurance to be efficient.

POLICY MAKERS PREFERENCE FOR MHI

All of the respondents thought that Bangladesh being a low income country, health insurance for this country must be one that protects the poor and provides them with a safety net. According to one of the respondents:

"Health insurance provides extra security for well-off people. So health insurance is not necessarily for them."

According to this respondents the well-off can always get their required health service in exchange of out-of-pocket expenses and this doesn't put extra burden on them. However, for the poor and needy when they are insured it can save them from an expensive medical bill and the financial catastrophe resulting from it.

Suggestions were made to privatize health insurance as government alone doesn't have the capacity to handle the complexities in operating an insurance scheme (e.g. claim settlement, service delivery etc.). Some also suggested that the program can start with including formal sector employees and make health insurance compulsory amongst them. Government can also think of collecting premium through general tax. For informal sector a different scheme considering their ability to pay and demand for services can then be designed.

Whatever form of health insurance is designed, it needs to be made sure that the benefit package is attractive among clients from all socioeconomic status and that quality of services is ensured. In ensuring quality of services the providers can also think of using a portion of the profit earned for facility improvement and incentive for the healthcare providers.

Response from the health economics unit of the ministry of health and family welfare mentioned that government currently is planning to experiment with micro health insurance scheme in a few *Upazilas* (sub-districts) and then with successful trial extend it to some form of social health insurance to cover all population of Bangladesh. The current scheme will cover only the below poverty line population with 100% subsidy on premium and will only provide in-patient services. Outpatient service and rest of the population will be included at a later stage during scale up.

POLICY/LEGISLATIVE CHANGES NEEDED TO INTRODUCE MHI

In principle health insurance is endorsed in government health policy of Bangladesh. However, the policy makers opined that an insurance Act including

specific laws on claim settlement, fee retention, local use of fund, finance authority to local government, etc. will need to be developed and enacted. The respondent from the health economics unit mentioned that the health insurance scheme under construction for the government will need to be accompanied by legislative changes to empower the hospitals to manage locally acquired money. This will eventually move towards hospital autonomy and delegate control over finance. He said *"All these will have to be brought under a specific insurance act which is currently missing."* Some did not want to comment on legislative matters as they said they did not have much knowledge on it.

Firm determination from the government will also be needed with regard to placing health insurance in the policy agenda along with its due importance, said one of the respondents. An independent body will have to be formed to oversee the activities of the insurance program which will include tasks like monitoring and regulating, identifying poor and other beneficiaries, fund management, MIS system. Institutional capacity will have to be built as well. One of the respondents mentioned the need for a managing authority, for example a national health security office, to look over the activities of health insurance mechanism. There is also lack of well trained people for health insurance in the country. A cadre of people will thus have to be trained for efficient operation of such a program.

One major issue raised was that, currently there is lack of coordination between the different ministries of the government (e.g. ministry of finance and public administration, ministry of health and family welfare etc.) and between the central and local government. This hampers smooth functioning for many development programs. Most of the policy makers we interviewed talked about this and suggested that there needs to be a mechanism to better coordinate and ensure efficient functioning of the programs. There will also need to be proper and effective coordination with the donor community for implementation of the insurance scheme country wide.

MHI And Its Benefit To The People

All of the policy makers believed that micro health insurance can help poor gain access to quality healthcare and protect them from financial catastrophe. But at the same time they emphasized on the need for a safety net program that will offer the insurance product at a subsidized rate (according to ability to pay) to the poor and ensure accessibility of the services. One of the respondents said that although a subsidized rate is required for the poor, it should never be free of charge as free service is often perceived to be of poorer quality. One concern raised was that if health insurance provides freedom of choice for healthcare providers then the whole sector may become private sector biased. Demand may shift significantly from public to private sector resulting in underutilization of public sector investment in health.

MHI And Its Contribution To Improve Quality Of Healthcare

Majority of the policy makers thought health insurance is necessary for improving quality of services in health. Some highlighted the need to increase resource to improve quality of care and the role of health insurance in it by saying,

"I believe health insurance is the only solution for Bangladesh. Currently only 3.5% of national budget is spent on health which has to be increased to 8% according to WHO recommendation in order to maintain quality of care. This increase in resource calls for an alternate health financing option and health insurance will be an effective solution in this regard."

Further it was mentioned that health insurance can bring in a healthy competition in the market given it provides freedom of choice for healthcare providers which will eventually encourage improvement in quality of services provided. On the other hand, introducing a provider incentive can also improve quality of services through health insurance as mentioned by the respondents.

While majority of the policy makers thought of health insurance to be a necessity in improving quality, one of them thought health insurance is not at all necessary for improving quality of health services. According to him,

"Health service can be made efficient and pro-poor and the quality can be improved without any health insurance. Health insurance is not the only solution and thus it is not necessary."

Another respondent said "Health insurance is not the only thing that can help improve quality of services. It is one of the tools to improve service delivery. Quality is multi facet and accessibility, health service quality are all part of it." Having said this, the respondent believed that health insurance can improve quality to a great extend.

EFFICIENCY IN BUDGET UTILIZATION: MHI VS. CURRENT FINANCING SYSTEM

The responses were mixed. Some thought health insurance can increase efficiency by increasing utilization and collecting more resources for health. According to one of the respondents introducing a case based provider payment mechanism can help increase efficiency and quality of care.

For those who thought the existing health financing mechanism is more efficient compared to health insurance opined that health insurance might challenge access if everyone has to pay for the premium. Lower utilization will then lead to inefficiency in the system. One of the respondents said,

"The existing health financing system is efficient as it works on very limited budget and the outcome is remarkable. We have universal coverage with the existing public health infrastructure; all we have to do is to ensure quality of services."

One of the respondents was not ready to compare insurance against the existing system as health insurance in Bangladesh is still at a planning stage. He said,

"As health insurance is yet to be implemented and there are only speculations on its outcome, I would not want to comment on its efficiency. Only thing I would like to say is that there need to be accountability for it to attain its potential."

SUMMARY

COMMUNITY PERSPECTIVE

The indepth interviews with villagers shed light on the level of understanding about health insurance or micro health insurance among the villagers of Chakaria. A few very interesting terms and ways of explaining health insurance evolved from the discussion with the villagers. Although half of the respondents had not idea about health insurance and its mechanism, for those who understood explained it as a means of securing future healthcare and access to quality healthcare at affordable cost in time of need. Some even compared MHI with a lottery due to its uncertain nature. Some expressed that for micro health insurance to succeed it must involve as many people as possible which indicates solidarity among the villagers could be a winning solution for MHI to work.

Opinions were then sought on factors that influence demand for health insurance or micro health insurance in a rural area in Bangladesh. The major reasons mentioned included reduced consultancy fee and discounted medicine price, trust in provider organization, acquaintance with doctors, and proximity to the health centers. Particularly for the Chakaria health card scheme, the villagers' trust in ICDDR,B (the provider organization) made them trust the scheme and services provided through it. Some of the respondents from the better-off households said that they would like to join such schemes to fulfill their social obligations if not for their own good. According to them, they have to donate money when a poor villager is in trouble and if they do not benefit from MHI they will take this as a donation for improving the health of the area.

Looking carefully into these factors we see that they are not all necessarily linked directly with micro health insurance and its mechanism but are reflection of people's unmet need at the available healthcare options. In many cases respondents preferred to have micro health insurance in place of the existing public health services due to their dissatisfaction at these government facilities. According to the respondents the doctors at the public facilities don't allow adequate time for consultation due to patient load, shortage of manpower and their behavior towards the patients is not always acceptable. As a result people long for places where they will have enough time on consultation and where they

will be treated with respect. It was interesting to find that those who preferred services from the public health facilities in our study were all from better-off households, none of the poor households voted for public health facilities.

Further it was observed that in comparing micro health insurance vs. other form of health financing, the opportunity cost of getting treatment (transport cost, lost wage and time etc.) is what the villagers prioritize not so much the mechanism behind the provision of health service. This indicates that although these issues are not necessarily associated with MHI, they can play a vital role in making MHI accessible and attractive to the villagers and therefore need to be catered-for for the scheme to be successful in a developing country setting.

On the other hand, major reasons for people who chose not to join the health card scheme in Chakaria or even any other micro health insurance scheme included affordability of the premium, the healthy not feeling or realizing the need for insuring against the risk of ill health, preference for informal health care providers over the doctors at the MHI health centers.

When asked about the benefit of micro health insurance the villagers mentioned reduction in uncertain household expenditure, access to quality treatment at all time, securing future healthcare, elimination of the need to borrow to pay for catastrophic healthcare cost, minimizing healthcare cost, having a fixed and known place for treatment, were among the top. The respondents also mentioned a very useful aspect of having a fixed and known place for treatment. They said that majority of the villagers are not aware of proper places for treatment of the various illnesses they experience. The VHPs acted as sort of an information hub. People could consult with the doctors at the VHPs about where to seek higher level healthcare in case the illness was not managed at the VHPs. This saved them from repeated visits to various providers before they could access the right kind of treatment.

Some of the respondents also opined that MHI could give them the purchasing power that will allow them to negotiate with the doctors and demand for quality healthcare. The fact that the health centers worked as a one-stop facility for all

the family members to access healthcare also helped in attracting people. The Chakaria health card scheme provided identification cards to the registered members and this was a feature preferred by many. They thought that having an identification card made accessing healthcare easier as their history of illness was recorded under with that card. According to some, the scheme gave access to good quality medicine at discounted price, which helped them in completing treatment. However, many of those who preferred to have MHI for healthcare mentioned that the process has to be honest and transparent for them to have trust on the providers.

In terms of renewal of scheme membership quality of treatment and qualification of doctors were among the major deciding factors. Another important factor was whether people received any benefit out of the scheme during the time they were insured. As the villagers had little understanding of health insurance, many took this as a loss in investment and further investment in the scheme were not attractive to them. For the particular case of Chakaria health card shortage of human resource, which resulted in unavailability of doctors round the clock, was a major reason that made people opt out of the program.

PROGRAM PERSPECTIVE

The indepth interviews shed light on some of the significant programmatic views around implementing MHI. The discussion highlighted the fact that the concept of health insurance is new not only to the villagers/clients but also to the program people themselves. As mentioned in their opinion regarding felt need for further skill enhancement, a more elaborated and rigorous understanding about health insurance and its mechanism would have made their work more effective.

Explaining health insurance to the villagers was not a simple task either. To make it understandable and easy to grasp the staff of the scheme had to take help of already existing terms that relate to the mechanism of health insurance. At the same time, life insurance had given rise to controversies in many areas of

Bangladesh and a few frauds have been reported in places. Therefore, the staff felt it was better to avoid the word "insurance" and use much general terms such as 'health card' to make it acceptable to the people.

According to the program people the scheme faced both internal and external challenges. Major external challenge was the competition in the health market where in one hand public service was being provided free (although unofficial payments exceeds cost of healthcare at many other sources) and on the other the informal healthcare providers were providing healthcare round-the-clock with provision of treatment on credit. Internal challenges included limited resource, lack of adequate technical and operational skill, limitation of the benefit package to include many services due to the small pool, including villagers in scheme who lived far from the Village Health Posts.

Regarding the potential of MHI in improving healthcare and its provision in Bangladesh, the program people thought that MHI is promising. At the same time some were also skeptic about its ability to scale up and serve a larger population. They thought that MHI could instead complement the national system by including people and raising fund at the local level. MHI can also open opportunities for the people, poor and better-offs alike, to have access to private as well as public healthcare services. It can potentially reduce out-of-pocket expenses.

A few suggestions to implement MHI in a low-income setting that emerged from the discussion with the program people of Chakaria health card scheme can be summarized as:

- The scheme should operate at a local level taking health service as close to people as possible as travel time and cost comes out to be a significant determinant of healthcare seeking irrespective of source and mode of care provision.
- For MHI to be universal and cover people with no or minimum ability to pay, the scheme should incorporate a safety net where the product is available to the poor at a subsidized rate or even at free of cost if possible.

- For MHI to be sustainable it needs to ensure enough cross subsidization and for that it will need to attract people from all socioeconomic status. The benefit package will therefore need to be carefully designed to attract larger pool of clients.
- MHI can be complementary to a national health insurance system and help raise fund by including people at the local level.
- Before launching a scheme, supply adequacy need to be ensured. Without required human resource and other supplies the scheme will fail to keep its promise to the clients and ultimately clients will lose trust and discontinue their membership.
- A team of properly trained people is necessary to make the scheme effective. Convincing people with attractive marketing techniques, maintaining transparency in fund management and efficient claim settlement all help in creating a lucrative demonstration effect for the potential clients. With trained staff it is possible to make sensible forecasts for the scheme and avoid unnecessary losses and ensure financial sustainability.
- An ownership feeling encourages people to join such movements and Chakaria is a good example for this as the self-help organizations and the community participation projects in the area played important role in introducing the scheme to the villagers. These types of groups are usually formed taking the group 'solidarity' as a capital. MHI schemes in other setting could also think of banking on people's solidarity.

POLICY PERSPECTIVE

In general, majority of the policy makers opined that the health policy is in line with exploring alternate health financing mechanism for Bangladesh which can raise more funds, make efficient use of the collected fund and at the same time ensure access to quality healthcare for all. However, the reaction to use of a social health insurance mechanism in this connection was mixed. For those who supported health insurance thought that it could potentially deal with the existing inadequacy in resource mobilization and inefficiency in allocation. At the

same time they also mentioned that for a health insurance program to be effective in a low-income country like Bangladesh, it would have to have a safety net program, which will protect the poor from the catastrophic health expenses by subsidizing the premium to a level affordable by them. Cautions were mentioned about checking the pros and cons of introducing an insurance mechanism for health, a concept that is almost alien in Bangladesh. Concerns were there with regards to government's ability to keep pace with the expected increase in demand due to introduction of insurance, universal participation to ensure financial sustainability, preference for private sector diverting clients away from public sector and thus resulting in underutilization of public resources and inefficiency resulting from it. Concerns are there regarding scaling up the insurance program to national level. Further if it involves subsidizing services for the poor then in absence of adequate cross subsidization whether it will result in increased liability for the government was also a concern raised by the respondents. From legal point of view, the policy makers mentioned, for health insurance to be effective in Bangladesh an independent body of authority will need to be set up to oversee activities like monitoring and regulating, identifying poor and other beneficiaries, fund management, claim settlement, and overall MIS system. The need for a health insurance act was also mentioned by all the respondents.

