What Factors Affect Uptake of Voluntary- and Community-Based Health Insurance Schemes in Low- And Middle-Income Countries? A Systematic Review

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Since MIA is involved in the implementation of CBHI schemes, there may be a conflict of interest. In order to ensure that the review process, results and reporting are objective and unbiased, we took the following steps: (a) we followed a protocol with explicit inclusion criteria and did not make inclusion based on study findings, (b) drafts of protocol and review were externally peer reviewed and approved, and (c) drafts of review were also peer reviewed by an eminent advisory group.

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Contributions

Conceived and designed the experiment: PP DMD TPK IHD. Performed the experiment: PP TPK SH AM. Analyzed the data: PP AM SH DJ DMD. Contributed analysis tools: PP IHD TPK SH AM DMD JK DJ. Wrote the report: PP DMD TPK.

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Abbreviations

3ie	International Initiative for Impact Evaluation
CBHI	Community-based health insurance
CGAP	Consultative Group to Assist the Poor
CI	Confidence interval
CIRM	Centre for Insurance and Risk Management
CPCI	Conference Proceedings Citation Index
CS	Case study
EED	Economic evaluation database
EPPI-Centre	Evidence for Policy Practice Information and Coordinating Centre
EU	Expected utility theory
GNI	Gross national income
IFMR	Institute for Financial Management and Research
ILO	International Labour Organization
KIIs	Key informant interviews
LIC	Low-income countries
LMIC	Low- and middle-income countries
MeSh	Medical subject headings
MFI	Microfinance institutions
MHI	Mutual health insurance
MHIB	Micro Health Insurance Bangladesh
MIA	Micro Insurance Academy
NGO	Non-governmental organisation
OOP	Out of pocket
PRISMA	Preferred reporting items for systematic reviews and meta-analyses
SEWA	Self-Employed Women's Association
SHI	Social health insurance
SSCI	Social Science Citation Index
SSMP	Safe Motherhood Program
STEP	Strategies and tools against social exclusion and poverty
UHC	Universal health coverage
UNDP	United Nations Development Programme
WHO	World Health Organization
WTP	Willingness to pay

Executive summary

Background

Most healthcare expenditures in developing countries are borne through out-of-pocket (OOP) spending payable by healthcare-seekers at the time and place of treatment. In India, 70 percent of total health spending is borne by private sources, 86 percent of which is through OOP spending [104, 94]. This inequitable and inefficient health financing situation persists in other low-income countries as well. The solution proposed by WHO and other international bodies has been to strive towards universal health coverage (UHC), notably through prepayment and risk-pooling mechanisms. Very few low-income countries (e.g. Armenia, Moldova, and Mongolia) have so far been able to mandate the entire population to pay premiums for UHC [97]). Attempts to subsidise large segments of the (below poverty line) population have also been rare, and fell short of UHC as coverage has been partial [78]. One way to enhance coverage, it was suggested, would be through community-based health insurance (CBHI) schemes; we refer here to the earliest suggestion [77]), which flagged the mutual operational model. In this model, the community plays an important role in mobilising, pooling, allocating, managing and/or supervising healthcare resources. CBHI schemes have been shown to be effective in reducing OOP payments of their members, and in improving access to health services ([98]). However, many schemes also reported low enrolment rates. If CBHI schemes are to move from niche to scale as a social protection mechanism, they need to attract more members and retain them. Hence, we focus on analysing the factors that affect joining on a voluntary basis and retaining members. Stated differently, we seek to understand the demand- and supply-side factors that affect uptake and renewal of community-based voluntary health insurance schemes in low- and middle-income countries.

Objective

The objective of this systematic review is to review and analyse the literature reporting empirical evidence on voluntary uptake in CBHI schemes in low- and middle-income countries, and identify factors influencing such uptake and renewal.

Methodology

This systematic review is delineated by the *databases* included and the specific *search terms* applied. The following important datasets were used: EconLit and similar; MEDLINE and similar; Google and similar; Global Health and similar; ProQuest and similar; Scopus and similar; and Cochrane and similar. In addition, grey literature was also consulted.

Five basic *exclusion criteria* were followed. A study was excluded: if published before 1990; if it was a policy analysis or an opinion piece; if it was conducted in a country that is not low or middle income (following World Bank classification); if the health insurance mechanism discussed was other than CBHI (private, social, and mandatory); or if the study was only on the impact of CBHI.

The *inclusion criteria* were determined by '*PICOS*': **P**articipants (who were offered the chance to join CBHI voluntarily, whether they decided to enrol or not) were included provided they resided in low- or middle-income countries (World Bank definitions 2012); voluntary, contributory and community-based **I**nterventions were included (when in low- and middle-income countries); **C**omparisons between individuals were included (joining CBHI schemes and not, those who renew or drop out);

Outcomes were included when related to determinants of demand (e.g. socio-economic characteristics, or social capital in the community) or of supply (e.g. scheme-related factors affecting access to CBHI, or the role of institutional factors or other health-related factors that enhance CBHI uptake). The review also included factors affecting renewal/drop-out in CBHI schemes. **S**tudy design also influenced the choice for inclusion (through a process of data extraction and quality appraisal). The main search language was English, but we also included relevant studies in Spanish, French, and German. Moreover, decisions regarding data extraction were guided by the *review question*.

In addition, we conducted preliminary quality assessment following Waddington et al [102]and detailed appraisal of quality and adequacy of different types of studies (reporting, data collection, presentation, analysis, and conclusions drawn) following relevant checklists [102] for quantitative studies, CASP [72] checklist for qualitative studies, CASP [73] checklist for cohort studies), and Cochrane checklist for RCT [83]. We separated the analysis of studies dealing with uptake from those referring to renewal/drop-out.

The 54 studies which were retained for detailed analysis of factors influencing uptake and renewal/drop-out were processed through four stages. In the first stage, quantitative studies (including quantitative data from mixed-method studies) and qualitative studies (including qualitative data from mixed-method studies) were coded for tabulation separately that summarises study objectives, design, sample size, methods of analysis, context, and findings.

In the second stage, a meta-analytic synthesis of the included quantitative studies was conducted.
In the third stage, we conducted a thematic synthesis of included qualitative studies. Two researchers independently coded and abstracted information from each qualitative study, based on the analysis of quotations from respondents and relevant texts. By reading and re-reading texts, the codes led to the development of key themes that are common across studies. In addition, subthemes within a key theme were also extracted. The findings were then summarised and analysed based on key emerging themes and subthemes to explain factors associated with enrolment or renewal/drop-out decisions.
In the final stage, the qualitative synthesis informed by thematic synthesis, and quantitative synthesis, informed by meta-analytic synthesis, were compared to gain insight for an overall synthesis of findings/statements.

Details of studies included

The initial list of 15,770 studies was subjected to four rounds of filtering, removing duplicates, applying inclusion and exclusion criteria to titles and abstracts, and removing irrelevant entries; 251 studies were retrieved for screening based on full reports, which were examined by applying the double screening and data extraction process of EPPI-Reviewer. Of the 251 full text studies, 54 were retained for this systematic review, referring to 20 countries, mainly in Africa, South Asia, and South East Asia, mostly to rural settings, mainly in low-income countries, with only few lower-middle-income countries and only very few upper-middle-income countries. As for the temporal dimension, most studies were published from 2004 to 2012 with only very few studies undertaken in the 1990s. This indicates that research on CBHI has taken off only in the twenty-first century.

Fifty-four studies (36 quantitative, 12 qualitative, and 6 mixed-method studies) have been included for analysis. Since the mixed-method study includes both quantitative as well as qualitative data, we have included 42 quantitative (36 quantitative and 6 mixed-method with quantitative data) and 18 qualitative (12 qualitative and 6 mixed-method with qualitative data) studies for analysis. While all

the 18 qualitative studies have been considered for the thematic synthesis, only 18 out of 42 quantitative studies could be included for the meta-analytic synthesis. A discussion of the vote count findings for the variables in the full range of 42 quantitative studies has been included in an attempt to explain any differences in results derived from the meta-analysis.

We identified nine major themes from the 18 qualitative studies: knowledge and understanding of insurance principle and CBHI; quality of healthcare; trust; benefits package; rules of CBHI schemes; cultural belief; affordability; distance to health facility; and legal and policy framework.

Results

Meta-analysis suggests that enrolments in CBHI were positively associated with household income, education of the head of the household, age of the head of the household, household size, female-headed household, married head of the household, and presence of chronic illness episodes in the household. However, presence of acute illness episodes and presence of elderly persons in the household had a negative association with enrolments in CBHI. As regards renewal decisions, surprisingly, household income and female-headed household were negatively associated with renewal. Education of the head of the household, household size, and trust in the scheme management were positively associated with renewal decisions.

Thematic synthesis of qualitative studies suggests some similarity in findings obtained in the meta-analysis and brings some additional key findings not dealt with in the meta-analysis. For instance, affordability (financial constraints, lack of money, etc.) was found to be a major constraint for enrolment decisions. However, timing and modalities of premium collection were also major constraints as a complaint by many participants. In other words, if timing and payment modalities could be made flexible, many poor people can enrol. Similarly, trust in scheme management was found to be an enabler for renewal of membership, similar to meta-analysis. In qualitative synthesis, trust in scheme management was also found to be a facilitator of enrolment decisions.

We found two key factors in thematic synthesis that were acting as facilitators of both enrolment and renewal decisions. These factors were (a) knowledge and understanding of insurance principle and CBHI, and (b) quality of healthcare. Similarly, three additional key factors that were found to be barriers to both enrolment and renewal were (a) stringent rules of some CBHI schemes (e.g. requirement of at least 60 percent of the group or 100 households per village), (b) lack of adequate legal and policy framework in support of CBHI, and (c) inappropriate benefit packages (e.g. exclusion of benefits such as chronic diseases, maternity care, ambulatory care, etc.). In addition, an insurance claim was found to be a motivating factor to renewing membership. Socio-cultural practices (e.g. savings and prepayment were perceived by the community as inviting diseases) and distance to health facility were found to be barriers to enrolment.

Conclusions

Based on the findings, a number of key recommendations can be made to maximise enrolment and renewal. The community's knowledge and understanding of the insurance principle and CBHI should be enhanced. Trust in the scheme management should be built. There should be an improvement in the quality of healthcare, especially the provider's attitude towards the patients. The benefits package should be made attractive by engaging the community in its design and taking into account the

community's preferences, and extending coverage to chronic illness, maternity care, ambulatory care, and costs of transportation. Flexibility in insurance payment modalities could improve affordability for poor people. Either the stringent rules of CBHI schemes should be relaxed or an alternative community financing mechanism should be in place to provide an opportunity to people who would like to join as households or groups. Sensitisation and communication campaigns could reduce the socio-cultural barriers to some extent. The government and the donors should create an enabling environment for the development and expansion of CBHI by formulating appropriate regulatory and legislative policies, and by financially supporting the poorest of the poor to make the scheme more inclusive. Government can also play a trust-building role through information campaigns on CBHI, supervision of CBHI, and monitoring provider performance. Additional research is needed to assess various interventions to improve quality of care, trust, affordability, and understanding of CBHI. We conclude that it could be very useful to have more information on the effect of package design, pricing, claims processing, promptness of reimbursements, and dispute settlement on uptake and renewal. Furthermore, more information on participation in other risk-sharing networks could inform the spill-over effect on propensity to join CBHI.

1 Background

1.1 Aims and rationale for this review

Health is indisputably a fundamental aspect of well-being. Despite general consensus on the necessities of good health, many low-income persons in low- and middle-income countries (LMIC) are unable to access healthcare. It has been argued that these vulnerable population segments are more prone to illness and therefore need more healthcares. LMIC represent nearly 84 percent of the global population, and much of the burden of diseases, with disproportionately low spending on healthcare [93].

High costs of treatment (including *direct costs* for consultation, laboratory tests, and medicines, and *indirect costs* for transportation and special meals) deter people from seeking timely care, which can lead to higher complications and chronic illnesses. Unaffordable treatment is not the only impediment standing in the way of poor people seeking healthcare services. Another is substandard public healthcare delivery (publicly funded health sector) in LMIC. One of the self-explanatory consequences of low budgetary allocations for public healthcare provision is increased reliance of the population on private providers, notably unqualified practitioners [82], and the resultant out-of-pocket (OOP) payments at the point and time of seeking care. The size of this problem is dramatic. India is a good example: 70 percent of health spending is private, of which 86 percent is borne OOP [104, 94]. Rural households in India frequently finance such OOP expenditures by borrowing money with interest, not only for inpatient care but also for outpatient care and even for maternity-related costs [67]. Similarly, in Bangladesh, 64 percent of health spending is private, 88.3 percent of which is OOP spending (Report of the Australian Leadership Awards Fellowships Program 2011). This inequitable and inefficient health financing method prevails in other LMIC as well. For instance, Tanzania spends only 7 percent of its GDP on the health sector, public expenditure representing 39 percent of total health costs, while OOP expenditures account for 52 percent of total health expenditure [68]. A similar pattern exists in several Latin American countries as well, for instance Peru (86.9 percent) and Mexico (91.5 percent) [106].[1]

The solution proposed by WHO and other international bodies has been to strive towards universal health coverage (UHC), notably through prepayment and risk-pooling mechanisms in lieu of payments at the point and time of healthcare seeking [86, 103] Achieving UHC could be reached in several ways, notably through mandating, with or without subsidies,[2] or through voluntary affiliation. Very few low-income countries have so far been able to apply UHC based on obliging their entire population to pay premiums, the notable examples being Armenia, Moldova, and Mongolia [97]. Several issues stand in the way of implementing UHC in LMIC. Firstly, the share of government budget allocated for health expenditures is very low, sufficient only for limited benefits to part of the population [103]. Secondly, the healthcare infrastructure in most LMIC is insufficient to organise a nationwide social health insurance [70]. Additionally, reaching a nationwide consensus on a (voluntary and) contributory scheme for the entire population is almost impossible, considering that higher-income persons are usually reluctant to accept income-rated premiums, which would oblige them to pay much more but draw significantly less from the scheme than the poor [65]. Lastly, in certain countries, political (in) stability interferes with strengthening the health sector [69]. Attempts to subsidise large segments of the (below poverty line) population have also been rare, and fell short

[1] http://data.worldbank.org/indicator/SH.XPD.OOPC.ZS

[2] Universal health coverage can be achieved through mandating whereby all citizens will be obligated to prepay for health services through insurance. Additionally, subsidies could be used to deliver services free of charge to care-seekers, or to pay the cost of insurance premiums covering certain benefits.

of UHC as coverage has been partial [78].

Moreover, the penetration of all types of health insurance (private, social, and community) in most LMIC remains very low. In India, for instance, health insurance uptake (both mandatory – for civil servants – and voluntary) is around 21 percent [81]. While health insurance is a favoured road towards achieving UHC in most LMIC, and has the potential to reduce OOP payments and improve access to necessary healthcare, the penetration of health insurance in the informal sector is very low [79].

One solution to these problems has been the practice for people to own and run CBHI schemes [77]. CBHI is defined as 'any not-for-profit insurance scheme that is aimed primarily at the informal sector and formed on the basis of a collective pooling of health risks' [64]. CBHI has a wide variety of health insurance arrangements with vast gradients of management, membership, and risk coverage [95]. Such an arrangement implies that the community plays an important role in mobilising, pooling, allocating, managing, and/or supervising healthcare resources [85]. The emergence of CBHI schemes has been particularly strong in sub-Saharan Africa, where such 'microinsurance' schemes have been implemented in Benin, Burkina-Faso, Cameroon, Côte d'Ivoire, Ghana, Guinea, Mali, Nigeria, Senegal, Tanzania, Togo, and Uganda [75]. Moreover, in Rwanda and Tanzania, there is government support for CBHI, and in South Asia, there is CBHI activity in India, Afghanistan, Nepal, and elsewhere.

CBHI is one form of micro health insurance (MHI) and development organisations have increasingly recognised the potential role of MHI as a poverty reduction tool [84,101]. For instance, Grameen Kalyan is an MHI initiative launched in Bangladesh in 1997 and provides primary healthcare, school health card, safe motherhood services, and loan insurance to the rural population. It has covered nearly 230,000 beneficiaries as of 31 December 2003 (ILO, Social Security Department).[3] Similarly, BRAC micro health insurance Bangladesh (MHIB) was established in 2001. It targets persons engaged in subsistence agriculture, animal husbandry, fishing, trade, and crafts, and aimed to contribute towards overall improvement in well-being of families by providing access to healthcare and increasing awareness about preventive healthcare in Bangladesh. It had covered nearly 32,100 persons by 31 December 2003 (ILO, Social Security Department).[4] There are also examples elsewhere, particularly in sub-Saharan Africa: 16 health mutuals covering 27,000 enrolled individuals in rural Senegal in 2000 [29]; 54 MHI schemes covering 88,303 individuals in Rwanda in 2000 [49]. Similar claims have been made by other development organisations stressing the potential poverty reduction function of these initiatives [101]. CBHI schemes have demonstrated that prepayment and risk-sharing mechanisms through community involvement in healthcare financing increased the access of poor populations to basic health services remarkably [98].

However, many schemes have been unsuccessful due to low enrolment rates. For instance, low percentages of enrolment were observed in a study of five CBHI schemes in East and southern Africa [91], where in four of the schemes, enrolment percentages varied between 0.3 percent and 6.5 percent of the target population, and one scheme only had 23 members in a target population of 27 co-operative societies. Low take-up rates of CBHI have also been observed in other studies, including in Lao PDR, where only 1.7 percent of the population enrolled in CBHI [105] and in India, where Ito and Kono [28] observed low uptake rates in micro health insurance, despite perceived need and the enthusiasm of microfinance practitioners. There are examples of schemes that have achieved higher

[3] http://www.ilo.org/dyn/ilossi/ssimain.viewBenefit?p_lang=enandp_scheme_id=1385andp_scheme_benefit_id=3382andp_geoaid=50

[4] http://www.ilo.org/dyn/ilossi/ssimain.viewBenefit?p_lang=enandp_scheme_id=1383andp_scheme_benefit_id=3376andp_geoaid=50

take-up rates however. A scheme launched in 1999 in Rwanda, to establish 54 CBHI schemes in three districts, while initially plagued by low enrolment rates successfully rose to 85 percent in 2008 [88]. Similarly, a study of four of 16 CBHI schemes in Thies, Senegal, reported that in 2000, the average enrolment was 68 percent of the households in these villages, with enrolment rates varying between a minimum of 37.4 percent and a maximum of 90.3 percent [87]. One possible explanation for low uptake in the informal sector is that poorer individuals doubt that insurance companies would actually pay in full, in all cases specified by the contract, and their own ability to enforce these contracts in such cases. Other factors that may influence insurance enrolment are people's perception of their own exposure to risks, and an understanding of what the insurance covers [63]. Other problems that may impede success of microinsurance schemes and limit individual enrolment include unaffordable premium levels, cultural aspects [5], mistrust in the healthcare system, and inferior quality of care (Criel and Waelkens 2003).

The variations in membership of voluntary schemes suggests that there are factors that limit individuals from enrolling, and if CBHI aims to improve access to care for the poor then it is important to analyse the factors of better-performing schemes and understand the reasons why poor households insure and address issues explaining why others remain uninsured.

1.2 Policy and practice background

One of the essential components of all health financing systems is mobilising resources with which to pay providers and to ensure that all individuals have access to effective healthcare. Health insurance systems also aim to ensure that individuals should be reimbursed fairly for their healthcare costs, or get care without having to pay for it. The policy objective is to prevent people becoming impoverished as a result of seeking care, or refraining from seeking care because they cannot afford it. Some high-income countries fund their healthcare system predominantly through general taxation (e.g. the UK) while others do this through earmarked contributions to a social health insurance that is mandatory for all or most of the population (e.g. France, Germany).

Low-income countries depend mostly on OOP payments by healthcare seekers at the point and time of service, and some also rely heavily on international donor support. The main reason for this situation is that health insurance systems in LMIC have difficulties in raising significant revenues, and thus cannot cope with sufficient accumulation of funds to cover all needs, including in outlier situations, while maintaining suitable quality of service and the level of protection promised. There are also specific concerns that health insurance should contribute to better equity and efficiency of the health system as a whole [92]. For example, increasing access to quality health services is one of the core objectives of the Nepal Health Sector Programme 2010–2015 (NHSP II); and the government introduced the Free Health Services Programme (certain services free at the point of service delivery) and the Support to the Safe Motherhood Programme (SSMP).[5] Nevertheless, OOP payments still remain the principal means of health financing in Nepal, representing 55 percent of total healthcare expenditures.[6] Health financing in Bangladesh, Cambodia, and Laos unfolds similarly, as OOP expenditure provides the main source of health financing in these countries and the contribution of government to health spending is low. These circumstances lead people in LMIC to look for other

[5]A five-year DFID-funded programme that worked directly with the Government of Nepal Ministry of Health on improving the policy environment and systems for delivering and improving access to maternal healthcare, especially for poor and socially excluded women.
[6]Ministry of Health and Population (2009). Nepal National Health Accounts.

solutions. The solution on which this systematic review focuses is CBHI, an arrangement in which communities voluntarily mutualise risks and pool resources in locally managed healthcare funds [77].

1.3 Research background

1.3.1 *Review of previous related reviews*

The study of determinants of enrolment in CBHI is informed mostly from recent econometric modelling to predict enrolment decisions of individuals and households [14, 28, and 90]. A few qualitative studies on determinants of enrolment include Criel and Waelkens [17], M. De Allegri et al. ([34]), and Basaza et al. [9], and there is also at least one study that used mixed methods [43]

An earlier systematic review on microinsurance [80] found that voluntary CBHI schemes were not able to mobilise all the resources needed to provide financial protection in low-income countries. The main conclusion of that review was that community financing arrangements are, at best, complementary to other systems of health financing. However, the more recent systematic review by Acharya et al. [63] on the impact of health insurance, which focused on uptake of social health insurance in LMIC (not specific to CBHI), found that health insurance may prevent high levels of expenditure, but that its impact was smaller among the poorer population. Hence, there is limited evidence that health insurance for the poor is effective on this count, and conclusions must be viewed as reserve, due to methodological shortcomings and inconsistencies regarding outcomes and study design. The major query is whether the insured poor might not in fact be exposed to higher OOP expenditure than those who are not insured. The review by Acharya et al. [63] only looked at the factors influencing the uptake of social health insurance, and found that it may depend on how people perceive their own risk, how well they understood the 'product', and social factors such as trust in financial institutions.

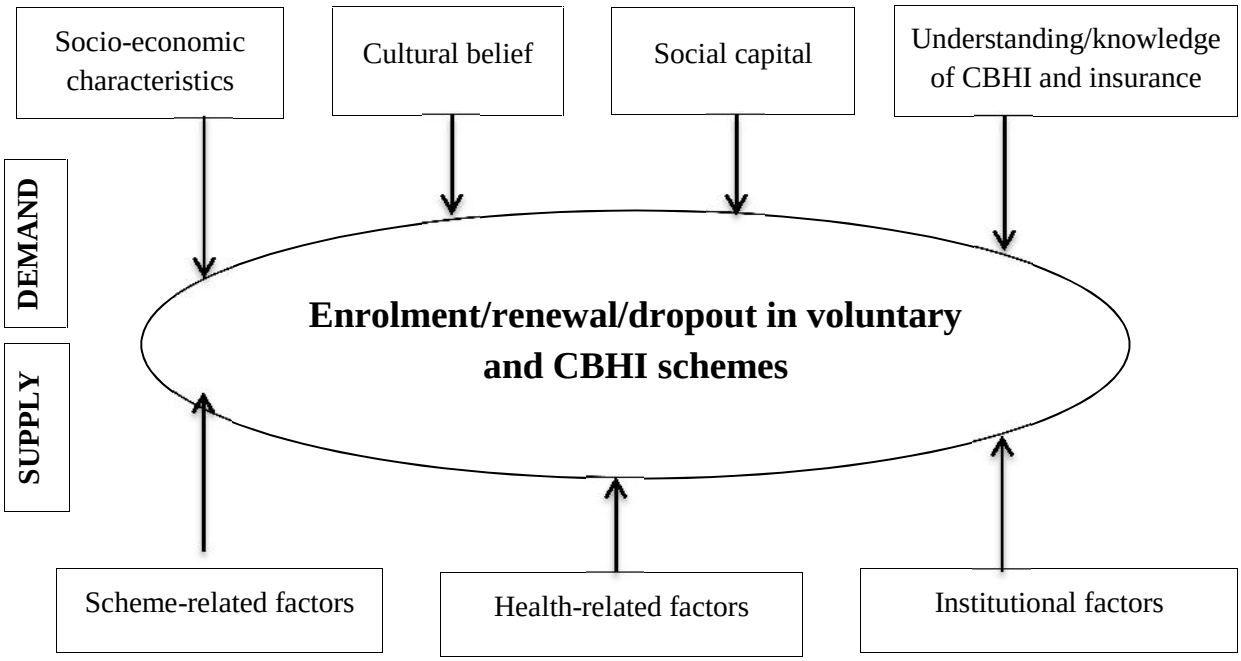
Another systematic review by Spaan et al. [96] evaluated the impact of health insurance on resource mobilisation, financial protection, quality of care, social inclusion, and community empowerment in LMIC in Africa and Asia. Most African studies included in that review reported on CBHI schemes that were of relatively high quality; social health insurance (SHI) studies were mostly Asian and of medium quality. Most studies were observational. These studies dealt more often with financial protection, utilisation, and social inclusion, and less with resource mobilisation, quality of care, or community empowerment. The evidence showed that CBHI and SHI improve service utilisation and reduce OOP expenditure, and that CBHI improves resource mobilisation too. The effect of SHI and CBHI on community empowerment was inconclusive. Finally, we mention a systematic review conducted by Cole et al. [71] on uptake and impact of index-based microinsurance (which dealt with agricultural risks), which found that uptake was positively associated with non-price factors such as higher financial liquidity, literacy, trust in external agents, and understanding of product design. On the other hand, higher risk aversion was associated with lower uptake of insurance.

We conclude this research background by saying that we have not found any systematic review on uptake of CBHI in LMIC, and to the best of our knowledge there is no ongoing work by others to review the literature on this topic either. This is why our review is unique and, as it can add new insights to the growing practice of microinsurance, is essential.

1.3.2 *Theory of change – how demand for health insurance is supposed to work*

Numerous factors can explain households' insurance enrolment decisions. The factors that enable or impede individuals from enrolling can be categorised into four broad heads in the demand side (namely, households or individual characteristics, cultural factors, social capital, and knowledge and understanding of insurance concepts and CBHI) and three broad heads in the supply side (namely, scheme related factors, health-related factors, and institutional factors). Figure 1.1 details the process of the theory of change of factors affecting uptake and enrolment of voluntary and community-based health insurance schemes.

Figure 1.1 Process to the theory of change of factors affecting uptake and enrolment of voluntary and community-based health insurance schemes



Generally, insurance demand studies use expected utility (EU) theory to explain individuals' decisions on whether or not to insure. This theory states that insurance demand is a choice between an uncertain loss that occurs with a probability when uninsured and a certain loss like paying a premium. EU theory assumes that people are risk-averse, implying that the more risk-averse individuals are, the more insurance coverage they will buy. But this theory is silent about the association between households' socio-economic status and insurance enrolment. State-dependent utility theory suggests that consumers' utility levels and tastes are influenced by their state, such as health or socio-economic status. Accordingly, people may have different degrees of risk aversion, which can influence their insurance decision. For example, individuals who perceive their health status as very good may be less likely to enrol than individuals who perceive their health status as less than optimal. Households with higher socio-economic status are in a good position to afford (paying premium) or may have better understanding of the benefits of being insured. Poverty literature also suggests that poor people have liquidity constraints that cause them to remain uninsured even when they may be better off with insurance.

The new theory of consumer demand for health insurance (based on prospect theory: consumers prefer an uncertain loss to a certain loss of the same expected magnitude) suggests that consumers who voluntarily purchase unsubsidised health insurance are better off. Cultural factors (e.g. the community's perception of disease in a given context) also influence uptake decision. Better knowledge and understanding of both insurance concepts and CBHI operations may boost enrolment in CBHI. As suggested by the endowment effect and status quo bias, the decision to insure may be complicated for individuals, particularly in areas where insurance is a new concept and illiteracy rates are high. Poor individuals will insure if they perceive the benefits of insurance (for example, access to better quality care) as higher than the cost related to giving up being uninsured. Social capital is also important in the CBHI context. Informal trust-building factors are equally or more important in explaining demand for insurance. Trust in insurance can relate to trust in the insurer or trust in the specific insurance product. If there is solidarity in the community or trust in management, it will positively influence individuals' decision to enrol in CBHI.

Institutional factors such as the technical arrangements made by the scheme management also influence people's perception of the benefits of the scheme. Many CBHI schemes operate within weakly defined legal and political systems, and are based on mutual, non-written agreements that are monitored and enforced by members. CBHI members often lack the technical capacities to manage an insurance scheme and negotiate with providers for better care.

Scheme-related factors such as benefits package design, premium, and transparency also affect people's decision to enrol. Transparency regarding the schemes' rules and processes, requirements that claimants submit documents to prove validity of their claims, and relevance to poor people's needs, such as inclusion of outpatient care in the benefits package, will create trust in the financial management of CBHI schemes and positively affect the willingness to pay for insurance. Supply-side factors such as availability and access to good-quality primary and secondary healthcare facilities in the area may attract more members to enrol in the scheme.

The following Table (1.1) summarises different theories on decision-making. For each theory, it is shown how individual's preferences will affect their motivation to insure, such that they reach their desired outcomes, as well as the factors that predict insurance purchase (column 3) or a decline in health insurance (column 4).

Table 1.1 Theories of decision-making applied to the health insurance context

Theories	Motivation	Effects predicting purchase of insurance	Effects predicting decline of insurance
Consumer choice	Maximize utility	High income; high user fees Low-premium insurance	Low income; high premium Low user fees
Expected utility	Maximise expected utility through certainty	Uncertainty Risk-aversion	Risk-seeking
State-dependent utility	Maximise expected utility through certainty	Weak health and anticipate high insurance pay-off	Healthy and anticipate low insurance pay-off
Prospect	Prospect of gain in reference to risk level	Prospect of loss in reference to risk level is certain	Prospect of loss is uncertain

Cumulative prospect	Prospect of gain probability of illness	Over-weighting of small illness	Under-weighting probability
Endowment/status quo/veil of experience	Higher utility versus reference point	Insurance benefits higher than cost of insurance and of giving up user fees	Risk-aversion against new and unknown
Regret and disappointment	Minimise regret and disappointment	Loss-aversion High probability of illness	Conservative preferences Low probability of illness
Time preferences	Maximise utility	High value of future protection	High value of current consumption
Poverty	Maximise utility	High risk-aversion when near to poverty line	Unaffordable premium
Social capital	Maximise utility	Strong social capital Trust in the insurance system	Weak social capital Mistrust in the insurance system

Source: Schneider 2004

1.4 Objectives of the systematic review

The main objective of this systematic review is to identify and assess the importance of various enabling or limiting factors in influencing the uptake (and renewal) of voluntary membership in CBHI schemes in LMIC.

More specifically, this systematic review will:

- develop a framework to distinguish different factors influencing uptake;
- provide a summary of existing literature relating to each of these factors;
- Identify issues that require additional essential primary research (stand-alone research or evaluation of current and future initiatives).

In light of the above discussion of pertinent issues on uptake and renewal of CBHI in LMIC, the systematic review should act as a compilation of known and accepted evidence, backed by a discussion of the underlying theory. It also provides policy implications for various stakeholders, including policy-makers, other government officials, politicians, community representatives, researchers, and implementers. The central question addressed by this review is to understand the demand- and supply-side correlates of enrolment and renewal decisions in CBHI schemes in LMIC.

2 Methods

2.1 Type of review

This study follows a mixed systematic review process. A search was conducted in the delineated databases and for specific search terms. The resulting list of studies was then screened by applying inclusion and exclusion criteria relevant for this review that is isolating studies that focused on identifying both the barriers and facilitators of voluntary uptake of CBHI in LMIC. Grey literature, including working documents, technical and policy documents, and master's and doctoral theses, was reviewed using the same search keywords that were identified after thorough screening of relevant websites and consultations with relevant authors. The review includes studies that followed quantitative, qualitative, or mixed methods to determine the factors of uptake and drop-out (renewal) of CBHI schemes in LMIC. A coding tool, based on the EPPI-Reviewer platform, was used to characterise studies and collect information on the context, mechanism, and outcomes of the studies included in this systematic review.

2.2 User involvement

The potential users[7] were engaged in all aspects of the review, from design and process to the dissemination and application of findings. An Advisory Group was formed and consulted, with nine members who are experts in health systems and policy, the non-state sector, developing country health systems, and systematic review methodology (Appendix 2.1).

The Advisory Group provided inputs into the preparation of protocol, assessment of scope of the review, inclusion of conceptual framework, formation of correct search strategy, and drafting the inclusion and exclusion criteria. Ongoing research and projects, relevant for answering the review questions, were also screened to broaden the inclusion strategy. Also, the Advisory Group provided feedback on preliminary findings and the conceptual framework used in the review, which was incorporated in the final report.

The review benefitted from the guidance provided by experts from the International Initiative for Impact Evaluation and EPPI-Centre, with the view to creating scientific knowledge that could best serve the interests of end-users such as policy-makers, donors, and civil society organisations.

2.3 Identifying and describing studies

2.3.1 *Defining relevant studies: exclusion and inclusion criteria*

Criteria for inclusion of studies in the review [PICOS]

Types of participants (P)
Studies on CBHI were included when participants resided in LMIC [104], which also means that the scheme operated in LMIC; moreover, participants had been offered the chance to join such schemes and could voluntarily choose to affiliate and pay a premium, or not to do so. The LMIC were identified by following the World Bank's main criterion for classifying countries, namely gross national income (GNI) per capita (see Appendix 2.2 for list of countries).

[7]MIA is in charge of implementation of CBHI schemes in India and Nepal.

Types of interventions (I)
In this review, we included studies that deal with ***interventions*** that are voluntary, contributory, community-based, and in LMIC.

'Voluntary' in our context means an informed and independent choice of the members to enrol (or not); and 'contributory' means that all members pay an insurance premium. The review excludes studies dealing with mandatory insurance affiliation, arising either from regulations or from a different transaction (e.g. obligatory insurance linked to a microcredit loan).

'Community-based' is defined as 'any non-profit insurance scheme that is formed on the basis of a collective pooling of health risks of a specific community in the informal sector'. We include all relevant types of CBHI programmes, notably those defined as CBHI by ownership, management, membership, and risk coverage. This inclusive identification is thus suitable for the purpose of this review.

Types of comparisons (C)
This review includes ***comparisons*** between those individuals who join CBHI schemes or renew and those who do not.

Outcomes (O): types of enabling and limiting factors
As a means of structuring the review and for identifying entry points for intervening on relevant factors, this systematic review developed a comprehensive framework (Figure 1.1) for the potential enabling and limiting factors that affect enrolment in CBHI schemes.

This systematic review answers the following specific questions with reference to the uptake of CBHI schemes:

1. Demand-side factors:
    - Which household level and individual characteristics affect the uptake of CBHI?
    - Which social capital-related factors in the community affect the uptake?

2. Supply-side factors
    - Which scheme-related factors affect access to CBHI?
    - Which institutional factors (governance, marketing, membership of SHG, etc.) play a role in increasing uptake?
    - Which other health-related supply-side factors enhance CBHI uptake? What factors affect renewal and retention of clients by CBHI?

Study design (S)
The research questions were answered using a broad range of studies, including quantitative, qualitative, and mixed methods approaches as outlined in Table 2.1. For the quantitative studies, we specifically included randomised controlled trials, quasi-experimental studies, experimental designs with control groups, and observational studies (quantitative surveys, cohort studies, case-controlled studies, and case studies) that dealt with factors affecting enrolment and renewal/drop-out. For the qualitative studies, we considered case studies, interviews/key informant interviews (KIIs), and focus groups with participants (who were enrolled, not enrolled, renewed, or dropped out) and CBHI scheme managers/policy-makers, potentially suitable for inclusion.

Publications describing and/or analysing theoretical frameworks were not included in the review, but were consulted to inform the background and framework of the review questions.

Table 2.1 Type of research question and study design

Type of research question	Sources of appropriate evidence to address the question
Demand-side questions Which household level and individual characteristics affect the uptake of CBHI? Which social capital-related factors in the community affect the uptake? Which cultural factors influence uptake? To what extent does understanding of insurance and CBHI boost uptake?	• Observational studies addressing the nature and magnitude of the problem (i.e. studies that test associations between characteristics of people and their context with whether they do or do not take up voluntary or CBHI schemes). • Effectiveness studies (e.g. experimental design studies with subgroup analysis or regression analysis assessing the characteristics influencing uptake). • Qualitative studies exploring views of and experiences with health insurance.
Supply-side questions Which scheme-related factors affect access to CBHI? Which institutional factors (governance, marketing, membership of SHG, etc.) play a role in increasing uptake? Which other health-related supply-side factors enhance CBHI uptake?	• Effectiveness studies (e.g. experimental design studies with subgroup analysis or regression analysis assessing scheme-related characteristics influencing uptake). • Qualitative studies of views and experiences with health insurance schemes (e.g. descriptive studies that listen to people talk about voluntary and CBHI schemes). • Qualitative studies of the acceptability of interventions.
Renewal and drop-out What factors affect renewal and retention of clients by CBHI?	• Observational studies addressing the nature and magnitude of the problem. • Qualitative studies exploring views of and experiences with health insurance. • Qualitative studies of the acceptability of interventions.

Other criteria for inclusion

The main search language was English, but we also included relevant studies in Spanish, French, and German. We limited studies to those published from 1990 onwards since CBHI was not widely available pre-1990. (The literature search indeed confirmed that most of the publications on the topic date to the twenty-first century.) Searches were conducted during May 2013 and November 2013.

Criteria for exclusion of studies in the review

Studies are excluded if:

- the study was published before 1990
- the study is a policy analysis or opinion piece
- the study deals with a country other than a LMIC
- the study is on other health insurance mechanisms (private, social, and mandatory)
- the study is only on the impact of CBHI after its introduction as a scheme.

2.3.2 *Identification of potential studies: search strategy*

We conducted a comprehensive search covering a range of different sources of academic and grey literature. This included academic databases relating to the thematic areas, including social sciences, economics, and medical sciences (full list in Appendix 2.3a), and other electronic resources, such as Eldis and Google scholar (full list in Appendix 2.3b). It was further supplemented by hand-searching, citation tracking, and personal communication for the inclusion of grey literature.[8]

Other searches

In addition, we expanded the search to include PhD and master's theses on our topic. Grey literature such as published or unpublished reports, records, communication or notes from relevant websites of institutions or organisations, personal contacts, and official correspondences were also recorded. Searches were also made on the web pages of organisations including STEP, CGAP, SEWA, CIRM, and IFMR. Reference lists of all the papers and relevant reviews were identified through hand-searching (Appendix 2.3b), and authors of relevant papers were contacted regarding any further published or unpublished work.

Conference proceedings were also checked, including:

- Annual International Conference on Health Economics, Management and Policy, Athens, Greece; 2002–2010 (http://www.atiner.gr/health)
- Annual Microinsurance Conference (http://www.munichre-foundation.org/home/Microinsurance/Microinsurance_Archive.html)
- Asian Conference on Microinsurance (http://www.conferensum.com/Conference-proceedings-documentation/finance-banking/insurance-pensions/4th-asian-conference-on-microinsurance?conferenceId=6014)
- Canadian Conference on Global Health (http://www.ccgh-csih.ca/csih2013/)
- GTZ-ILO-WHO-Consortium on Social Health Protection in Developing Countries (Berlin 2005, Manila 2006, Paris 2007, Kigali 2007) (http://www.socialhealthprotection.org/)
- Malawi Conference on Micro Health Insurance in Africa (http://www.microfinancefocus.com/news/2009/09/10/malawi-conference-on-micro-health-insurance-in-africa/)
- Proceedings from DAVOS conferences (https://idrc.info/archive/idrc-davos-2014/outcomes/conference-proceedings/)
- Global Symposium on Health Systems Research (http://healthsystemsresearch.org/hsr2014/home?qt-programme_at_a_glance=1)
- The Annual World Bank Conference on Development Economics (http://web.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTABCDE/0,,contentMDK:22725124~pagePK:64168427~piPK:64168435~theSitePK:7455677,00.html)
- World Congress on Health Economics by International Health Economics Associations (IHEA): (https://archive.healtheconomics.org/congress/2011/index.html)

Search strategy

Search strategies for electronic databases were developed using the thesaurus or index terms (such as MeSH terms) specific for the databases combined with free text terms, related to thematic areas such as CBHI or health insurance as a whole. These strategies were developed by one of the authors of this systematic review and also peer-reviewed by search specialists at 3ie and EPPI-Centre. The example of a complex search string used for Science Citation Index Expanded (SCI-Expanded, ISI web of

[8] Abay Asfaw, 14 January 2014.

knowledge database) is shown below in Table 2.2. In the complex search strategy, truncation operators such as '?' as well as field operators such as 'near' are used, while simple search strategy for intervention and population terms is demonstrated in Table 2.3. A complete Medline/PubMed search strategy is given in Appendix 2.4. As mentioned previously, the search looked for studies published from 1990 to 2013, and the manner in which CBHI is reported to operate in LMIC is also recorded. The search was not restricted to English language.

Table 2.2 Sample complex search strategy

Population terms
TS=(((developing or 'less* developed' or 'under developed' or underdeveloped or 'middle income' or 'low* income') NEAR/1 (economy or economies))) OR TS=((low* NEAR/1 (GDP or GNP or 'gross domestic' or 'gross national'))) OR TS=((low NEAR/3 middle NEAR/3 countr*))

Table 2.3 Sample simple search strategy

Population terms	**(AND)**	**Intervention terms**
'developing country'[tw] OR 'developing countries'[tw] OR 'less developed nation'[tw] OR 'less developed nations'[tw] OR 'less developed population'[tw] OR 'less developed populations'		'community-health insurance'[All Fields] OR (('insurance, health'[MeSH Terms] OR ('insurance'[All Fields] AND 'health'[All Fields]) OR 'health insurance'[All Fields] OR ('health'[All Fields]

The search strategy was translated for use in other databases using the appropriate controlled vocabulary as applicable by an information specialist. Electronic search results or publications available digitally in '.ris' format were uploaded to review software (EPPI-Reviewer 4),[9] for screening, reviewing, coding, and further management by the review team.

2.3.3 *Screening studies: applying inclusion and exclusion criteria*

Studies in the review were included following a rigorous process that was divided into six stages. In the first stage, the potential citations were imported to EPPI-Reviewer 4 and duplicates were removed. In the second stage, the remaining studies were scanned on the basis of title and abstract. In the third and fourth stages, the filtering followed on full texts of the potential studies and it was carried out independently by two reviewers. Contradictions were resolved by a third reviewer and, if the study fulfilled the criteria specified for inclusion, it was retained for the final set of studies. During the fifth stage, the studies that were retained from EPPI-Reviewer were consolidated with the studies that were published in the later stages of review. These studies were published after the search strategy had been applied on the databases and so to keep the review as up to date as possible, the set of such studies referred by the expert panel was manually added. In the sixth and last stage, studies were divided into enrolment and renewal, with further distribution according to the study design: quantitative, qualitative, and mixed methods.

[9]Thomas J, Brunton J, Graziosi S (2010) EPPI-Reviewer 4: software for research synthesis. EPPI-Centre Software, London: Social Science Research Unit, Institute of Education.

2.3.4 *Characterising included studies*

A coding tool, based on the EPPI-Reviewer platform, characterising studies and collecting information on context, mechanism, and outcomes, was used to collect information from the included studies (Appendix 2.5). We extracted information about a broad range of study characteristics, including:

- how the report was located
- the country in which it was carried out
- the area it focused on
- the characteristics of the population
- details of the intervention site
- details about study design, sample size, and analytical framework
- Findings of included studies according to the framework adopted (Fig 1.1).

The data extraction was independently conducted by two people.

2.3.5 *Critical appraisal of studies: quality assurance process*

Critical appraisal is a central part of the systematic review process, which uses the data in published research, applying the rules of evidence to factors such as internal validity, faithfulness to reporting standards, and description, to assess methods of analysis and conclusions. Once studies were selected for inclusion, a process of data extraction and critical appraisal was carried out using EPPI-Reviewer 4. A team of two authors independently appraised the studies. Any discrepancies in the critical appraisal were resolved through discussion, and any issue that could not be resolved was discussed with a third author.

Quality appraisal for included studies was done using a two-step approach. In the first step, assessment was carried out to ascertain the quality of reporting of data in the studies. The critical appraisal checklist proposed by Waddington et al. [102] (Appendix 2.6) was used to screen the studies on aim of research and reporting of data through questions 1 to 7. If the responses were assessed as 'NO' for any of the seven questions, the study was classified as 'low quality' and other studies were classified as 'remaining included studies'. On completion of this first level of quality assessment, 8 studies were classified as 'low quality' and the other 54 studies were categorised as 'remaining included studies' eligible for detailed quality appraisal. Low-quality studies were excluded from further analysis in this review. The list of excluded studies is given below in Table 2.4.

Table 2.4 Low-quality studies according to study type

Study type	Low-quality studies	
	Uptake	**Renewal/drop-out**
Quantitative	Mushi (2007), Barone (2011)	-
Qualitative	Timmis (2009), Amoako et al. (2002)	Derriennic et al. (2005)
Mixed methods	Devadasan (2004)	-
Case studies	Gumber (2001), Radermacher et al. (2005)	-

Studies were excluded on the basis of ambiguous research objectives or insufficient reporting of data. For instance, Mushi [60] conducted a study of pilot community health funds (CHF) in two districts of Tanzania to determine the price effects in public healthcare. While the context of that study is adequately described, there is no information on sampling procedure for the subject households, and no detail is provided on sample size calculation. Similarly, a qualitative study [57] assessed 12 existing CBHF schemes in Uganda, by conducting interviews and focus group discussions. However, the study is silent on the population sample selected and the number of FGDs conducted. Timmis [62] also did not mention clearly the methods used and the process of data collection and therefore was excluded on account of low quality. Among the mixed-methods studies, one was found to be of low quality [58], as it described the aim of the study but failed on the other checklist questions, such as sampling procedure, sampling characteristics, methods of recording data, and analysis. Among the cohort studies, Amoako [55] was found to be low quality as it did not state explicitly the method of analysis followed. Also, two case studies [59, 61] were subjected to the quality assessment process, and both were excluded on account of inadequacies of reported data. Gumber [59] stated the research aim, description, and methods of data collection and analysis but overlooked the sampling procedures, sampling characteristics, and so on. Radermacher [61] did not clearly state the aim of the study and the sampling procedures, which are very important features of quality research. Therefore these two studies were not retained for further assessment.

The second step of quality appraisal involved detailed assessment of the 54 'remaining included studies' using different quality assessment checklists. The checklists were suitable for measuring the differences in quality of the included studies in the review on the basis of their study type. The following checklists were used for the critical appraisal of quality.

- Randomised control trial studies: risk of bias assessment tool, Table 8.5d – Cochrane Handbook for Systematic Reviews of Interventions [83]
- Cohort studies: Critical Appraisal Skills Programme (CASP) checklist for cohort studies [73]
- Quantitative studies (case-control and cross-sectional): critical appraisal checklist [102]
- Qualitative studies: Critical Appraisal Skills Programme (CASP) checklist for qualitative studies [72]
- Mixed-method studies: quantitative and qualitative components of the study were judged on quality using their respective checklists adopted for each component separately.

2.4 Synthesis of evidence

2.4.1 *Overall approach and process of synthesis*

The 54 studies that were retained for detailed analysis of factors influencing uptake and renewal/drop-out were processed through four stages. In the first stage, quantitative studies (including quantitative data from mixed-method studies) and qualitative studies (including qualitative data from mixed-method studies) were coded for tabulation separately as shown in the matrix (Appendix 2.7 and 2.8, 2.9). The matrix summarises key features, notably study objectives, design, sample size, methods of analysis, context, and findings.

In the second stage, a meta-analytic synthesis of the included quantitative studies was conducted. Below, we provide the steps we followed to conduct the meta-analysis:

Estimating effect size: Most of the studies selected for this meta-analysis reported odds ratios or the coefficients of regression of the LOGIT or PROBIT model. We used the following formulas to convert these measures into the effect size.

$$Effect\ size = \frac{\ln(OR)}{1.81}\ , where\ OR\ is\ the\ odds\ ratio\ estimated\ by\ a\ logit\ model$$

$$Effect\ size = \frac{Coefficient\ of\ regression}{1.81}\ , where\ the\ coefficient\ of\ regression\ is\ estimated\ by\ a\ logit\ model$$

$$Effect\ size = Coefficient\ of\ regression\ , where\ the\ coefficient\ of\ regression\ is\ estimated\ by\ a\ probit\ model$$

Estimating standard error of the effect size: Standard error of the effect size was estimated from the standard error of the odds ratio or the coefficients of regression of LOGIT or PROBIT model, by applying transformation similar to that used for estimating the effect size. Some authors reported 95 percent confidence intervals instead of the standard error. For these studies we first computed the 95 percent confidence interval of the effect size by applying similar transformations and then computed the standard error of the effect size by using the following formula.

$$Standard\ error\ of\ the\ effect\ size = \frac{95\ percent\ CI\ of\ ES\ (upper\ limit) - 95\ percent\ CI\ of\ ES\ (lower\ limit)}{2 * 1.96}$$

Some authors did not report the confidence intervals but reported the t-statistic for the coefficient of regression. For these studies we first estimated the standard error of the coefficient of regression by using the following formula and then estimated the standard error of the effect size by using the same transformation used to estimate effect size.

$$Standard\ error\ of\ the\ coefficient\ of\ regression = \frac{Coefficient\ of\ regression}{t\ statistic}$$

Some authors did not report the SE (standard error), CI (class interval) or the t-statistic. Therefore, we could not estimate the standard error of the effect size for these studies (15, 34).

Sample size: Sample size was reported by all the studies.

Weights: The standard practice in meta-analysis is to apply weights proportional to the variances of the effect size for estimating the summary effect. But this could not be applied in this meta-analysis exercise as it was not possible to calculate the standard errors of the effect size for a few studies. It was also not wise to exclude them as those were based on large samples. We therefore applied weights proportional to the sample size in order to estimate the summary effect by combining the effect size estimated from individual studies.

Estimating summary effect: When a characteristic or a trait influencing enrolment behaviour of a household was reported in the same way by all the authors, the summary effect was obtained by averaging the effect sizes, after applying weights. But the studies selected for this meta-analysis exercise reported the same characteristic in many different ways, for example as continuous and categorical variables, and authors used heterogeneous categories for analysing data when it was a

categorical variable (Box 2.1). Handling this heterogeneity was a major challenge for the current meta-analysis exercise.

Box 2.1: Example of Heterogeneity Experienced

Oriakhi (Edo State, Nigeria), Kuwawenaruwa (Tanzania) and Panda (India, 3 sites) used the age of the head of the household as a continuous variable in Logit model. Other authors used the age (of the head of the household) as a categorical variable. Again different authors had different base categories and estimated odds ratios for multiple but non-uniform categories. Kent Ranson (Gujrat, India) assumed three categories viz. (1) 18-29 years (base) (2) 30-39 years and (3) 40 years and above. Gumber (Gujrat, India) made five categories for the same variable: (1) 16-25 years (base), (2) 26-35 years, (3) 36-45 years and (4) 46-55 years and (5) 56 years and above. Allegri (Burkino Faso, 2006) created three categories as (1) 20-40 years (base), (2) 41-60 years and (3) 61 years and above. Gnawali (Burkino Faso, 2009) too used three categories and had the same base category as Allegri. But two other categories were (1) 41-64 years and (2) 65 years and above. Schneider (Rwanda) had two categories: (1) Below 40 years (base) and (2) 40 years and above. Chankova (Ghana, Mali and Senegal) created four categories viz. (1) less than 40 years (base) (2) 40-49 years (3) 50-59 years and (4) 60 years and above. Mathiyazhagan (Karnataka, India) mentioned three categories viz. youthful (base), middle aged and old aged without any mention about the age-brackets. After a thorough literature search we concluded that in Indian context youthful relates to 15-29 years age group, middle aged belongs to 30-59 years age group and old aged are 60 years and above.

Averaging the effects for individual studies with weights was certainly not an option here. In order to overcome this challenge of heterogeneity we applied an innovative technique to obtain the summary effect. The method for analysis has been described below.

Effect size for a continuous variable is basically the transformation of the slope of the regression line and it implies the amount of increase in the effect size for unit increment in the independent variable. On the other hand, the effect size for a particular category of a categorical variable is to be treated as uniform over the category. However, when there are multiple categories it can be thought of as a step function of the independent variable. In order to combine the effect sizes estimated from individual studies, we (a) first simulate the effect sizes from each study over a domain of interest (=range of values of the independent variable), (b) merge them together in a single dataset, and then (c) fit a linear regression over the merged dataset. We report the coefficient of regression (fitted over the merged dataset) as the summary effect. The summary effect is interpreted as the average increase in the effect size for unit increment in the independent variable, which is now a combination of continuous and categorical variable. We applied this technique to estimate the summary effect of four variables, namely age of the head of the household, education status of the head of the household, household size, and the socio-economic status of the household in terms of income/expenditure/assets quintile. This method, whenever applied in this exercise, has been referred to as the regression method for obtaining summary effect.

Standard error of the summary effect estimated using the regression method has been computed by Stata with the following command:

Regress {Dependent Variable} {Independent Variable} [Pweight=SampleSize]

In the third stage, the approach to the synthesis of findings from qualitative studies drew on the work of Thomas and Harden [99] known as thematic synthesis. Based on the framework (Figure 1.1),

information was coded and abstracted from each qualitative study, based on the analysis of quotations from respondents and relevant texts, by two researchers independently. By reading and re-reading texts, the codes led to the development of key themes that are common across studies. In addition, subthemes within a key theme were also extracted. The findings are then summarised and analysed based on key emerging themes and subthemes to explain factors associated with enrolment or renewal/drop-out decisions.

In the final stage, the qualitative synthesis informed by thematic synthesis and quantitative synthesis informed by meta-analytic synthesis were compared to gain insight for an overall synthesis of findings/statements.

3 Studies included in the review

3.1 Studies included from searching to screening

In the database searching stage, a total of 15,770 potentially relevant papers were identified, of which 4,372 duplicates were removed, leaving 11,398 papers. Inclusion and exclusion criteria were applied successively to titles and abstracts, and then full reports, as follows:

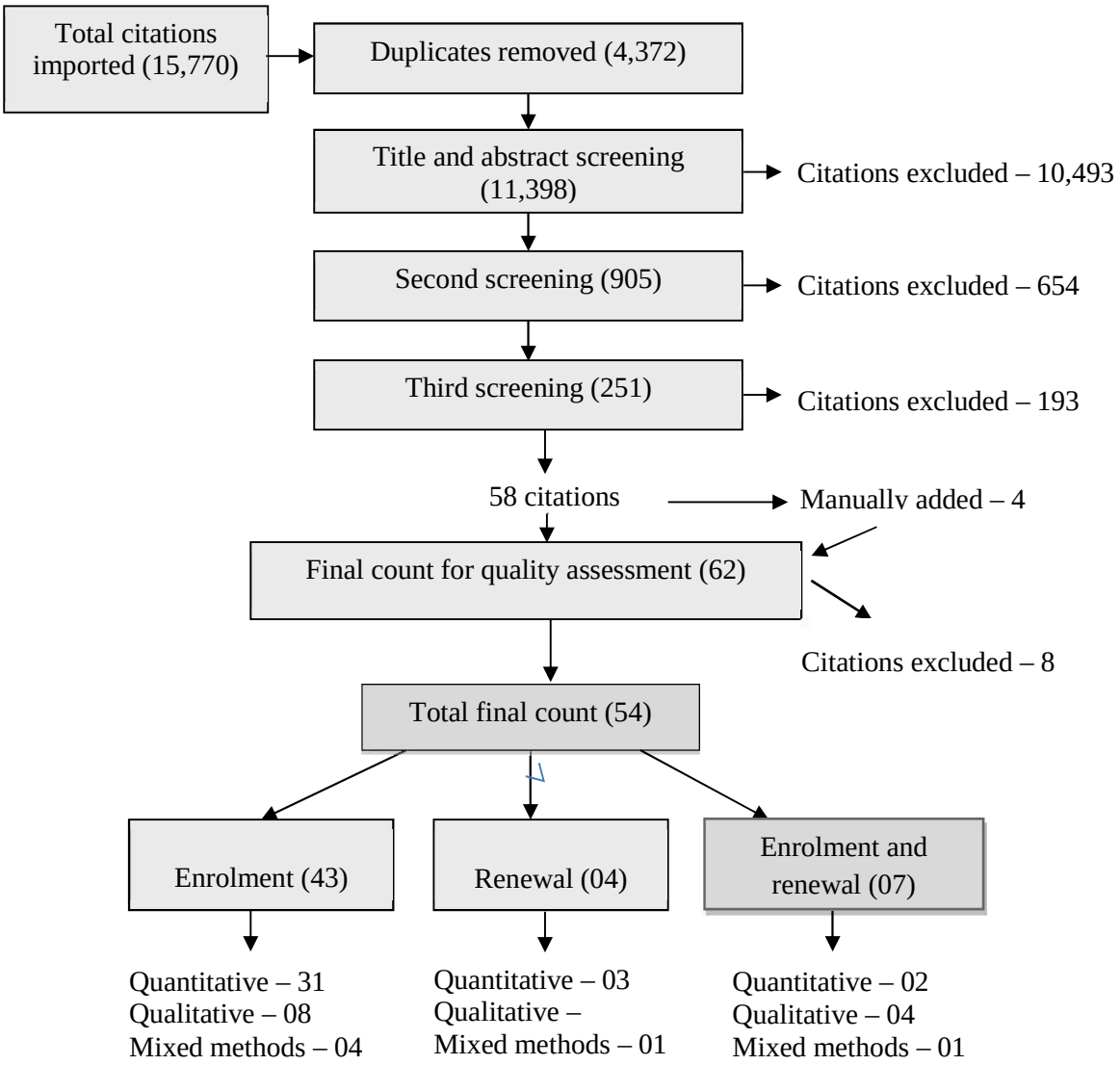
In the first round of screening, 10,493 citations were removed after two reviewers independently screened the titles and abstracts and identified those that were clearly not relevant to the review. That left 905 studies.

In the second round, 251 papers were retrieved for screening based on full reports, and the other 654 papers were excluded either because they did not deal with CBHI or the uptake was not voluntary.
In the third stage, the inclusion and exclusion criteria were then reapplied to the full-text studies for a detailed screening and a total of 58 papers were retained for this systematic review at the end of this stage, while 193 papers were excluded as they did not meet the criteria (e.g. policy briefs, private/SHI/Ghana NHIS, and papers dealing with only impact of CBHI, but not correlates of uptake) or were not available. Disagreements between the two evaluators on whether to include or exclude a paper were resolved through discussion with a third reviewer and, when necessary, with the review group.

Additionally, 4 more papers, which were published while the review process unfolded and did not come up in the automatic data search, were added, giving a total of 62 papers.
Papers were then critically appraised using the different tools described in the previous section. At this stage, 8 of the 62 papers were excluded on the basis of their low quality, and the remaining 54 papers were further assessed for their quality. The details of these 54 papers have been described in Appendix 3.1.