The study respondents also mentioned that increased coordination between the different ministries and the local government would be a must in order for this new financing tool to be successfully implemented. Lack of coordination between the planning wing, the finance ministry and the various other ministries make it difficult for the concerned ministries to carry out their planned objectives. Even within the ministries when we talked with the health economics unit, embedded within the MoHFW, who are responsible for advising MoHFW on the health financing mechanism we felt some degree of inconsistency between the opinions of the official from the two wings. Even though the health economics unit thinks MHI is much needed to access additional fund in financing healthcare for the country, MoHFW has doubt on how efficiently MHI can take the burden off the national account. Some even expressed their concern that MHI schemes may

result in increasing national expenditure instead of decreasing. On the other hand, the official from MoHFW informed us that without the timely act of the ministry of finance and planning ministry they cannot realize their planned projects. This is a general challenge in conducting any project through the public system in Bangladesh and has been documented earlier by other authors (12, 13). Therefore, effective and timely communication between the ministries needs to be ensured for any new project to take off in Bangladesh.

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CHAPTER 7: MICRO HEALTH INSURANCE EN ROUTE TO UNIVERSAL COVERAGE FOR HEALTH: EXPERIENCE FROM LOW AND MIDDLE INCOME COUNTRIES

The potential of micro health insurance (MHI) in providing financial protection to the poor in low and middle income countries has been evident in various countries around the world (1) (2, 3). MHI has made significant contribution in dealing with 'health care crisis' arising in different regions of developing world in the last decade (1, 4, 5). In many of these countries micro health insurance has served as a transitional mechanism for establishing an insurance system to achieve universal health coverage (6-12). Empirical evidence shows that when public funding in health is low, micro health insurance can assist countries to build capacity and provide financial protection for a certain segment of the population, particularly those who are left out of the national system. Skills gained in running micro health insurance schemes particularly in low-income setting may later be useful in managing publicly funded schemes as they expand. Health insurance can provide financial security for the poor in developing countries as long as they are appropriately managed to play a positive role in improving access and equity in health services.

In Bangladesh, the very use of health insurance as a means to finance healthcare is rather new. So far the experience around health insurance in Bangladesh is limited to a few micro health insurance schemes and private health insurance with very minimum reach. In the public sector Bangladesh government has recently committed to test the feasibility of using health insurance to achieve universal coverage in the country. A pilot project, "*Shasthya Shurokkha Karjokrom* (SSK)", is underway to try-out the potential of health insurance in ensuring healthcare for the population living below poverty line. The challenges ahead are daunting but with careful thinking around the policy environment and implementation strategy Bangladesh too can take the advantage of health protection schemes to protect its people from the adverse effect of catastrophic

health expenses. The learning from countries, particularly the low and middle income ones, that are successfully using health insurance schemes to achieve universal coverage and that have previous experience with MHI schemes are thus important for Bangladesh. At the same time, we need to bear in mind that while success encourages countries to opt for micro health insurance, studying challenges faced by these countries and the ways they were dealt with is even more important. It gives the opportunity to prepare for risks that accompany implementation. Thus, studying the prepayment mechanism adopted by other countries can provide us with valuable input in designing a prepayment mechanism for health for Bangladesh. These schemes can help us understand the dynamics of health insurance market and the ways to develop a system that would make access to quality health service easier for its population, particularly the poor. In addition, many of these countries have built on experience from small-scale micro health insurance schemes to design and implement a large-scale nation wide health insurance mechanism. This is of particular interest for Bangladesh as currently all Bangladesh have is experience of some small scale micro health insurance schemes and the experience of the other countries will facilitate the transition towards a health insurance scheme that would operate on a larger scale and extend coverage to those who need it the most.

The chapter takes a case study approach in studying the experience of health insurance schemes in different countries. Three low, middle and upper-middle income country case studies, namely, Ghana, India and Thailand have been chosen. A health-financing framework based on the three essential roles of health financing, namely revenue collection, pooling and purchasing, was used to study the experience in each of these countries (9). Alongside the discussion also will highlight the instigating factors for evolution of social health insurance, the policy environment, and details of implementing health insurance schemes (e.g. provider payment mechanism, designing benefit package) and challenges faced en route to universal coverage by means of health insurance in the these countries. For the purpose of the study an extensive country specific literature review was conducted.

The three countries were selected based on their stage and mode of health protection scheme implementation to achieve universal coverage. Thailand is an example of a country, which has achieved universal coverage in a comparatively short period of time by covering majority of its population through a few large scale health insurance schemes. Although per capita health expenditure in Thailand is much higher than that in Bangladesh (Table 34), the country started out with a comparatively low public expenditure on health and gradually moved towards increasing public contribution with strong political commitment. The path to universal coverage in Thailand offers valuable learnings for countries at any stage of UHC implementation. Ghana, on the other hand, initiated health insurance schemes to finance and ensure access to quality healthcare in 2005. Within almost 7 years of operation, coverage has reached to about 35% as of 2012. Ghana characterizes a large informal sector and the national system is aiming at incorporating this sector via their national health insurance schemes. India, the third case study country, is an example of targeted insurance schemes. The major national health insurance schemes are mostly targeted towards ensuring quality healthcare for the below poverty line. Public expenditure as a percent of total health expenditure is similar in India and in Bangladesh. India also shares similarities in terms of a wide range of socio-cultural and financial characteristics with Bangladesh. Therefore challenges faced by India in implementing a nationwide health protection scheme, are likely to be more relevant incase of Bangladesh. The Bangladesh government is currently following the model of RSBY scheme in India to design and implement health protection schemes for its below poverty line population. Few summary statistics depicting state of health and other relevant indicators of these 3 countries in contrast with Bangladesh is presented in Table 34 which will enable us to have a comparative picture of health outcomes in each of these countries.

TABLE 34: SALIENT ECONOMIC, SOCIO-DEMOGRAPHIC, HEALTH SYSTEMS, AND HEALTH STATUS INDICATORS IN THE CASE STUDY COUNTRIES IN COMPARISON WITH BANGLADESH

Country	Thailand	Ghana	India	Bangladesh
Population (millions)	66.78	25.36	1240	152.9
GDP per capita (current USD) (2013 est)	5779	1850.2	1499	829
Poverty* (% of population)	13.2 (2011 est)	24.2 (2012 est)	21.9 (2012 est)	31.5 (2010 est)
Life expectancy at birth (2012 est)	75	62	66	70
Maternal mortality (per 100,000 live births)	26 (2012 est)	380 (2013 est)	190 (2013 est)	170 (2013 est)
Under-five mortality (per 1,000 live births) (2013 est)	13	78	53	41
Per capita health expenditure (current USD) (2012 est)	215	83	61	26
Government spending on health (% of total spending on health) (2012 est)	76.4	57.1	33.1	34.4
Out-of-pocket expenses (% of total health expenditure) (2012 est)	13.1	28.7	57.6	63.3
Doctor per 10,000 population	3.93	0.96	7.02	3.56

Note: * measured by headcount ratio at $1.25 a day (PPP)
Source: (13-15)

THE THREE COUNTRY CASE STUDIES

THAILAND: THE GREAT ACHIEVER OF UNIVERSAL HEALTH COVERAGE

THE HEALTH SYSTEMS OF THAILAND

Thailand has a pluralistic public/private mix health care system in terms of both healthcare providers and financing agencies. Majority of the health service in Thailand is provided through the public health facilities which were rapidly expanded nationwide since 1961 in Thailand (16, 17). Since 1994, the numbers of hospitals and beds have also increased remarkably (17). In 2012 government spending on health was 76.4% of the total 215 USD spent per capita in Thailand (14). This high public expenditure on health indicates the intense investment by government in its health sector.

It is one of the developing countries in the world that has achieved near universal coverage for healthcare. Currently around 98% of the population is

covered for primary healthcare through a mix of health protection schemes (18). The quest for achieving universal coverage for health in Thailand holds a long history dating back to 1970s (19). By the year 2000, four health insurance schemes were in place to serve around 75% of the population. These schemes are: Civil Servants Medical Benefits Scheme (CSMBS), Medical Welfare Scheme (MWS), Health card scheme (voluntary public health insurance), and the Compulsory Social Security Scheme (SSS).

HEALTH PROTECTION SCHEMES OF THAILAND

Health systems financing through health insurance started in Thailand as early as in 1963 with the establishment of the Civil Servant Medical Benefit Scheme (CSMBS) which was formed to cover civil servants and public employees and their family members. The CSBMS was fully funded from general tax revenue through the Ministry of Finance.

In 1975 Thailand introduced the Medical Welfare Scheme (MWS) funded from general taxation to provide free health services for its low income population. The MWS initially provided free medical services at the public facilities for the low income population and later on included children, elderly, veterans, disabled, monks and priests in the beneficiary list.

Thailand also has a community financed voluntary scheme in place which is the Health Card Scheme. The scheme came into operation in 1983 in the form of a community financed project and then in a later stage in early 1990s took the form of a publicly subsidized voluntary health insurance scheme. Coverage was limited to near-poor population as no government support was there to reach the poorest segment. However, the voluntary nature of the scheme resulted in selection bias.

The Compulsory Social Security Scheme was initiated in 1992 for the private employees. The employer, employee and the central government contribute in funding the scheme. With time the scheme now covers all formally employed people, including those engaged in small businesses.

By 2000 the objective of providing universal coverage for essential health services became central to the health systems of Thailand and the political party 'Thai Rak Thai' that won the election in 2001 included this in their election agenda. Soon after their victory the party introduced the new "30 Baht to treat all diseases" scheme in fulfillment of their election commitment. The scheme entitled the insured a comprehensive benefit package covering both preventive and curative care with a co-payment of 30 Baht (1.9 constant 2005 PPP $) per medical visit (16, 20). The scheme was predominantly financed from tax revenues and public hospitals are the main provider of services (21). This new scheme combined the MWS and the voluntary Health card scheme and expanded coverage to an additional 18 million people. Legislative changes accompanied the introduction of this new scheme when in 2002 the new Thai government passed the National health Security Act. This act is known to be the most important policy change for the reform of Thai health systems (19, 21). In November 2006, the new government abolished the 30 Baht copayment and made the universal coverage scheme free of charge (21, 22).

The universal coverage scheme of Thailand so far has achieved some very positive outcomes including increasing utilization, equity in service provision, increasing quality of care and financial risk protection with decreasing catastrophic expenditure on health for its population (16, 23, 24). The incidence of medical impoverishment went very low and between 2004 and 2009 The UCS prevented atleast 3,00,000 households from becoming poor due to healthcare expenditures (25). Some distinct features of the Thai health systems instigated these positive changes and these can assist countries that are willing to redesign their health systems with an aim to achieve universal coverage by means of health protection schemes. An account of these features is provided in the following section.

Factors Instigating Universal Coverage Through Health Protection In Thailand

Strong political commitment and civil society engagement:

Above all the strong and sustained political commitment towards achieving universal coverage for health for the population of Thailand which is also known as the big bang policy reform was the major driving force behind the success of UCS. The civil society also played an active role in pushing through the goal of achieving universal coverage in Thailand (26).

Extensive coverage of public health facility:

The universal coverage scheme operates by providing services mostly through the public health facilities. The extensive geographical coverage of public health facilities in Thailand, which was initiated in 1963 ensured access to health service for majority of the population (17, 26). The government of Thailand shifted health budget from urban to rural facilities to support this infrastructural development in the rural areas (22, 27).

Equity in health human resource distribution:

In late 70s there was a 21-fold difference in physician density between Bangkok and the rural Northeast regions, which was reduced to a five-fold difference by 2009. During this same period there was an 18 fold gap in nurse density which came down to a three-fold difference.

All this was possible due to the policy actions of the Thai government. After 1975 a monthly hardship allowance was introduced for rural recruitment and retention, which worked as an incentive to retain staff in remote rural areas. The incentive rate was adjusted in 1997 to further reduce disparity (28). Currently the Thai government mandates new medical graduates to undertake employment in rural health services for three years. This policy change was brought about in response to the internal brain drain of trained professionals from rural public hospitals to urban private hospitals (29). As a result the mal-

distribution of healthcare providers within the country is now minimized to some extent. The community and village health volunteers and nurses also played a key role in primary care services, particularly in remote areas (22, 30).

EFFICIENT PURCHASING:

The fact that majority of health service is provided through the public health facilities also means the National Health Security Office is the single purchaser for three-quarter of the country's population. This gives government a substantial bargaining power with which it negotiates heavily to bring down the price of medicine, medical products and interventions (28).

GREATER INTEGRATION BETWEEN LOCAL SCHEMES AND THE PUBLIC HEALTH SYSTEM:

The Thai government has been involved in community financing for long through the health card scheme. This led to increasing integration between schemes and the public health system starting at the district level, then at regional and finally at provincial level (31). The integration helped develop inter-regional risk pooling and re-insurance, which in turn contributes to improved technical and managerial expertise and financial sustainability of the schemes.

EXPENDITURE MINIMIZING EFFORTS AT NATIONAL LEVEL:

The government of Thailand adopted a few expenditure management approaches which enhanced coverage for the UCS. These included closed-ended capitation contracting with diagnosis related group hospital payment, strong gate-keeping for primary care, tough negotiation with pharmaceuticals, and finally the focus of the system being on primary care. Additional at one point the Thai government took contractionary fiscal measures to cut down on expenditures and increase revenue collection to safeguard public spending on healthcare and social safety net (26).

CONTINUING EFFORT ON IMPROVING QUALITY OF SERVICES:

Varied measures have been taken by the Thai government in increasing productivity of the workers and improving the quality of health services. These include assuring an adequate basic salary, offering financial incentives like overtime rates, hardship allowances, non-private practice incentives, and long-service allowances and nonfinancial incentives like an annual prize for the best rural doctor or nurse, supporting career advancement, and permitting off-hour private practice. Currently a pay-for-performance model is also being piloted in selected hospitals (28).

TECHNICAL KNOW-HOW:

The public health insurance schemes in Thailand maintain a national centralized online registration database to link the providers with the schemes. Beneficiaries are required to register with an enlisted primary care unit in their home area. These primary care units work as gate-keepers for access to care and they refer patients to specialists or hospitals if required. Treatment outside the home area is limited to accidents and emergency care only. This well managed national MIS system assists efficient scheme management (16, 26).