The flow of studies is shown in Figure 3.1 below, using a PRISMA flowchart diagram to provide information on the selection of papers [89]

Figure 3.1 PRISMA flowchart diagram of study screening



3.2 Characteristics of included studies

3.2.1 *Geographical location*

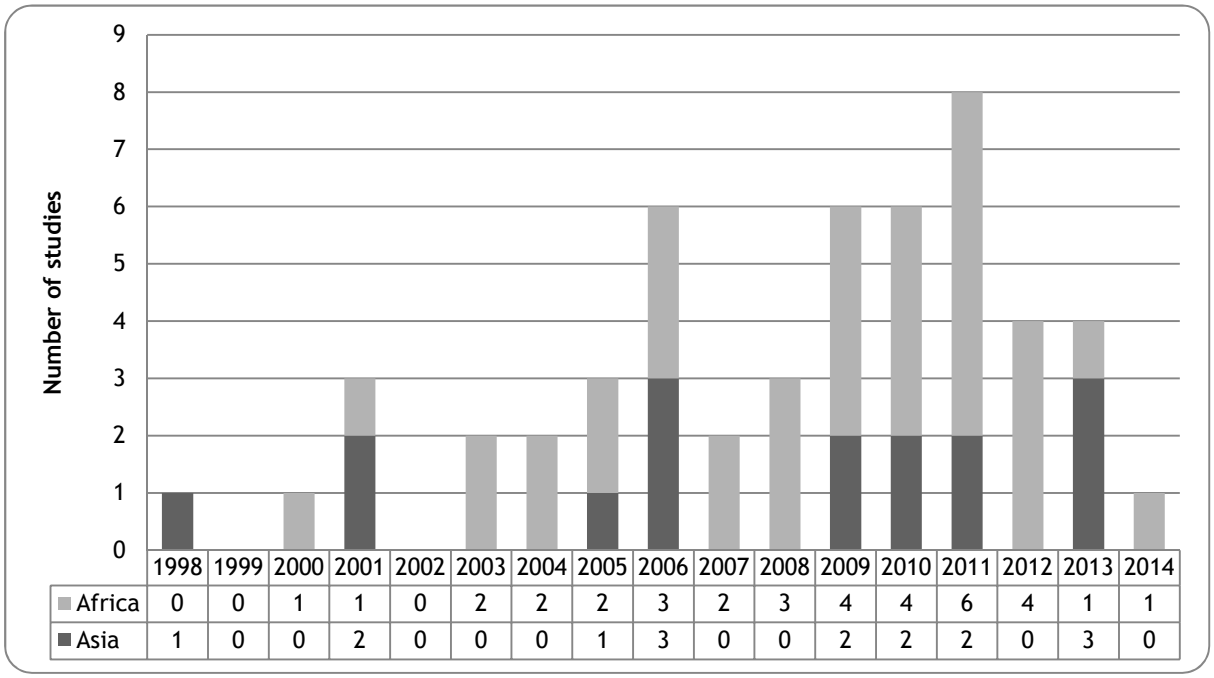
The 54 papers included in the review were conducted across 20 countries (Afghanistan, Armenia, Benin, Burkina Faso [x7], Cambodia, Cameroon [x2], China [x3], Democratic Republic of Congo, Ecuador, Ghana [x5], Guinea-Conakry, India [x9], Malaysia, Mali, Nigeria [x7], Rwanda [x2], Senegal [x4], Sri Lanka, Tanzania [x3], and Uganda [x4]).[10] In other words, most of the studies were conducted in African countries, followed by Asian countries; with only very few studies on CBHI uptake conducted in other countries (see Tables 2.7 and 2.8 for full details of the quantitative and qualitative studies respectively). In addition, most of the studies were conducted in a rural setting (32), 7 took place in an exclusively urban environment, and the remaining 15 involved both rural and urban settings. The low-income countries were the setting for most studies, with fewer studies in lower-middle-income countries, and even fewer in upper-middle-income countries (in fact only 3 studies dealt with CBHI in China, Malaysia, and Ecuador).

[10] The count is 56 as the paper by Chankova (2008) describes CBHI schemes in three countries.

Studies included were diverse in their nature and characteristics. Of the 54 studies, 39 studied CBHI schemes operational at the regional level, 11 at local level, and the remaining 4 at national level. All 7 studies conducted in Burkina Faso looked at CBHI schemes in Nouna health district operational at regional level. Studies conducted in Nigeria have mostly looked at the schemes in Anambra and Enugu districts.

Figure 3.2 presents the timeline of the various research studies that were published, with a distinction between the two continents. Overall, there have been two periods when there has been a spurt in the number of research studies: during 2005–2006 and during 2009–2011. With very few studies undertaken in the 1990s, research in this area has taken off only in the past decade. Throughout the period 2004–2012, most of the studies were conducted in African countries.

Figure 3.2 Studies undertaken in Asia and Africa 1990 to present



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Africa	0	0	1	1	0	2	2	2	3	2	3	4	4	6	4	1	1
Asia	1	0	0	2	0	0	0	1	3	0	0	2	2	2	0	3	0

3.2.2 *Description of the studies*

Out of the 42 quantitative studies (36 quantitative and 6 mixed-methods studies with quantitative data), 1 study dealt with RCT, 5 each dealt with case-control methods and cohort studies, and the remaining 31 studies were cross-sectional surveys, based on a random sample. Multivariate analyses (LOGIT/PROBIT/TOBIT) were used in 29 studies to examine the correlates of uptake and renewal. Only 1 study was based on panel data, and used fixed-effect and random-effect models. A total of studies used descriptive statistics with statistical tests and 1 was a descriptive study without any statistical test.

Out of the 18 qualitative studies (12 qualitative and 6 mixed-method studies with qualitative data), 10 studies used both focus groups and interviews, and 4 each used either focus groups or interviews with different categories of participants (e.g. those who were insured, uninsured, renewed, or dropped out) and with scheme managers and healthcare providers to elicit in-depth understanding of the reasons for uptake and renewal in CBHI schemes.

4 Results

4.1 Characteristics of voluntary and CBHI schemes

Almost all the voluntary and community-based health insurance schemes included in this review share the key important features, such as pooling of prepaid funds, mutual aid, targeting of the informal sector, and not-for-profit and community participation in management. Thus, CBHI schemes appear particularly appropriate for providing insurance coverage to the persons with limited protection from other sources, such as those who are not engaged in formal sector employment. They also seem particularly relevant to LMIC, where government revenue is limited and there is currently extensive reliance upon OOP payment. A great majority of CBHI schemes are controlled and managed by the community through their elected representatives; in some cases, the decision-making is entrusted to an NGO or a hospital with limited involvement of the community. Scheme-related features of included studies can be seen in Appendices 4.1a and 4.1b.

In most of the schemes, the unit of enrolment is households, and a single premium per person is applicable for all the members in the household. In some schemes, however, the premium is set on an individual basis and it varies among individuals. For instance, a scheme in rural West Africa sets a higher annual premium for adults (US$ 3) than children (US$ 0.8) (Allegri et al. 2006b [5]). The annual premium is generally paid all at once (flat premium) and membership is renewable on a yearly basis. Only a few schemes have the provision for paying the premium on a monthly or quarterly basis. The individual premium amount varies from US$ 1 to US$ 5 and the household premium from US$ 10 to US$ 40 in a year. The insured members have to observe between a two-week and three-month window, depending on the scheme, before being able to access health services.

A few CBHI schemes apply stringent membership requirements. For instance, in Uganda, an NGO-managed scheme had a requirement of village-based enrolment (at least 100 people per village) and a hospital-managed scheme had a requirement of group-based enrolment (at least 60 percent of the group) before the scheme could become operational [8]. A minority of schemes restrict the number of household members for enrolment (up to 4–7 members). On the other hand, a minority of schemes exempt poor individuals and households from paying insurance premiums. For instance, in a scheme in Ghana, the indigenes (unemployed persons, persons without a fixed place of residence, etc.), pregnant women, the aged (> 69 years) and children (< 19 years) are exempt from paying the premiums. [3]

As regards the benefits package, coverage of hospitalisation is nearly universal. Few schemes cover hospitalisation with drugs on concession. Very few schemes include coverage of OPD and IPD facilities or free OPD and/or maternity insurance. Most of the CBHI schemes charge very little, but those schemes also provide concessions on consultations, diagnostic tests, and hospital bills. Most of the schemes show low subsidy levels for health facilities, but there are some schemes, such as in Nigeria, where the benefits package is highly subsidised (around 90 percent of total premium) [32]. A significant minority of schemes operate without subsidy, for example a study in India [44]. Almost all the schemes prefer first-line health services and, in some cases, if referred by the first-line health facility, the patients are being referred to a second-line health facility. In some schemes, a ceiling is applied to the number of contacts enrolled members are entitled to and co-payment is required at point of delivery. The healthcare providers contracted by the scheme management are generally paid on a capitation basis.

4.2 Quality appraisal of included studies

The various tools used for the critical appraisal of the RCT-based study (1), quantitative studies (33), qualitative studies (11), mixed-method studies (3), and cohort studies (6) are given in Appendix 4.2.

4.2.1 *Quality appraisal for quantitative studies*

Quality appraisal for RCT study

This systematic review report includes one RCT study [14] to determine the factors affecting enrolment decisions of the households. The credible quality of this study means it is considered a low-risk study on the various types of bias. There was no selection bias as participating households were randomly assigned to treatment groups. There was no attrition bias as there is no missing outcome data reported in the study. The study design, methods, and analysis are adequately reported.

Quality appraisal of cohort studies

Out of the 6 cohort studies, 2 are quantitative. Of the 2 quantitative cohort studies, Liu [33] did not clearly state the issue that the study addressed and the cohort was not recruited in an acceptable way. Ranson [45] was a good-quality study judged by the quality appraisal checklists. Overall, both the studies are very valuable for this systematic review and answer the requirements of the checklist.

Quality appraisal of cross-sectional studies

We have retained 33 cross-sectional studies (based on quantitative analysis of survey data) for this systematic review. Methods of recording data were reported in 15 (54 percent) studies and the sampling strategies were appropriate in 28 (84 percent) studies. Multivariate techniques were used in 27 (81 percent) studies to control for potential confounding factors. The data collected corresponded to the research issue in question in 31 (93 percent) studies. Ethical considerations related to research were reported in only 13 (39 percent) studies. Study design and data analysis were adequately described in all the included studies and were consistent with the study findings.

4.2.2 *Quality appraisal for qualitative studies*

Of the 12 qualitative studies, 1 [10] is a cohort study. The cohort study was assessed using the cohort checklist. It passed the entire checklist except for two conditions – both exposure and outcome were not accurately measured to minimise bias.

The remaining 11 studies were valuable as there was a clear link between the aim and the results; data supported the findings and the detailed process of analysis had been recorded adequately. Adequate methods of reporting data were provided for 10 (90 percent) studies and 10 (90 percent) studies stated explicitly the methods of analysis. The recruitment strategy in 10 (90 percent) studies was appropriate to the aims of the research. The relationship between researcher and participants had been adequately considered in 6 (54 percent) studies. The ethical issues had been taken into consideration in 4 (36 percent) studies. All studies provided adequate reporting of the research context, sampling procedures, and sample characteristics and data collection.

4.2.3 *Quality appraisal for mixed-method studies*

In this review, we have 6 studies that have used both qualitative and quantitative design (‘mixed methods’), of which 3 have used cohort technique and are assessed using the cohort checklist. A further 3 studies qualified as meeting the entire checklist reporting procedure and are included for further assessment, and 1 study [51] neither reported methods of recording of data nor accurately measured exposure and outcome to minimise bias.

Of the remaining 3 mixed-method studies, 2 studies reported methods of recording of data; 2 studies discussed the ethical considerations; and 2 studies collected relevant data that addressed the research issue. None of these 3 studies used multivariate techniques to control for potential confounding factors. Data collection, sampling, and research context have been adequately described in all studies.

4.3 Meta-analysis

Out of the 42 quantitative studies (36 quantitative and 6 mixed-methods studies with quantitative data), 18 [1, 6, 12, 15, 21, 25, 26, 27, 30, 32, 34, 35, 42, 44, 46, 48, 50, 54] reported quantitative results (econometric models) for understanding household and individual characteristics influencing enrolment and renewal in CBHI (see Appendix 2.7). All studies were based on cross-sectional surveys. However, the authors used different sets of variables and different econometric models for analysis. We have considered here only those 18 studies that have explained their results using a LOGIT or PROBIT regression model. Household characteristics that have an impact on the enrolment behaviour as reported by these studies included religion, caste, socio-economic status of the family, age, sex, occupation, and literacy level of the head of the household. Individual traits included age, sex, education, and self-perceived health status of the insured individuals. We presume that the individuals who were enrolled from a given household were selected on the basis of some individual traits, though the decision to join or not join the CBHI was made at the household level, where household-level characteristics played the critical role. Hence, we limit our meta-analysis to the household-level characteristics and to those variables that were reported by most of the authors. The complete list of the household-level characteristics reported by the 18 studies selected for meta-analysis is given in Appendices 4.3 to 4.6.

The variables we studied in depth in the current meta-analysis exercise are as follows:

- education level of the head of the household
- gender of the head of the household
- marital status of the head of the household
- socio-economic status of the household
- age of the head of the household
- presence of acute illness in the household
- presence of chronic illness in the household
- presence of elderly people (above 65 years) in the household
- household size
- trust in the insurer.

4.3.1 *Geographical variation*

Studies selected for this meta-analysis exercise spread over nine countries in two regions. Seven countries (Ghana, Mali, Senegal, Burkina Faso, Nigeria, Tanzania, and Rwanda) were located in sub-Saharan Africa and two (India, China) belonged to South Asia. In India, however, the studies were conducted in five different locations. We report the summary effects for each region separately and also after clubbing them together.

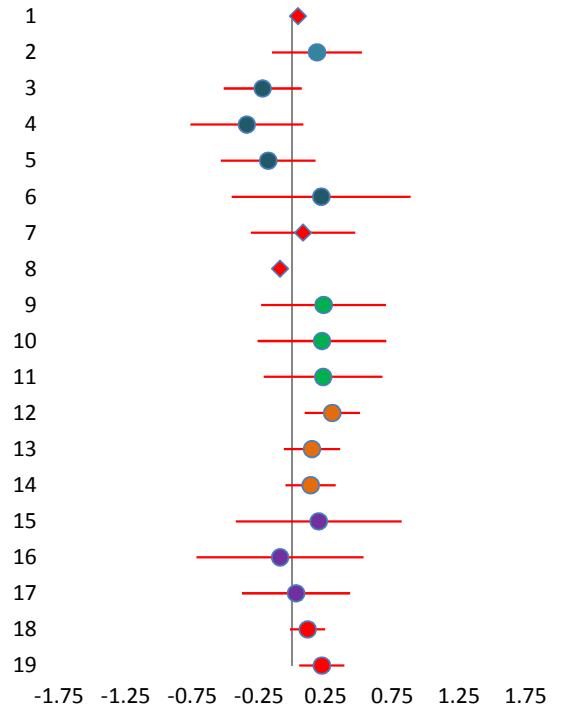
4.3.2 *Findings*

We report here our findings for the variables, which have been reported by most of the authors. We provide the region-wise forest plot diagrams for each variable we examined and report the summary effects region-wise and for all locations combined.

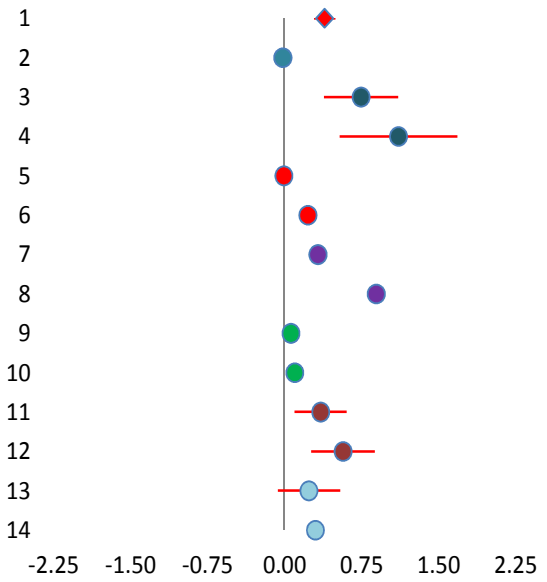
4.3.2.1 Education of the head of the household

The level of education of the head of a household is one of the key determinants of enrolling in CBHI, as reported by many authors. Most of them reported a positive association between the level of education of the head of the household and enrolment in CBHI. The effect size of the variable is also apparent from the forest plot diagram (Figure 4.1) (see Appendices 4.7 and 4.8).

Figure 4.1 Forest plot for education of the head of the household



Asia

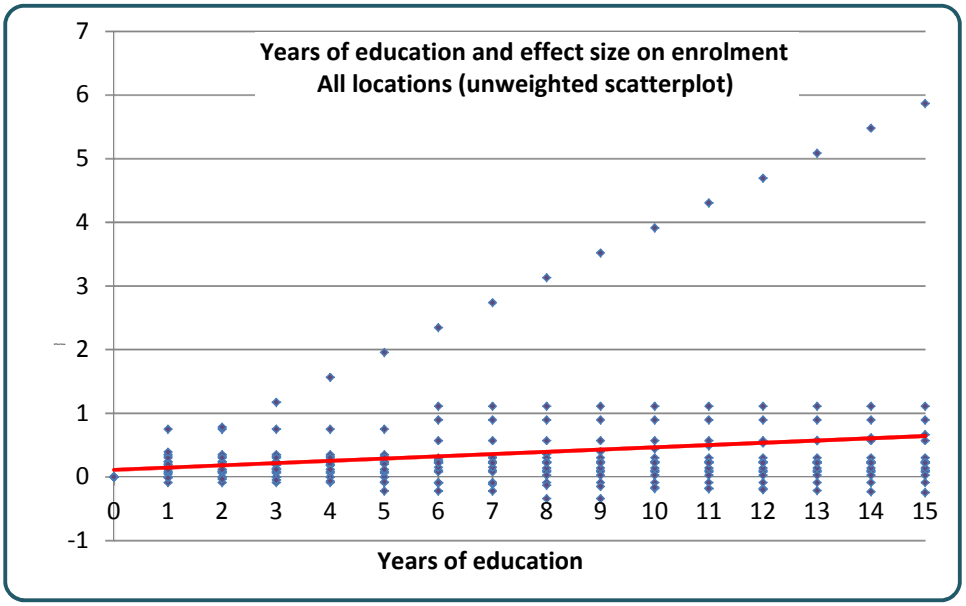


Sub-Saharan Africa

Note: The horizontal line denotes the 95 percent CI. The markers of same shape and colour imply the effect of multiple categories estimated from the same study.

The effect size was not always significantly different from zero. Some of the authors did not report any standard errors in their results. Results of a few studies were apparently counter-intuitive where change in the effect size occurs in both directions (positive and negative) with increased level of education. However, as a whole the association appears positive.

Figure 4.2 Years of education and effect size on enrolment (unweighted scatter plot)



Three authors [30, 32, 34], who measured education in terms of number of years in school, considered it a continuous variable. The rest [1, 6, 15, 25, 26, 27, 46, 42, 44, 48] treated it as a categorical variable. All of them assumed the same base category (no experience of schooling), but dealt with multiple heterogeneous categories for the level of education (primary, secondary, middle, upper-middle, etc.). In order to estimate the summary effect of the level of education of the head of the household, we applied the regression method for obtaining summary effect (as described in the methods section) over a domain of 0 to 15 years of schooling. Figure 4.2 displays the unweighted scatter plot for the effect size and level of education, along with the best-fitted line of regression (shown in red). The slope of this unweighted regression line is 0.0356 and R-square is estimated as 0.0391.

Table 4.1

Summary effect of education of the head of the household

Asia	0.0167
Sub-Saharan Africa	0.0555
All	0.069

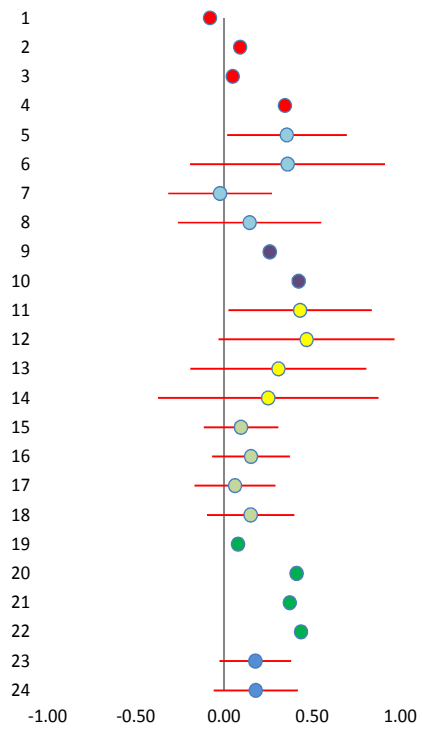
The summary effect size of education, after applying weights (proportional to the sample sizes), is estimated as 0.0167 for Asia, 0.0555 for sub-Saharan Africa, and 0.0451 when two regions are clubbed together (Table 4.1). R-square for the weighted OLS is estimated at 0.069 (for two regions combined together). SE of the summary effect for all locations combined is estimated as 0.0002, which implies that it is significantly different from zero (p-value=0.000).

In line with meta-analysis, the vote count results of the full range of quantitative studies support the positive association between education of the head of the household and enrolment in 81 percent of cases.

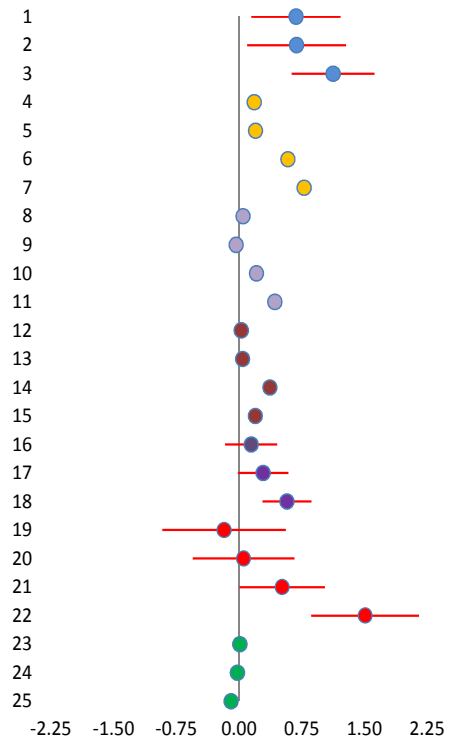
4.3.2.2 Socio-economic status of the household

A total of 10 studies [6, 15, 25, 26, 27, 32, 34, 46, 44, and 48] have been used in this section for meta-analysis in which most of the authors reported socio-economic status of a household as a key variable influencing enrolment in CBHI. Different authors dealt with the variable very differently. Some of them assumed income as the indicator of socio-economic status. Some considered that it was best reflected by the level of expenditure, and some authors created socio-economic categories based on the assets possessed by the household. We understand that income, expenditure, and assets are not the same thing though; each of them can throw light on the socio-economic status of a household. It will be fairly reasonable to consider the categories based on either of them (in the absence of any uniform measure) as an indicator of socio-economic status of a household.

Figure 4.3 Forest plot for socio-economic status



Asia



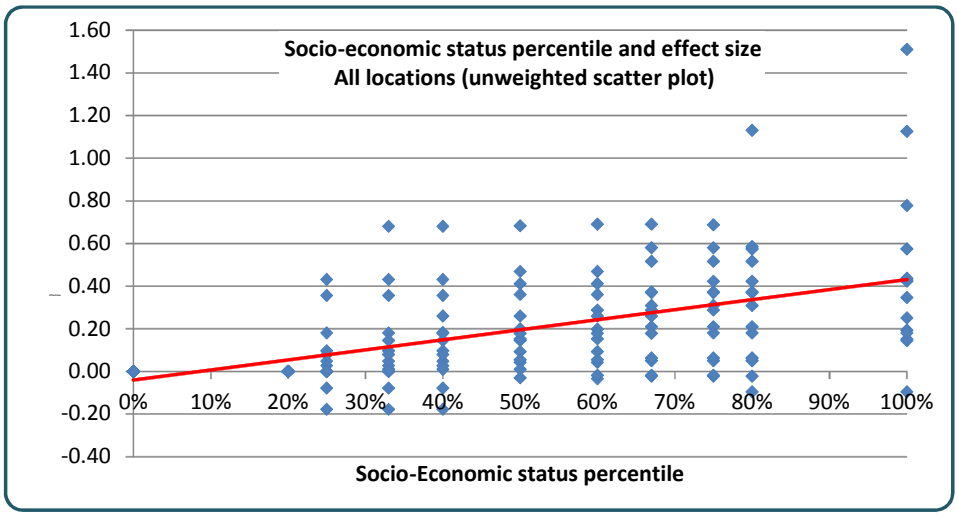
Sub-Saharan Africa

Note: The horizontal line denotes the 95 percent CI. The markers of same shape and colour imply the effect of multiple categories estimated from the same study.

The forest plot diagram for the variable (see Figure 4.3, Appendices 4.9 and 4.10) clearly indicates a positive association between the socio-economic status of a household and their likelihood of joining the CBHI. It is interesting to note from the forest plot diagram that the effect size increases with increasing socio-economic status in sub-Saharan Africa, but the shift in the effect size is not unidirectional in Asian locations. The effect is positive when the household ranks above the poorest

category. But the effect size shrinks when the household belongs to an even higher socio-economic class.

Figure 4.4 Socio-economic status and effect size (unweighted scatter plot)



Authors classified the households as belonging to different socio-economic categories based on income, expenditure, or assets. They also varied, while grouping the households under different categories. Some of the authors classified the households on the basis of tertiles, some did on the basis of quartiles, and some created quintiles. The lowest category was the base but it was not possible to use the standard methodology to estimate the summary effect because of the heterogeneous categories. Hence we assumed (a) uniform effect size within a given category (tertile, quartile, or quintile), and (b) the distribution of households over the domain of socio-economic percentile (instead of tertile, quartile, or quintile). We then applied the regression method of obtaining summary effect by fitting a linear regression of effect size on the percentile values.

Table 4.2

Summary effect of socio-economic status of the household

Asia	0.258
Sub-Saharan Africa	0.5209
All	0.471

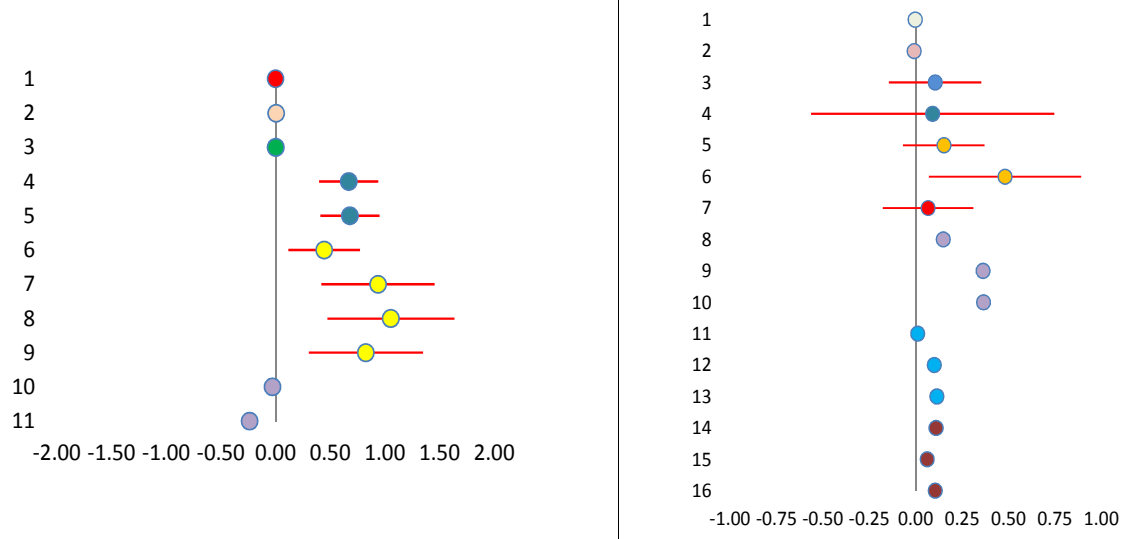
Figure 4.4 displays the unweighted scatter plot diagram for the socio-economic percentile and effect size. The coefficient of regression for the unweighted regression line is estimated as 0.4709, with an estimated R-square value of 0.26. The coefficient of regression, for all locations combined together and after applying weights proportional to the sample size, is estimated as 0.471, with estimated R-square value of 0.37. The SE of the summary effect for all locations combined is 0.001, which implies that the effect is significantly different from zero (p-value=0.000). We estimate the summary effect of socio-economic percentile for Asian and African locations as 0.258 and 0.5209 respectively (Table 4.2).

In line with meta-analysis, we find similar results in vote count findings from all the quantitative studies. In 84 percent of quantitative studies, household economic status is positively associated with enrolment.

4.3.2.3 Age of the head of the household

Many authors [6, 26, 44, 46, 26, 34, 30, 42, 25, 48, and 15] have studied age of the head of the household associated with enrolment in CBHI. Again, the variable was treated very differently by different authors – continuous and categorical with heterogeneous categories.

Figure 4.5 Forest plot for age of the head of the household



Asia	Sub-Saharan Africa

Note: The horizontal line denotes the 95 percent CI. The markers of same shape and colour imply the effect of multiple categories estimated from the same study.

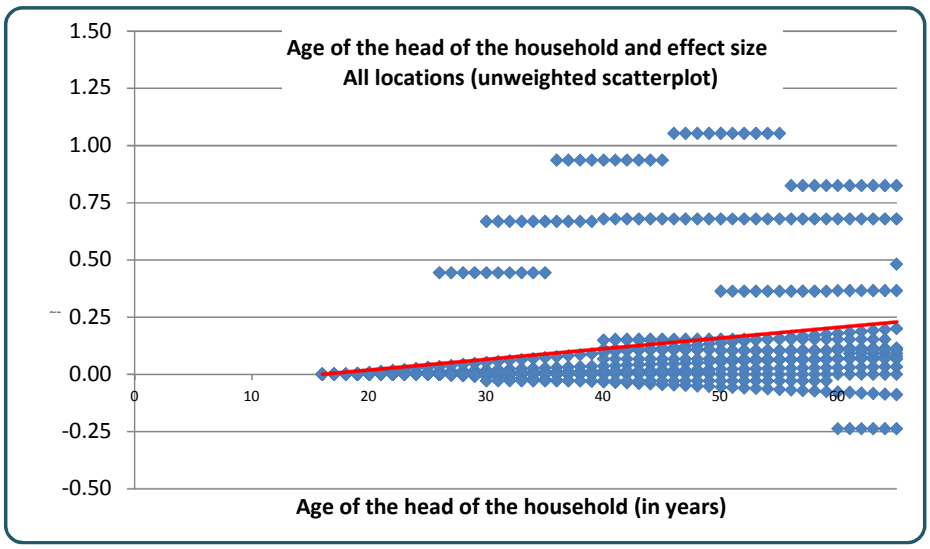
The forest plot diagram for the age of the head of the household (Figure 4.5) indicates a positive association between the age of the head of the household and enrolment in CBHI in sub-Saharan Africa. In Asian locations, it is a mixture of positive and negative associations. For those studies where the age has been treated as a continuous variable, the slope of the regression is almost zero.

Table 4.3
Summary effect of age of the head of the household

Asia	0.0092
Sub-Saharan Africa	0.0042
All	0.0048

We apply the regression method for obtaining summary effect and fit a regression of the effect size on the age of the head of the household over a domain of 16 to 65 years with weights proportional to the sample size. We estimate the summary effect of the variable as 0.0048, with R-square value of 0.15 for all locations combined (Table 4.3). The SE of the summary effect is estimated at a very small 8.43E-06, implying that the effect significantly differs from zero (p-value=0.000). Separate estimates of the summary effect for Asian and African locations are estimated as 0.0092 and 0.0042 respectively. The unweighted OLS gives a regression coefficient of 0.0047, with estimated R-square value of 0.0774 (Figure 4.6).

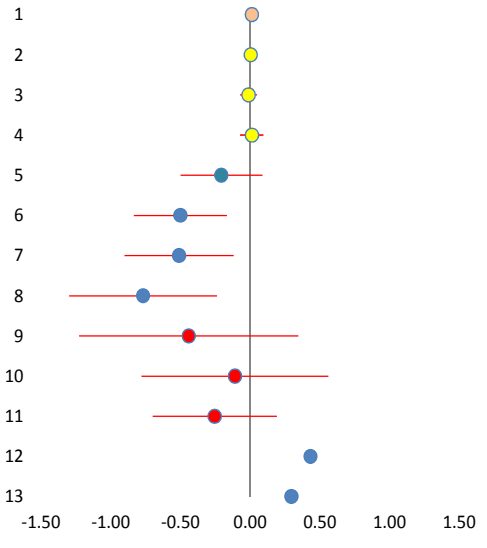
Figure 4.6 Age of the household head and effect size (unweighted scatter plot)



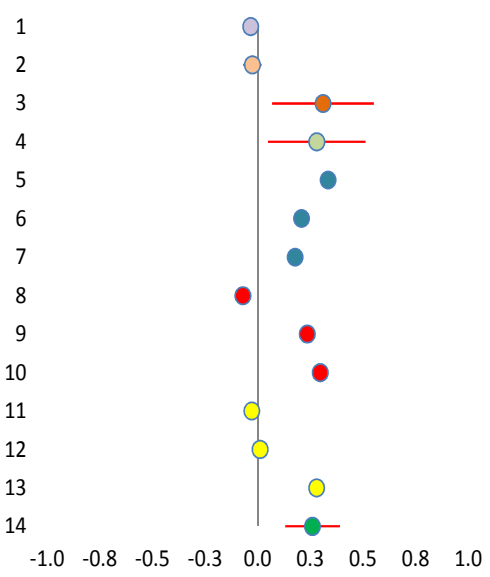
When the association between age of the household head and enrolment is considered for the full range of quantitative studies, we find a positive relationship in half of the studies.

4.3.2.4 Household size

Figure 4.7 Forest plot for household size



Asia



Sub-Saharan Africa

Note: The horizontal line denotes the 95 percent CI. The markers of same shape and colour imply the effect of multiple categories estimated from the same study.

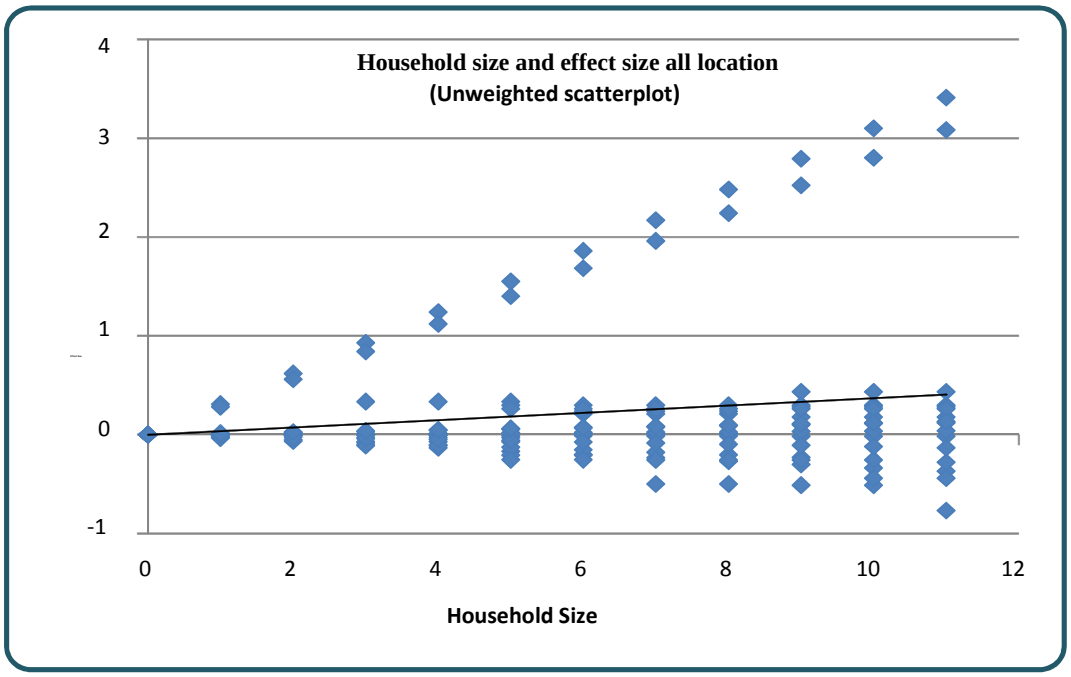
As is evident from the forest plot diagram, household size has a negative association with enrolment in Asia and positive association in sub-Saharan Africa. The variable has been treated very differently by different authors – continuous as well as categorical, with many non-uniform categories – and hence we apply the regression method to estimate the summary effect, region-wise as well as for all locations combined, and report the coefficient of regression as the summary effect.

Table 4.4

Summary effect of household size

Asia	-0.0040
Sub-Saharan Africa	0.0414
All	0.0328

Figure 4.8 Household size and effect size (unweighted scatter plot)



We estimate the summary effects as -0.0040 for the Asian locations [1, 26, 46, and 34] and 0.0414 for the African locations [15, 25, 30, 32, 42, and 48]. The summary effect for all locations combined is estimated as 0.0328, with R-square value=0.059 (Table 4.4) and SE=0.0002. The small standard error implies that the effect significantly differs from zero (p-value=0.000). The unweighted OLS gives the coefficient of regression as 0.0368, with estimated R-square value of 0.0359.

The vote count findings of all quantitative studies suggest that there is a positive relationship between household size and enrolment in three-fifths of studies. However, the estimate of the summary effect in meta-analysis might have been influenced by the large sample size used in some studies.

4.3.2.5 Presence of chronic illnesses in the household

Figure 4.9 Forest plot for presence of chronic illnesses in the household

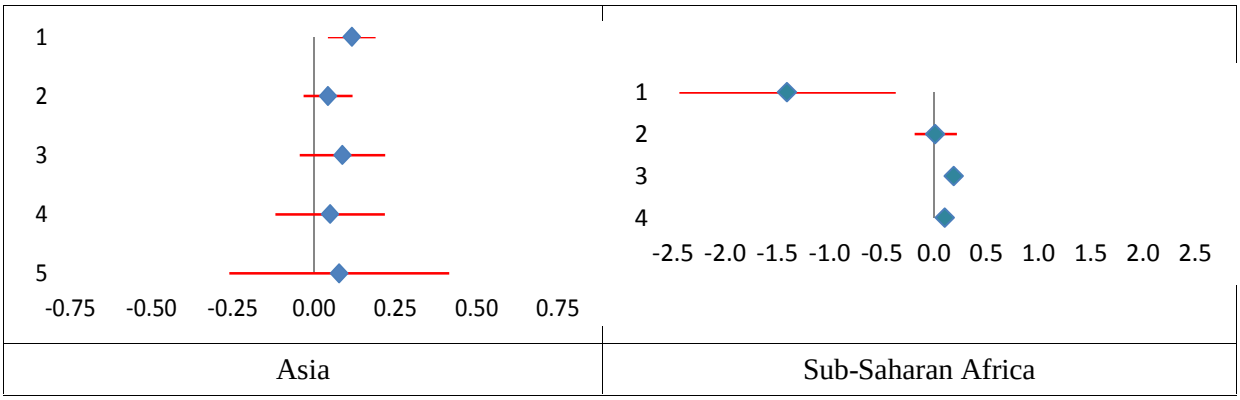


Table 4.5 Summary effect for presence of chronic illnesses in the household

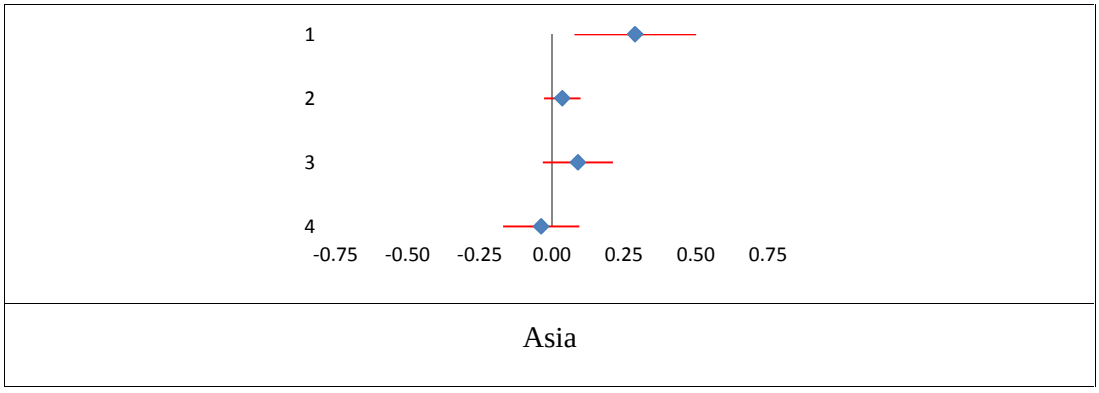
Asia	Sub-Saharan Africa	All locations
0.097	0.0495	0.00601

For this variable, 3 studies [1, 44, 26] involving nine locations for the Asian region and 4 studies [6, 15, 25] for African locations reported the results of presence of chronic illnesses in the household. The forest plot is displayed in Figure 4.9. The studies in the Asian locations show a positive association between the presence of chronic illnesses in the household and enrolment in CBHI; only one was significantly different from zero. In sub-Saharan Africa, the effects were very close to zero and one was significantly below zero. We estimate the summary effects as 0.097, 0.0495 and 0.0601 respectively for Asia, sub-Saharan Africa, and all locations combined together (Table 4.5). However, the results are only indicative and not conclusive as the standard error for the summary effect size could not be calculated.

In three-fifths of the full range of quantitative studies, enrolment is positively associated with the presence of chronic illness in the household, suggesting similar results from meta-analysis.

4.3.2.6 Presence of acute illnesses in the household

Figure 4.10 Forest plot for presence of acute illnesses in the household



Only 2 studies [46, 44] involving four locations for the Asia region and none from sub-Saharan Africa reported the presence of any acute illnesses (in the month prior to the survey) as a determining factor for enrolment in CBHI. All but one of them showed a positive association between the presence of acute illnesses and enrolment; however the effect was significantly higher than zero in only 1 study. Interestingly, all authors who reported the presence of acute illnesses in the household treated it as a continuous variable. The summary effect could be estimated only for the Asia region and it was 0.138. However, the results are only indicative and not conclusive as the standard error for the summary effect size could not be calculated.

In four-fifths of the full range of quantitative studies, enrolment is positively associated with the presence of acute illness in the household, suggesting similar results from meta-analysis and vote counts.

4.3.2.7 Presence of elderly people in the household

Figure 4.11 Forest plot for presence of elderly people in the household

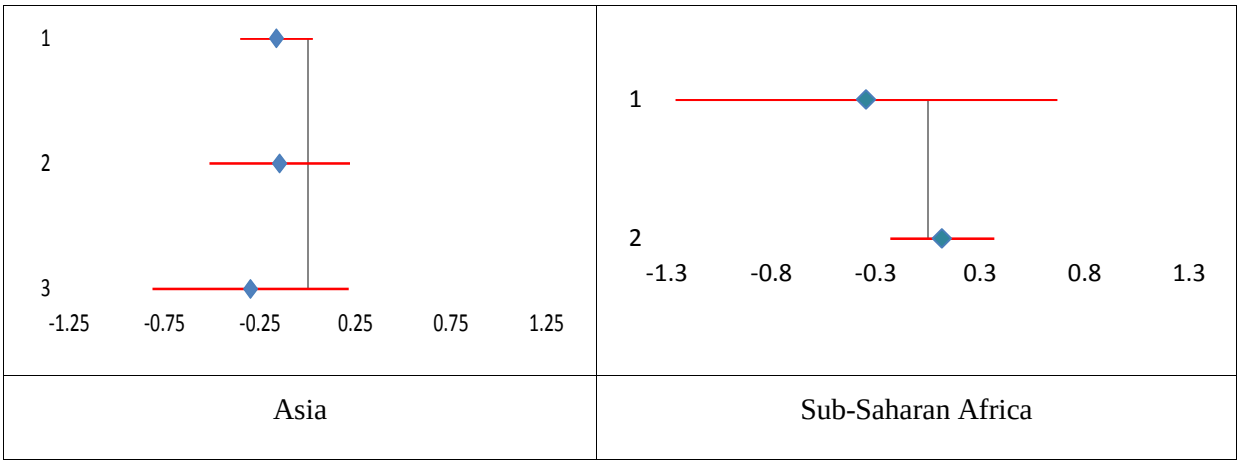


Table 4.6 Summary effect for presence of elderly people in the household

Effect size (Asia)	Effect size (sub-Saharan Africa)	Effect size (total)
-0.212	-0.1614	-0.181

Only 1 study [44] involving three locations for Asia and 2 studies [25, 30] from sub-Saharan Africa probed the effect of the presence of elderly people on enrolment in CBHI. All studies in the Asian locations indicate a negative association between the two. Out of 2 studies in sub-Saharan Africa, 1 reported a negative association and the other reported a slightly positive association. Overall, the summary effects are estimated as negative for both regions (-0.212 for Asia and -0.1614 for sub-Saharan Africa) and also for all locations combined together (-0.181) (Table 4.6). However, the results are only indicative and not conclusive as the standard error for the summary effect size could not be calculated.

The vote count results from the full range of quantitative studies contradict the findings of meta-analysis. In three-fifths of all the quantitative studies, we find a positive association between enrolment and the presence of elderly people in the household, while the relationship was negative in meta-analysis. This discrepancy could be explained by the small number of studies involved or that the vote count does not take into consideration sample size.

4.3.2.8 Marital status of the head of the household

Figure 4.12 Forest plot for marital status of the head of the household

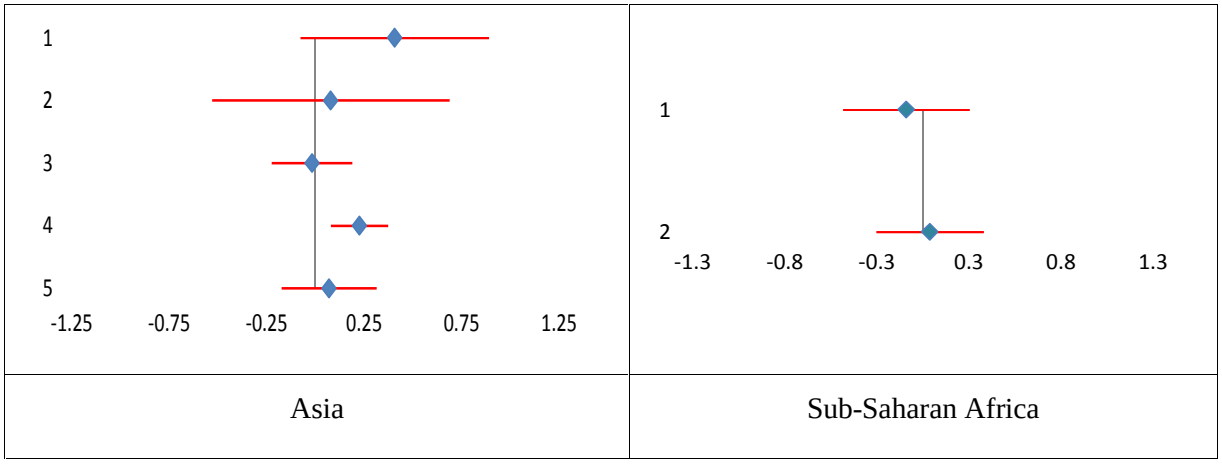


Table 4.7 Summary effect for marital status of head of the household

Effect size (Asia)	Effect size (sub-Saharan Africa)	Effect size (total)
0.1543	-0.0027	0.1403

Only 3 studies [26, 46 ,27] involving five locations from the Asia region and 2 studies [30, 43] from sub-Saharan Africa probed the marital status of the head of the household as a determinant of enrolling in CBHI. There were 4 studies from the Asia region and 1 study from the African region that reported a positive association (a household with a married head is more likely to join the CBHI than one with an unmarried head). Overall summary effect for the variable is estimated positive for the Asia region (0.1543) and negative (-0.0027) for the Africa region. Estimated summary effect for the variable for all locations combined was 0.1403 (Table 4.7). However, the results are only indicative and not conclusive as the standard error for the summary effect size could not be calculated.

Similar to the results in meta-analysis, vote count results suggest that 86 percent of all the quantitative studies found a positive association between households with a married household head and enrolment.

4.3.2.9 Gender of the head of the household

Figure 4.13 Forest plot for gender of the head of the household

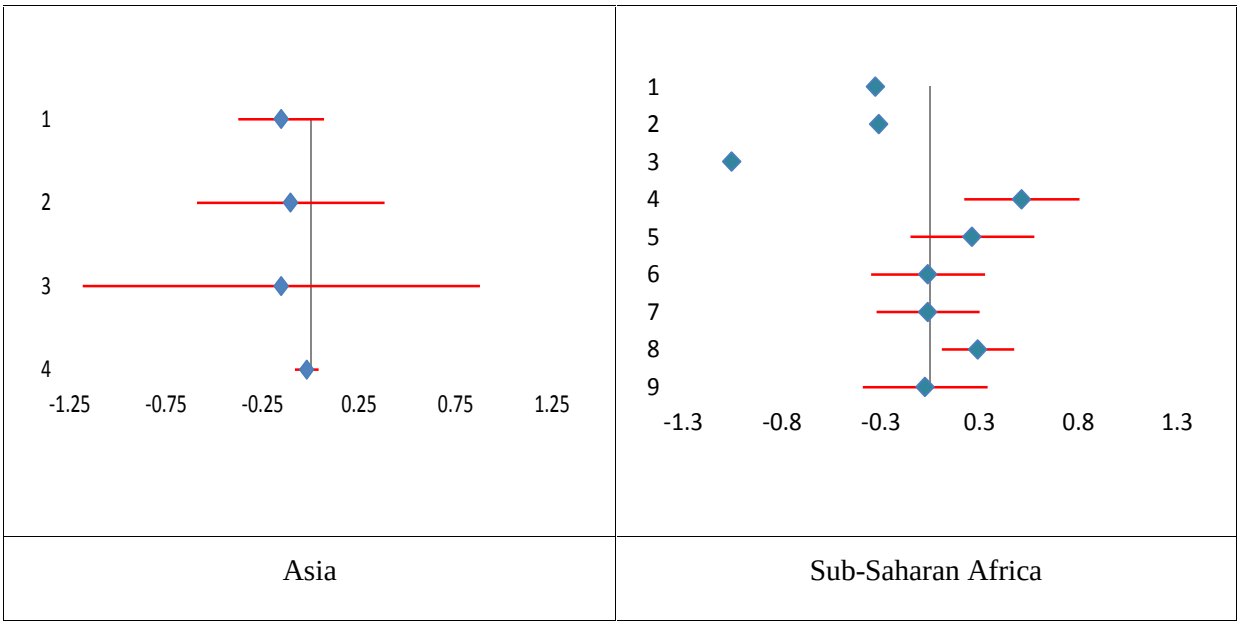


Table 4.8 Summary effect for gender of head of the household

Effect size (Asia)	Effect size (sub-Saharan Africa)	Effect size (total)
-0.0505	-0.4083	-0.359

Gender of the head of the household was reported by many authors as an influencing factor for enrolling in CBHI. For the Asia region 2 studies [44, 27] involving four locations and for the Africa region 5 studies [15, 30, 42, 32, 48] involving eight locations examined the variable in great detail. A household with a female head in the Asia region was more likely to enrol in CBHI compared with one headed by a male. The result was uniform across the region, though the absolute values of the effect size and its CIs varied. In the Africa region, on the other hand, the result was not so uniform. Out of 9 studies in the Africa region, 3 [30, 42, 48] reported a positive association between enrolment in CBHI and male-headed households, but the remaining studies reported almost zero or a highly negative association between the two. The summary effect is estimated as negative for both the regions (-0.0505 for Asia, -0.3556 for Africa) and also for the two regions combined (-0.359) (Table 4.8). However, the results are only indicative and not conclusive as the standard error for the summary effect size could not be calculated.

In line with the results in meta-analysis, the vote count results show a similar pattern of relationship between female-headed households and enrolment – four-fifths of all quantitative studies show a positive association between the two.

4.3.2.10 Variables influencing renewal and drop-out

There were only 4 studies [1, 12, 21, and 35] on renewal/drop-out selected for this exercise. Authors discussed several variables, namely gender [12, 21, 35] and level of education of the head of the household [1, 21, 35, 12], household size [1, 21], socio-economic status [21, 35] measured with respect to income, and trust in the insurer [12, 35]. Gender and trust were treated as dichotomous variables across the studies with the same categories (female/male, no trust/trust). Household size was considered a continuous variable in all the studies. Hence, for these three variables, we followed standard procedures for estimating the summary effect with weights proportional to the sample size. The education variable was treated as continuous (years in school) in the Asia region, but categorical for locations in sub-Saharan Africa, and we applied the regression method of obtaining summary effect. Socio-economic status was reported only for locations in sub-Saharan Africa. However, different authors used different categories and we applied the regression method for obtaining summary effect to combine the categories and report the coefficient of regression of the effect size on the socio-economic percentile as the summary effect. Summary effects of all the variables impacting upon renewal or drop-out are given in Table 4.9.

Table 4.9 Summary effects for the variables influencing renewal/drop-out

Variable	Type of variable (for reporting summary effect)	Summary effect		
		Asia	Sub-Saharan Africa	All locations combined
Gender of the head of the household	Cat: female=0, male=1	0.4500	0.0072	0.1581
Trust in the insurer	Cat: no trust=0, trust=1	0.1800	0.7700	0.5076
Household size	Con	0.0200	-0.0400	0.0135
Education of the head of the household	Con: years of education	0.0542	0.013	0.0460
Socio-economic status	Con: socio-economic percentile		-0.0341	

In Asia, male-headed households are more likely to renew their membership in the CBHI (summary effect = 0.45). The effect is positive for Africa (summary effect = 0.0072) too, but the effect size is much less compared with Asia. Summary effect for all locations combined is estimated as 0.1581.
Trust in the insurers is considered a key determinant of renewal in Africa (summary effect = 0.77). Indian locations too reported a positive effect of trust on renewal (summary effect = 0.18). The combined effect size for the trust variable is estimated as 0.5076 for all locations combined.

Household size was found to have a positive effect on renewal (larger households are more likely to renew) in the Asia region and a negative effect in the sub-Saharan Africa region. However, in terms of absolute value both were close to zero. The summary effect sizes were estimated as 0.02 for the Asia region, -0.04 for sub-Saharan Africa, and 0.0135 for all locations combined.

Education of the head of the household had a positive effect on renewal in both the regions. Summary effect sizes are estimated as 0.542 for the Asia region, 0.013 for sub-Saharan Africa, and 0.046 for all locations combined. Socio-economic status as a determinant of renewal was studied only in the African region and the effect was negative (summary effect size = -0.0341).

As there were very few quantitative studies on renewal decisions that were not included in the meta-analysis, we did not provide vote count results for all the variables separately. Broadly, the vote count findings are in agreement with the findings obtained from the meta-analysis.
The summary effects of all the variables are presented in Table 4.10.

Table 4.10 Summary table (effects of all variables)

Variables	Summary effect			Method of estimating summary effect
	Asia	Sub-Saharan Africa	All	
Socio-economic percentile	0.2379	0.5209	0.4626	Regression
Presence of acute illnesses	0.1169			Averaging
Presence of chronic illnesses	0.0909	0.0495	0.0597	Averaging
Level of education of the head of the household	0.0153	0.0555	0.0443	Regression
Household size	-0.0036	0.0414	0.0323	Regression
Marital status of the head of the household	0.1543	-0.0027	0.1403	Averaging
Age of the head of the household	0.0082	0.0042	0.0048	Regression
Presence of elderly person	-0.1847	-0.1614	-0.1731	Averaging
Gender	-0.0635	-0.4083	-0.3556	Averaging

4.3.3 *Conclusion*

The results show that the socio-economic status of a household seems to be the most critical determinant of enrolment in CBHI, with the highest effect size in both regions. It is important to note that, while most of the other variables (except household size and marital status) have estimated effects of different magnitudes in the two regions, the impact on enrolment is in the same direction. It is true for both the regions that households with incidence of chronic illnesses are more likely to join the CBHI (effect is more in sub-Saharan Africa than Asia). Similarly, educated, mature, and female household heads attach more value to CBHI. However, it is gender that matters most, followed by education and age. Presence of elderly people negatively influences enrolment. The two variables that behave differently in the two regions are household size and marital status of the head of the household. Household size has a negative effect for Asia, but a positive effect for sub-Saharan Africa. The effect size of the marital status of the head of the household is close to zero (actually negative) in sub-Saharan Africa, while it is positive and comparatively higher in Asia. This leads us to believe that some factors such as socio-economic status and education have similar effects universally, whereas some variables have only localised impact.

As regards renewal/drop-out decisions, trust in the insurer had the largest effect on renewal, followed by gender of the household head (male) and education of the household head. While trust in the insurer had a larger effect in sub-Saharan Africa, gender of the household head (male) and education of the household head had a larger influence on renewal decisions in Asia.

Also, small R-square values for the fitted regressions (while estimating the summary effects) for some of the variables indicate that it may not be possible to meaningfully combine the results of individual studies due to their localised behaviours. For some variables, the results are only indicative and not conclusive as the standard error for the summary effect size could not be calculated.

5 Thematic synthesis of qualitative studies on factors influencing enrolment and renewal/drop-out in community-based health insurance (CBHI) schemes

This chapter presents thematic synthesis of qualitative studies on factors explaining enrolment and renewal/drop-out decisions of participants in voluntary and CBHI schemes in LMIC. In total 18 qualitative studies were included for analysis and development of themes (see Appendix 2.8 and 2.9).

5.1 Data analysis

The data analysis was conducted using the following steps. Firstly, two researchers independently reviewed and analysed quotations from respondents and other relevant text, and developed codes by labelling the data. The labelled codes are reflections of individual study and care was taken to ensure that the codes would explain the themes correctly. Secondly, codes were defined and redefined with additional data on quotes. Thirdly, codes led to the development of themes and thus we established the thematic framework through examination and translation of common elements across the studies. Fourthly, charts were developed using themes against individual studies, and an overall picture was built up from all the studies. Finally, an analytical framework was developed by cross-checking the themes with other data both within and between studies for ensuring validity of emerging explanations.

5.2 Results

We identified nine major themes: knowledge and understanding of insurance principle and CBHI; quality of healthcare; trust; benefits package; rules of CBHI schemes; cultural beliefs; affordability; distance to health facility; and legal and policy framework (Figure 5.1). Quotations from the studies illustrating these themes are presented in Appendix 5.1.