STRONG RESEARCH CAPACITY:

Thailand possesses a relatively strong health systems research institute that enabled evidence based decision making and designing schemes appropriate to serve the healthcare need of the country (26, 27).

CHALLENGES FACED BY THE UNIVERSAL COVERAGE SCHEME IN THAILAND

One of the major challenges Thailand is facing today despite its achievement in providing healthcare to its population is harmonizing the three insurance schemes currently in place (32). This has resulted from political interest and from other power dynamics of institutional reform (26). The schemes differ in terms of benefit paid out and fund management (28). Failure to integrate these schemes undermines both efficiency and equity for health systems of Thailand (33). It increases administrative costs and can potentially lead to cream

skimming. With varied scheme structures it is extremely difficult to assess whether the subsidies are equitably channeled to the target population. A harmonized revenue collection system and a body to oversight the payment mechanism could be an option for the Thai government (16).

Despite the concentrated effort of the Thai government to increase health workforce and to achieve equity in distribution major challenges still remain in health worker production, distribution, and performance for meeting the country's health care demand (16, 28).

A few lessons emerge from the Thailand experience of achieving universal coverage by means of health protection schemes, which we have presented in Table 35. Countries at different stages of implementing health protection schemes with a view to achieve universal coverage can learn from these lessons. The usefulness of these lessons will depend on their applicability in the respective context of each country.

GHANA: ENSURING QUALITY HEALTHCARE BY MEANS OF HEALTH INSURANCE

HEALTH SYSTEMS OF GHANA

After independence in 1957 the health systems of Ghana was designed to provide public health service free of cost to its citizens which was financed by tax revenue (34) (35-38). With time, demand for healthcare increased due to increase in utilization which was partly due to moral hazard resulting from free service provision. This posed serious budget constraint for the government. With the Hospital fee decree of 1969 the government, therefore, introduced a small user fee which was taken as a token money for healthcare consultation (39). Further with the economic stagnation in 1970s the health systems of Ghana became financially unstable and the government cut down on its health spending as a result during the time period 1970s and 1980s (35, 37). Decreasing budget in health sector resulted in shortage of supply and deteriorating quality of health service in many of the facilities in the districts of Ghana (37). In 1988, the Health fee Act of 1971 was then amended to increase the user fee to charge full cost of drugs and consultation(39). Before this amendment a fixed amount was being

paid by patients to cover consultation, investigation, drugs etc. (39). In 1992 the health systems of Ghana changed from free public healthcare provision to charging full cost which was then known as "cash and carry"(39, 40). This system was also called the "revolving drug fund". This fund was established with the aim to finance 15% of the recurrent cost in health sector (39, 40). However, the 'cash and carry' system soon failed in many aspects. Particularly with this system, the poor and indigent people were deprived of any healthcare as they lack the ability to pay for services out-of-pocket. The failure of cash and carry system and its negative impact on healthcare utilization particularly by the poor initiated an anti-cash and carry movement in the country. The main political opposition party demanded for the abolition of "cash and carry" and they used this for their campaign in the election of 2000. It has been documented that this was a major factor that lead to change in political power in 2000 in Ghana (35, 41). The new government in fulfillment of their election commitment, decided to change the health systems of Ghana from a user financed system to a national health insurance scheme. the foundation of a national health insurance scheme was also backed by the experience of micro health insurance schemes that were initiated in different parts of Ghana by the NGOs in early 1990s in an attempt to ensure access to quality services (42) (35, 41). The MHI schemes proliferated in Ghana and from only three in 1999 the number reached 259 by 2003. Community solidarity principle was the driving force behind these schemes and inspired the culture of insurance for health. In 2003, the government then passed a national health insurance act known as ACT 650. The "National Health Insurance Scheme' (NHIS) was established in Ghana under this act (34, 35, 37-39, 41, 43). With the aim to provide broad range of healthcare through the district mutual and private health insurance schemes and increase affordability and utilization of health services, particularly for the poor NHIS started its operation in 2005 (35, 37-39, 43). From 2005 till date Ghana's health system is operated by NHIS and the people of Ghana are benefiting from this new system.

The remainder of this section provides a synopsis of the operation of NHIS and the challenges it faced at different stage of implementation. The learnings are

useful for any country planning on implementing a nation-wide health insurance scheme to ensure universal health coverage for its population.

GHANA NATIONAL HEALTH INSURANCE SCHEME (NHIS) AT A GLANCE:

Ghana National Health Insurance Scheme, as mentioned earlier, was created by the national health insurance ACT 650 of 2003 and started its activities in 2005 (38). The NHIS was established with the aim to provide financial access to quality basic healthcare services for the people of Ghana, particularly for the poor and indigents. NHIS follows a purchaser- provider split model (44) where it covers both public and private health care providers at all levels of the health system to provide the basic healthcare service package subject to their accreditation by the NHIA (12). The system is unique in the sense that it combines the concept of social health insurance and mutual health insurance (45). The mutual health insurance is implemented at the district and regional level known as the District Mutual Health Insurance Scheme (DMHIS) and this allows decentralization of management and ensures accountability of stakeholders (40). The DMHIS is by far the most common form of health insurance scheme found in 155 district offices in the country. These schemes are public noncommercial ones, and they receive financial support from the government (39). A management body, the National Health Insurance Authority (NHIA), had been formed with the mandate to secure implementation of NHIS. The NHIA is responsible for the registration, licensing and regulation of health insurance schemes. It is also responsible for granting accreditation to healthcare providers and monitoring their performance for efficient and good quality service delivery. The National Health Insurance Fund is managed by NHIA. Finally and most importantly the NHIA ensures that the services of NHIS reach the indigents (40, 45). Currently 155 district schemes are in operation in Ghana(40). Coverage by the end of 2012 was 8.8 million people which represent 35% of the population of Ghana (40).

The NHIS runs on a single benefit package set by the legislative instrument 1809 (45). The package covers 95% disease conditions, outpatient services including

diagnostics, operation (e.g. hernia repair), most of the inpatient services, specialist care, most surgeries, hospital accommodation (general ward), oral health treatment, all maternity care services including caesarian delivery, emergency care, all drug on NHIA list. The package excludes expensive procedure like certain surgeries, cancer treatment, organ transplant, and dialysis, cosmetic surgery, high profile items like HIV antiretroviral drugs (39, 40).

There is no limit on what NHIS pay in medical bills as long as the care is within the provision of the benefits package. Finally, no co-payments, co-insurance, or deductibles are required (35). Members of NHIS are required to pay a premium and a registration fee to become members. The groups that are exempt from paying premiums are required to pay the registration fee.

Premium for NHIS members, although is set according to ability to pay and is linked to a person's income, in practice this happens only for the formal sector comprising 3% of the population. The informal sector comprising majority of the population pay a flat rate of premium set by the district NHIS. However there are certain group of people who are exempt from this premium. They include children aged less than 18 years if both parents are registered, aged population (aged 70 or over), pregnant women, and core poor. The registration fee, however, is payable by all members.

Beneficiaries of NHIS are given cards that can be used to seek treatment in any hospital in the country. Bills are sent to the scheme providers for payment. Furthermore, portability allows NHIS members to access services outside their own district (39).

The NHIS is financed from different sources including VAT on goods and services (a VAT of 2.5% is charged which is called the National health insurance lavy NHIL and represents the largest source accounting for 70% of the revenue), portion of social security tax from formal sector workers (23%), premiums (5%), others including investment return, parliament and donor (2%) (37, 40).

The DMHIS collects all the premiums either from paying beneficiaries or from the National Health Insurance Fund (NHIF) that provides subsidies for the

exempt groups. At the beginning the NHIF paid an annual premium per beneficiary equivalent to 8 GH¢, but this gradually increased to 14 GH¢. During 2011 the NHIA covered premiums amounting to 74.53 million GH¢. The NHIA is subsidizing more than 82 percent of total expenditure.

Purchasing under NHIS was initially based on fee for services in 2004. Later from 2008 NHIS started to follow provider payment system of diagnostic related groupings for services (46). However, there are delays in claim processing under NHIS which is mostly due to the manual processing of claim.

Instigating Factors

Political commitment: like Thailand, the national health insurance scheme in Ghana was also brought about by a major political shift. National health insurance being central to the national health strategy of Ghana, made is possible for the NHIS to be established.

Progressive general taxation:

NHIS relies on progressive general taxation and it covers most of the funding in the system. Along with it the redistributive function of the NHIS pool made cross subsidization more effective.

MHI creating culture of health insurance:

The NHIS benefited from the experience of the MHI schemes that were in operation in Ghana since 1990s. Despite the low population coverage of the MHI schemes the sheer number of these schemes throughout the country had the effect of validating the concept of health insurance and preparing the population for the national health insurance system. At the same time this legitimized the use of such tools to finance healthcare in front of the policy makers and other stakeholders including the donors (47).

Once the NHIS was on board, the government offered the existing MHIs a choice between affiliating with NHIS and thereby receiving government subsidies and

other support, or remaining independent and streamline their benefit package to satisfy the new regulations. Given the financial incentive most of the schemes chose to affiliate with government plan and the rest scaled back coverage and provided supplementary products like medicine, cash for transfer etc. The amalgamation of MHI and NHIS increased coverage for Ghana by 30 fold and reached 35% of total population (42).

Challenges Faced And Solutions Tried

Lack of adequate marketing: NHIS suffers from lack of adequate marketing technique to increase knowledge about NHIS among the population. This results in low awareness, trust and interest of people in the scheme.

To raise awareness and knowledge about NHIS the program ran a 13 week radio campaign with 5 radio stations. NHIA also developed public education materials on NHIS for educating people. 'Community darbar' is another technique that has been used to publicize NHIS (38, 40).

To improve communication between NHIA, clients and stakeholders, call centers to answer queries from clients were set up in 2012. The data from the call centers are also providing feedback for management decision-making (40). Ghana is also testing the mechanism of 'mystery shopping' through call centers to identify inefficiencies, and abuse in the system (40).

Children's access to NHIS services: The NHIS exempts children from paying any premium given both the parents are enrolled with NHIS. This creates a bar in accessing services of NHIS for children who don't have both their parents enrolled (39).

A new rule called 'decoupling' is being used in some of the districts where it does not mandate both parents to be enrolled (39) and is expected to ease children's access to free NHIS benefits.

POOR ROAD NETWORK AND HEALTH INFRASTRUCTURE HINDERS ACCESS:

The NHIS is adopting community registration to ease registration process for the people living in remote areas. Also institutional and group registration to increase active members are being tried (40). To reduce fund collection time and to expedite membership process NHIS is trying mobile money payment system.

SUPPLY SHORTAGE, DELAY IN REIMBURSEMENT, AND LACK OF COORDINATION:

There is lack of adequate supply, human resource and infrastructure in NHIS. Timely supply of fund is a problem for DMHIS. Lack of coordination and operational differences within NHIS hampers efficiency of the scheme.

So far, temporary solutions of increasing supply have been tried but providers are looking for more permanent solutions like owning offices, vehicles for the scheme.

For timely provider payment 'capitation', a process to ensure prior allocation of funds to service providers to cover estimated cost of facility utilization by the insured, is being piloted in some of the districts (38). Although majority of the districts where this provider payment method has been tried expressed satisfaction with the method, it is being criticized by many stakeholders in the recent times. Indeed, capitation can result in under provision of services and thereby compromise quality. On the other hand, in some cases it can also result in provider induced moral hazard. Studies have shown that a strong regulatory system of quality control, usage and audit along with a reliable information system can help countries to reach the goal of controlled cost through capitation (48).

The new National Health insurance act 2012 (ACT 852) has been passed to facilitate harmonization of NHIS operation for effective and efficient delivery of services (40).

In places the providers are not cooperative and some are accepting illegal fees. To prevent this strong monitoring mechanism needs to be in place to minimize fraud and ensure quality.

DELAY IN CLAIM REIMBURSEMENT:

Delay in claim reimbursement can discourage members from continuing membership with NHIS. Establishment of claims processing centres with sole responsibility of processing claims efficiently on time is one of the latest reforms of NHIS (40).

FINANCIAL SUSTAINABILITY OF THE SCHEME:

NHIS is facing challenges regarding its financial sustainability. NHIA is thinking of identifying high return and relatively safe investment opportunity which can contribute in the pool of NHIS (40).

SERVICE MAY NOT BE PRO-POOR:

Only 2% of Ghana's population is registered as Indigents (poorest members of the society) in the scheme. Whereas, 28% of the population of Ghana live below the poverty line (as of 2006 Ghana living standard survey) (47). Studies have mentioned corruption in identification of the poor (39). The government of Ghana is thinking of introducing biometric registration and instant issuance of cards to avoid this sort of irregularities in the system (40).

POLITICIZATION OF THE SCHEME:

This is a challenge that is yet to be resolved mostly due to the difficulty of avoiding it. Ghana did not start with a foolproof blue print of national health insurance scheme, rather the country incorporated and are still incorporating changes to rectify challenges in implementation. So far Ghana has succeeded in reaching 35% of its population through NHIS and is showing promise in ensuring universal health coverage for health (40). The success and challenges of Ghana's NHIS scheme is believed to provide valuable lessons for other African countries as well as the developing world where countries are trying to initiate such schemes to achieve universal coverage. Bangladesh can benefit from the learnings as well. Key lessons learnt from Ghana's experience are listed in Table 35.

India: Paving The Way Towards Universal Coverage With A Pro-Poor Health Insurance Mechanism

India shares quite a few common challenges in health care provision and financing as that of Bangladesh. Very low level of total health expenditure as a percent of GDP, low public health expenditure, high OOP, dominance of informal sector workers in the economy are a few of these health systems challenges. India has a few health insurance schemes which are specially designed to serve the poor and disadvantaged population. The learning from these schemes can prove to be valuable for Bangladesh as well.

Health Systems In India

Health service delivery in India is dominated by the private sector providers. People utilize around 80% of out-patient and 60% of in-patient care from private practitioners (49). Although the public facilities including primary, secondary and tertiary level care in principle is available to the entire population, it constitutes only 20% of outpatient care and 40%of inpatient care utilization (50).

Healthcare in India is financed through 4 major sources: out-of-pocket spending by households, tax-revenue, social insurance schemes for formal private sector workers, civil servants, and military and railway employees and private voluntary health insurance schemes. A new source that added to this pool is the government sponsored schemes. The remaining share is borne by the private firm, external agencies and others. Although the private facilities cost much higher than the government facilities, the government services are not free and includes OOP expenses for user fees, medicine and other supplies. Informal payment, like many other developing countries, is also in existence at these public facilities (51, 52).