5.2.1 *Knowledge and understanding of insurance principle and CBHI*

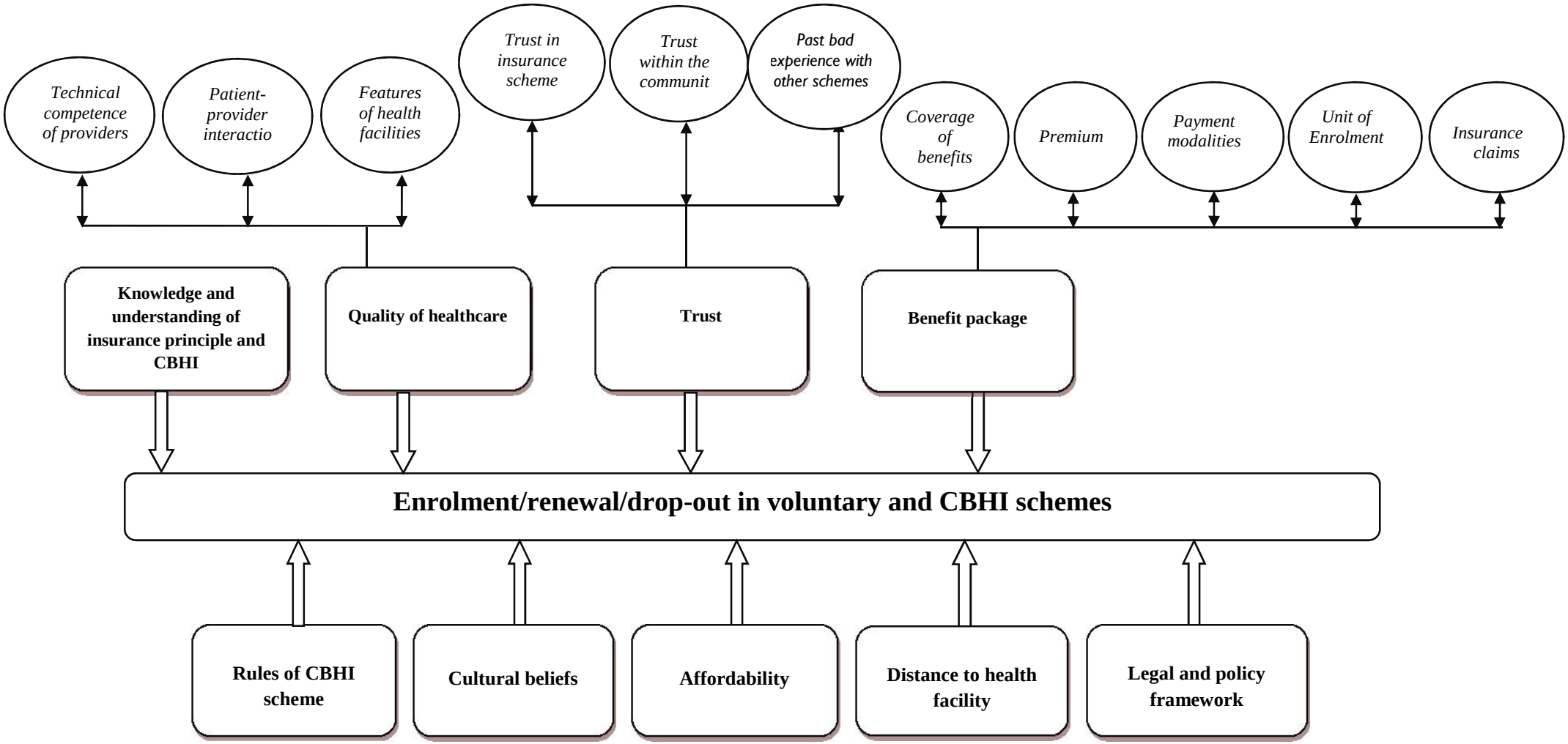
This theme encompasses knowledge and understanding of prepayment, risk-pooling, redistribution of financial resources, managerial structure of CBHI, responsibilities of different levels of management, and benefits of CBHI (including scheme features). For this theme 11 studies reported knowledge and understanding of insurance principle and CBHI [4, 5, 8, 9, 10, 16, 17, 43, 49, 51, and 52].

Inadequate knowledge and understanding of insurance principle and CBHI was reported to be an obstacle to enrolment in 4 studies [4, 9, 31, and 43] [Box 5.1]. Limited understanding of the principles of CBHI on the part of both beneficiaries as well as health providers and managers of CBHI was reported to be a barrier to enrolment in 1 study [8]. However, a failure to understand the principles of CBHI did not explain low enrolment rates in 1 study [17]. A good understanding of the benefits of insurance was a facilitator of enrolment decision in 1 study [16]. Health insurance was poorly understood by some people as a form of ‘lotto’ in 1 study [7]. Even in specific contexts where people had a broad understanding of insurance and CBHI, some legal terms (e.g. collaboration between CBHI and providers are regulated by a contract; CBHIs are managed following their by-laws) were not understood in 1 study [49], and some technical aspects of insurance (e.g. the risk of adverse selection and the advantages of a large risk pool) were not fully understood in another study [17]. Although respondents comprehended the principle of insurance, they could not recall specific elements of scheme features, including the CBHI managerial structure in 1 study [5]. In addition, 1 study reported poor knowledge and understanding of CBHI activities by key policy-makers and health

service managers [7, 10]. Lack of clear understanding of insurance and the prepayment mechanism was reported to hamper scale-up of CBHI activities in 1 study [52].

Poor knowledge and understanding of CBHI was also reported to be a barrier to renewal in 2 studies [9, 51].

Figure 5.1 Themes and subthemes identified in CBHI uptake



5.2.2 *Quality of healthcare*

This theme describes the issues related to quality of healthcare, and involves three aspects: technical competence of providers; patient–provider interactions/attitude of providers; and features of the health facility. These dimensions of quality of healthcare were reported in 12 studies [3, 4, 5, 7, 9, 16, 17, 31, 45, 49, 52, and 53]. Low healthcare quality was recognised by participants in 1 study [52] as one of the most important constraints on enrol and membership renewal.

(a) Technical competence of providers

Lack of technical competence of health providers was reported to be a barrier to enrolment in 2 studies [17,49] [Box 5.1]. People dropping out of the CBHI schemes in 1 study could be explained by the lack of technical expertise of providers [49].

(b) Patient-provider interaction

The negative attitude of health providers was reported to be a barrier to enrolment in 6 studies [5, 7, 9, 17, 31, and 52]. Participants expressed dissatisfaction with the negative attitude of providers towards patients in 5 studies [3, 4, 16, 49, and 53] [Box 5.1]. The dissatisfaction was reported as long waiting queues, rudeness of providers, preference given to uninsured patients as they would pay in cash, differential treatment depending on socio-economic status of patients, and so on.

In 1 study it was reported that the percentage of members who left the scheme because of the negative behaviours of providers was 30 percent [52]. Another study also reported members dropping out of the schemes due to the rude behaviour of providers [31].

(c) Features of health facility

A close relationship between features of the health facility (dirty health premises, unavailability of diagnostics, drug shortages, or unavailability of prescribed medicines) and low enrolment was established in 4 studies [9, 17, 45, and 52]. In addition, 2 studies highlighted participants' concerns about these poor features of health facilities, although they did not relate these features directly to either enrolment or renewal decisions [49, 53] [Box 5.1].

5.2.3 *Trust*

This theme includes trust in insurance scheme management, trust within the community, and distrust associated with past bad experiences of other schemes or collective arrangements. In all, 12 studies commented on aspects relating to trust [4, 7, 8, 9, 16, 17, 43, 45, 49, 51, 52, and 53].

(a)Trust in insurance scheme management

People's trust in CBHI management was reported to be a facilitator of insurance enrolment decisions in 4 studies [3, 4, 43, 49] and distrust a barrier to enrolment in 5 studies [5, 7, 8, 52, 53] [Box 5.1]. In addition, 4 studies highlighted the role of trust, although this was not in reference to specific enrolment/renewal decisions: poor involvement of the community in a hospital-based scheme [9]; lack of community participation in premium setting and managing funds [16]; criticism by respondents that the scheme failed to reach its objectives, failing to defend its members, and failing to keep its promises [17]; and low community participation an obstacle to sustaining the scheme [31].

In 1 study [51], members who renewed their membership had much stronger linkages with the scheme's grassroots workers compared with drop-outs. Greater contact led to greater trust by the members in the scheme.

Box 5.1 Quotations about the themes of knowledge and understanding of insurance principle and CBHI, quality of healthcare, and Trust

Knowledge and understanding of insurance principle and CBHI

'I don't understand much, so I decided to stop taking VIMO.' [51]

'The population lacks a clear understanding of insurance and the need to pay in advance to ensure that they can get care when they need it.' [45]

'Some people drop out when it gets to three times of payment without falling sick.' [9]

'It is not only money. It is because people have not understood that they are not entering.' [4]

'I did not have adequate information about health insurance; we were not informed about registration time-table.' [8]

'We have no information about the organisation.' '[We] want staff of organisation to come to our village and explain clearly to villagers about the goal of the organisation.' [43]

Quality of healthcare

'I have subscribed to Maliando in order to be able to treat our many illnesses. But since the staffs at the Yende health centre does exactly the opposite (are not welcoming towards the patients, are not skilled, do not have good medicine, do not even talk with the patients…' [17]

'Providers are unfriendly, unskilled and incompetent.' and 'Providers incompetence creates mistrust among people in MHI causing them not to enrol.' [49]

'The MHIS is very good but one thing that we (insured) encounter is that when you have the insurance card and you don't receive quick services.' [3]

'With the insurance, will be more security, because they will run a survey to make sure that people are treated well but if you go to the hospital today with no insurance, they do not treat you well.' [5]

'We would sustain ourselves better if membership in the scheme was high but because some health workers are rude, some members keep dropping out of the scheme.' [31]

'I would say that the percentage of members who leave (MHOs) because of the negative behaviour of health professionals is 30. [52]

'People's mistrust in providers is among the main reasons for non-enrolment.' [49]

'Health facilities are dirty, lack qualified personnel, drugs, ambulances, clean bedding and electricity.' [49]

'You pay a lot and get lower quality care than you would in the hospital.'[45]

'We go more quickly to the health centre than non-members, but very often, they do not cure our illness.' [17]

Trust

'We pay less than non-members of the scheme at the health facilities but we all get same treatment. This is very fair.' [31]

'They want to see whether the MHO is serious and whether it is managed well before they enrol; this allows people to understand that this initiative is real.' [52]

'The first year, I wanted first to observe whether what had been said would be done.' [17] 'In the beginning, the people in charge told us good things about Maliando, but we have not seen anything.' [17]

'They perform their duties so we don't bother if they are trusted or not; nothing more important than getting what one wants for at the end of the day. It is the same with everyone.' [53]

'I trust it because it is a collective affair. It is because people in my village have joined that I trust the insurance. I know it is something serious.' [4]

'A health organisation collected money from us and promised to help but they never returned.' [9]

'We had the bad experience with the Credit Mutuelle; we paid the money and the people in charge used it all for their personal benefit.' [17]

(b) Trust within the community

Trust within the community was reported to be a facilitator of enrolment decision in 1 study [4], and also a facilitator of renewal decision in another study [51]. In these 2 studies, participants highlighted that it was because people in their village had joined or renewed that they also did so as they trusted the insurance scheme. Lack of trust within the community led to scepticism about who would manage the funds in the CBHI [5]. One study reported strong social capital or trust within the community, but limited trust outside the community and with the government [45]. Lack of solidarity among community members was reported to be among the main reasons for non-enrolment in 1 study [49] [Box 5.1].

(c) Past bad experience with other schemes

Previous bad experience and lack of trust in local financial organisations or other collective arrangements led communities not to trust the CBHI management, and thus not to enrol in the schemes, in 5 studies [4, 8, 9, 43, 49]. The communities in such contexts were suspicious of the CBHI scheme, and preferred 'to wait and see whether CBHI will keep its promise' before enrolling [49]. In fact, 1 study reported that the past bad experience did not explain low enrolment as people gained confidence with the transparency and trustworthiness of the scheme management through time [17] [Box 5.1].

5.2.4 *Benefits package*

This theme involves coverage of benefits, premiums, payment modalities, unit of enrolment, and insurance claims, and 12 studies reported various aspects of the benefits package [3, 4, 5, 7, 9, 16, 19, 31, 40, 45, 51, and 52].

(a) Coverage of benefits

People's dissatisfaction with the insurance benefits package was reported to be a major cause of low levels of enrolment and membership renewal in 3 studies [9, 31, and 52]. Exclusion of chronic diseases from the benefits package was reported to be a major weakness in 4 studies [9, 31, 45, and 53]. In 1 study, those who had dropped out of the scheme suggested that the scheme should include outpatient care in the benefits package [51]. Participants voiced concerned about the provision of only second-level care (hospitalisation) and not having access to primary-level care at the health centres in 2 studies [7, 16] [Box 5.2].

(b) Premium

Participants reported that the premium level was not too high and it was fair in 4 studies [3, 4, 5, 17], and 1 study reported that a higher premium discouraged people from joining the scheme [45] [Box 5.2]. The uninsured in 1 study reported that they did not join the scheme as they considered the premium to be too high [7]. However, in the same study, an equally high percentage of uninsured reported that they did not join due to an inappropriate registration period. Therefore, premium per se was not a major issue. As reported by 2 studies [16, 31], what participants criticised was the flat rate of premium, in one case the individual premium being same for children and adults [16] and in another case the premium being the same for the rich and the poor, and the fact that no exemptions were given to the most vulnerable [31]. In fact, the participants in 1 study appreciated that the CBHI had set a difference between the adult and child premium [5].

(c) Payment modalities

Paying the premium for the whole family at one go was reported to be a major deterrent to enrolment in 5 studies [3, 4, 5, 7, 52], and this factor was also found to be a deterrent to renewal in 1 study [51]

[Box 5.2]. On the other hand, as reported by 1 study, payment by instalments was an enabler of enrolment [8]. The timing of collecting the premium was also noted in 1 study as an enabler: it was important for villagers to receive the CBHI card before being asked to pay for premiums [43]. In 1 study the inappropriate registration period and the fact that payment could not be diluted over time were criticised by participants [16].

(d) Unit of enrolment

Family/household enrolment was the norm in the great majority of the schemes. Family enrolment discouraged enrolment among large families in 6 studies [3, 4, 5, 7, 9, 52] [Box 5.2]. In 1 study, enrolment was limited to four household members so larger families were excluded from the scheme and the coverage level was low [31].

(e) Insurance claims

In 1 study it was found that membership renewal could be explained by filing an insurance claim [51]. In this study, the members who renewed their membership were more likely to report filing insurance claims than the members who dropped out, suggesting a motivation to continue in the scheme [Box 5.2].

5.2.5 *Rules of CBHI schemes*

This theme highlights the restricted rules imposed by the management in some CBHI schemes that inhibited participation, both enrolment and renewal. The rules of the CBHI scheme were reported in 4 studies [3, 8, 9, and 31]. In 1 study the existing indigene criteria (persons who are unemployed or do not have a fixed place of residence, etc.) are exempted from insurance premiums) and this excluded the majority of the poorest sections of society from accessing healthcare [3]. Difficulties in raising 60 percent of a group or 100 families per village before enrolment were reported in 3 studies [8, 9, and 31] [Box 5.2]. In some schemes, many large families were reported to be excluded from the CBHI schemes due to the restrictions imposed on families (e.g. only up to four members can enrol) [31]. All these arbitrary restrictions inhibited participation and the coverage levels were low. Although it did not explicitly discuss the link to enrolment, 1 study reported that the community must identify at least 500 persons prior to enrolment [53].

5.2.6 *Cultural beliefs*

This theme involves various socio-cultural aspects that can act as facilitators or barriers to enrolment in CBHI. In 1 study all the participants acknowledged the fact that setting money aside for healthcare may be perceived as attracting diseases [4] [Box 5.2]. Some participants in this study further stated that when they save they do not talk about diseases. Even prepayment was associated with disease in 1 study [9]. In another cultural context, participants reported that it is only when someone becomes sick that they ask the community to contribute financially to help a person [52]. In some cultures, women seek permission from their husbands on whether to enrol or not to enrol [51].

Box 5.2- Quotations Regarding the Themes of Benefit Package, Rules Of CBHI Schemes and Cultural Belief

Benefit Package-

"Why the body of a subscriber who has died in hospital can't be transported to the villages." [16]

"People with chronic diseases receive care from the doctor at the ambulatory; they get their drugs from the pharmacy where they often have to pay for the drugs. They can be a burden on their families; it is difficult to afford the drugs for many people. CBHI should cover these costs of possible." [45]

"Some services included and some are excluded. They have excluded some services because the money would not be enough to pay for them. I would like if one day, they could cover all services, but today it is good as it is, so that the insurance can have money till the end of the year." [5]

"If people cannot afford to pay now, how will they afford to pay if you increase the premiums?"; [45]

"Why should it be the same premium for everyone, when there are different charges for adults and children at the health centre and the hospital? [16]

"It is a good thing to have a lower premium for the children. Since they cannot work, it is their parents who help them, who care for them. It is for this reason that the insurance has a lower premium for the children, so that in the future, children will help their parents." [5]

"Because of problems at home, I did not take VIMO this year. Also it was festive time. So we did not take VIMO this year. We also had a wedding in our house and my husband does not earn money so we could not pay for the VIMO this year. There was no other reason. Now we will take VIMO from this year. If God allows us to take VIMO, then we will definitely take VIMO this year." [51]

"Out here in the countryside, the availability of money poses a problem....we, the farmers, have money after the harvest, but by the time the rainy season arrives, we have nothing left in our hand and out here you cannot find where to borrow money. [5]

"There are very hard periods where people do not have any money at all, not even to eat…." [52]

"How can you suffer to pay for an insurance premium or registration fees and when are going for your card they ask you to pay additional GH 1.50 before your card is given to you?" [3]

"In our case, we did all we could to pay the entire premium. We looked for the money and we managed to find it. But for large families, this is very hard. It would be better if they could pay little by little. So, when they have some money, they turn that in. Then, when they find the rest, they pay again." [5]

"….If the CBI people had said that I could divide the whole amounts in parts, I could have managed to enrol." [4]

"If you only register yourself and leave the rest of your family behind if a disease catches someone else in your family, then it is still your problem to pay for the care." [5]

"I want to join but paying for my 10 children is a problem." [9]

Rules of CBHI Schemes-

"The neediest people in our community especially the orphans, the disabled and the elderly still pay in the schemes. They have more health needs and should be excused." [31]

"Hardly, any marketing of CHI is carried out because of the abolition of user fees." [8]

"Rules should be change so that those who don't fall sick get something from the scheme." [9]

Cultural Belief-

"….Paying before you fall sick is like buying a disease." [9]

"It is the old people who say that if you keep an idea in your head, this thing will happen, but nowadays we do not think like this anymore." [4]

"In our culture, it is only when someone becomes sick that we ask the community to contribute financially to help a person." [52]

5.2.7 *Affordability*

This theme involves people's ability to raise funds to pay the premium, and 10 studies commented on aspects of affordability [3, 4, 7, 8, 9, 16, 17, 43, 45, and 51]. Lack of financial means was the most common reason for people not enrolling in the scheme in 10 studies [3, 4, 7, 8, 9, 16, 17, 43, 45, and 53] [Box 5.3]. Incapacity to pay the premium stood out as the single most contributing factor to non-enrolment in 1 study [9]. Lack of affordability was also a reason for people dropping out of the scheme in 1 study [45]. However, 1 study reported that lack of money was not a major issue in renewal decision [51].

It should be noted that, while lack of money was a common response for not being able to join the scheme, especially for many poor households, many studies had noted that unavailability of funds at the time of payment collection was the real issue [3, 4, 7, and 51].

All the studies had noted that the poorest of the poor had been excluded from the CBHI scheme due to their inability to raise sufficient funds to pay the premium.

5.2.8 *Distance to health facility*

This theme encompasses the travel/transport aspects that can act as facilitators or barriers in accessing healthcare at the designated health facilities contracted by the CBHI scheme. In 1 study it was reported that 25 percent of the non-enrolled could not join the scheme because there was no facility nearby [3]. Another study reported that 15 percent of the participants viewed distance as a direct obstacle to enrolment, and others, while recognising that distance was a barrier to access to care, noted this aspect in relation to lack of visibility of the scheme [4]. Long distance from the communities to the health facility was reported to be an obstacle to enrolment in 1 study [9] [Box 5.3], and 2 studies reported that high transport cost was a reason for low enrolment [45, 52].

5.2.9 *Legal and policy framework*

Various legal and policy framework aspects affected enrolment or renewal decisions and 7 studies discussed this affecting uptake in the CBHI scheme [8, 10, 31, 45, 49, 52, and 53]. The absence of a coherent legal, regulatory, and policy framework (e.g. absence of government-mandated guidelines compatible with health sector objectives to govern the CBHI scheme) was highlighted in 4 studies as a direct obstacle to maximising CBHI membership [8, 31, 45, and 52] [Box 5.3]. In 1 study many insured members had dropped out of the CBHI schemes as they doubted their operation without appropriate legislative backup from the government [31]. The importance of the legal and policy framework was discussed in the context of the sustainability of CBHI schemes in 3 studies [10, 49, and 53].

Box 5.3 Quotations on the themes of affordability, distance to health facility, and legal and policy framework

Affordability

'We are not refusing to pay, but we cannot afford to' [16]

'I wanted to enrol, but I did not find the means. Maybe next year…' [4]

'The only reason for not joining is money. If we had money we would join, but our village is the poorest of the poor.' [45]

'The care given to us at the hospital is good but we cannot afford joining the scheme.' [8]

Distance to health facility

'It was expensive for me to travel 27 km to and from ISHAKA hospital.' [9]

'Transport is a problem. Our village is isolated and the road is not good. In winter it is very difficult to even get to Vayk.' [45]

If there was a doctor in our village, more people would enrol… To have a doctor right at your side would encourage many to enter.' [4]

Legal and policy framework

'For me, the solution is that (health insurance) becomes obligatory and that there's a real constraint to enrol. Without this, MHOs will not survive.' [52]

'It should be feasible to roll out CBHI schemes nationally, but technical and managerial oversight would be needed. There is no role for the government in this; it should be provided by NGOs.' [45]

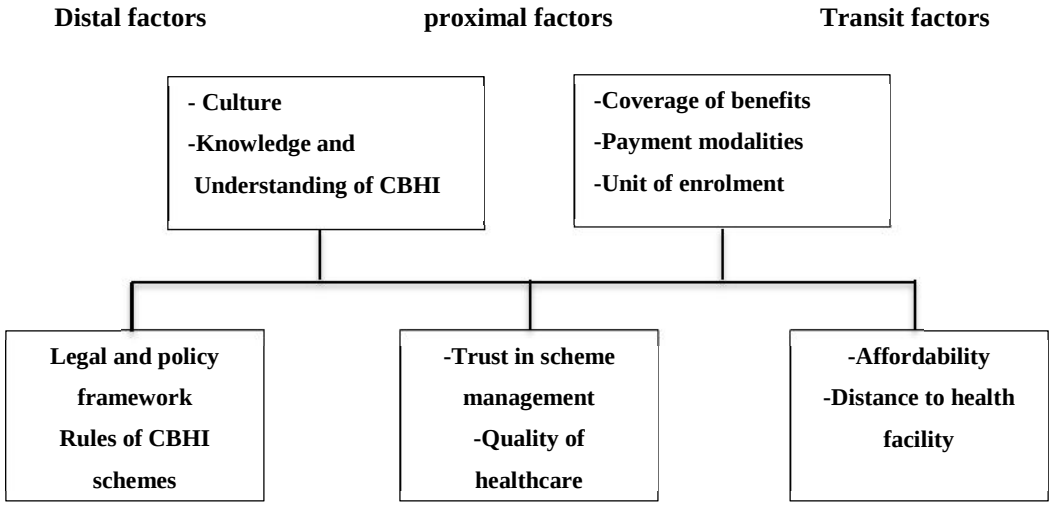
'No policy yet but CHI is a component of the ministerial policy statement.' [8]

'Health is something that everyone needs to maintain, and therefore CHI has a place in Uganda. Let us start with national policies facilitating CHI… Regulations are very important and gradual implementation is needed.' [10]

5.3 Recommendations from included studies

We found and analysed nine themes that emerged from the present thematic synthesis. The analysis showed the comprehensive interlink ages within and between various themes. In order to increase enrolment and renewal, the key proximal and distal factors must be looked into (Figure 5.2).

Figure 5.2 Factors associated with enrolment and renewal/drop-out



5.3.1 *Enhancing knowledge and understanding of insurance principle and CBHI*

Studies have recommended ways of overcoming knowledge and understanding barriers. Communication and sensitisation campaigns need to be tailored to the core principles of CBHI to enhance people's knowledge and understanding, and then people's enhanced understanding of the insurance principle and CBHI can lead to higher enrolment [4, 7, 9, and 17]. Similarly, sensitisation and information campaigns on CBHI could influence policy-makers and other stakeholders [10]. In 1 study it was suggested that discussion about CBHI by-laws, the contract between CBHI and health providers, and the provider payment mechanism in meetings may be reassuring for members and build their trust in CBHI [49]. Another study suggested that renewal rate can be increased if the CBHI workers make follow-up visits to the member's homes and explain the CBHI scheme and its rules during their contact [51].

The evidence of five CBHI schemes suggests that the large majority of participants considered door-to-door visits to be the most effective approach to convince people to join and to get members to pay their fees on time [52]. In addition, in one of these schemes, the trained elected members gave educational sessions on subjects related to health and prevention, and people were given preventive items, including prophylactics and insecticide-treated bed nets. There was a noticeable increase in enrolment after health education sessions [52].

5.3.2 *Improving quality of healthcare*

To improve quality of care, studies have recommended the following: (a) building partnership and securing support of providers by CBHI management [4, 7]; (b) providing consumers with choices in the selection of providers [5]; (c) supervision of the health centres [16]; (d) regular supportive and supervisory visits to improve the capacity of health personnel to offer patient-centred care [17, 49]; (e) increase in government funding for health services and to address the issue of 'unofficial fees'

[31]; and (f) expanded service delivery at the health posts and motivating health workers through financial and non-financial incentives [45].

A CBHI scheme adopting a co-development approach provided health facilities with medication, equipment, ambulances, sources of water, and access to electricity. In return, those health facilities offered a 10–25 percent discount on healthcare costs. This approach positively influenced the quality of care and the relationship between CBHI members and healthcare workers [52].

5.3.3 *Building trust*

Many trust-building approaches have been suggested by various studies. Trust in the scheme management could be enhanced by: (a) improving knowledge of CBHI and its managerial structure [4]; (b) including consumer preferences on the choice of providers [5]; (c) involving the community in the running of the scheme [7, 16, 19, 31, 43]; (d) improving the trust-building role of government through information campaigns on CBHI, supervision of CBHI, monitoring provider performance, joining the CBHI schemes, and subsidising the enrolment of vulnerable groups [9, 49]; (e) empowering the members through the creation of a formal appeal system to settle disagreements; (f) negotiating with providers for better quality of care and timely provision of reimbursements [45]; (g) ensuring that CBHI workers maintain contact with the poorest members and take the extra effort it needs to build their trust in the scheme [51]. While improving the knowledge of CBHI and its managerial structure will improve the trust in scheme management [4], previous bad experiences in the community with collective arrangements are not an obstacle to enrolment if the CBHI management proves it can carry out its work with transparency and accountability [17].

5.3.4 *Making the benefits package attractive*

In order to make the benefits package more attractive, studies have recommended various options in terms of more flexibility and creativity in the design of CBHI schemes. A change in the timing was suggested in 4 studies (e.g. harvest time, period when people earn the highest income) and modalities of premium collection (e.g. instalments, in kind) so as to enable more people to pay the premium and enrol on the scheme [3, 4, 5, 7]. In order to ease the financial burden of paying premiums for a large family, 1 study has recommended integration of the scheme with existing savings or credit facilities [17], and another study has suggested providing incentives for large families to enrol (e.g. a lower premium per head) [7]. Other suggestions include extending cover to include maternity care [7], chronic disease and ambulatory service [9], and outpatient care (OPD) [45], and offering incentives to those who renew even though they have not used the services in the previous year [7]. In 4 studies it was suggested that the community needs to be involved in the design of the benefits packages, and their preferences need to be taken into account to raise the acceptability of the scheme [5, 19, 40, 49].
An innovative type of collective insurance package, called Maternity without Risks, systematically covered all women in a village for prenatal medical consultations and healthcare received during birth. Village funds were created by requiring all citizens to contribute equally. Participants reported that the product was attractive because all women in the village, and therefore also their families, were confident they would eventually receive healthcare services covered by the CBHI [52].

5.3.5 *Making the rules of CBHI flexible*

As a measure against adverse selection, many schemes have established arbitrary policies for enrolment (e.g. at least 60 percent of any group must join a scheme before commencement or at least 100 people per village must enrol before accessing benefits [8, 9]). Such restrictive policies are an obstacle to enrolment and CBHI expansion. To address this issue, studies have recommended provision of an alternative contributory mechanism for those who wish to join as a single family or

groups [8, 9]. Reviewing the indigene policy for effective targeting was recommended in 1 study as the current policy excluded many of the poorest people from enrolment into the scheme [3].

5.3.6 *Addressing culture*

Awareness campaigns and community education on insurance principles and CBHI could influence cultural beliefs [4].

5.3.7 *Addressing affordability*

Since affordability is a major constraint to enrolment decisions, making the timing and modalities of premium collection flexible could help many poor people to enrol. However, most of the studies have reported that the poorest of the poor are being excluded from enrolling into the schemes. It was recommended in 9 studies that the government and/or donors would need to financially support the very poor and vulnerable groups who are unable to pay premiums [3, 4, 5, 8, 9, 17, 45, 49, 52]. Other suggestions to help the poor include (a) facilitating access to credit [5], (b) initiating income-generating schemes and educating communities about the principle of solidarity (healthier people contribute to the less healthy) during awareness and sensitisation campaigns [9], and (c) revising the indigene criteria to effectively target the most vulnerable groups [3].

5.3.8 *Overcoming the distance barrier*

To address the distance barrier, sliding contributions from the health facility could be promising (RAHA scheme in India) [9].

5.3.9 *Creating an enabling legal and policy environment*

Absence of a coherent legal and policy framework is found to be an important barrier to enrolment and renewal. Studies have recommended various approaches to address this issue. In order to ensure scheme sustainability, 1 study suggested that a larger group is required for policy-making with appropriate legislative backup [53]. Another study highlighted the trust-building role of government in providing information campaigns about CBHI, supervision of CBHI, and provider performance [49]. Promoting dialogue between CBHI stakeholders for government buy-in was emphasised by 1 study [52]. Fine-tuning social marketing strategies and developing government-mandated guidelines for CBHI schemes compatible with health policy could expand membership [45]. In 1 study it was suggested that CBHI should be clearly linked to a broader strategy to ensure universal health coverage for the informal sector to help address the small risk pools, and that schemes need substantial support to build management capacity [31].

5.4 Conclusion

Overall, the following aspects were found to be barriers to both enrolment and renewal decisions: (a) inadequate knowledge and understanding of the insurance principle and CBHI; (b) low healthcare quality, especially the negative attitude of providers towards the patients; (c) distrust in CBHI scheme management; (d) inappropriate benefits packages, especially exclusion of benefits such as chronic diseases, outpatient care, and so on, and the requirement to pay the premium for the whole family in one go; (e) restrictive rules imposed by some scheme management bodies (e.g. minimum requirement of 60 percent of a group or 100 families per village); and (f) lack of an adequate legal and policy framework to support CBHI. In addition, an insurance claim was found to be a motivating factor in renewing membership. Other barriers to enrolment were socio-cultural practices (e.g. savings and prepayment were perceived by the community as inviting diseases), lack of affordability, and distance to the health facility.

To maximise enrolment and renewal, a number of key recommendations can be made. Knowledge and understanding of the insurance principle and of CBHI should be enhanced. Trust in the scheme management should be developed. There should be an improvement in the quality of healthcare, especially in the provider's attitude towards the patients. The benefits package should be made attractive by engaging the community in its design and taking into account the community's preferences. The government and the donors should create an enabling environment for the development and expansion of CBHI by formulating appropriate regulatory and legislative policies, and by financially supporting the poorest of the poor to make the scheme more inclusive.

6 Discussion and conclusions

6.1 Overall synthesis statements

Below, we attempt to provide overall synthesis statements, based on the findings from two sources: (a) meta-analysis of quantitative studies, and (b) thematic synthesis of qualitative studies.

Evidence from the meta-analysis suggests that education of the head of the household was positively correlated with both enrolment and renewal decisions in the CBHI schemes. This evidence is supported by the thematic synthesis of qualitative studies, which reported that knowledge and understanding of the insurance principle and CBHI was found to be a facilitator of both enrolment and renewal decisions. In communities where literacy is low and information is scarce, enrolment and renewal decisions may be related to people's understanding of CBHI to a large extent. Age of the head of the household was found to be a facilitator of enrolment in meta-analysis. Age did not emerge as a theme in the qualitative synthesis. Married heads of the household were more likely to be enrolled in CBHI schemes compared with their unmarried counterparts. This evidence is supported by the meta-analysis. However, marital status of the head of the household did not emerge as a theme in the qualitative synthesis. Female-headed households were more likely to be enrolled in CBHI schemes compared with male-headed households. This evidence is supported by meta-analysis. In meta-analysis, it is surprising to find that, while female-headed households were more likely to enrol, they were also more likely to drop out of the scheme. This may be attributed to possible exclusion of female heads in the continuation of the scheme. Gender of the head of the household did not emerge as a theme in the qualitative synthesis.

Economic status of the household (defined in terms of income, expenditure, ownership of assets) was found to be positively associated with enrolment, based on the results of meta-analysis. This evidence is also corroborated by the thematic synthesis of qualitative studies. Lack of affordability (financial constraints, lack of money, etc.), which emerged as a theme in the qualitative synthesis, was found to be a barrier to enrolment. Surprisingly, economic status was found to be negatively related with the renewal decision in meta-analysis. It is to be noted that, rather than income per se, the evidence from qualitative synthesis suggests that it was the timing and modalities of premium collection that inhibited many poor people from enrolling or renewing their membership.

Household size was found to be positively associated with enrolment in meta-analysis. In the qualitative synthesis, participants highlighted that a larger household was a barrier to enrolment as it was difficult for such households to arrange the premium amount for all the members in one go. This discrepancy between the results of meta-analysis and qualitative evidence could be explained in terms of possible incentives to larger households (low per person per year premium) provided in the benefits packages to ensure maximum enrolment in the studies analysed in meta-analysis. The meta-analysis suggests that the household size was found to be a facilitator of renewal decision as well. None of the qualitative studies looked into this aspect.

Results from meta-analysis suggest that the presence of chronic illness in the household was an enabler of enrolment in the scheme. This is supported by the thematic synthesis of qualitative studies, which reported that many people did not enrol and many insured dropped out of the scheme due to non-availability of benefits associated with chronic illness in the benefits package. The presence of elderly persons in the household was found to be a barrier to enrolment in meta-analysis. This factor did not emerge as a theme in the qualitative synthesis.

Qualitative synthesis found that trust in the scheme management was a significant enabler of enrolment. This aspect was not considered in the meta-analysis. However, trust in the insurance scheme was found to be a facilitator of renewal decisions in the meta-analysis as well as in the qualitative synthesis.

Some other facilitators and barriers of enrolment and renewal were evident in qualitative synthesis, although these aspects were not considered in the meta-analysis. For instance, quality of healthcare was found to be an important enabler of enrolment and renewal decisions in qualitative synthesis. Distance to the health facility was found to be an obstacle to enrolment in the qualitative synthesis. Two other themes that emerged as having a bearing on enrolment and renewal of membership were (a) the rules of CBHI schemes and (b) the legal and policy framework. The rigidity in scheme rules and a lack of a clear legal and policy framework in support of CBHI activities hindered both enrolment and renewal decisions. In addition, the socio-cultural factors that associated savings and prepayment as inviting diseases were found to be a barrier to enrolment. Finally, submitting an insurance claim was found to be an important enabler of renewal decisions in the qualitative synthesis.

6.2 Limitations of this systematic review

This systematic review was limited by the number, quality, and themes of published literature. This is inherent to the exercise; the filtering process that was followed could deal only with the quality of articles, but not with the meagre number or with the themes that were chosen by the various authors. This is particularly limiting in the case of a nascent activity like CBHI, where the history of publications spans barely a decade.

On the quality of publications, overall eight articles were considered unsuitable and were excluded, but the studies that were retained for full-text analysis were then all considered equal in terms of quality. Bai et al. [66] suggested that this could possibly bias the pooled results.
A number of authors did not report the standard errors or their estimates. Hence, we applied weights proportional to the sample size (instead of inverse of the variance, which is the standard practice of meta-analysis) while estimating the summary effect. Sample sizes for some of the studies were very large [15] and sensitivity analysis shows that this does have some influence on the estimated summary effect. For some variables, the results are only indicative and not conclusive as the standard error for the summary effect size could not be calculated.

6.3 Implications

6.3.1 *Implications for policy*

Government has an important role to play in the development and expansion of CBHI by creating an enabling environment and by putting in place a coherent legal and policy framework. Development of government-mandated guidelines for CBHI compatible with health policy could inform such a response. Moreover, CBHI should be clearly linked to a broader strategy to ensure universal health coverage for the informal sector to help address the small risk pools.

Government can also play a trust-building role through information campaigns on CBHI, supervision of CBHI, and monitoring provider performance. Government and/or donors would need to financially support the very poor and vulnerable groups who are unable to pay premiums to make the schemes more inclusive. Other areas where the government can play a crucial role include (a) increase in

funding for health services and improvement in the quality of care, and (b) effective targeting of the poor and the most vulnerable groups by reviewing the indigene policy.

6.3.2 *Implications for practice*

Trust in scheme management could be enhanced by (a) improving knowledge of CBHI and its managerial structure; (b) including consumer preferences on choice of providers; (c) involving the community in the running of the scheme; (d) discussion about CBHI by-laws, the contract between the CBHI scheme and health providers, and the provider payment mechanism in meetings with members in order to build their trust in CBHI; (e) empowering the members through the creation of a formal appeal system to settle disagreements; and (f) ensuring that CBHI workers maintain contact with the poorest members and take the extra effort it needs to build their trust in the scheme. While improving knowledge of CBHI and its managerial structure will improve trust in scheme management, previous bad experiences in the community with collective arrangements are not an obstacle to enrolment if the CBHI scheme management proves it can carry out its work with transparency and accountability.

To improve the quality of healthcare, the scheme management can play a crucial role by (a) building partnership and securing support of providers, and timely provision of reimbursements, (b) providing consumers with choices about selection of providers, and (c) regular supportive and supervisory visits to improve the capacity of health personnel to offer patient-centred care.
The CBHI management can play a crucial role in making the benefits packages more attractive in terms of more flexibility and creativity in the design of CBHI schemes. These could include (a) extending cover to include maternity care, chronic disease, ambulatory service, outpatient care, and transportation costs, and (b) involving the community in the design of the benefits packages, and including their preferences to improve acceptability of the scheme, (c) providing incentives for large families to enrol (e.g. a lower premium per head).

Since affordability is a major constraint in enrolment decisions, making the timing and modalities of premium collection flexible could help many poor people to enrol. Other strategies to include the poor could help uptake, such as (a) a change in the timing (e.g. harvest time, period when people earn the highest income) and modalities of premium collection (e.g. instalments, in kind) to enable more people to pay premiums and enrol on the scheme; (b) integration of the scheme with existing savings or credit facilities; and (c) initiating income-generating schemes and educating the communities about the principle of solidarity (more healthy people contribute to the less healthy) during awareness and sensitisation campaigns. Communication and sensitisation campaigns need to be tailored to the core principles of CBHI to enhance people's knowledge and understanding. This could change cultural beliefs that act as a barrier to uptake.

Sensitisation and information campaigns on CBHI could influence policy-makers and other stakeholders too. Promoting dialogue between CBHI stakeholders for government's buy-in would help.

Either the stringent rules of CBHI schemes should be relaxed or an alternative community financing mechanism should be in place to provide an opportunity for people who would like to join as households or groups.

Finally, there should be more policy-relevant research to assess the impact of various interventions designed to maximise enrolment and renewal: (a) which insurance awareness tools convey the message effectively; (b) whether flexible payment modalities (paying by instalments, collecting

premiums at harvest time, etc.) increase CBHI membership; (c) whether financial and non-financial incentives to motivate health workers improve patient-centred care; (d) whether empowering members through the creation of a formal appeal system to settle disagreements enhances trust in scheme management; (e) whether integration of the CBHI scheme with existing savings or credit facilities eases the financial burden of paying premiums for large families; and (f) how to effectively target the poorest of the poor to make the CBHI scheme more inclusive.

6.3.3 *Implications for research*

We found that many relevant topics have not yet led to suitable publications. The aspects that would be particularly important in identifying factors influencing uptake and renewal in CBHI schemes include the following:

- *The range of services that are actually covered by CBHI schemes:* This topic would elucidate the effective coverage that CBHI schemes offer their members, as well as the shares of benefits that are included in the insurance for which insured persons must co-pay (due to thresholds and benefit caps that apply). Additionally, this investigation would clarify which services are left out altogether, and for which insured persons must still pay OOP in full. With more comprehensive the coverage, the propensity to join would presumably be higher.
- *The proportion of the total health costs that are (not) covered*: CBHI schemes invariably have a limited benefits package. But which share of the total healthcare cost can the CBHI scheme potentially cover? If this is relatively minor, there would probably be less interest in joining the CBHI scheme.
- *The proportion of the catchment population that is covered*: CBHI schemes may not necessarily aim to cover everybody, as the specific social fabric of each community may set some limitations on what is desirable. However, policy-makers may be interested to assess the potential of CBHI to be leveraged as a policy instrument towards universal health coverage. The literature on population coverage is yet to be written.
- *Comparative analysis of different models of CBHI:* The factors influencing enrolment may differ across different models of CBHI scheme, notably the mutual-aid or co-operative model, which is different from the provider-based model or the charitable 'full-service' model [76].It is noted that we did not find a single study that compared these CBHI models in terms of the factors of uptake and renewal. Such a comparison seems particularly cogent for policy decisions aiming to scale the membership in CBHI from niche to mass in LMIC.
- *Sustainability analysis of CBHI:* The basic issue relating to financial sustainability of CBHI is that the worst-case scenario of the scheme could lead to insolvency or default. We have found no literature discussing this eventuality, nor have we found studies on what CBHI schemes do to reduce this risk. The standard solution in insurance business is to cede part of the risk to reinsurance. However, we have not found any literature on this practice among CBHI schemes.
- *Finally, is there a risk of endogeneity between two or more variables?* It is not impossible that several factors that were discussed in the literature (e.g. income and education) could be correlated and endogenous. It would be very useful if studies would report on tests to check the extent of correlation or remove the risk of endogeneity. We have found none within the search for this systematic review.

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Annexures

Appendix 2.1 Details of Advisory Group membership

1) **Dr Rattan Chand**, Chief Director (Statistics), Ministry of Health and Family Welfare, Government of India. As a statistician he has the relevant skills to contribute to the quality of any statistical analysis of the outcomes of the systematic review, e.g. meta-analysis of RCT studies.
2) **Dr Michael Kent Ranson**, Senior Economist (Health), Health Results Innovation Trust Fund, Health, Nutrition and Population Department, the World Bank. He has experience of working in both India and Bangladesh. His PhD study at LSHTM focused on a voluntary health insurance scheme in India, i.e. SEWA, and he is also a visiting faculty member at the James P Grant School of Public Health, Dhaka.
3) **Dr Julia Watson**, Senior Health Economist, Department for International Development. Her role may include identifying priorities and crafting policies that support these priorities. It may also include public outreach and advocacy.
4) **Dr KR Viswanathan**, Climate Change and Development Division, Embassy of Switzerland. He supports the design, planning, monitoring, review, and steering of initiatives supported by the Government of Switzerland in India in the area of climate change and development as a part of the Global Cooperation Programme. Being active in the policy community, he can support in providing a forum to talk about our findings with officials from other ministries.
5) **Dr Hilary Thomson**, Senior Investigator Scientist, Social and Public Health Sciences Unit, UK's Medical Research Council. As a systematic review expert of complex public policy and public health interventions, she can help in developing a greater understanding of how research evidence can be used and knowledge translation strategies are to be developed to reduce the gap between 'what is known' and 'what needs to be done'.
6) **Prof. (Dr) Arnab Acharya**, Senior Evaluation Specialist HLSP, Mott MacDonald, London. He can provide comments on the analytic framework, research questions, eligibility criteria, and search terms so that quality and usefulness of the review can be enhanced.
7) **Dr Sukumar Vellakkal**, Assistant Professor, South Asia Network for Chronic Disease, Public Health Foundation of India. He will contribute to research and methods for this systematic review as well as influencing policy through existing networks.
8) **Dr Henri Van Den Hombergh**, UNICEF, New York. Dr Henri has significant experience in working with the policy-makers in LMIC.
9) **Dr Rumana Huque**, Assistant Professor, Department of Economics, Dhaka University, Bangladesh. She is also a member of the Technical Advisory Group of Public–Private Partnership in Health Sector, Ministry of Health and Family Welfare, Bangladesh. Given the importance of the issue and interest in the area, she can contribute at different stages of the review and play an important role in the policy-making process.

Details of Review Group membership

The authors will be supported by **Prof. Dr Ruth Koren**, Professor of Medical Sciences, Sackler School of Medicine, Tel Aviv University, Tel Aviv, and Israel.

Appendix 2.2 All countries listed as LMIC and LIC as per World Bank list of economies

Country name	Code	Region	Income group
Afghanistan	AFG	South Asia	Low income
Albania	ALB	Europe and Central Asia	Lower middle income
Armenia	ARM	Europe and Central Asia	Lower middle income
Bangladesh	BGD	South Asia	Low income
Belize	BLZ	Latin America and Caribbean	Lower middle income
Benin	BEN	Sub-Saharan Africa	Low income
Bhutan	BTN	South Asia	Lower middle income
Bolivia	BOL	Latin America and Caribbean	Lower middle income
Burkina Faso	BFA	Sub-Saharan Africa	Low income
Burundi	BDI	Sub-Saharan Africa	Low income
Cambodia	KHM	East Asia and Pacific	Low income
Cameroon	CMR	Sub-Saharan Africa	Lower middle income
Cape Verde	CPV	Sub-Saharan Africa	Lower middle income
Central African Republic	CAF	Sub-Saharan Africa	Low income
Chad	TCD	Sub-Saharan Africa	Low income
Comoros	COM	Sub-Saharan Africa	Low income
Congo, Dem. Rep.	ZAR	Sub-Saharan Africa	Low income
Congo, Rep.	COG	Sub-Saharan Africa	Lower middle income
Côte d'Ivoire	CIV	Sub-Saharan Africa	Lower middle income
Djibouti	DJI	Middle East and North Africa	Lower middle income
Egypt, Arab Rep.	EGY	Middle East and North Africa	Lower middle income
El Salvador	SLV	Latin America and Caribbean	Lower middle income
Eritrea	ERI	Sub-Saharan Africa	Low income
Ethiopia	ETH	Sub-Saharan Africa	Low income
Fiji	FJI	East Asia and Pacific	Lower middle income
Gambia, The	GMB	Sub-Saharan Africa	Low income
Georgia	GEO	Europe and Central Asia	Lower middle income
Ghana	GHA	Sub-Saharan Africa	Lower middle income
Guatemala	GTM	Latin America and Caribbean	Lower middle income
Guinea	GIN	Sub-Saharan Africa	Low income
Guinea-Bissau	GNB	Sub-Saharan Africa	Low income
Guyana	GUY	Latin America and Caribbean	Lower middle income
Haiti	HTI	Latin America and Caribbean	Low income
Honduras	HND	Latin America and Caribbean	Lower middle income
India	IND	South Asia	Lower middle income
Indonesia	IDN	East Asia and Pacific	Lower middle income

Iraq	IRQ	Middle East and North Africa	Lower middle income
Kenya	KEN	Sub-Saharan Africa	Low income
Kiribati	KIR	East Asia and Pacific	Lower middle income
Korea, Dem. Rep.	PRK	East Asia and Pacific	Low income
Kosovo	KSV	Europe and Central Asia	Lower middle income
Kyrgyz Republic	KGZ	Europe and Central Asia	Low income
Lao PDR	LAO	East Asia and Pacific	Lower middle income
Lesotho	LSO	Sub-Saharan Africa	Lower middle income
Liberia	LBR	Sub-Saharan Africa	Low income
Madagascar	MDG	Sub-Saharan Africa	Low income
Malawi	MWI	Sub-Saharan Africa	Low income
Mali	MLI	Sub-Saharan Africa	Low income
Marshall Islands	MHL	East Asia and Pacific	Lower middle income
Mauritania	MRT	Sub-Saharan Africa	Low income
Micronesia, Fed. Sts	FSM	East Asia and Pacific	Lower middle income
Moldova	MDA	Europe and Central Asia	Lower middle income
Mongolia	MNG	East Asia and Pacific	Lower middle income
Morocco	MAR	Middle East and North Africa	Lower middle income
Mozambique	MOZ	Sub-Saharan Africa	Low income
Myanmar	MMR	East Asia and Pacific	Low income
Nepal	NPL	South Asia	Low income
Nicaragua	NIC	Latin America and Caribbean	Lower middle income
Niger	NER	Sub-Saharan Africa	Low income
Nigeria	NGA	Sub-Saharan Africa	Lower middle income
Pakistan	PAK	South Asia	Lower middle income
Papua New Guinea	PNG	East Asia and Pacific	Lower middle income
Paraguay	PRY	Latin America and Caribbean	Lower middle income
Philippines	PHL	East Asia and Pacific	Lower middle income
Rwanda	RWA	Sub-Saharan Africa	Low income
Samoa	WSM	East Asia and Pacific	Lower middle income
São Tomé and Principe	STP	Sub-Saharan Africa	Lower middle income
Senegal	SEN	Sub-Saharan Africa	Lower middle income
Sierra Leone	SLE	Sub-Saharan Africa	Low income
Solomon Islands	SLB	East Asia and Pacific	Lower middle income
Somalia	SOM	Sub-Saharan Africa	Low income
South Sudan	SSD	Sub-Saharan Africa	Lower middle income
Sri Lanka	LKA	South Asia	Lower middle income
Sudan	SDN	Sub-Saharan Africa	Lower middle income
Swaziland	SWZ	Sub-Saharan Africa	Lower middle income
Syrian Arab Republic	SYR	Middle East and North Africa	Lower middle income
Tajikistan	TJK	Europe and Central Asia	Low income

Tanzania	TZA	Sub-Saharan Africa	Low income
Timor-Leste	TMP	East Asia and Pacific	Lower middle income
Togo	TGO	Sub-Saharan Africa	Low income
Tonga	TON	East Asia and Pacific	Lower middle income
Uganda	UGA	Sub-Saharan Africa	Low income
Ukraine	UKR	Europe and Central Asia	Lower middle income
Uzbekistan	UZB	Europe and Central Asia	Lower middle income
Vanuatu	VUT	East Asia and Pacific	Lower middle income
Vietnam	VNM	East Asia and Pacific	Lower middle income
West Bank and Gaza	WBG	Middle East and North Africa	Lower middle income
Yemen, Rep.	YEM	Middle East and North Africa	Lower middle income
Zambia	ZMB	Sub-Saharan Africa	Lower middle income
Zimbabwe	ZWE	Sub-Saharan Africa	Low income

Source: World Bank List July 2012

Appendix 2.3a Academic databases

Database	Date of search	Search terms used	Number of studies	Remarks
Major databases				
Business Source Premier (EBSCO) www.ebscohost.com/	18 November 2013	See Appendix 2.3	1389 Hits	Search limited to peer-reviewed journal
Cochrane database	31 October 2013	See Appendix 2.3	41 hits	Results were downloaded as text file and using the EPPI RIS export facility, it was converted in RIS format
ECOLIT (EBSCO) www.ebscohost.com/	18 November 2013	See Appendix 2.3	234 hits	Interface: EBSCO
Global health (OVID) http://www.ovid.com/	17 November 2013	See Appendix 2.3	721	Limited to 1990-At Present
ISI web of knowledge http://portal.isiknowledge.com/	18 November 2013	See Appendix 2.3	1258 hits	This includes Science Citation Index Expanded, Social Science Citation Index, Arts and Humanities Citation Index. Limited to 1990-2013
Medline (OVID) http://www.ovid.com/	17 November 2013	See Appendix 2.3	1633 hits	MEDLINE + In-Process Files (OVID). Limited to 1990–2013
ProQuest Dissertations and Thesis Full Text www.proquest.com/	19 November 2013	See Appendix 2.3	479	Search Limited from 1990–2013
ProQuest Health Management www.proquest.com/	19 November 2013	See Appendix 2.3	1981	Search Limited from 1990–2013
ProQuest International Bibliography of Social Sciences (IBSS) www.proquest.com/	18 November 2013	See Appendix 2.3	562	Search Limited from 1990–2013
Scopus www.scopus.com/	18 November 2013	See Appendix 2.3	2000 hits	Search showed 3050 results but only 2000 relevant results were downloaded
Sociological Abstracts (ProQuest) www.proquest.com/	19 November 2013	See Appendix 2.3	332 hits	Search Limited from 1990–2013
Appendix 2.3b other electronic resources				
3ie http://www.3ieimpact.org/en/evidence/	7 August 2013	Health insurance	9 systematic reviews	Systematic reviews and impact evaluations were searched

			and 25 impact evaluations	
Cambridge University Press www.cambridgeindia.org/	15 July 2013	'Community based health insurance' OR 'mutual health insurance' OR 'health insurance' OR 'voluntary health insurance' OR 'Group health insurance'	370 hits	Search was made in abstract only else search yielded thousands of studies and most of them were irrelevant
Centre for Reviews and Dissemination (including DARE, NHS EED and HTA) www.crd.york.ac.uk/	28 May 2013	Insurance, health Or Group health insurance OR health insurance Or Health Insurance, Voluntary	397 hits	• Search using MeSH thesaurus (terms were found in the index by choosing **Permute** to find all terms that contain that text in any position) • Results were downloaded as a text file
EconBase (Elsevier)	08 August 2013			• No access to the database • Elsevier to some extent covered via ScienceDirect
ELDIS www.eldis.org/	16 July 2013	Community based health insurance OR Group health insurance OR voluntary health insurance	170 hits	Search showed 23,199 hits but relevancy ends at #170 hits, i.e. page 17, and results were downloaded manually
Google https://www.google.co.in/	24 July 2013	Community based health insurance OR Group health insurance OR Voluntary health insurance	73 hits	• Advanced search was used • Search showed 466 results out of which 73 results downloaded (after that it showed repeated results) • Only English
Google scholar http://scholar.google.co.in/	13 June 2013	Community based health	163 hits	• Search was in title only, else

		insurance		search showed 1,70,000 hits • 1990–2013
Health Management Information Consortium (HMIC) http://www.hmic.gov.uk/	29 May 2013	Health insurance		Search showed 151 results but not relevant
IDEAS http://ideas.repec.org/	15 July 2013	(‘community-based health insurance’ | ‘community health insurance’ | ‘group health insurance’ | ‘mutual health insurance’ | ‘micro health insurance’ | ‘health insurance’ | voluntary health insurance’) + (developing | ‘less developed’| ‘under developed’ | ‘low income’| ‘middle income’| ‘low and middle income’) + (country | nation| world| population)	487 hits	Searched in whole record
Ingentaconnect http://www.ingentaconnect.com/	11 June 2013	(Community OR ‘community*based’ OR micro OR group OR voluntary OR mutual) AND (‘health insurance’) AND (developing OR ‘less developed’ OR ‘under developed’ OR ‘low income’ OR ‘middle	134 hits	In article title, keywords or abstract

		income') AND (country OR nation OR world)		
Interscience and Synergy Blackwell http://onlinelibrary.wiley.com/	17 July 2013	(Community based health insurance) OR (Voluntary health insurance) OR (group health insurance) in Abstract AND ((developing OR low income OR middle income) AND country) in Abstract	45 hits	Search in abstract only (else thousands of studies)
JSTOR www.jstor.org	13 June 2013	(((Community OR micro OR group OR voluntary OR mutual) AND ('health insurance') AND (developing OR 'less developed' OR 'under developed' OR 'low income' OR 'middle income'))) AND (year:[1990 TO 2013]) AND la:(eng) AND disc:(economics-discipline OR finance-discipline OR public policy-discipline OR sociology-discipline)	288 hits	• Search showed 4,719 hits but relevancy ends at #288 • Full text search
Kluwer online http://link.springer.com/	11 June 2013	('community based health insurance' OR 'group health insurance' OR 'voluntary health	120 hits	

		insurance') AND ('developing country' OR 'less developed country' OR 'low-and-middle income country')		
LILACS http://lilacs.bvsalud.org/en/	13 Nov 2013	Community-based health insurance OR Group health insurance OR Voluntary health insurance OR Community based insurance	222 hits	• Downloaded as text file • First search was made in title, abstract and subject, which yielded 41,502, so the search restricted to title only
POPLINE http://www.popline.com/	10 June 2013	('community-based health insurance' OR 'community based health insurance' OR 'group health insurance' OR 'voluntary health insurance' OR 'mutual health insurance' OR 'micro health insurance' OR 'health insurance') AND ((developing OR 'less developed' OR 'under developed' OR 'low income' OR 'middle income' OR 'low and middle income') AND (country* OR nation* OR world OR population*))	1000 hits	Simple search option used
PROSPERO http://www.crd.york.ac.uk/PROSPERO/	28 May 2013	Health insurance		No relevant study found

ScienceDirect www.sciencedirect.com/	29 April 2013	Community-based health insurance and (Developing countries or Low income countries or middle income countries)	206 hits	• Search restricted to Title - Abstract –Keywords (else thousands of results) • 1990–2013
Scirus http://www.scirus.com/	15 July 2013	Title: 'Community-based health insurance' OR 'Voluntary health insurance' OR 'Group health insurance'	367 hits	• Search in title only else thousands of results • All Journal sources except ScienceDirect and MEDLINE/PUBMED • All preferred web sources except RePEC • Subject areas - Agriculture and Biological Sciences, Economics Business and Management, Languages and Linguistics, Life Sciences, Psychology, Social and Behavioural Sciences, Sociology
SSRN http://www.ssrn.com/	13 May 2013	Community-based health insurance	99 hits	Search in Title, Abstract, Abstract ID and Keywords
World Bank and International Monetary Fund (IMF) Joint Libraries Information System (JOLIS) http://jolis.worldbankimflib.org/e-nljolis.htm	25 July 2013	Keywords anywhere 'Community based health insurance' OR Keywords anywhere 'Group health insurance' OR Keywords anywhere 'Voluntary health insurance'	55 hits	Searched as keywords anywhere
Institutional websites				

Centre for Insurance and Risk Management (CIRM) http://www.ifmr.ac.in/cirm	27 May 2013			Database already covered in IFMR
CGAP http://www.cgap.org/	27 May 2013	Health insurance	3 hits	Only publications were downloaded
Department for International Development (DFID) http://r4d.dfid.gov.uk/	29 May 2013	Community-based health insurance OR Group health insurance OR Voluntary health insurance	45 hits	• Only documents were searched (projects were not searched) • All text search
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) www.giz.de/en/	18 July 2013	Hand-search		Only English
EPPI-Centre database of health promotion research (Bibliomap) http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=185	7 August 2013	Health insurance		Search showed 32 results, only 1 was relevant
IFMR http://library.ifmr.ac.in/cgi-bin/koha/opac-search.pl?q=su:Databasepercent20Management	27 May 2013	Health insurance	114 hits	Search as keywords
International Health Economics Association (IHEA) https://www.healtheconomics.org/	27 May 2013			SSRN E-journals are already covered
International Labour Organization (ILO) labordoc.ilo.org/	19 July 2013	Community based health insurance OR Voluntary health insurance OR Group health insurance	247 hits	
Management Sciences for Health (MSH) www.msh.org/	19 July 2013			No relevant study found
Micro Insurance Academy (MIA) www.microinsuranceacademy.org/	19 July 2013	Hand-search of publications		
Micro Insurance Network www.microinsurancenetwork.org/	18 July 2013	Hand-search of publications		
Population Services Inc. (PSI) www.psi.org/	19 July 2013			No relevant study found

RAND www.rand.org/	08 August 2013	Hand-search of publications		No relevant study found
Self Employed Women's Association (SEWA) www.sewa.org/	29 May 2013	Hand-search of publications		No relevant study found
STEP-ILO	08 August 2013	Hand-search of publications		STEP is no longer active And studies are already covered in ILO search.
The Trials Register of Promoting Health Interventions (TRoPHI) http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=185	7 August 2013	Health insurance		Search showed 30 results, only 1 was relevant
The World Bank (WB) https://openknowledge.worldbank.org/browse?type=topic	19 July 2013	Hand-search of publications		Topics searched: Health, Nutrition and Population: Health Insurance Health, Nutrition and Population: Health Economics and Finance Health, Nutrition and Population: Health Policy and Management
United States Agency for International Development (USAID) www.usaid.gov/	22 July 2013	Health insurance	83 hits	Only pdf files were downloaded
World Health Organization (WHO) www.who.int/search/	22 July 2013	Community based health insurance OR Voluntary health insurance OR Group health insurance	428 hits	Search showed 3720 results but 428 were downloaded (after that search showed repeated results)

Appendix 2.4: Search strategy

Ovid MEDLINE(R), Ovid MEDLINE(R) In-Process and Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid OLDMEDLINE(R) 1946 to present

18th November 2013

1. Developing Countries. Sh, kf.

2. exp Africa/ or exp Asia/ or exp Caribbean/ or exp West Indies/ or exp South America/ or exp Latin America/ or exp Central America/

3. (Africa or Asia or Caribbean or West Indies or South America or Latin America or Central America).tw.