HEALTH INSURANCE SCHEMES IN INDIA

Health financing through health insurance is present in India. The insurance schemes in existence in India can be categorized into three groups: private health insurance, community health insurance, government/state sponsored health insurance. Although it is difficult to ascertain the exact proportion of population covered through any sort of insurance it is estimated that these schemes together cover around 25% to 26% of the population as of 2010 (53, 54). The government sponsored schemes share characteristics common to community health insurance in the sense that the schemes are voluntary in nature. However, management is not in the hand of the community rather the state manages the schemes.

Health insurance in India was initiated with the aim to ensure access to quality healthcare for its population, particularly for the poor (55, 56). Health insurance started in India as early as in 1940 when the government of India introduced the Employees' state insurance scheme (ESIS) for formal workers employed in private sector. In mid 50s another scheme was rolled out known as the Central Government Health Scheme (CGHS)(57). CGHS provided comprehensive medical coverage for the central government employees and their families. The scheme was funded by contributions from the employee, the employer and government subsidies. A few other government schemes also emerged for the railway, defense and other civil servants shortly after independence in 1947. In addition, the community based health insurance came into existence in India as early as in 1952 with the establishment of the Student Health Home which was one of the outcomes of the communist movement in West Bengal (58) (56). In late 1990s the microfinance movement along with the community based health insurance led to the introduction of many small scale community-based health insurance schemes (56).

After a long gap, in 2003 the central government of India introduced the Universal Health Insurance Scheme (UHIS) to cover poor households mainly involved in the informal sector (50, 59). However the scheme could only reach 3.7 million by the end of 2009. Yeshasvini, a scheme for the members of rural

cooperative societies was also introduced in 2003 in the Karnataka state of the country.

However, the formation of the National Rural Health Mission (NRHM) in 2005 aiming at provision of quality healthcare through health insurance initiated the big push towards the establishment of various health protection schemes throughout the country. A good number of these schemes were government sponsored. Among them were the Aarogyasri schemes initiated in two states of India, one starting in 2007 and the other in 2009. Both the schemes targeted below poverty line population and focuses on tertiary level inpatient care. At the national level, the Rashtriya Swasthya Bima Yojana (RSBY) established in 2008 is the largest voluntary scheme that operates across all states of India targeting the below poverty line population and covers inpatient services with secondary care focus (60-62). RSBY currently covers more than 33.57 million families (117 million persons) across 28 States and Union Territories of India (63). In 2010 to provide additional benefit on top of RSBY the RSBY plus was launched in the state of Himachal Pradesh and it included tertiary care for inpatient services. RSBY being the scheme operating on national level the discussion around learning from Indian experience in this chapter will mostly focus on experience of India with RSBY.

Service delivery under RSBY which follows a purchaser-provider split model (44), is the responsibility of private voluntary health insurance companies. However, oversight remains with the state nodal agency. The insurance companies empanel hospitals for RSBY. As of July 2010, around 6,000 hospitals have been added to the RSBY service delivery network and 70% of these hospitals are private. The hospitals bill the insurance companies and the hospitals are reimbursed based on a basic form of diagnostic related groups (DRG) with a certain cap on reimbursement (up to a maximum of US$ 600 per family per year). As most of the DRGs are within the cap limit the patient ends up getting a cashless transaction (62).

Premium for the social health insurance for the formal sector employees is financed by contributions made by the employee and the employer and government subsidies. The premium of the government sponsored schemes is paid from the government and the state via general tax revenue. There is a nominal registration fee that the clients have to pay to become members (62). There is no cash payment at the point of service by the clients for the government sponsored schemes. The voluntary private health insurance, on the other hand, is financed by contribution made by the individuals and the employers.

Health insurance in India has experienced positive gains in some aspects while challenges remain in others. The share of social security contribution (including CHI, not mandatory health insurance) in private health expenditure in India rose from 1.1 to 4.6% between 2000 and 2011 and out-of-pocket expenditure as a proportion of private health expenditure dropped from 91.8 to 86.3% over the same period (15). Utilization of health services has been documented to increase as a result of health insurance (64-66). Particularly the cashless system under RSBY is expected to increase utilization significantly (62). Studies have also found that health insurance is providing financial protection to its clients in India (66). As compared with non-insured, the share of borrowing in total expenses for healthcare is found to be lower among the insured (67). At the same time, the challenges faced by the national level health insurance scheme in India (RSBY) offers valuable learnings in terms of country preparedness in implementing such schemes. This is of particular importance for Bangladesh as the current plan of the government is to pilot a health insurance scheme that will later be scaled up to national level. And most importantly the model that is being designed relies heavily on the RSBY model of India.

INSTIGATING FACTORS

STRONG POLITICAL WILL:

The major health insurance scheme in India is initiated by the government. It was the government that felt the need for a national health insurance mechanism

to provide financial security to the vulnerable group of society. With a strong political push the RSBY was launched initially targeting the below poverty line population.

CREATING AN ENVIRONMENT FOR POOLING RISK FOR HEALTH:

In 1999, India opened up its insurance market. A regulatory body, the Insurance Regulatory and Development Authority (IRDA), was set up to regulate and promote any types of insurance in India in the best interest of the policy holders. An elaborated institutional framework was also established (56, 68). The micro health insurance schemes and other schemes of this sort are also regulated through this body, which puts a mandate on these schemes to serve the rural and below poverty line population (68). Further in 2005, another body named the National Rural Health Mission (NRHM) was setup with the primary aim to provide quality healthcare particularly to the poor. In 2007 NRHM elaborated its policy framework to develop pro-poor health insurance programs (69). At the same time the national planning commission also set up a working group on healthcare financing.

CBHI CREATING CULTURE OF HEALTH INSURANCE:

The community based health insurance schemes also contributed in creating an enabling environment for health risk protection through health insurance in India. The schemes have provided the health systems of India a useful platform to explain the principle of health insurance to the community and mechanism of collecting premiums and claims and reimbursement process (70). All the government sponsored schemes have used in one way or other the experience from the community based schemes that were established earlier. Indian government thus welcomes CBHI as a way towards achieving universal coverage as well as source of inspiration (56).

PARTNERSHIP WITH VARIOUS STAKEHOLDERS:

From the very beginning of RSBY the scheme took onboard its various stakeholders. With the private players RSBY formed a partnership.

STRONG ONLINE CLAIM PROCESSING AND PAPERLESS TRANSACTION:

RSBY operates on a paperless mode and has a very strong online claim processing mechanism which enables efficient management of the scheme. All empanelled hospitals install the necessary hardware and software to carryout transaction through the smartcard process and to connect to the district server of the insurance company. This enables almost real-time data transfer.

FLOURISHING PRIVATE HEALTH INSURANCE MARKET:

With the private insurance market flourishing in India, competitiveness between the existing insurers is increasing. This has resulted in benefiting the government schemes as insurers are now willing to quote lower bids against a premium rate offered by the government.

CHALLENGES FACED AND SOLUTIONS TRIED

GAINING SUPPORT OF VARIOUS STAKEHOLDERS: at the initial stage of implementing RSBY one of the major challenges was to obtain buy in of government and state officials as well as the insurance companies through which services were to be delivered. Also the industries providing logistical support (e.g. smartcard for identification of beneficiaries) had to be convinced of the potential of such national level health insurance schemes. Continued and intensive meetings helped in getting everyone onboard by involving them in the scheme design and other managerial activities.

BENEFIT LIMITED TO INPATIENT CARE:

The major government sponsored health insurance scheme in India covers inpatient services only and does not cover out-patient care, primary care or high

level tertiary care (71). This limits the extent of financial protection provided by the schemes.

LACK OF ACCOUNTABILITY:

Although NRHM increased funding for healthcare in India resulting in improved infrastructure and increased human resource for health, accountability regarding health service provision still remains a challenge for the health systems (57).

LACK OF PROVIDER REGULATION:

This is becoming a major concern for healthcare provision under the health protection schemes of the country. This results in low quality of care. Studies have found that the insured are not getting any better care than the uninsured (72). Over prescription and fee for service is still in existence (56). Clients don't have an effective customer care center to deal with this.

LIMITED RISK POOL:

The ceiling on maximum number of household members that can be enrolled restricts larger households from joining such schemes and thereby limit the pool.

LACK OF AWARENESS:

Comparatively lower awareness about health insurance is again prevalent in India like the other developing countries. This is all the more important as India runs a voluntary insurance mechanism. For many of the CBHI schemes of India level of awareness among the members about the benefit of the health insurance scheme was found to be low or limited. It is more of a concern for schemes that are tied to other development activities (e.g. micro finance) (73). It is thus suggested that educational and awareness raising activities accompany such schemes to make the most out of them.

LOW UTILIZATION:

Although some studies have shown healthcare utilization to increase among the insured in India, low utilization is still a problem for the very poor and those living in remote areas. The limited utilization of the scheme only benefits the insurer and the premium paid out by the government can be considered a sunk cost as the scheme is failing to reach those in greater need (61). This also limits the ability of the government sponsored schemes to rescue the poor and needy from the catastrophic healthcare costs.

DEVELOPING A FULL PROOF SECURE SYSTEM:

Preventing fraud through a full proof system was a major challenge. India managed to develop a key management system to minimize fraud and ensure security. In addition, India managed to standardize all the software and hardware and a common guideline regarding usage which ensues synchronization between the various state schemes.

SUMMARY FINDINGS

The salient characteristics of the three country case studies on health insurance are presented in Table 35.

TABLE 35: SUMMARY FINDINGS ON FACTORS INFLUENCING EVOLUTION OF HEALTH INSURANCE IN CASE STUDY COUNTRIES AND LESSONS LEART

Country	Factors initiating insurance mechanism for financing healthcare	Prepared environment before launching health insurance?	Challenges faced	What worked/ measures taken so far	Lessons learnt
Thailand	Active participation by the civil society to push for health insurance. Strong political will in face of financial crisis. Stron stewardship from government. Overall economic growth.	Yes. National health insurance act passed. Used experience from previous health insurance schemes Prepared health service delivery system to handle supply inadequacy.	Harmonization of the 3 schemes that coexist in Thailand which is increasing cost, decreasing efficiency. Lack of cross subsidization among the different schemes results in difference in benefit paid out per beneficiary, quality and range of services. Human resource shortage, mal-distribution impedes	Extensive coverage under public health facility. Incentive for rural recruitment and retention of health workers helped deal with mal-distribution. Recent mandate for medical graduates to undertake employment in rural areas for 3 years minimized	Strong and sustained political commitment and civil society engagement proved to be the strongest driving force. Strong and well established service delivery base facilitates translation of entitlements into improved service use and health. Continued effort is required to increase quality of services and productivity of providers. Legislative support can tackle impediments in implementation.

Country	Factors initiating insurance mechanism for financing healthcare	Prepared environment before launching health insurance?	Challenges faced	What worked/ measures taken so far	Lessons learnt
			service delivery under UCS. The copayment of 30 baht deterred coverage among the poor and informal sector workers.	internal brain drain from rural to urban facilities. Strengthening of national health security office to negotiate with providers. Copayment of 30 baht was substituted by tax funding which increased coverage among the poor.	Increasing government budget by multi facet measures like expenditure cut, increasing overall national budget and shuffling budget from less priority areas to serve the disadvantages can strengthen health insurance schemes. Community based/ micro health insurance schemes can be a temporary way to increase coverage for informal sector. Building research capacity to inform policy is necessary A well managed national MIS system can assist efficient scheme management. Technical know-how has been a key factor behind success of UCS.
Ghana	Failure of user fee to improve quality and utilization Decreasing utilization	Yes. A national health insurance act was passed before	Educating people about risk pooling and pre-payment for health. Supply inadequacy.	Claim settlement unit to ensure timely reimbursement of claims and efficient	Supply adequacy should be ensured before initiation of insurance scheme. Trained human resource is a pre-requisite for successfully

Country	Factors initiating insurance mechanism for financing healthcare	Prepared environment before launching health insurance?	Challenges faced	What worked/ measures taken so far	Lessons learnt
	of public healthcare among poor and disadvantaged Political pressure from opposition to abolish user fee national health insurance established in fulfillment of election mandate of ruling political party	launching the insurance scheme nationwide. The experience of MHI before the initiation of the national health insurance system helped build a culture of health insurance	Low infrastructural development. Lack of coordination within NHIS. Government is the sole funding source for NHIS threatening financial sustainability. Service not yet pro-poor. Capacity inadequacy in terms of accreditation, monitoring and evaluation, quality assurance and the like.	fund management. Biometric identification being tested to avoid corruption in identification of target population. To increase capacity training programs both in-house and through partnerships with academic institutions, and developing manuals	implementing health insurance schemes. Automated claim processing center is useful for smooth functioning and timely reimbursement to clients. A monitoring and evaluation unit needs to be in place to deal with fraud. Periodic clinical audit can be of help. Intensive public education programs on health insurance needed to increase awareness. Premium payment should be flexible in terms of time of payment, mode of payment etc. for greater participation. Mass community registration can help increase inclusion with limited resource and effort.
India	Political commitment to improve quality of healthcare particularly for poor Communist movement in West Bengal	Yes Setting up of a regulatory body for insurance in 1999 National Rural Health Mission (NRHM) setup in	Lack of awareness Limited risk pool Lack of provider regulation	Transport support of upto Rs. 1000 per family/year helps remove financial barrier to seek treatment (USD 1= Rs.61)	Low level of public awareness results in low risk pool which threatens sustainability Empanelling a large number of public as well as private hospitals can create a healthy competition between the

Country	Factors initiating insurance mechanism for financing healthcare	Prepared environment before launching health insurance?	Challenges faced	What worked/ measures taken so far	Lessons learnt
	initiated a scheme for the students Experience from community health insurance schemes helped build the culture for health insurance	2005 and then elaborated in 2007 to provide quality healthcare to the poor The national planning commission set up a working group on healthcare financing	Limited utilization by the poor and needy Lack of provider accountability	Smart card based identification helps avoid fraud and misidentification	two groups of providers and bridge the gap in quality of care between the two. A purchaser-provider split model can be of use. When targeting poor cashless scheme is essential. Cashless transaction simplifies claim process and can encourage participation. Majority of the target population were illiterate and thus a paperless scheme (online claim process) helped greater participation. Making the scheme portable gave access to the migrant population of the country.