4. exp Russia/ or (Afghanistan or Albania or Algeria or Angola or Antigua or Barbuda or Argentina or Armenia or Armenian or Azerbaijan or Bangladesh or Barbados or Benin or Byelarus or Byelorussian or Belarus or Belorussian or Belorussia or Belize or Bhutan or Bolivia or Bosnia or Herzegovina or Hercegovina or Botswana or Brazil or Bulgaria or Burkina Faso or Burkina Fasso or Upper Volta or Burundi or Urundi or Cambodia or Khmer Republic or Kampuchea or Cameroon or Cameroons or Cameron or Cameroons or Cape Verde or Central African Republic or Chad or Chile or China or Colombia or Comoros or Comoro Islands or Comores or Mayotte or Congo or Zaire or Costa Rica or Cote d'Ivoire or Ivory Coast or Croatia or Cuba or Djibouti or French Somaliland or Dominica or Dominican Republic or East Timor or East Timur or Timor Leste or Ecuador or Egypt or United Arab Republic or El Salvador or Eritrea or Ethiopia or Fiji or Gabon or Gabonese Republic or Gambia or Gaza or Georgia Republic or Georgian Republic or Ghana or Gold Coast or Grenada or Guatemala or Guinea or Guam or Guiana or Guyana or Haiti or Honduras or India or Maldives or Indonesia or Iran or Iraq or Jamaica or Jordan or Kazakhstan or Kazakh or Kenya or Kiribati or Korea or Kosovo or Kyrgyzstan or Kirghizia or Kyrgyz Republic or Kirghiz or Kirgizstan or Lao PDR or Laos or Latvia or Lebanon or Lesotho or Basutoland or Liberia or Libya or Lithuania or Macedonia or Madagascar or Malagasy Republic or Malaysia or Malaya or Malay or Sabah or Sarawak or Malawi or Nyasaland or Mali or Marshall Islands or Mauritania or Mauritius or Agalega Islands or Mexico or Micronesia or Middle East or Moldova or Moldavia or Moldavian or Mongolia or Montenegro or Morocco or Ifni or Mozambique or Myanmar or Myanmar or Burma or Namibia or Nepal or Netherlands Antilles or New Caledonia or Nicaragua or Niger or Nigeria or Northern Mariana Islands or Oman or Muscat or Pakistan or Palau or Palestine or Panama or Paraguay or Peru or Philippines or Philippines or Philippines or Philippines or Papua New Guinea or Portugal or Romania or Rumania or Romania or Russia or Russian or Rwanda or Ruanda or Saint Lucia or St Lucia or Saint Vincent or St Vincent or Grenadines or Samoa or Samoan Islands or Navigator Island or Navigator Islands or Sao Tome or Senegal or Serbia or Montenegro or Seychelles or Sierra Leone or Sri Lanka or Ceylon or Solomon Islands or Somalia or Sudan or Suriname or Surinam or Swaziland or South Africa or Syria or Tajikistan or Tadzhikistan or Tajikistan or Tadzhik or Tanzania or Thailand or Togo or Togolese Republic or Tonga or Trinidad or Tobago or Tunisia or Turkey or Turkmenistan or Turkmen or Uganda or Ukraine or Uruguay or USSR or Soviet Union or Union of Soviet Socialist Republics or Uzbekistan or Uzbek or Vanuatu or New Hebrides or Venezuela or Vietnam or Viet Nam or West Bank or Yemen or Yugoslavia or Zambia or Zimbabwe).tw.

5. ((developing or less* developed or under developed or underdeveloped or middle income or low* income or underserved or underserved or deprived or poor*) adj (countr* or nation? or population? or world or state*)).ti, ab.

6. ((developing or less* developed or under developed or underdeveloped or middle income or low* income) adj (economy or economies)).ti, ab.

7. (low* adj (GDP or GNP or gross domestic or gross national)).tw.

8. (low adj3 middle adj3 countr*).tw.

9. (lmic or lmics or third world or lami countr*).tw.

10. transitional countr*.tw.

11. or/1-10

12. insurance, health/ or insurance, major medical/ or managed care programs/ or not-for-profit insurance plans/ or prepaid health plans/ or Insurance Coverage/ or Universal Coverage/

13. ((health or health-care or healthcare or medical) adj3 (insurance or microinsurance or micro-insurance)).ti,ab.

14. ((prepaid or pre-paid or 'not for profit' or not-for-profit) adj3 plan*).ti,ab.

15. 12 or 13 or 14

16. (enrol* or adopt* or uptake* or uptake or willingness-to-pay or 'willingness to pay' or willing-to-pay or 'willing to pay' or uptake or choose* or support or demand* or voluntary or community-based).ti,ab.

17. Choice Behaviour/ or Patient Preference/

18. 16 or 17

19. 11 and 15 and 18

20. limit 19 to yr='1990 -Current'

21. exp Animals/

22. Humans/

23. 21 not (21 and 22)

24. 19 not 23 **[Narrow Search 1633 hits]**

25. 11 and 15

26. limit 25 to yr='1990 -Current'

27. 26 not 23 **[Broad Search – 6524 hits]**

Appendix 2.5 Data extraction sheet

1. **Total citations imported (15,770)**
2. **Duplicates removed (4,372)**
3. **First screening: title and abstract screening (11,398)**
   - **Exclude on date**
     Exclude studies prior to 1990.
   - **Exclude on country**
     Exclude if study is not carried out in a low- or middle-income country.
   - **Exclude on topic**
     Exclude if study is on other health insurance mechanisms (private and social) or other topics like microfinance.
   - **Include based on title and abstract**
     Cannot be excluded so is marked as include. These studies will further require full report retrieval.
   - **General exclusion**
     Exclude studies if found completely irrelevant.
   - **Overlapping**
     Exclude unidentified duplicates.
4. **Second screening: screen on full report (905)**
   - **Exclude on topic**
     Exclude if the topic is about other stuff not relevant for the study.
   - **Exclude on type**
     Exclude if study is a policy analysis or opinion piece.
   - **Include based on full text**
     Cannot be excluded so is marked as include. Will require retrieval of full report.
   - **General exclusion**
     irrelevant studies.
   - **Only impact of CBHI**
     Exclude studies that measure impact of CBHI schemes.
5. **Third screening (251)**
   - **Included on mutual consent**
     Inclusion based on independent screening.
   - **Excluded as private/SHI/Ghana NHIS, etc.**
   - **Excluded as not determinants.**
   - **Policy brief.**
   - **Excluded as could not be found.**
   - **Excluded as willingness to pay only.**
6. **Data extraction tool (62 studies)**
   - **Identification of report**
     how the report has been identified.
     - **Name of study**
     - **Author**
       - Name
       - Affiliation
         Academic organisation or consultant

- Country
  Country of author

- **Which search strategy was used to identify this report?**
- **Online databases**
  EconLit, PubMed, etc.
- **Hand-search**
  The report was found through hand-searching a journal.
- **Citation**
  The report was identified from the bibliographical list of another report.
- **Contact**
  Through personal or professional contact.
- **Unknown**
  Source unknown

- **Status of report**
- **Published**
  If the report has an ISBN or ISSN number.
- **In press**
  Accepted for publication, but yet not published.
- **Unpublished**
  If it does not have an ISSN or ISBN number.

- **Linked items**
  If this report is linked to one or more other reports in such a way that they also report the same study.
- Not linked
- Linked
  Details of bibliography or unique identifier.

- Language of report
- English
- Other (specify)

- **Study details**

- **Study type**
  - Quantitative
  - Mixed methods
  - Undecided
  - Case study finding
  - Qualitative

- **Study design**
  - **RCTs**
  - **Cohort studies**
    - Yes
    - No
    - Unclear
  - **Case-control**
    - Yes
    - No
    - Unclear

- **Cross-sectional studies**
  - Yes
  - No
  - Unclear
- **Case series and case reports**
  - Yes
  - No
  - Unclear
- **Ideas, opinions, editorials anecdotal**
  - Yes
  - No
  - Unclear
- **Descriptive**
- **Review/systematic review**
- **Quasi experimental**
- **Theoretical study**
- **Assumption**
  - **Theoretical assumptions**
    For qualitative studies only
- **Aim**
  - **Aim or objective**

- **Study setting**
  - **Country**

Country where the study was carried out. If the study was conducted in more than one country then all the countries will be included.

- Region
- Time period for which the study was conducted
- Any
- Specific
- Not mentioned

  - **Population studied**
  - **Scheme**
    - Scheme details
- **Intervention**
  - **Type of intervention**
    - **Voluntary**
    - **Community participation**
      - Yes
      - No
  - **Type of participants**
      - Members voluntarily chose to join the scheme
      - Members voluntarily chose not to join the scheme
      - Members chose to affiliate or re-affiliate
  - **Scale and size of scheme**

        - Local
        - Regional
        - National
        - International
    - **Equity**
        - Poverty/income
        - Geography
        - Gender
        - Age
        - Health status
- **Methodology**
    - **Validity**
        - Heterogeneity
          Are the following subgroup effects considered?
            - Yes
                - Age group
                - Women
                - Socio-economic status
                - Geographically remote areas
            - No
            - Unclear
    - **Analysis**
        - Main analysis of the report
    - **Data collection**
        - Data collection technique
    - **Sample**
        - Sampling and number of participants
- **Domains evaluated**
    - Enabling and limiting factors
        - Household characteristics
            - HH income
                - Positive
                - Negative
                - No Effect
            - HH size
                - Positive
                - Negative
                - No effect
            - Health expenses
                - Positive
                - Negative
                - No effect
            - Health events

        - Positive
        - Negative
        - No effect
    - Women below age 40
        - Positive
        - Negative
        - No effect
    - Number of children and aged
        - Positive
        - Negative
        - No effect
    - Education
        - Positive
        - Negative
        - No effect
    - Risk Perspective
        - Positive
        - Negative
        - No effect
    - Understanding of benefits packages
        - Positive
        - Negative
        - No effect
    - Female-headed household
        - Positive
        - Negative
        - No effect
    - Elderly headed
        - Positive
        - Negative
        - No effect
    - Others
- Social capital
    - Trust in insurance scheme provider/management
        - Positive
        - Negative
        - No effect
    - Broad Image of the intermediary
      NGO provider, MFI, etc.
        - Positive
        - Negative
        - No effect
    - Risk sharing and solidarity
- Scheme-related factors

- Benefits package design
  - Positive
  - Negative
  - No effect
- Premiums
  - Positive
  - Negative
  - No effect
- Procedure for claim settlement
  - Positive
  - Negative
  - No effect
- Good quality of service delivery
  - Positive
  - Negative
  - No effect

- Institutional factors
  - Regulatory mechanism
    - Positive
    - Negative
    - No effect
  - Aspects relevant for setting up a local, self-run health insurance plan
    - Positive
    - Negative
    - No effect
  - Membership of SHG
    - Positive
    - Negative
    - No effect
  - Marketing
    - Positive
    - Negative
    - No effect
  - Availability of subsidy
    - Positive
    - Negative
    - No effect
- Supply-side factors
  - Availability of healthcare
    - Positive
    - Negative
    - No effect
  - Quality of care

- Positive
- Negative
- No effect

- Distance to healthcare
  - Positive
  - Negative
  - No effect
- Understanding of scheme by officials
  - Positive
  - Negative
  - No effect

- Qualitative reporting

Reporting from the qualitative studies.

- Conclusion from the study
  Main study findings.
  - Code for conclusion

Appendix 2.6 Critical appraisal to assess study of 'low' quality

If the response to any of these seven questions was 'No', the study was assessed to be of a 'low' quality:

1. Is the research aim clearly stated? (Yes/No)

REPORTING:

2. Description of the context? (Yes/No)

3. Description of the sampling procedures? (Yes/No)

4. Are sample characteristics sufficiently reported? (sample size, location, and at least one additional characteristic) (Yes/No)

5. Is it clear how the data were collected (e.g. for interviews, is there an indication of how interviews were conducted? (Yes/No)

6. Methods of recording of data reported? (Yes/No)

7. Methods of analysis explicitly stated? (Yes/No)

Source*:* Qs 1–7 (Waddington et al. 2012)

Appendix 2.7 Characteristics of Included Studies (Quantitative)						
S.No. Ref. No Author (Year) Study Setting	**Focus of Study**	**Type of Study Design**	**Sample Size(Sampling technique)**	**Method of Analysis**	**Results and Findings**	**Remarks**
1 Aggarwal A. (2010) Yeshasvini, Karnataka, India, (Rural)	Enrolment: The study covers various dimensions of vulnerability and assesses their relationship with enrolment and utilisation of healthcare in India	Cross-Sectional Study	4109-Households (Multi-stage stratified random)	LOGIT models	Education, access to information and SHG membership are empowering factors that increase likelihood of joining and renewing membership. Enrolment disproportionately in favour of wealthier classes although income turns insignificant but has positive relation with probability of enrolment. Poor health status households are more likely to join. Enrolment is positively related with locational vulnerabilities and negatively related with poverty, poor living conditions and distance from government healthcare facilities but shows positive relation towards transport facilities.	Scheme Enrolment is gender neutral at the same time study specified women are major beneficiaries of the program. Enrolment is biased in favour of the empowered classes of the society;
2	Enrolment: The	Cross-Sectional	100-Individual	PROBIT Model	Premium flexibility,	Result also shows that

Akotey OJ et al. (2011) MHI informal sector, Ghana, (Urban)	purpose of this paper is to identify the factors which influence the demand for micro-insurance services among the informal sector workers of Ghana who are quite vulnerable to various risks in the economy.	Study	(Simple Random sampling)		income level and nodal agency are significant determinants of micro-insurance demand. Insurance knowledge, Expectation (trust) and marital status were also found to have positive and significant impact on the demand.	an improvement in the perception of low-income earners about insurers has a positive and significant impact on the demand for micro insurance. Formal education is not a significant determinant; rather one's level of insurance knowledge has a positive and significant Impact on micro-insurance demand.
11 Bendig M.et al. (2011) Sri Lanka	Enrolment: Evidence on the determinants of insurance participation using PROBIT models on household survey data from Sri Lanka	Cross-Sectional Study	330-Households	Trivariate PROBIT model Binary PROBIT models	Households with higher assets base are more likely to join. Education of the household head is a strong determinant to join. Household's experience of a family related shock is positively associated with the participation. Elderly Household heads are less	Female-headship of a household is positively associated with the enrolment in MFI and the use of micro health insurance whereas household size has negative association

					like to join.	. Poorer the Households lower the accessibility to enter in any MFI, resulting less likely to enrol in scheme.
12 Bhat R et al. (2007) Krupa, Anand, Gujarat, India, (Rural)	Renewal/Drop-out: Factors affecting the decision to purchase health insurance and renewal of insurance in India	Cross-Sectional Study	301-Households	LOGIT model & Heckman two-step method	Customer satisfaction is significant factor in influencing the renewal decision of policyholder. Income is not very significant variable which affect health insurance renewal decision. Education is significant factor which affects renewal decision.	Factors affecting health insurance renewal are not the same as factors affecting health insurance purchase decision.
14 Bonan J.et al. (2012) Thies, Senegal, (Urban)	Enrolment: Elaborates on various reasons explaining low Enrolment rates in the context of our study in Senegal	RCT	360-Households (Simple Random Sampling)	Descriptive and Econometrics analysis is done using PROBIT model	Lack of knowledge results in low take-up rates even insurance literacy module has no significant impact on health insurance take-up while marketing treatments have a large and positive significant impact. Study found Enrolment depends more on compensations in the form of reduced fees of membership	If the state or the city authorities wanted to increase Enrolment rates the most efficient way would be to alleviate the financial barriers to entry. Results indicate that household with recent illness episodes of sickness

					rather than education. Male-headed household are more likely to join. Both risk aversion and time variable appears not to significant influence Enrolment.	are not inclined. Enrolment does not depend on whether the head of the household is self-employed or a public servant.
15 Chankova S. et al.(2008) Ghana Mali and Senegal. Nkoranza, Ghana. Bla and Sikasso, Mali. Thies region of Senegal, West Africa, (Both Rural & Urban)	Enrolment: Investigate the determinants of enrolment impact of MHO membership on use of healthcare services and on OOP healthcare expenditures for outpatient care and hospitalization in Africa (Ghana, Senegal and Mali)	Cross-Sectional Study	2659(Mali), 1806(Ghana) & 1080(Senegal)-Households	Multiple logistic regressions and log-linear regression model	Lack of information is a cause of Non-enrolment. Study provides the strong evidence, women headed households are more likely to join. Older age of household head is significantly associated with enrolment in Ghana and Senegal. There is a positive relation between employment if the person engaged in agriculture, commerce or administration. Availability of a health facility linked with higher likelihood of enrolment.	A key feature of the Mali and Senegal MHOs benefit packages is that their include outpatient care serviced through primary health facilities. In contrast, the MHO covered in the Ghana study site provides primarily inpatient benefits.
6 Allegri, M, De et al. (2006c) Nouna, Burkina Faso, Ghana, (Both Rural &	Enrolment: To identify factors associated with decision to enrol in a community health insurance	Case-Control Study	3125-Households	Multivariate unconditional logistic regression used to control for possible	Enrolment is associated with Bwaba ethnicity, higher education, higher socioeconomic status, a negative perception of the	Individual participatory in another risk-sharing arrangement is not associated with

Urban)	(CHI) scheme in Burkina Faso, Africa			confoundi ng; Huber-White correction estimates applied to account for potential clustering at communit y level.	adequacy of traditional care, a higher proportion of children living within the household, greater distance from the health facility, and a lower level of socioeconomic inequality within the community, but not with household health status or previous household health service utilization.	enrolment. No difference between insured and uninsured regarding age and gender.
18 Donfouet HP et al. (2012) Bandjoun, West province of Cameroon, (Rural)	Enrolment: Spatial interactions in the demand for CBHI in the Cameroon, Africa	Cross-Sectional Study	369-Individuals (Two-stage cluster sampling)	To test Bayesian Spatial TOBIT Analysis study adopted Gibbs Markov Chain Monte Carlo (MCMC)	Solidarity is an important factor of CBHI. Household with more health events are more willing to pay. There is evidence of special interaction as the neighbouring households behave similarly. Higher education positively affect WTP	
20 Dong H et al. (2005) Nouna health district, Burkina Faso, (Both Rural & Urban)	Enrolment: To provide information for devising CBI policies in Nouna Health District of Burkina Faso.	Cross-Sectional Study	800-Households (Two-stage cluster sampling)	Descriptiv e Statistics with test, Differenc es in WTP for CBHI analysed using expenditu re quintiles; Consumpt ion	Chances of enrolment poor people are low if premium is not adjusted for Income or no exemptions or subsidies are provided.	Gini coefficient of household WTP twice of individual WTP suggesting a reason for household enrolment being better than

				expenditure collected over a 6-month period		individual.
21 Dong H et al. (2009) Nouna, Burkina Faso, (Both Rural & Urban)	Renewal/Drop-out: The study explores the reasons for members who are not willing to renew their membership.	Cross-Sectional Study	1309-Households (Two-stage cluster sampling)	Logistic regression, Chi-square tests used to assess differences in proportions.	Affordability, Female headed household, higher age or lower education of a household head, lower number of illness episodes in the past three months, fewer children or elderly in a household, poor perceived healthcare quality, less seeking care in the past month and living in rural area have positively affect drop-out. Higher household expenditure and a shorter distance to the contracted health facility increase the drop-out.	High drop-out rates endanger the sustainability of CBI not only because they reduce the size of the insurance pool, but also because they bear a negative impact on further enrolment and drop-out.
22 Dror D.M. (2010) Maharashtra, Karnataka and Bihar, India, (Rural)	Enrolment: Examination of the association between insurance status and indicators on social-capital in states of Maharashtra, Karnataka and Bihar in India.	Case-Control Study	700-Households (Two-staged sampling)	Descriptive with nonparametric statistical analysis.	Trust seems to be a vital (yet insufficient) precondition for success in achieving voluntary affiliation, Finance emerged as the second most important reason for not joining in 3 out of 4 locations. Among the non-insured cohort, the main reason	Interactions of the community with a solidarity promoting organization (such as an MIU), even when it comes from the outside, can enhance trust and social capital.

					for not joining was lack of trust on the part of scheme-provider. Access to quality care mentioned as the positive factor of joining the scheme.	
23 Eckhardt M et al. (2011) El Páramo, Ecuador., (Rural)	Enrolment: To assess the willingness to pay and its factors in CBHI in El Paramo, Ecuador.	Cross-Sectional Study	210-Household (Two-stage cluster sampling)	Descriptive with nonparametric statistical analysis to test significance	Willingness to join was found to be negatively associated with education. Enrolments are likely to be lower than the stated willingness to join, still CHI scheme presents as an interesting financing alternative in rural areas	With affiliation, 92.2percent of interviewees stated that they would visit the local health facility more often. This clarifies that people who have clear foresight of getting ill are more willing to join the scheme.
24 Fonta WM et al. (2010) Enugu State, South-eastern Nigeria, (Rural)	Enrolment: Paper examines the possibility of adopting CBHI using in-kind payments in rural Nigeria.	Cross-Sectional Study	380-Households (Simple Random Sampling)	Contingent-Valuation method used & Estimation done through PROBIT	Household members who have foresight of getting sick are more likely to join. Distance (high cost of transportation), Education and available quality of health services have positively related with enrolment.	Household heads that have greater trust and confidence in the proposed scheme are willing to pay higher amounts to enrol than those who have low confidence in the scheme.
25	Enrolment: To quantify	Cross-Sectional	990-Households	Propensity Score	Per-capita expenditure in	The policy implicatio

Gnawali D et al. (2009) Nouna, Burkina Faso, Ghana, (Rural)	the impact of CBI on utilisation of health-care services in Burkina Faso.	Study	(Cluster Random Sapling)	Matching estimated by logistic regression.	richest quartile, household size, household with more children below 5years of age, education of household heads and involvement in any other risk sharing network is positively linked with Enrolment. Younger household heads are less likely to enrol whereas premium subsidies have the positive relation.	ns suggested are (a) there is a need to subsidize the premium to favour the enrolment of the very poor (b) Various measures need to be in place in order to maximize the population's capacity to enjoy the benefits of insurance once insured. Though HH perceived good quality of care however did not enrol. Possibly due to unaffordability.
26 Gumber A. (2001) SEWA, Ahmedabad, Gujarat, (Both Rural & Urban)	Enrolment: Paper examines the determinants of enrolment in CBHI using household data from pilot study undertaken	Cross-Sectional Study	1200-Households (Purposive sampling)	Multinomial LOGIT model.	Information availability (scheme) is positively related with enrolment. Rate is higher for women with chronic illness or who has an incidence of illness in last 1year.	Hospitalisation Coverage is most preferred by rural and urban population. The community plan fairly addresses

	in Gujrat, India.				Enrolment is neutral amongst different quintiles. Enrolment rate declines with increasing household size. Education is positive related with enrolment. There is urban bias in enrolment.	equity in enrolment but that, in terms of providing financial protection, social insurance coverage is much more successful.
28 Ito S. et al. (2009) Yeshasvini, Karnataka, India, (Rural)	Enrolment: Investigation of insurance Enrolment decision in Yeshasvini Scheme, operating in Karnataka, India.	Cross-Sectional Study	209-Households (Purposive random sampling)	PROBIT Analysis based on Expected Utility theory and Prospect Theory.	Households with healthy head members are more likely to be enrolled. This is due to the fact that ill member if head, would have less money to spare. Household with sick head member would have low income and hence is unlikely to enrol. Evidence of existence of adverse selection is seen.	We find some evidence that people behave risk-lovingly when facing risk of losses, which is consistent with prospect theory and insurance covers losses. We also find that hyperbolic discounters are more likely to purchase the insurance, which can be explained by demand for commitment, which sophisticated hyperbolic discounters have.
29	Enrolment: Study deals	Cross-Sectional	360-Households	Binary PROBIT	Income is significantly and	Household head of the

Jutting J. (2003) les mutuelles de santé, Senegal, (Rural)	with the subject of participation in local development organisations and institutions in rural areas of Senegal.	Study	(Two-stage sampling)	Model was used	positively related with participation. Governance on management and finances was negatively related to membership in Sanghe mutual. Household heads with previous experience of membership in local organisation tend to participate more. Types of health insurance provided (Primary healthcare in Ngaye Ngaye and in-patient care in others) have not affected decision to participate significantly.	family seems to be better educated. Poorest of the poor within the villages find it financially difficult to participate. Being a Christian increases the probability of being a member by roughly 37percent. People from Wolof ethnicity have a high disposable income and more likely to be a member as compared to Serere and Peulh.
30 Kuwawenaruwa A. et al. (2011) Tiba Kwa Kadi (CHF/ TIKA); (Morogoro, ilala, and Kinondoni), (Kigoma, Kilosa, Mbulu and singida), Tanzania, (Urban)	Enrolment: To assess the willingness to pay of people and their response to change in Benefit Package and Scheme Design in CHF scheme in three urban councils; Kigoma, Kilosa,	Cross-Sectional Study	2724-Individual	LOGIT Model, Bi-variate analysis was done for Willingness to Pay and Willingness to Join, Statistical significance analysed through Pearson chi-square and the	Households in Dar es Salaam who possess higher income, are educated and having better access to healthcare are more likely to pay and join. People with formal education and employment will be more willing to pay and join. Fixed premium for household entails	Insured are more likely to get married. Those who are eligible for exemptions were less likely to join.

	Singida in Tanzania.			Mann-Whitney U test used for estimation of WTP and WTJ.	enrolment of bigger households. Poor people whose self-assessed health is poor will be more willing to join than healthy ones. WTP for insurance is likely to reduce due to lower income levels of Age.	
32 Lammers J. et al. (2010) Lagos, Nigeria, (Urban)	Enrolment: Study about the determinants to join recently launched low-cost health insurance scheme in Nigeria.	Cross-Sectional Study	677-Households, 1941-individual	LOGIT estimation used.	Low wealth, small household size, high-risk preference, health optimism, and underestimation of health risks explain a lower Enrolment propensity. Households with higher product awareness are more likely to be enrolled. Health risk occurrence and lower self-assessed health increases the propensity to be enrolled significantly (This strongly suggesting adverse selection). Ethnicity and religion appear to be important determinants in the insurance decision as basic model shows that Muslims have higher propensity to enrol than other ethnicities.	The propensity to enrol is seven times higher for persons from highest quintiles; however WTP of wealthy household does not mean a necessary enrolment as health shocks are less frequent in wealthy household. The elderly aged (>49) do not have larger propensity to enrol through they have higher need for healthcare.

33 Liu H. et al. (2013) NCMS, China, (Rural)	Enrolment: Examines the role of social learning in household enrolment decision for the New Cooperative Medical Scheme in rural China.	Cohort Study	3266-Households (Multi-stage Random cluster-sampling)	Panel data analysis is done using fixed and random effect models of 3 waves of longitudinal nation-wide survey employed for model estimates, to control for the endogeneity of the village-level peer enrolment level.	Low household income and community urban city indicators resulted significant negative coefficients. Study highlighted an interesting finding of 10-percentage-point increase in the enrolment rate in a village increases one's take-up probability by 5 percentage points (social multiplier effect of 1.9 at the village level).	Wealthier and relatively well-educated older male household heads with Han nationality tend to be opinion leaders in NCMS enrolment.
34 Mathiyazhagan K. (1998) Karnataka, India, (Rural)	Enrolment: Examining Willingness to Pay and policy concerns for CBHI in Karnataka in India.	Cross-Sectional Study	1000-Households (Multi-stage sampling)	Logistics Model, Contingent-Valuation Method to elicit WTP	Income is significantly and positively related with participation. HH size positively influenced the decision making for willingness to join and pay. Large households had 119percent higher probability to join and 27percent higher chance to pay. Longer illness experience, education and distance have positive and significant contribution in joining whereas Age and Caste is inversely related to WTJ.	Probability of willingness to pay for a rural health insurance scheme was found to be less than the probability of willingness to join (WTJ).