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CHAPTER 8: DISCUSSION AND CONCLUSION

Micro health insurance, the focus of this thesis, has come under discussion in the policy arena of Bangladesh in recent times with its mention in the current national health financing strategy 2012-32. As elaborated earlier (Chapter 1) the current financing strategy of the health sector hinges on establishing a social health insurance system on its journey towards achieving universal health coverage (1). MHI has been identified as an intermediate step in this journey that will allow the country to build its capacity to manage publicly funded large scale health insurance schemes (2, 3). As the concept of health insurance is quite new for Bangladesh, the financing strategy has identified MHI and/or community health insurance to work as a catalyst to introduce health insurance to the people of Bangladesh and gradually move towards a national wide system for insuring its people from the risk of ill health and the financial catastrophe resulting from it. MHI is thus being treated as a means to bridge the gap between no insurance for health to insurance at national scale. In this light of strategic thinking, the findings of this thesis are expected to contribute to a great extent in terms of understanding the prospects and challenges of MHI in a developing country like Bangladesh and thereby facilitate the transition from MHI to a social health insurance system for the country. The objective of the thesis thus fits well into the current health financing strategy of Bangladesh.

The current chapter will synthesize the findings from the research carried out as a part of this thesis and how they relate to the major issues around MHI with special focus on low and middle income countries.

CREATING A CULTURE TO INSURE AGAINST THE RISK OF ILL HEALTH

While insuring health is a common phenomenon in developed countries, the culture is almost absent in the developing ones. The advantage of paying in

advance for healthcare to secure future health is not well established in the mind of the majority of people living in this part of the world (4, 5). Further, with limited ability to pay, for the majority of people paying premiums throughout the year to ensure healthcare for an unpredictable episode of illness does not appear convincing. Literature shows that local communities may spontaneously organize themselves against threats to economic survival rather than health care costs (6). Thus for countries in the initial stage of MHI implementation, the first and foremost challenge would relate to the acceptance of the product and increasing the level of understanding. This low level of understanding was also demonstrated among the villagers of Chakaria, the study participants (see chapter 6). The program people interviewed in our research also expressed this as a major challenge in implementing MHI in rural Bangladesh (see chapter 6). A few varied methods have been used to create a culture of health insurance in other low-income countries. Using popular terms to explain the mechanism of health insurance proved to be an effective method. For example in Uganda they termed health insurance as 'association of people who help each other in need'. Interestingly the research findings of this thesis also indicate a similar approach taken by the program people of Chakaria Health Card Scheme. The low level of understanding and confusion around health insurance led the program to use a more general term 'health card' which was easily accepted by the villagers (see chapter 6).

In addition to understanding the technicality of MHI, studies have documented low level of awareness regarding health insurance schemes and their benefits among the clients in low-income countries. In India, as documented in chapter 7, lack of awareness among the population is a constraint in increasing coverage for the national level RSBY scheme which is voluntary in nature. Although the government of India pays the premium for the below poverty line population, utilization is low due to the clients not being fully aware of the benefits they are entitled to.

In the initial years of MHI schemes, lack of awareness often gives rise to a phenomenon where people tend to wait and see if the scheme is worth joining and if it can benefit them at all (7). Some of our study participants also expressed

preference to remain in their status-quo until the Chakaria scheme has visible benefits (see chapter 3 for status-quo theory and chapter 6 for findings) (8). This hampers MHIs from reaching a broader base to operate and thereby ensure financial viability of the scheme. If an insufficient number of people join to start with, a young institution will always struggle to become an attractive proposition.

In convincing these clients, the MHI schemes should have an efficient and active marketing team to carry-out the task of informing potential clients about the benefits that the members of the scheme are entitled to. The program people of the Chakaria scheme reported lack of adequate marketing skills to have delayed or hampered their reach to a large number of villagers (Chapter 6). At the same time the importance of increasing the number of scheme members for efficient risk pooling under MHI need to be explained to the clients. The broader the group of risk-sharing individuals, the lower will be the premiums and the more comprehensive the insurance coverage.

In addition, a good grasp on the theories around decision making under uncertainty could play a vital role in this regard. Theory says people react differently to uncertainty based on their attitude towards risk (detailed discussion on theories on decision making under uncertainty is presented in chapter 3). Framing product propositions and marketing them according to the varied group of people has great potential in making the offer attractive to that particular group. Thus, further research on how people from different risk groups react to different offers of MHI is essential in making it popular and building a culture for insuring health in developing countries.

ENSURING EFFECTIVE RISK POOLING: FOLLOWING THE LAW OF LARGE NUMBERS

Effective risk pooling for micro health insurance or any insurance scheme for that matter depends on the scheme's capacity to spread the risk of ill-health between the rich and the poor, and between the ill and the healthy. Following the

law of large numbers, successful risk pooling that ensures a minimum burden of financial consequence of health risk on individuals demands a large client base (9).

BANKING ON SOLIDARITY AND QUEST FOR SOCIAL SERVICE

Two interesting findings from our study need to be highlighted in relation to increasing the size of the client pool. One is the understanding about MHI among community members of Chakaria that success of an MHI scheme lies in solidarity. The second is that many of the better-off respondents opined that, if not for their own benefit, MHIs can give them the opportunity to contribute in improving the health of their not so well-off neighbors (Chapter 6). These two findings have important implications for MHI schemes in developing countries, particularly in settings where solidarity among the community members is strong. Earlier studies have also found the success of MHI schemes to be dependent on the level of social capital (4, 10, 11). The higher likelihood of NGO members joining the Chakaria health card scheme documented in chapter 5 might also be indicative of the in-built solidarity that the members of such development programs share.

Thus the notion of social service can be used to encourage people to join MHI schemes. The dominant religion in Bangladesh is Islam which mandates the better-off Muslims to donate a proportion of their income (known as *Zakat)* when their savings exceeds a certain level and it is used as a poverty alleviation tool (12). MHI schemes can also think of accessing the *zakat* funds to subsidize premiums for the poor.

The quantitative findings of the thesis help us identify groups of people who are more inclined towards joining the MHI scheme. Results showed that households with higher level of education were more likely to join MHI schemes (Chapter 5). The influence of education on enrolment in MHI schemes have been documented elsewhere (13-17). This could be due to better understanding of the concept of health insurance among the educated group. Education has far reaching implications in people's life. Along with it comes access to information on myriad

issues, which in turn prompts informed decision-making. The other group of people identified was those having membership of development programs offered by NGOs, particularly the micro finance programs (Chapter 5). These income generating programs give the households access to additional funds that they can use to pay for the premium. Another explanation for NGO members to join such schemes could be linked with the concept of 'self-selection bias' which is a condition where the characteristics of the target population or sample that causes them to get involved in a group biases the outcome of that group. In other words individuals who join development programs might have an inbuilt interest to join new schemes that they perceive to be beneficial for their family. Additionally involvement with development programs also gives this group exposure to knowledge and information, which the other group does not have access to or are simply not aware of.

MHI schemes can bank on these groups of people who are in favor of participating in MHI schemes and use them to influence their peer and neighbors.

TRUST OVER THE PROVIDER ORGANIZATION

Due to the fact that MHI is not widespread in developing countries, people tend to speculate about its operational mechanism which often results in clients being skeptic about its effectiveness. A trusted relationship between the clients and the provider organization (both insurer and health service provider) can play a vital role in raising the demand for MHI. For the Chakaria health card scheme, the integrity of ICDDR,B (the provider organization for the MHI scheme under study) resulted in a trusted relationship between the organization and the villagers. As a result, people were attracted to the MHI scheme that ICDDR,B offered with the belief that the health service would be of superior quality and that as insurer ICDDR,B will not mishandle the premiums they pay. The MHI schemes around the world, particularly in developing countries, have also been documented to experience similar conditions where trust in provider organization boosted demand for a particular scheme (18).

An Affordable Premium For MHI: The Right Balance Between Individual Contribution And Benefits Covered

A major challenge for the MHI schemes in the developing countries has been to set an appropriate level of premium. MHI schemes around the developing world have been found to charge a flat rate premium for its clients. This is primarily due to the fact that the client base for MHI schemes are mostly involved in the informal sector and charging a sliding scale premium according to people's level of income is complex. However, a flat rate premium tends to make the system highly regressive as poor people in this system contribute a higher proportion of their income than the wealthier people (19-21). Safe-nets where premium for those with lower ability-to-pay are subsidized or exempted have the potential to bring in the desired level of equity (19).

Further, complexity in setting premiums for MHI schemes lie in the fact that while the financial viability of any insurance scheme is critical for its long term existence, MHIs are primarily designed to ensure inclusion of people with lower ability to pay. Therefore, many a times, the organizations designing MHI schemes to serve the poor population opt for lowering the premium level in general. This is particularly so because studies including the current thesis document lower participation among the poor population due to non affordability of the premium (13) (chapter 5, 6). This is an intuitive finding, as for the poor, investing money in advance to secure healthcare is considered a luxury against the pressing need for basic necessities like food, shelter, and clothing. Health becomes a secondary issue for these people which gains attention only in case of emergency. Low enrolment in health insurance schemes among the poor was found in Mahajan where it is noted that after paying for essential consumption, repayment of borrowing, the poor don't have much left to pay for premiums (22). Building safety-nets within the scheme to subsidize services for the poor is a common practice in dealing with this challenge.

On the other hand, empirical evidence shows that most micro-insurance institutions incur losses in their first few years of operation due to the fact that they keep the premiums low to attract and retain members (7). However, only a good reserve or support from some external partner to make up the shortfall between premiums earned and expenses reimbursed can help the MHI scheme to survive in such conditions and the scheme can then buildup their client pool to reduce risk in future. Otherwise the scheme will be forced to maintain the balance between expense and earning either by increasing premiums or by truncating benefits both of which will eventually negatively affect demand for the scheme. Earlier studies have documented such consequences. Experience from the Chakaria Health Card Scheme revealed that low premiums resulted in doctors not being available at the health centers round the clock which lead to high dropout rates in consecutive years (Chapter 6).

Further, while MHIs tend to keep premiums low at a rate affordable by all, a low price for a product can also signal inferior quality (23). For the case of Chakaria scheme the competitors (e.g. village doctors) even tried to use this as a case against the scheme with the propaganda that 'low price means low quality' (chapter 6). Therefore, MHI schemes in a developing country setting need to take these complexities into consideration in designing their product. Methods like The 'CHAT' (Choosing health plans all together) exercise (24) carried out in India to involve the community people in deciding the best combination of premium and the product that best suits their need could be tested in Bangladesh to make the scheme affordable and acceptable to people from all strata of SES (25). Premium levels and products that reflect the affordability and need for services of the client have greater potential to attract people from all levels of the society (25).

The role of actuarial science is of great importance in this connection. Many countries have learnt the value of actuarial knowledge in scheme design in a costly manner where they had set the premium level to reflect client's ability to pay only (26). As a result the premium was too low to ensure financial feasibility.

Thus for long-term sustainability of the MHI schemes financially viability requires attention no less than people's ability to pay. To attend to the scheme's mandate to include the poor it can build in a safety-net to subsidize premium for the poor which has been the case in many other countries. The policy makers participating in our study also expressed that the potential of MHI to insure people against health risks lies in the scheme's capacity to protect the poor through safety-net programs and affordable premiums. At the same time, the schemes need to be designed in a manner that the potential models have the capacity to scale up to the national level. It is worth mentioning that the national health financing strategy of Bangladesh is also planning to roll out a scheme that will completely subsidize the premium for those below the poverty line (1).

Non Financial Barrier To Uptake Of MHI

Affordability of the insurance product is not the sole barrier to uptake of MHI in low income countries. The significant impacts of non financial barriers have resulted in varying effects of MHI schemes in different parts of the developing countries (27-31). As evident from the Chakaria experience, villagers living in places far from the health centers were less likely to join the health card scheme compared to those who lived nearby (Chapter 5). Low levels of education and lower socioeconomic status add to this challenge as has been the case in other countries around the developing world (29) (Chapter 5).

In designing MHI schemes for rural Bangladesh, the provider thus has to acknowledge these non financial barriers.

Implementing MHI: Can Micro Finance Help?

The link between micro finance and micro health insurance is an interesting one and has its implication in effective implementation of MHI programmes in developing countries. Micro finance has achieved great success in reaching people from lower SES. The famous book "Bankers to the poor" by noble laureate Dr. Muhammad Yunus of Bangladesh has argued and demonstrated that access

to credit can be ensured for the poor households with impressive rate of compliance on loan repayment (32). The Grameen Bank of Bangladesh, one of the major micro finance institutes, has shown that poor people can take out loans to engage in income earning activities and improve their standard of living.

On the contrary, it is also true that there are instances where bundling MHI with existing MFI schemes has led to loss of clients for MFI due to the higher interest rate charged on loans disbursed to pay for the premium for health insurance (33). Thus although at a first glance bundling MHI with MFIs may appear lucrative, further research to find alternate ways to benefit from the learnings of MFI useful for the implementation of MHI needs to be carried out. At the very least the MHIs could use the vast reach of MFIs to expand their networks and create a client pool that is large enough to efficiently spread the risk of ill-health between the rich and the poor, the ill and the healthy and ensure higher value for money.

MHI Complementing The National Health System

Despite the challenges of MHI schemes, a well-designed scheme can play a complementary role to the national system. The qualitative analysis in this thesis revealed the frustration of the community members of Chakaria (a remote rural area) with the government services in expressing their preference for an alternate health financing mechanism (chapter 6). The dissatisfaction with the government health facilities in terms of supply shortage, high patient-doctor ratio, long waiting time, unofficial payments and biased treatment for people from different socioeconomic status, came up several times in discussion with the community members (chapter 6). MHIs can work towards bridging this gap between what people need and what the public sector healthcare facilities offer, particularly in hard to reach areas. Depending on their suitability, it is also possible to use MHIs as insurance providers while healthcare provision is made through public and private sector providers, i.e. a purchaser provider split model (34). In this connection, the policy makers participating in our study were concerned about the possible client loss and resulting inefficient use of public

sector resources if an insurance mechanism is introduced that gives clients 'freedom of choice' for healthcare providers (chapter 6). However, international experience shows that this model has the potential to induce healthy competition in the market and thereby improve quality of services and efficiency in the health systems (chapter 7).

The following section focuses on the essential role of an efficient health insurance system as the government of Bangladesh envisions establishing a social health insurance mechanism in its journey towards UHC. As mentioned earlier the current financing strategy takes MHI as an intermediate step towards the establishment of a national-wide health insurance mechanism in Bangladesh (1). Therefore, for a successful transition from MHI to a social health insurance system, MHI will need to demonstrate that it effectively performs the essential roles of a health financing tool.

Essential Roles Of A National Health Insurance Mechanism

Revenue Collection

Revenue collection under health insurance can vary from being financed by an earmarked tax like social security tax to general tax revenue. It could also be a combined contribution from the client and the employer. Chapter 7 highlights experience in the three different countries in this regard. Thailand started with a co-payment based method. The deterring effect of co-payment on health service utilization later resulted in the Thai government fully subsidizing the premium. Thailand currently has achieved universal coverage for health. In Ghana the major share of the fund comes from VAT on goods and services (70%) followed by compulsory contribution from formal sector workers in the form of social security tax (23%). Premiums from the members on the other hand only fund 5% of the total revenue. This system resulted in reduction of OOP expenses to some extent but the complete advantages are yet to be realized with the current level of enrolment. India, on the other hand, has a revenue collection strategy varying from full subsidization from government to combined contribution from employer, employee and government.

The experience in each of these countries could help Bangladesh design its own revenue collection strategy for a national level health insurance scheme. Bangladesh has a major share of its population involved in the informal sector that makes tax-based revenue collection difficult. Given the limited health sector budget, complete subsidization like Thailand might be difficult too if it is to cover the whole population. However, the current approach of Bangladesh government to fully subsidize the premium for the population below the poverty line (BPL) has been adopted from the Indian experience with the expectation that it will ensure universal coverage for the BPL population. The effectiveness of this approach awaits further investigation. The example of Ghana could also prove to be useful in expanding the insurance scheme in Bangladesh to include people from all strata. What the country has to be careful about is that while a mixed method could be useful, the coexistence of too many types of schemes will result in fragmentation of the resource pool thereby limiting the capacity of the schemes to distribute risk across the different groups (21). It has been observed that in many low and middle income countries financing reforms followed a path where health insurance schemes are solely introduced for the formal workforce. In this system better quality health and resources can be focused to already an advantaged and organized group, which in another form exacerbates inequities in societies and leads to a two-tier system of healthcare provision.

Efficient Purchasing

Efficient purchasing is of particular interest for the low and middle income countries where resource constraints pull the lever in almost every aspect of national planning. Effective cost containment strategies are necessary to ensure efficient purchasing in health systems. At the same time strategies need to be sensitive in ensuring universal coverage, access, and quality of services (35). Chapter 7 of the thesis discusses the varied approaches taken in the case study countries in terms of purchasing health care. Thailand has an efficient purchasing mechanism backed by the strong negotiating power of its national

security office which is the single purchaser for the majority of the population (75%). The closed-ended capitation contracting with diagnosis related group (DRG) hospital payment also helped Thailand keep expenditure low. India, on the other hand, has not been an efficient purchaser for its RSBY clients. The state nodal agency is weak and has not been able to ensure quality healthcare in exchange for premiums paid. A strong negotiating power in purchasing healthcare could also instigate healthy competition in the market leading to improved quality at a reduced price.

In this connection, the relationship between the purchaser and the provider of healthcare services under any insurance mechanism is also of great importance. There are varied models the countries can apply depending upon who purchases the service on behalf of the clients and who delivers the services included in the insurance package. For the case of Bangladesh where public sector facilities suffer from low utilization and low satisfaction among the clients, the government could think of adopting a purchaser-provider spit (PPS) model which will increase the choice of providers and at the same time induce a healthy competition between the providers. The PPS model first tested in Finland allows the two functions of an insurance mechanism, purchasing and service provision, to be distributed between two different parties (34). PPS has the provision to include both public and private sector healthcare providers in the scheme and provides the clients with access to the providers they prefer, while giving purchasers the scope to demand better quality, lower cost services. The freedom of choice of healthcare provider encourages competition amongst the providers in terms of delivering quality service. Like other mechanisms PPS also has its drawbacks which include providers exploiting the ignorance of patients and weakness of purchasers in ordering unnecessarily costly medical services. Again a strong purchasing power, stringent regulations and a proper provider payment mechanism can control these instances. The mechanism for provider payment thus has significant contribution in shaping the outcome of the schemes. The learnings from chapter 7 shows India uses a DRG based payment mechanism instead of a fee-for-service system which is considered to be too low by some of the providers in India and thus instances have been reported where doctors have

refused to treat RSBY clients. Thailand, on the contrary, has successfully set the DRG based payment at a level that covers costs in most cases. Ghana started with a fee-for service mechanism and later moved on to a DRG based payment mechanism as fee-for-service was resulting in cost escalation. Capitation again has its benefits and disadvantages. In cases it can give rise to provider discontent as has been found in Ghana as well as in Nigeria (36). While capitation can result in under provision of services, with careful monitoring, strong regulatory and quality control audits, it can contribute to cost containment for the schemes.

THE IMPACT OF POLICY

Political support has played a key role in implementing health insurance program to reach universal coverage in many developing countries. This is particularly important for Bangladesh where a change in political regime brings in changes in all its macro-economic as well as social conditions. The political parties in Thailand and in Ghana were the major driving force to implement the health insurance schemes in their respective countries. In Thailand the ruling political party implemented the insurance scheme soon after a national financial crisis. Similarly in Ghana, the mandate to implement national health insurance was the winning factor for the political party that came into power in the national election. All these point to the importance of key events or windows of opportunity like national elections, in bringing in desired changes at the policy level. Indeed, creating the policy environment before a country aims for any systems reform is crucial as seen in other country studies. In Tanzania, health insurance was implemented without necessary legislative changes which hindered implementation (37). Likewise Malawi implemented health insurance policy in a hurried manner and it resulted in a mismatch between supply and demand (38).

On the legal front, challenges for MHI remain in formulating relevant laws and their implementation. Our policy level respondents see the need to formulate specific MHI or health insurance act and for smooth operation of the schemes the need for claim settlement law which would assist dispute resolution. Having said

this, one major concern among the respondents from the ministry of health and family welfare of Bangladesh was the lack of coordination between and within the various ministries of the government of Bangladesh (Chapter 6).

CONCLUSION

Health services, by nature, are prone to market failure particularly for the difficulties they pose for measuring and monitoring use of resources and quality and effectiveness of services. This is what makes health financing all the more complex. Programs that are not cautiously managed, regulated, and implemented are unlikely to succeed due to the fact that countries vary in terms of conditions causing ill health and their financial capacity to protect people from the impoverishing effect of ill health (39). The discussion presented in this chapter and the rest of the thesis highlights the fact that countries willing to initiate health insurance as one of the means of ensuring universal coverage need to be flexible in terms of testing and adopting strategies and policies to implement health insurance in their own country context. In this connection, the demand influencing factors need to be taken into consideration in order for any health insurance mechanism to achieve economies of scale. As highlighted in both the quantitative and qualitative findings of this thesis, these factors are not only related to the characteristics of the clients who demand the services but are spread across a wide range of supply-side, institutional and social factors. Revisiting and restructuring policies at different stages of health insurance mechanism development have played a pivotal role for countries to achieve targets. The same mechanism can have a different impact in different settings depending on the stage of development of a particular country and its social, political and economic context (18, 40-43). Interested countries must therefore, set their own priorities for health and the risk protection mechanisms that would suit best the achievement of their country specific goals (39). It might prove to be effective for a country to have different types of health insurance co-existing to serve different groups of the population (44) or have various types follow each other in succession (45). It might well be appropriate for Bangladesh to follow an

incremental approach at the early stage of the move towards universal coverage for health through health insurance by gradually incorporating specific groups of people. This would allow the country to build institutional and technical capacities to support and sustain the newly developed health financing mechanism and at the same time garner adequate political support for future scaling up (46).

However, it is important to realize that creating entitlements by itself does not ensure proper utilization of health services by the target population, particularly in low-middle income countries. For any health financing reform to succeed it should be accompanied by appropriate parallel measures to improve efficiency of healthcare delivery.

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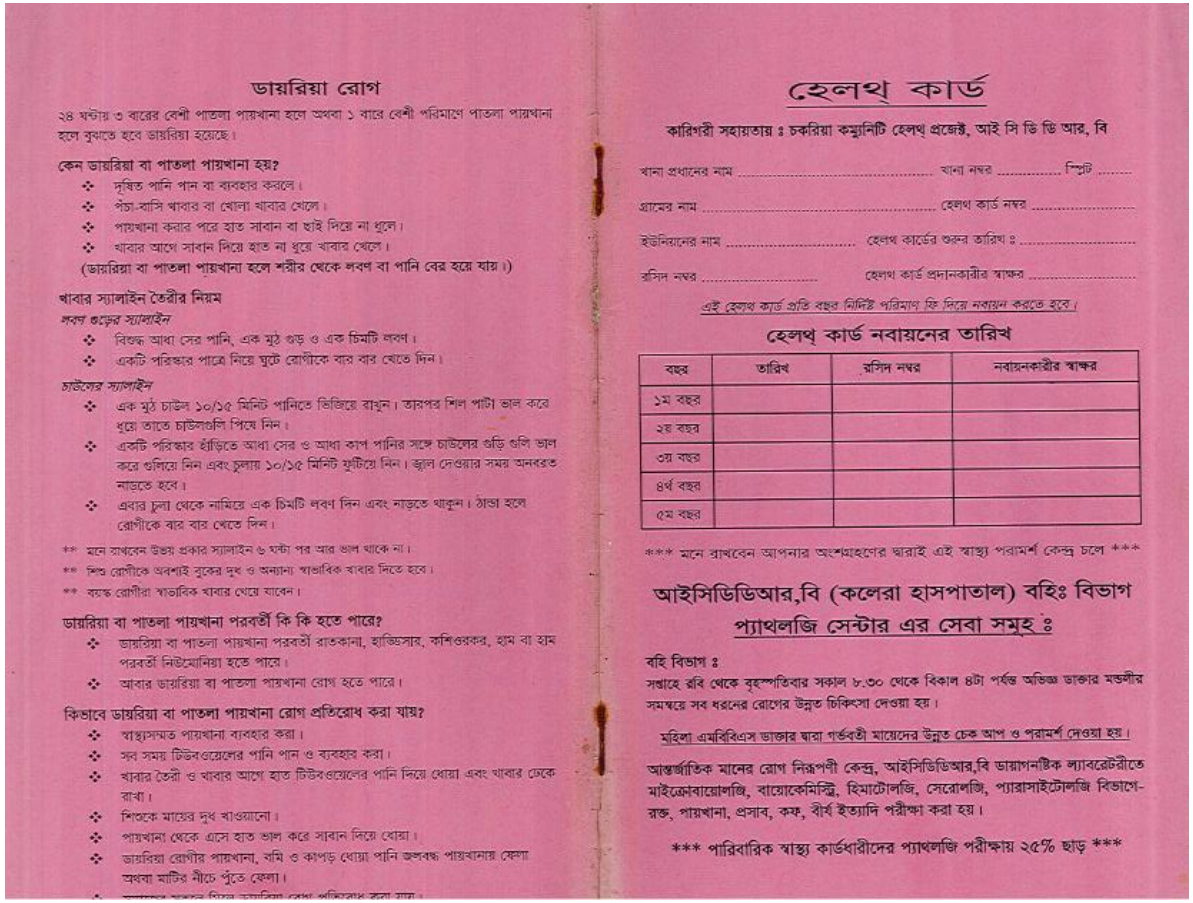
APPENDIX

Appendix 1: THE MEMBERSHIP CARD FOR THE CHAKARIA MICRO HEALTH INSURANCE SCHEME KNOWN AS “CHAKARIA FAMILY HEALTH CARD



ডায়রিয়া রোগ

২৪ ঘন্টায় ৩ বারের বেশী পাতলা পায়খানা হলে অথবা ১ বারে বেশী পরিমাণে পাতলা পায়খানা হলে বুঝতে হবে ডায়রিয়া হয়েছে।

কেন ডায়রিয়া বা পাতলা পায়খানা হয়?

- দূষিত পানি পান বা ব্যবহার করলে।
- পঁচা-বাসি খাবার বা খোলা খাবার খেলে।
- পায়খানা করার পরে হাত সাবান বা ছাই দিয়ে না ধুলে।
- খাবার আগে সাবান দিয়ে হাত না ধুয়ে খাবার খেলে।

(ডায়রিয়া বা পাতলা পায়খানা হলে শরীর থেকে লবণ বা পানি বের হয়ে যায়।)

খাবার স্যালাইন তৈরীর নিয়ম

লবণ গুড়ের স্যালাইন

- বিশুদ্ধ আধা সের পানি, এক মুঠ গুড় ও এক চিমটি লবণ।
- একটি পরিস্কার পাত্রে নিয়ে ঘুটে রোগীকে বার বার খেতে দিন।

চাউলের স্যালাইন

- এক মুঠ চাউল ১০/১৫ মিনিট পানিতে ভিজিয়ে রাখুন। তারপর শিল পাটা ভাল করে ধুয়ে তাতে চাউলগুলি পিষে নিন।
- একটি পরিস্কার হাঁড়িতে আধা সের ও আধা কাপ পানির সঙ্গে চাউলের গুড়ি গুলি ভাল করে গুলিয়ে নিন এবং চুলায় ১০/১৫ মিনিট ফুটিয়ে নিন। জ্বাল দেওয়ার সময় অনবরত নাড়তে হবে।
- এবার চুলা থেকে নামিয়ে এক চিমটি লবণ দিন এবং নাড়তে থাকুন। ঠান্ডা হলে রোগীকে বার বার খেতে দিন।

** মনে রাখবেন উভয় প্রকার স্যালাইন ৬ ঘন্টা পর আর ভাল থাকে না।
** শিশু রোগীকে অবশ্যই বুকের দুধ ও অন্যান্য স্বাভাবিক খাবার দিতে হবে।
** বয়স্ক রোগীরা স্বাভাবিক খাবার খেয়ে যাবেন।

ডায়রিয়া বা পাতলা পায়খানা পরবর্তী কি কি হতে পারে?

- ডায়রিয়া বা পাতলা পায়খানা পরবর্তী রাতকানা, হাড্ডিসার, কাশিওরকর, হাম বা হাম পরবর্তী নিউমোনিয়া হতে পারে।
- আবার ডায়রিয়া বা পাতলা পায়খানা রোগ হতে পারে।

কিভাবে ডায়রিয়া বা পাতলা পায়খানা রোগ প্রতিরোধ করা যায়?

- স্বাস্থ্যসম্মত পায়খানা ব্যবহার করা।
- সব সময় টিউবওয়েলের পানি পান ও ব্যবহার করা।
- খাবার তৈরী ও খাবার আগে হাত টিউবওয়েলের পানি দিয়ে ধোয়া এবং খাবার ঢেকে রাখা।
- শিশুকে মায়ের দুধ খাওয়ানো।
- পায়খানা থেকে এসে হাত ভাল করে সাবান দিয়ে ধোয়া।
- ডায়রিয়া রোগীর পায়খানা, বমি ও কাপড় ধোয়া পানি জলবদ্ধ পায়খানায় ফেলা অথবা মাটির নীচে পুঁতে ফেলা।

হেলথ্ কার্ড

কারিগরী সহায়তায় ঃ চকরিয়া কম্যুনিটি হেলথ্ প্রজেক্ট, আই সি ডি ডি আর, বি

থানা প্রধানের নাম ..... থানা নম্বর ..... স্লিপ্ট .....

গ্রামের নাম ..... হেলথ কার্ড নম্বর .....

ইউনিয়নের নাম ..... হেলথ কার্ডের শুরুর তারিখ ঃ .....

রসিদ নম্বর ..... হেলথ কার্ড প্রদানকারীর স্বাক্ষর .....

এই হেলথ কার্ড প্রতি বছর নির্দিষ্ট পরিমাণ ফি দিয়ে নবায়ন করতে হবে।

হেলথ্ কার্ড নবায়নের তারিখ

বছর	তারিখ	রসিদ নম্বর	নবায়নকারীর স্বাক্ষর
১ম বছর			
২য় বছর			
৩য় বছর			
৪র্থ বছর			
৫ম বছর			

*** মনে রাখবেন আপনার অংশগ্রহণের দ্বারাই এই স্বাস্থ্য পরামর্শ কেন্দ্র চলে ***

আইসিডিডিআর,বি (কলেরা হাসপাতাল) বহিঃ বিভাগ

প্যাথলজি সেন্টার এর সেবা সমূহ ঃ

বহি বিভাগ ঃ

সপ্তাহে রবি থেকে বৃহস্পতিবার সকাল ৮.৩০ থেকে বিকাল ৪টা পর্যন্ত অভিজ্ঞ ডাক্তার মন্ডলীর সমন্বয়ে সব ধরনের রোগের উন্নত চিকিৎসা দেওয়া হয়।

মহিলা এমবিবিএস ডাক্তার দ্বারা গর্ভবতী মায়েদের উন্নত চেক আপ ও পরামর্শ দেওয়া হয়।

আন্তর্জাতিক মানের রোগ নিরূপণী কেন্দ্র, আইসিডিডিআর,বি ডায়াগনষ্টিক ল্যাবরেটরীতে মাইক্রোবায়োলজি, বায়োকেমিস্ট্রি, হিমাটোলজি, সেরোলজি, প্যারাসাইটোলজি বিভাগে- রক্ত, পায়খানা, প্রসাব, কফ, বীর্য ইত্যাদি পরীক্ষা করা হয়।

*** পারিবারিক স্বাস্থ্য কার্ডধারীদের প্যাথলজি পরীক্ষায় ২৫% ছাড় ***

Appendix 2: CHAKARIA COMMUNITY HEALTH PROJECT SOCIO-DEMOGRAPHIC CENSUS, CHAKARIA, 1999

HHN	Split no	**Chakaria Community Health Project socio-demographic Census 1999**							Village	VID	
HH member : on the day of the interview total male members: total female members: Respondent ID											
Member ID	Name Member ID=01= HH head	Rel with HH head	Age on the int date			sex	Usual resident	Marital status	Education		Main occup ation
			yr	mon	day				type	class	

Household characteristics	Religion	Tribe : Bengali=1 Mog=2	Donation during last Ramadan Donated =1 Received=2 None =3
Participation in last religious occasion: took part =1 did not take part=2			Type of largest room: wall: floor: roof: pillar :

Mosquito net no:	Radio: yes=1 no=2	TV: yes-=1 no =2	Power supply: electricity=1 oil lamp=2	**CCHP Family health card**: Yes =1 No=2
Day labor: yes=1 no=2	Main earner: male=1 female=2	Type of cooking salt used: coarse=1 Fine =2	Sanitary latrine: Don't have=1 ring/pakka/ covered=2 covered hole=3 open=4 ring/pakka open =5	
Water used for washing: tube well=1 pond/river=2 both=3		Membership in NGOs in HH (yes=1 no=2): BRAC:.....GBank.....Other.....		

Ever married women<45 yrs: use of family planning method: don't use=1 condom=2 pill=3 injectible=4 copper T=5 permanent method=6 others= please specify.
Outcome of last pregnancy (during last one year starting from the int day): live birth(7+mon)=1 still birth(7+mon)=2 abortion (<7mon)=3 currently pregnant= yes=1 no=2

Member no	MID of husband	Ngo membership			Pregnancy outcome	Delivery date	Currently pregnant	Date of conception	Date of TT for current pregnancy		Total TT before current pregnancy	Use of pap test
		BRAC	GBank	Other					TT 1	TT2		

Children <24 mon: ANC/Safe DK/colostrums/ diar L2W/Ors: yes=1 no=2; currently breast milk, only breast milk =1, breast milk and supplementary food=2, only supplementary food=3

Member no	MID of mother	ANC	Safe DK use	Gave colostrums	Currently breast feeding	Diar L2W	Gave ORS	MUAC (mm)	Date of vaccination					
									BCG	DPT1	DPT2	DPT3	Measles	Last Polio

Live birth: starting from January 1998 till the int date								
Member no	Name of child	sex	Date of birth	MID of mother	Mother's age on the day of child's birth			Comment
					yr	mon	day	

Death: starting from January 1998 till the int date							
Member no	Name of person dead	Sex	Date of death	Age at death			Reason of death
				yr	mo	day	

Name of interviewer: _____ Date of interview: _____

Note: the micro health insurance scheme in Chakaria was known as "CCHP family health card".

APPENDIX 3: CHAKARIA DEMOGRAPHIC AND HEALTH SURVEY, 2004

Chakaria DSS ICDDR,B 2004	vid	round	data collection: date	data collection: respondent's mid	data collector	supervisor: code	supervisor: check	re-interview	ethnicity bang..1, rakha..2	currently NGO membership (any member)	Date of joining
	hid	1					yes…1 no….2	yes…1 no….2	religion muslim.....1 hindu.....2 buddha.....3	brac: yes…1 no….2	
		2					yes…1 no….2	yes…1 no….2		gbank: yes…1 no….2	
	split	3					yes…1 no….2	yes…1 no….2		proshika: yes…1 no….2	
		4					yes…1 no….2	yes…1 no….2		others: yes…1 no….2	

ownership of assets (hh or any member)	num almirah	num table/chair	num mosqu net	num watch/clock	num choki/khat	radio yes….1 no….2	television yes….1 no….2	main occup of hhh	roof of main dweling	electricity yes….1 no….2	latrine: none…0 surface…1 hole …2 ring/pukka…3

sale of menial labour last quarter in number of days:	num van/rickshaw	num sew machine	telephone yes….1 no….2	**cchp health card yes….1 no….2**	cchp coop mem yes….1 no….2	ownership of land write in local unit	homestead + pond	agri	salt	fish

membership identity → mid: father - mother - spouse

no…0 fem ster…1 male ster…2 pill…3 iud…4 inj…5 imp/norpla…6 condom…7 mr….8 safe per…9 withdraw…10 amenorr…11

mid	household member	mid fms not hh mem…55 dead…66	Birth (delivery place only for infant)	safe motherhood activities (only for infant)	SES (for age≥ 6 years) edu type: no…0 sec….1 not sec……2	round	fp use	m stat, date mar…1 div…2 aba….3 sep…4 wid…5 unm…6	pregnancy: conception, date planned------1 unplanned---2	pregnancy: outcome , date s_ab…1 i_ab….2 still b..3 live b…4	migration: in-date, moved from	migration: out-date, moved away	death
	name	fa_mid	date:	anc: pnc:	edu type:	1							date:
		mo_mid		delivery: midwife……1	class passed:	2							cause:
sex m..1 f…2	rela with hhh	sp_mid	delivery place: hos/clinic…1 home……2	fwv/a……2 nur/doct……3 tba……4	main occup:	3							
						4							days suffered:
	name	fa_mid	date:	anc: pnc:	edu type:	1							date:
		mo_mid		delivery: midwife……1	class passed:	2							cause:
sex m..1 f…2	rela with hhh	sp_mid	delivery place: hos/clinic…1 home……2	fwv/a……2 nur/doct……3 tba……4	main occup:	3							
						4							days suffered:

Chakaria DSS ICDDR,B 2005	Vid	round	data collection: date	data collection: mid of respondent	data collector	supervisor: code	supervisor: Check	re-interview	did any HH member sell menial labour last quarter?	from where the rice/ruti for dinner last night came?	was any HH member not able to eat enough last night because of lack of food?
	hid	5					yes…1 no….2	yes…1 no….2	yes…1 no….2	own cultivation-1 bought-2 borrow-3 help-4	yes…1 no….2
		6					yes…1 no….2	yes…1 no….2	yes…1 no….2	own cultivation-1 bought-2 borrow-3 help-4	yes…1 no….2
	split	7					yes…1 no….2	yes…1 no….2	yes…1 no….2	own cultivation-1 bought-2 borrow-3 help-4	yes…1 no….2
		8					yes…1 no….2	yes…1 no….2	yes…1 no….2	own cultivation-1 bought-2 borrow-3 help-4	yes…1 no….2

ownership of assets (hh or any member)	almirah: yes….1 no….2	table/chair: yes….1 no….2	mosqu net: yes….1 no….2	watch/clock: yes….1 no….2	choki/khat: yes….1 no….2	radio yes….1 no….2	television yes….1 no….2	main occup of hhh:	roof of main dweling:	electricity yes….1 no….2

latrine: none…0 surface….1 hole …2 ring/pukka…3	currently NGO membership: no-0 brac-1 gbank-2 others-3	van/rickshaw: yes….1 no….2	sew machine :yes….1 no….2	telephone yes….1 no….2	**cchp health card valid-1 invalid-2 no- 3**	cchp coop mem yes….1 no….2	ownership of land write in local unit	homestead + pond	agri:	salt:	fish:

membership identity → mid: father - mother - spouse

no…0 fem ster…1 male ster…2 pill…3 iud…4 inj…5 imp/norpla…6 condom…7

mid	household member	mid_fms not hh mem…55 dead…66	birth (delivery place only for infant)	safe motherhood activities (only for infant)	SES (for age≥ 6 years) edu type: no…0 sec….1 not sec……2	round	fp use	m stat, date: mar…1 div…2 aba….3 sep…4 wid…5 unm…6	pregnancy: conception, date planned------1 unplanned---2	pregnancy: outcome , date s_ab……1 i_ab….2 still b…..3 live b…4	migration: in-date, moved from	migration: out-date, moved away	death
	name	fa_mid / mo mid / sp_mid	date:	anc: pnc:	edu type:	5							date:
				delivery: A D P	class passed:	6							cause:
sex m..1 f…2	rela with hhh		delivery place: hos/clinic…1 home……..2	midwife……..1 fwv/a……..2 mur/doct……..3 tba……..4	main occup:	7							
						8							days suffered:
	name	fa_mid / mo mid / sp_mid	date:	anc: pnc:	edu type:	5							date:
				delivery: A D P	class passed:	6							cause:
sex m..1 f…2	rela with hhh		delivery place: hos/clinic…1 home……..2	midwife……..1 fwv/a……..2 mur/doct……..3 tba……..4	main occup:	7							
						8							days suffered:

APPENDIX 5: PRELIMINARY QUESTIONNAIRE FOR SEMI-STRUCTURED INTERVIEW WITH MEMBERS AND NON-MEMBERS OF HEALTHCARD SCHEME IN CHAKARIA

Interview date:

D	D	M	M	Y	Y

1. Village:
2. Household number:
3. Household head name:
4. Name of respondent:
5. Age: 6.Sex: male ☐ female ☐

7. Occupation:

7a. Socioeconomic Status: poor ☐ non poor ☐

Healthcard scheme in Chakaria

		skip
8. Membership in health card scheme ever:	Yes and continued membership	Q.12,13
	Yes but did not renew	Q. 12
	No	Q. 9, 10, 11, 13

9. Since when are you a member? _____

10. Why did you join the health card scheme?

11. What benefits did you receive from health card scheme?

12. What was your reason for never enrolling into the health card scheme?

13. Reasons for not renewing

14. To you, which was better health service with health card scheme or without health card scheme?

With health card scheme why?
Without health card scheme why?

P.T.O

Understanding of health insurance and willingness to join micro health insurance schemes

Benefit type	Service	Cost	Payment mechanism	Benefit ceiling (1 USD=Tk. 84, 2012 est.)	Premium (1 USD=Tk. 84, 2012 est.)
Out-patient services	Consultation at designated health centres	Free of charge	No point of service payment	Maximum of 6 members per household per year is covered under the scheme Benefit ceiling of Tk. 54,000/ household/ year And individual household member ceiling of Tk. 9,000/ household/ year	Tk. 1000/ household/year
	Diagnostic tests	20% discount on market price	Patient pay 80% of the price out-of-pocket		
	Medicine	20% discount on market price	Patient pay 80% of the price out-of-pocket		
In-patient services	Hospital stay, operation, medicine and diagnostic	No out-of-pocket expenses for costs not exceeding Tk 9,000/ individual / year	Patients pay costs exceeding the ceiling		

Present the above hypothetical health insurance offer. If health insurance is offered in your area:

15. What would be your reason for joining or reason for buying Health insurance?

16. If you don't wish to enroll what would be the reason for not enrolling

17. What factors will you consider to continue membership?

18. In your opinion is health insurance necessary for provision of quality healthcare in your area?
Yes No not sure
Reason for yes/no:

19. What do you understand by the term "health insurance"?

20. Do you think Health insurance can benefit you? Yes No

If yes, Why? If no, Why?

21. In your opinion which would be better: current system of health service provision at govt facility or healthcare under health insurance scheme?
Current system of govt health service why?
Healthcare under health insurance why?
None why?
Other why?

_____
Signature of the interviewer date:

APPENDIX 6: KEY INFORMANT INTERVIEW WITH PROGRAM PERSONNEL

Interview date:

D	D	M	M	Y	Y

1. Name:
2. Position held while working for health card scheme:
3. Sex: male female
4. How long did you work for the health card scheme:
5. What was your role in the project?

6. What factors helped you in convincing people to enroll in health card scheme?

7. What were the operational/programmatic challenges in running the health card scheme? (e.g.not enough resource, lack of skill,) (mention them according to the level of importance starting from the most important)

8. Do you think you had enough technical knowledge and skill to operate such a scheme?
   Yes no
9. If no, what could have been done to make it easier for you to run the program efficiently?

10. To you, what is the difference between health insurance and other forms of insurance?

11. To you, what is the difference between savings and health insurance?

12. What technique did you use to explain health insurance to people? (e.g. definition, use of local term for health insurance)

13. What additional skill do you think would be required to run a health insurance scheme in your area?

14. To your opinion, does health insurance have the potential to benefit people, particularly the poor?
    Yes why? No why?

15. Is health insurance necessary for provision of quality healthcare in your area?
    Yes No not sure
    Reason for yes/no:

16. To your opinion which is better: govt health service or healthcare under health insurance scheme?
    Govt health service at govt facilities why?
    Healthcare under health insurance why?
    None why?
    Other why?

_____ Date :

Signature of interviewer

APPENDIX 7: KEY INFORMANT INTERVIEW WITH POLICY MAKERS

Interview date:

D	D	M	M	Y	Y

1. Name:
2. Organization:
3. Position:
4. Sex: male female
5. Role in policy making:

6. To your opinion does micro health insurance hold the potential for making health financing in public sector more efficient?
7. Yes why? No Why?

8. Is health policy in Bangladesh in favor of employing micro health insurance as an alternate health financing tool nationally?
   Yes:
   Which factors are favorable?

   No:
   Which factors act as barriers?

9. If policy is in favor of micro health insurance then what form of health insurance do policy makers would prefer for Bangladesh?

10. What policy changes need to be brought in to create an enabling environment for micro health insurance in Bangladesh? What legislative consequences will this have?

11. To your opinion, does micro health insurance have the potential to benefit people, particularly the poor?

    Yes why? No why?
12. Is micro health insurance necessary for provision of quality healthcare in Bangladesh?

    Yes No not sure
    Reason for yes/no:

13. To your opinion which would make the most efficient use of government budget for health? Existing health financing mechanism or health financing under micro health insurance?
    Existing health financing mechanism why?
    Healthcare under health insurance why?

_____ Date:
Signature of interviewer

APPENDIX 8: CONSENT FORM FOR HEALTH CARD MEMBERS AND NON-MEMBERS

Protocol No. **PR-12001**	Version No.	Date: 00-00-0000

Protocol Title: Problems and prospects of implementing micro health insurance in rural Bangladesh: Findings from Chakaria
Investigator's name: Shehrin Shaila Mahmood
Organization: ICDDR,B and The Australian National University

Purpose of the research
Background : I am a PhD student and as a part of my study I will conduct a research on the health card scheme that operated in your area with assistance from ICDDR,B during the time period 1998-2005. My research will try to find out whether the scheme was considered as an efficient health financing tool for the villagers. I would like to interview people who joined and also those who did not join the scheme to investigate the factors that influenced the choice to enrol or not to enrol. At the same time the research will also aim to assess the level of understanding among the villagers about health insurance. The study will also investigate the level of interest among villagers to join such schemes and their opinion on the potential of health insurance in ensuring access to quality healthcare.

Why invited to participate in the study?
As the health card scheme was in existence in your village your opinion as a member/non-member of the scheme would be very useful to fulfil the aim of the study. For this, we are inviting you to participate in this study.

Methods and procedures
If you agree to our proposal of enrolling you in the study:
I would like you to answer a few questions that will mostly be on your understanding about health insurance, the factors that influenced your enrolment/non-enrolment in the scheme, which aspects to you would make the scheme more attractive and efficient, your opinion about the potential of health insurance to serve as an alternate health financing tool. The interview will take about 30 minutes to complete.

Risk and benefits
We assure you that the study does not involve any physical, financial or other direct/indirect risk to you or your household members.

Even though you might not receive any direct benefit by participating in this research and providing us with your valuable opinion, the findings from this study will help us to assess how far health insurance in the form of micro health insurance will be accepted by people in rural Bangladesh. Also, we can asses if micro health insurance can be a solution to the ever rising out-of-pocket health expenses in a low-income country like Bangladesh. If so, then which aspects of micro health insurance would attract people and which need to be amended to cater the needs of the clients of a low-income country.

Privacy, anonymity and confidentiality
I do hereby affirm that privacy, anonymity and confidentiality of data/information identifying you/your household members will strictly be maintained. We would keep all information under lock and key. None other than the investigators of this research; possible study monitor, and any law-enforcing agency in the event of necessity would have access to the information. As my program of study is at an overseas university the data related to the study will be taken outside the country for analysis; however, any personal identifiable information will be held and processed under secured conditions, with access to limited appropriate staff of my organization.

Future use of information
In case of future use of the information that I collect from you, complete privacy of your identification will be maintained. Privacy will also be maintained in case the data is shared with other researchers or is presented at conferences.
Right not to participate and withdraw

I should inform you that your participation in the study is voluntary, and you are the sole authority to decide for and against your participation. You would also be able to withdraw your participation any time during the study. Refusal to take part in or withdrawal from the study will involve no penalty or loss.

Principle of compensation
I am sorry that you will not be provided with any direct financial benefit for participating in this study.

Answering your questions/ Contact persons
I would be happy to answer your questions about the study. (Contact Shehrin Shaila Mahmood, phone 880-2-8810021). You can also contact our IRB secretariat (Contact RA, M. A. Salam Khan, phone: 9886498 or PABX 8860523-32 ext. 3206) for any further clarification about your right as a responded of the study.

If you agree to participate in the study, please indicate that by putting your signature or your left thumb impression at the specified space below

Thank you for your cooperation

_____ _____
Signature or left thumb impression of participant Date

_____ _____
Signature or left thumb impression of Date
Parent/ Guardian/ Attendant

_____ _____
Signature or left thumb impression of the witness Date

_____ _____
Signature of the PI or his/her representative Date

(NOTE: In case of representative of the PI, she/he shall put her/his full name and designation and then sign)

(Name and contact phone of IRB Secretariat, RA, M. A. Salam Khan, Phone No: 9886498 or PABX 8860523-32 Extension. 3206).

APPENDIX 9: CONSENT FORM FOR HEALTH CARD SCHEME PROGRAM PERSONNEL

Protocol No. **PR-12001**	Version No.	Date: 00-00-0000

Protocol Title: Problems and prospects of implementing micro health insurance in rural Bangladesh: Findings from Chakaria
Investigator's name: Shehrin Shaila Mahmood
Organization: ICDDR,B and The Australian National University

Purpose of the research
Background : I am a PhD student and as a part of my study I will conduct a research on the health card scheme that your organization (ICDDR,B) rolled out in Chakaria during the time period 1998-2005. This study will try to investigate the factors associated with the operation of a micro health insurance scheme like yours. Also the study will try to assess the level of knowledge among the program people in operating health insurance scheme and identify the prevailing gaps in skill and knowledge.

Why invited to participate in the study?
As you were directly involved in the operation of the Chakaria healthcard scheme your opinion will be highly valuable in assessing the feasibility of running such a scheme in rural areas of Bangladesh. For this, we are inviting you to participate in this study.

Methods and procedures
If you agree to our proposal of enrolling you in the study, we will be asking you questions which will concentrate on the following issues:
The operational definition of micro health insurance according to the providers of micro health insurance in Chakaria. The level of knowledge and skill on running micro health insurance among the program personnel.
The major challenge in operating micro health insurance schemes in a resource poor setting
Factors facilitating rolling out of health card scheme in Chakaria
Factors that can influence efficiency in operating micro health insurance schemes
The interview will take about 20 minutes to complete.

Risk and benefits
We assure you that the study does not involve any physical, financial or other direct/indirect risk to you or your household members.
Even though you might not receive any direct benefit by participating in this research and providing us with your valuable opinion, the findings from this study will help us to assess from a program perspective whether it is feasible to roll out health insurance in the form of micro health insurance in a resource poor country like Bangladesh. At the same time from your valuable opinion I will be able to identify the gaps in knowledge and skill that demands particular attention in making such a program a success.

Privacy, anonymity and confidentiality
I do hereby affirm that privacy, anonymity and confidentiality of data/information identifying you/your household members will strictly be maintained. We would keep all information under lock and key. None other than the investigators of this research; possible study monitor, and any law-enforcing agency in the event of necessity would have access to the information. As my program of study is at an overseas university the data related to the study will be taken outside the country for analysis; however, any personal identifiable information will be held and processed under secured conditions, with access to limited appropriate staff of my organization.

Future use of information
In case of future use of the information that I collect from you, complete privacy of your identification will be maintained. Privacy will also be maintained in case the data is shared with other researchers or is presented at conferences.
Right not to participate and withdraw

I should inform you that your participation in the study is voluntary, and you are the sole authority to decide for and against your participation. You would also be able to withdraw your participation any time during the study. Refusal to take part in or withdrawal from the study will involve no penalty or loss.

Principle of compensation
I am sorry that you will not be provided with any direct financial benefit for participating in this study.

Answering your questions/ Contact persons
I would be happy to answer your questions about the study. (Contact Shehrin Shaila Mahmood, phone 880-2-8810021). You can also contact our IRB secretariat (Contact RA, M. A. Salam Khan, phone: 9886498 or PABX 8860523-32 ext. 3206) for any further clarification about your right as a responded of the study.

If you agree to participate in the study, please indicate that by putting your signature or your left thumb impression at the specified space below

Thank you for your cooperation

_____ _____
Signature or left thumb impression of participant Date

_____ _____
Signature or left thumb impression of Date
Parent/ Guardian/ Attendant

_____ _____
Signature or left thumb impression of the witness Date

_____ _____
Signature of the PI or his/her representative Date

(NOTE: In case of representative of the PI, she/he shall put her/his full name and designation and then sign)

(Name and contact phone of IRB Secretariat, RA, M. A. Salam Khan, Phone No: 9886498 or PABX 8860523-32 Extension. 3206).

APPENDIX 10: CONSENT FORM FOR HEALTH POLICY MAKERS

Protocol No. **PR-12001**	Version No.	Date: 00-00-0000

Protocol Title: Problems and prospects of implementing micro health insurance in rural Bangladesh: Findings from Chakaria
Investigator's name: Shehrin Shaila Mahmood
Organization: ICDDR,B and The Australian National University

Purpose of the research
Background : I am a PhD student at The Australian National University and my research topic is micro health insurance in Bangladesh. The research will look into the feasibility of using micro health insurance as an efficient health financing tool in a resource poor country like Bangladesh. As you are aware that the health sector of Bangladesh is underfunded where only 4% of national budget is being spent on health. The level of out of pocket expenditure is unjustly high compared to the ability to pay of the citizens. Therefore you would agree that the country needs alternate health financing mechanisms to overcome the resource shortage and safeguard people from the sudden financial shock of illness. Health insurance in many countries has proved to be efficient in pooling risk and managing health fund to ensure healthcare for all. My research will try to understand the factors associated with the uptake of micro health insurance in Bangladesh. In particular, a part of my study will investigate whether the policy environment in Bangladesh is in favour of rolling out micro health insurance as an alternate health financing mechanism.

Why invited to participate in the study?
As you hold a valuable position in the policy arena of health in Bangladesh, your opinion will help in building a useful discussion around health insurance in Bangladesh. It is for this reason we are inviting you to join this study and enrich our findings.

Methods and procedures
If you agree to join by participating in the interview I will ask a few questions which will focus on the following issues:
The policy environment for health insurance in Bangladesh
The view of policy makers regarding using micro health insurance or as a health financing tool in Bangladesh
Factors or issues that would influence (negative or positive) the use of micro health insurance in a resource poor country like Bangladesh
The interview will take about 20 minutes to complete.

Risk and benefits
We assure you that the study does not involve any physical, financial or other direct/indirect risk to you or your household members.
The research findings will help us to assess the policy environment for implementing health insurance in Bangladesh.

Privacy, anonymity and confidentiality
I do hereby affirm that privacy, anonymity and confidentiality of data/information identifying you/your household members will strictly be maintained. We would keep all information under lock and key. None other than the investigators of this research; possible study monitor, and any law-enforcing agency in the event of necessity would have access to the information. As my program of study is at an overseas university the data related to the study will be taken outside the country for analysis; however, any personal identifiable information will be held and processed under secured conditions, with access to limited appropriate staff of my organization.

Future use of information
In case of future use of the information that I collect from you, complete privacy of your identification will be maintained. Privacy will also be maintained in case the data is shared with other researchers or is presented at conferences.

Right not to participate and withdraw
I should inform you that your participation in the study is voluntary, and you are the sole authority to decide for and against your participation. You would also be able to withdraw your participation any time during the study. Refusal to take part in or withdrawal from the study will involve no penalty or loss.

Principle of compensation
I am sorry that you will not be provided with any direct financial benefit for participating in this study.

Answering your questions/ Contact persons
I would be happy to answer your questions about the study. (Contact Shehrin Shaila Mahmood, phone 880-2-8810021). You can also contact our IRB secretariat (Contact RA, M. A. Salam Khan, phone: 9886498 or PABX 8860523-32 ext. 3206) for any further clarification about your right as a responded of the study.

If you agree to participate in the study, please indicate that by putting your signature or your left thumb impression at the specified space below

Thank you for your cooperation

_____ _____
Signature or left thumb impression of participant Date

_____ _____
Signature or left thumb impression of Date
Parent/ Guardian/ Attendant

_____ _____
Signature or left thumb impression of the witness Date

_____ _____
Signature of the PI or his/her representative Date

(NOTE: In case of representative of the PI, she/he shall put her/his full name and designation and then sign)

(Name and contact phone of IRB Secretariat, RA, M. A. Salam Khan, Phone No: 9886498 or PABX 8860523-32 Extension. 3206).