35 Mladovsky P. (2014) Senegal, (Rural)	Renewal/Drop-out: The study explores whether never having actively participated in CBHI is a determinant of dropout in Senegal.	Case-Control Study	382-Households	LOGIT model was used to assess the probability to retain the membership	Most of renewed households are wealthier and have higher expenditure than those who dropped-out (although not significant). Satisfaction with the accessibility of premium price was quite low and not significant. Odds ratios of retaining in the scheme for demographic, education, ethnicity and religion variables are also not significant, except for age. Households who have foresight of illness, accident, injury or disability, easy and quality access to health service, source of information and knowledge are significantly positive relation with retaining in scheme.	Training is the most highly correlated with renewals, followed by voting, participating in a general assembly, awareness raising / information dissemination and informal discussions / spontaneously helping. Perceived trust worthiness of the scheme management / president; accountability and being informed of mechanisms of controlling abuse/fraud are also significantly positively correlated with remaining in the scheme. Perception of poor quality of health services is

						identified as another most important determinant of drop-out; Financial factors do not seem to determine drop-out.
36 Msuya J. et al. (2004) Igunga, Tanzania, (Rural)	Enrolment: To evaluate the role of the community health funds in lowering the barriers to access healthcare in Tanzania	Case-Control Study	100-Households (Multi-stage sampling)	PROBIT analysis	Village of residence, Ethnic origin, Main occupation of the household head, Education level of the key female member, household size and the wealth status of the household have statistically significant relationship with CHF status whereas ethnicity, gender and education of household head shown insufficient coefficient.	Income is most important factor determining household participation. This result showed that even though community insurance schemes were advocated as one important means to reach the poorest of the poor, it has not happened in the case of the Igunga CHF scheme.
37 Msuya J. et al. (2007) Igunga, Tanzania, (Rural)	Enrolment: This study aims to evaluate the role of the community -health funds (CHF) in lowering	Cross-Sectional Study	200-Households, 1700-Individual (Multi-stage sampling)	PROBIT analysis	1percent point increase in income was likely to increase the probability of joining the scheme by 12.5percent. Households with	Members of a community health fund are more likely to seek formal medical

	the barriers to assessing healthcare in Tanzania				big family size are more likely to join as the premium is independent of family size. Education variable was found to be insignificant. Igurubi (near to health facility) showed higher propensity to enrol than Itumba (further village).	care when they are ill than non-members.
38 Noubiap JJN et al. (2013) Bonassama, Doula, Cameroon, (Rural)	Enrolment: To evaluate CBHI knowledge, concern and preferences of informal sector workers in Bonassama Health District of Doula, Cameroon.	Cross-Sectional Study	160-Individual (Simple Random Sampling)	Descriptive, Chi-square test or its equivalents were used to compare qualitative variables	Profession, ethnicity, access to healthcare and religious affiliation of its members are directly linked with enrolment. Whereas lack of awareness is inversely related to employment.	Lack of awareness and limited knowledge on the basic concepts of a CBHI by this target population as one of the reason for low enrolment. Solidarity based community associations to which the vast majority of this target population belong are prime areas for sensitization on CBHI schemes.
13 Boateng, NE et al. (2013) Ga District,	Enrolment: The study assessed the performance of Ga District	Case-Control Study	376-Individual (Multi-Stage sampling)	Descriptive without test	Study has reported reasons for not enrolling are expensive contribution and Scheme does not	Increasing trends in membership coverage and revenue

Greater Accra, Ghana, (Urban)	Mutual Health Insurance Scheme, Greater Accra region, Ghana				offer services needed. Lack of education and insurance knowledge leads to lesser enrolment.	are largely driven by the exempt groups and subsidies from the NHIA.
39 Onwujekwe O. et al. (2009) Igboukwu and Neni communities in Anambra, Nigeria, (Both Rural & Urban)	Enrolment: To determine how equitable enrolment and utilisation of CBHI is for two communities Igboukwu and Neni in Anambra State of Nigeria	Cross-Sectional Study	455(Igboukwu), 516(Neni)-Household (Simple Random Sampling)	Descriptive with test, Principal components analysis	Level of awareness of both schemes which is important for enrolment is high. Unavailability of doctors was reported by most of the respondents; hence it should be sorted to increase enrolment. Cost of registration is a hindrance. There is a demand for scheme awareness so that it is successful.	Enrolment is generally low and contributions are retrogressive. The average premiums also small. Major reason unwillingness because of 1. Cost of registration is high 2. Unavailability of doctors There is need for increase in pool of funds, risks and subsidies from government and donors in order to ensure equitable financial risk protection.
41 Onwujekwe O. et al. (2011) Enugu and Anambra, Southeast	Enrolment: Information about the determinants in Enugu and Anambra States,	Cross-Sectional Study	3070-Household (Simple Random Sampling)	Logistic regression with principal components analysis and Contingen	WTP positively related to health expenditure using OOP expenses. WTP is positively related to SES and education.	There were high levels of catastrophic costs, but with appreciable levels of

Nigeria, (Both Rural & Urban)	Nigeria			t valuation method	Household size is negative related to joining. Geographical area of residence is not a barrier to join under the scheme.	affordabilit y and altruistic WTP for CBHI, coverage can be increased and financial risk protection assured for most people that need CBHI.
42 Oriakhi H. et al. (2012) Edo state, Nigeria, (Rural)	Enrolment: To find out the factors which influence the willingness to participate in rural areas at Edo State, Nigeria	Cross-Sectional Study	360-Household (Multi-stage random sampling)	Logistics regression multi-stage sampling procedure	Household size and Membership of formal organization have significantly positive relation with participate. Education is negatively related with enrolment. Nature of employment and Income (significantly) negatively related with willingness to participate whereas medical expense and credit obtained for medical treatment both are positively related with participate. Low trust in the management leads to low enrolment rate.	The study recommen ded the incorporati on of communit y participati on in the scheme especially in scheme manageme nt selection and large household have an encourage ment to participate in CBHI while awareness creation as measures to promote CBHI scheme in the state.
44 Panda P. et al. (2013) Uttar Pradesh	Enrolment: Study examines what drives the Enrolment,	Cross-Sectional Study	369(Bihar), 1711(Uttar Pradesh)-Households (Cluster sampling)	Marginal-effect estimates based on LOGIT specificati	Household's socio-economic status does not appear to substantially inhibit	Coverage of transportat ion cost in benefit-package

and Bihar, India, (Rural)	the degree of inclusive practises of the schemes and influence of health status on enrolment in rural Uttar Pradesh and Bihar, India.			on.	Enrolment. In some cases scheduled caste/scheduled tribe households are more likely to enrol. Households with greater financial liabilities find insurance more attractive. Access to the national hospital insurance scheme Rashtriya Swasthya Bima Yojana does not dampen CBHI Enrolment. Households with children seem to be more risk averse and expect a higher need for health case so are more likely to enrol.	works towards reducing the potential negative effect of accessibilit y on Enrolment. Education affects positively the up-take however it is restricted to Vaishali. Intra-household pooling of income as a measure of risk pooling can help smooth consumpti on and exerts a negative effect on Enrolment of insurance. None of the locations show that low castes communiti es are less likely to enrol.
46 Ranson K (2001) Armenia, (Rural)	Enrolment: Assesses the impact of the Self-Employed Women's Association 's (SEWA's) Medical	Cohort Study	700-Households (Two-stage random cluster sampling)	LOGIT model and log-linear model	Older age and higher frequency of illness episode in the last month are significantly associated with membership. Quintile of ESI (Economic	Women of age 30 years and above were 3.4 times as likely to join the fund as those of 18

	Insurance Fund, Gujarat, in terms of inclusion of the poor, hospital utilization, and expenditure.				Status Index) is taken as proxy of wealth is not statistically associated with membership in the fund. Fund members have higher rates of hospitalization (even women living in the same households as fund members) but this association was not significant.	to 20 years. Each additional illness reported within the last month (acute illnesses as well as exacerbations of chronic disease) was associated with a 70 percent to 80 percent (best fit) increase in the probability of joining the Fund. Lack of awareness of benefits among fund members or costs and difficulties associated with submitting an insurance claim.
47 Rao K.D et al. (2009) Afghanistan, (Rural)	Enrolment: Performance of one type CBHI scheme, the community health fund, which was piloted for the first time in five provinces of Afghanista	Cross-Sectional Study	160(Parwan), 160(Saripul)-Households	Descriptive Statistics with test, Quasi-experimental design (one-group pre-test-post-test design); Control of	Unawareness on part of scheme; high premiums; and perceived low quality of services at the CHF clinics are the main reason among non-member for not enrolling. Low perceived service quality affects	Poorest and female-headed households were enrolled into the programme free of cost. Further poor households

	n.			spill-over effect as no other programme operated in the catchment area during the study period.	enrolment: specifically lack of trust in doctor's skills and lack of drugs.	are eligible for reduced premiums
48 Schneider P. et al. (2001) Byumba, Kabgayi and Kabutare, Rwanda, (Rural)	Enrolment: Whether health insurance membership improve financial accessibility to care without increasing the burden of OOP health expenditure in three districts of Rwanda	Cross-Sectional Study	2518-Households, 11582-Individual	LOGIT regression	Literate household head 103percent more likely to enrol than illiterate. Large households (4+ members) are 60percent more likely to buy insurance than smaller households. Households who live within 30 minutes of their health facility have a 296percent higher probability of joining than those who live farther away.	Households who own a radio (awareness campaign) is 47percent more likely to enrol Male-headed households are 55percent more likely to join than female-headed and households with pregnant women are 23percent more likely to join, although these results are not significant. Cattle ownership and different income quartiles were not significant in the demand

						for health insurance.
50 Shafie A. et al. (2013) Penang Malaysia, (Urban)	Enrolment: To assess the willingness of Malaysians to participate in a VCHI plan of Malaysia	Cross-Sectional Study	472-Individuals (Two-stage cluster sampling)	Multinomial LOGIT regression model	Married individuals are almost three times more likely to choose VCHI. Chinese as a group are more risk averse and so have a higher WTP. The Enrolment is positively affected by higher income. Enrolment is positive related to education.	Contribution payable is influenced by ethnicity, educational level, household monthly income, the presence of chronic disease and the presence of private insurance coverage
27 Hong W. et al. (2005) Fengshan Township, Guizhou, China, (Rural)	Enrolment: Study evaluates the probability of farmers joining a re-established CBI Fengshan Township, Guizhou Province in China.	Cross-Sectional Study	1173-Households, 4160-Individuals (Multi-stage sampling)	Logistic regression	Income is an important factor influencing farmers' decision to join a CBI despite the premium representing a very small fraction of household income. Farmers self-perceived good health are less likely to participate in the CBI than farmers with medium or poor health status; these results are statistically significant comparing good with poor health status.	Income and health status influence enrolees' utilization of health services: richer/sicker participants, meaning that poorer/healthier participants subsidize the rich/sick. Wealthy farmers benefit the most from the CBI with low premium and high co-payment features. In conclusion, policy recommen

						dations related to the improvement of the benefit distribution of CBI.
54 Zhang L et al. (2006) Fengshan Township, Guizhou, China , (Rural)	Enrolment: Examine the probability of farmers' willingness-to-join with emphasis on social capital in China	Cross-Sectional Study	1157-Households, 2830-Individuals (Multistage sampling)	Logistic regression model with odds ratios (ORs) estimation in this study, Discrete choice model to predict WTJ	Analysis showed both individual level trust index and community level reciprocity index are significantly and positively associated with the probability of farmers' WTJ the CHI. Financial social support and the probability of WTJ the CHI showed positively and significantly association. Both income and asset has strongly positive associations with the probabilities of WTJ. Age, Medical expense and farmers who reside closer to village health facility are more willing to join whereas distant residents are less likely to join.	The results imply that the participation rate of CHI might be increased by enhancing social capital in rural China. However, social capital is affected by many socio-economic factors, such as income inequality.

Appendix 2.8 Characteristics of Included Studies (Qualitative)

S.No. Ref No. Author (Year) Study Setting	Participants	Sampling and Data Collection (Response)	Focus of Paper	Themes covered	Method(Analysis)
7 Atim C. et al. (2000) Nkoranza Community Financing Health Insurance Scheme, Ghana (rural)	Subscribers	A Stratified multi-stage sampling FGDs (43), Interviews with 300 individuals	An external evaluation of the Nkoranza Community Financing Health Insurance Scheme, Ghana	KQTBA	Cross-Sectional Studies (Descriptive Statistics)
8 Basaza R. et al. (2007) Ugandan Community Health Insurance Scheme, Uganda (rural)	Scheme members	KI interviews (23), EI interviews (39), Total (62)	To explore the reasons for the limited success of CHI	KTBRAL	Case Study Research Design (Framework method)
9 Basaza R. et al. (2008) Ugandan Community Health Insurance Scheme, Uganda (rural)	Members and non-members	FGDs (30), Interviews (18)	To study the reasons for low enrolment in two different models of CHI	KQTBRAD	Cross-Sectional Studies Analysis (NR)
10 Basaza R. (2010) Ugandan Community Health Insurance Scheme, Uganda (rural)	District Health Officers and senior staff of the Ministry of Health	Purposeful sampling Interviews (32)	To investigate the knowledge of CHI and the perception of its relevance by key policy makers and health service managers	KL	Cohort Studies (Framework method)
16 Criel B.et al. (1998) CBHI in Bwamanda,	Subscribers and non-subscribers	FGDs (10)	To find pertain to the reasons for people to subscribe to the scheme	KQTBA	Cross-case analysis

Democratic Republic of Congo (rural and urban)					
17 Criel B.et al. (2003) CBHI in Bandjoun, West province of Cameroon (rural)	Subscribers and non - subscribers	FGDs (12)	To study the reasons for drop out from the CBHI scheme	KQTBA	Cross-Sectional Studies Cross analysis
4 Allegri M De et al. (2006_a) Nouna Health District, Burkina Faso, Ghana (rural and urban)	Household heads	Stratified Purposive Sampling Interviews (32) (Male heads, 24 and Female head, 8)	To assess determinants of enrolment in a newly established CBI scheme	KQTBCAD	Cross-Sectional Studies, Grounded theory (Contrast and compare method
5 Allegri M De et al. (2006_b) Nouna Health District, Burkina Faso, Ghana (rural and urban)	Insured and non-insured members	Stratified Purposive Sampling Interviews (32),10 FGDs	To provide adequate policy guidance to decision makers in LMIC by producing an in-depth understanding of how consumers' preferences may affect decision to participate in such schemes	KQTBA	Cross-Sectional Studies, (Method of Constant Comparison)
31 Kyomugisha E L et al. (2009) community health insurance schemes (CHI) in Uganda (rural)	Members and non-members and KI are Scheme managers, officials from Ministry of health and one health financing organisation	Purposive sampling FGDs (15), KI (12)	To examines issues of equity and sustainability in CHI schemes, which are prerequisite to health sector financing	KQTBRL	Cross-Sectional Studies Analysis(Descriptive)
45 Poletti T.et al. (2007) Rural Setting, community health	High level government officials, heads of hospitals and polyclinic, family	Snowballing technique FGDs (02) and 30 (KI)	To identify the major constraints and opportunities for scaling up community-based health insurance in Armenia	KQTBADL	Case Series and Case Reports, (Grounded theory approach)

insurance schemes (CHI) in Uganda (rural)	physician, major donors, academicians and consultants, NGO, Health post nurses, NGO partner, heads of village council,				
49 Schneider P. (2005) Community-Based Health Insurance in Rwanda (rural)	MHI members, Non-members, MHI managers, Healthcare provides	FGDs (24)	To identify trust-building factors in the provider-consumer-MHI relationship that motivate consumers to insure	KQTL	Case-Control, Exploratory Study (descriptive analysis)
52 Turcotte-Tremblay A-M et al. (2012) Mutual health organizations (MHO) in Benin, Senegal (rural and urban)	MHO promoters, Technicians, Elected members, Health professional	Snowball approach FGDs (02), Interviews (23) (10 promoters representatives, two coordinators, one technical assistant, eight elected members, one healthcare member, one healthcare manager, one medical doctor, eight elected members and six healthcare members	To map initiative implemented to increase the pool of MHO members in Benin	KQTBDL	Multiple Case study design, (content analysis)

Appendix 2.9 Characteristics of Included Studies (Quantitative and Qualitative data analysis from 6 Mixed-method papers)

S.No. Ref. No Author (Year) Study Setting	Focus of Study	Type of Study Design	Sample Size(Sampling technique)	Method of Analysis	Results and Findings	Remarks
3 Alatinga K. et al. (2011) Kassena-Nankana East Scheme, Ghana, (Rural)	Enrolment: The impact of Mutual Health Insurance on access and quality of healthcare for the rural poor in Northern Ghana	Cohort Study	100-Individual (cluster random sampling)	Descriptive Statistics with test, Cramer's V correlation coefficient	Positive relationship of insurance and insurance status. Whereas distance to the health facility prevents households from enrolling in MHIS. Flat rate nature of insurance premium is preventing majority of households from enrolling in health schemes	Insured are generally the rural middle class with relatively higher level of incomes.
19 Dong H. et al. (2004) Nouna, Burkina Faso, (Both Rural & Urban)	Enrolment: Studies the acceptability and sustainability of the CBI scheme in Nouna health district of Burkina Faso	Cross-Sectional Study	160-Households (Purposive sampling)	Logistic regression analysis	Mean and median WTP increased with household size and proportion of children. Young males preferred to pay more than the elder	The average household premium for the insurance based on the median household head's WTP is about

	through eliciting Willingness to Pay for the scheme.				ones. Preference was to cover drug, lab tests, impatient stags and surgery in the package. Community participation and solidarity necessary for CBHI success. Marketing found important variable in initial designing of the scheme to keep the membership high.	6.3percent of the annual household expenditure. However, it is needed to have more support for the success of the CBI.
43 Ozawa S. et al. (2009) Cambodia, (Rural)	Enrolment: To understand the role and influence of villager's trust for the health insurer on enrolment in a CBHI scheme in Cambodia	Cohort Study	560-Hoseholds (Stratified random sampling)	Multinomial logistic regression models Multivariate regression models	Significant association is found between insurer trust levels and CBHI enrolment. Trust factor of renewed members are significantly more than those who are new to the scheme or drop outs. Other factors affordability of premium	Five domains of insurer trust were identified: organizational trust, financial trust, honesty, competence, and personal interactions. Individual who was never insured tended

					time of premium collection and understanding of insurance showed positive relation with enrolment however Income does not play significant role.	to have more years of education.
51 Sinha T. et al. (2006) VIMO SEWA, Ahmedabad, Gujarat, (Urban)	Renewal/ Drop-out: Interest of the paper is to find out the how VIMO SEWA can protect its members and increase membership in India	Cohort Study	220(Purposive random sampling)	Descriptive with test	Most important factor for not renewing membership is not being approached by a VIMO SEWA aagewan (grassroots worker). Lack of money and Individual characteristics like age, education, and occupation to buy insurance do not appear to be major factors affecting the member's renewal decision but time of	A high renewal rate also contributes to the financial viability and efficiency of the scheme. Members who have been in the scheme for a length of time develop a sound understanding of the scheme.

					collection and scheme understating considerably affect.	
S.No. Ref No. Author (Year) Study Setting	**Participants**	**Sampling and Data Collection (Response)**	**Focus of Paper**	**Themes covered**	**Method(Analysis)**	
40 Onwujekwe O. et al. (2010) CBHI in Enugu and Anambra, Southeast Nigeria (rural and urban)	Scheme members	FGDs (12), Interviews (3070)	To examine socio-economic status (SES) and geographic differences in willingness of respondents to pay	B	Cross-Sectional Studies, Mixed Methods (Content analysis)	
53 Uzochukwu BSC. et al. (2009) Community Based Health Insurance Scheme in Anambra State, Nigeria (rural)	Policy makers and managers and CBHI members and health workers	FGDs (08), Interviews (14) (1 senior politician, 8 state policy makers and 5 LGA officials), Health workers (4), Managers of the scheme (2), CBHI and Non-CBHI members (8 FGDs), Members of the community health committees (16)	To explore the CBHI policy development and implementation process and the factors that have constrained or enhance its implementations	KQTBRAL	Case study Mixed Methods, (Principal Components Analysis (PCA))	

Appendix 3.1 Details of final 54 studies

Ref. No	Author (year)	Study type	Factors	Country	Region
1	Aggarwal A (2010)	Quantitative	Both enrolment and renewal/ drop-out	India (lower middle income)	South Asia
2	Akotey O J (2011)	Quantitative	Enrolment	Ghana (lower middle income)	Sub-Saharan Africa
3	Alatinga KA (2011)	Mixed methods	Both enrolment and renewal/ drop-out	Ghana (lower middle income)	Sub-Saharan Africa
4	Allegri M. De (2006a)	Qualitative	Enrolment	Burkina Faso (lower income)	Sub-Saharan Africa
5	Allegri M. De (2006b)	Qualitative	Enrolment	Burkina Faso (lower income)	Sub-Saharan Africa
6	Allegri M. De (2006c)	Quantitative	Enrolment	Burkina Faso (lower income)	Sub-Saharan Africa
7	Atim C (2000)	Qualitative	Enrolment	Ghana (lower middle income)	Sub-Saharan Africa
8	Basaza R (2007)	Qualitative	Enrolment	Uganda (lower income)	Sub-Saharan Africa
9	Basaza R (2008)	Qualitative	Both enrolment and renewal/ drop-out	Uganda (lower income)	Sub-Saharan Africa
10	Basaza R (2010)	Qualitative	Enrolment	Uganda (lower income)	Sub-Saharan Africa
11	Bendig M (2011)	Quantitative	Enrolment	Sri Lanka (lower middle income)	South Asia
12	Bhat R (2007)	Quantitative	renewal/ drop-out	India (lower middle income)	South Asia
13	Boateng EN (2013)	Quantitative	Enrolment	Ghana (lower middle income)	Sub-Saharan Africa
14	Bonan J (2012)	Quantitative	Enrolment	Senegal (lower middle income)	Sub-Saharan Africa
15	Chankova S (2008)	Quantitative	Enrolment	Ghana (lower middle income), Mali (lower income), Senegal (lower middle income)	Sub-Saharan Africa

16	Criel B (1998)	Qualitative	Enrolment	Democratic Republic of Congo (lower income)	Sub-Saharan Africa
17	Criel B (2003)	Qualitative	Enrolment	Guinea-Conakry (lower income)	Sub-Saharan Africa
18	Donfouet HP (2012)	Quantitative	Enrolment	Cameroon (lower middle income)	Sub-Saharan Africa
19	Dong H (2004)	Mixed methods	Enrolment	Burkina Faso (lower income)	Sub-Saharan Africa
20	Dong H (2005)	Quantitative	Enrolment	Burkina Faso (lower income)	Sub-Saharan Africa
21	Dong H (2009)	Quantitative	Drop-out	Burkina Faso (lower income)	Sub-Saharan Africa
22	Dror D M (2010)	Quantitative	Enrolment	India (lower middle income)	South Asia
23	Eckhardt M (2011)	Quantitative	Enrolment	Ecuador (lower middle income)	Latin America and Caribbean
24	Fonta WM (2010)	Quantitative	Enrolment	Nigeria (lower middle income)	Sub-Saharan Africa
25	Gnawali D (2009)	Quantitative	Enrolment	Burkina Faso (lower income)	Sub-Saharan Africa
26	Gumber A (2001)	Quantitative	Enrolment	India (lower middle income)	South Asia
27	(2005)	Quantitative	Enrolment	China (lower middle income)	South Asia
28	Ito S (2009)	Quantitative	Enrolment	India (lower middle income)	South Asia
29	Jutting J (2003)	Quantitative	Enrolment	Senegal (lower middle income)	Sub-Saharan Africa
30	Kuwawenaruwa A (2011)	Quantitative	Enrolment	Tanzania (lower income)	Sub-Saharan Africa
31	Kyomugisha E L (2009)	Qualitative	Both enrolment and renewal/ drop-out	Uganda (lower income)	Sub-Saharan Africa
32	Lammers J (2010)	Quantitative	Enrolment	Nigeria (lower middle income)	Sub-Saharan Africa
33	Liu H (2013)	Quantitative	Enrolment	China (lower	South Asia

				middle income)	
34	Mathiyazhagan K (1998)	Quantitative	Enrolment	India (lower middle income)	South Asia
35	Mladovsky P (2014)	Quantitative	Renewal/ drop-out	Senegal (lower middle income)	Sub-Saharan Africa
36	Msuya JM (2004)	Quantitative	Enrolment	Tanzania (lower income)	Sub-Saharan Africa
37	Msuya J (2007)	Quantitative	Enrolment	Tanzania (lower income)	Sub-Saharan Africa
38	Noubiap JJN (2013)	Quantitative	Enrolment	Cameroon (lower middle income)	Sub-Saharan Africa
39	Onwujekwe O (2009)	Quantitative	Both enrolment and renewal/drop-out	Nigeria (lower middle income)	Sub-Saharan Africa
40	Onwujekwe O (2010)	Mixed methods	Enrolment	Nigeria (lower middle income)	Sub-Saharan Africa
41	Onwujekwe O (2011)	Quantitative	Enrolment	Nigeria (lower middle income)	Sub-Saharan Africa
42	Oriakhi H (2012)	Quantitative	Enrolment	Nigeria (lower middle income)	Sub-Saharan Africa
43	Ozawa S (2009)	Mixed methods	Enrolment	Cambodia (low income)	East Asia and Pacific
44	Panda P (2013)	Quantitative	Enrolment	India (lower middle income)	South Asia
45	Poletti T (2007)	Qualitative	Both enrolment and renewal/ drop-out	Armenia (lower middle income)	Europe and Central Asia
46	Ranson K (2001)	Quantitative	Enrolment	India (lower middle income)	South Asia
47	Rao KD (2009)	Quantitative	Enrolment	Afghanistan (lower income)	South Asia
48	Schneider P (2001)	Quantitative	Enrolment	Rwanda (lower income)	Sub-Saharan Africa
49	Schneider P (2005)	Qualitative	Enrolment	Rwanda (lower income)	Sub-Saharan Africa
50	Shafie AA (2013)	Quantitative	Enrolment	Malaysia (Upper middle income)	East Asia and Pacific

51	Sinha T (2006)	Mixed methods	Renewal/ drop-out	India (lower middle income)	South Asia
52	Turcotte Tremblay A –M (2012)	Qualitative	Both enrolment and renewal/ drop-out	Benin (lower income)	Sub-Saharan Africa
53	Uzochukwu BSC (2009)	Mixed methods	Enrolment	Nigeria (lower middle income)	Sub-Saharan Africa
54	Zhang L (2006)	Quantitative	Enrolment	China (lower middle income)	South Asia

Appendix 4.1a Scheme-related factors of included quantitative studies

Ref. no Author (year)	Setting	Scheme-related factors
1 Aggarwal A (2010)	Yeshasvini, Karnataka, India, (Rural)	• US$ 2.05 is premium per year per person • Health service package focusing on high-cost surgery events that could be catastrophe for poor households; free OPD consultations and diagnosis lab tests at concessional rates are optional • Individual unit of enrolment • Co-operative societies community-based prepayment scheme • 3 million co-operative members are enrolled • This scheme run by Department of Co-operation, Karnataka
2 Akotey OJ (2011)	MHI informal sector, Ghana, (Urban)	
3 Alatinga K (2011)	Kassena-Nankana East Scheme, Ghana, (Rural)	• Voluntary participation • Premiums are flat rate and lower • Service centre near their home • Informal sector poor people • Premium is US$ 3.15 per person per year • Renewal charged at US$ 3.01 per person per year • 88.29 percent are insured
6 Allegri M. De (2006c)	Nouna, Burkina Faso, Ghana, (Both Rural and Urban)	• Enrolment is voluntary and unit of enrolment is household • Premium is set on the basis of individual in which US$ 2.53 is for adults and US$ 0.84 for children per year • 154 members of 3,125 (4.9 percent) households were insured • The benefit package included a wide range of first-line and second-line services that were available at the health facilities within the district • It excluded reimbursement for all traditional healing practices
11 Bendig M (2011)	Sri Lanka	
13 Boateng EN (2013)	Ga District, Greater Accra, Ghana, (Urban)	
14 Bonan J (2012)	Thies, Senegal, (Urban)	• Three vouchers under MHO scheme; voucher 2 offered a full refund of membership fees in an MHO and voucher 3 a full refund of membership fees plus a refund of US$ 5.06 covering fees linked to the observation period.
15 Chankova S (2008)	Ghana Mali and Senegal. Nkoranza, Ghana. Bla and Sikasso, Mali. Thies	1- MHO scheme in Ghana • Unit of enrolment is entire household and 43,658 enrolled in scheme • Annual premiums: US$ 3.61 per individual per

	region of Senegal, West Africa, (both Rural and Urban)	year for first year and US$ 3.01 annual renewal • Total hospital admission and drugs 100 percent for hospital admission. No outpatient visit • 2- MHO in Mali Entire household for unit of enrolment and 1,470 households and 8,672 enrolled in CBHI • US$ 1.04–2.08 annual household membership, in addition US$ 0.28–0.54 per individual per month. • Outpatient visits covered by all 4 MHOs at 75 percent for all consultations, hospital admission only covered by Blaville MHO at 75 percent and drugs covered by all 4- MHOs at 75–80 percent 3- MHO at Senegal • Unit of enrolment is entire nuclear family for most and 2,200 individuals are enrolled MHOs, monthly premiums for most MHOs; US$ 0.20–0.40 per individual per month, outpatient visits covered by 23 MHOs at 50–100 percent, hospital admission covered by 22 MHOs, and essential drugs covered by 23 MHOs at 50–100 percent
18 Donfouet HP (2012)	Bandjoun, west province of Cameroon, (Rural)	
19 Dong H (2004)	Nouna, Burkina Faso, (both Rural and Urban)	
20 Dong H (2005)	Nouna health district, Burkina Faso, (both Rural and Urban)	• Unit of enrolment is household
22 Dror DM (2010)	Maharashtra, Karnataka and Bihar, India, (Rural)	1- Baif • Unit of enrolment is individual, premium is US$ 3.94 (including life insurance and scholarship for some children) and US$ 1.58 is as government subsidy 2- Uplift • Unit of enrolment is household and individual, premium is US$ 1.58 in which US$ 0.95 if whole family joins and US$ 1.89 if only some members join premium 3- Yeshasvini • Unit of enrolment is individual, US$ 1.89 premium for adults and US$ 0.95 for unmarried children younger than 18 and possibility to pay in kind 4- Nida • Unit of enrolment is individual and US$ 1.58 for the medical treatment package premium and US$ 3.55 for the hospitalisation package
23 Eckhardt M (2011)	El Páramo, Ecuador, (Rural)	• Unit of enrolment is household • Annual premium • Insurance covers the services at the local health centre: laboratory, prescribed medicines from the health centre's stock, all materials needed for treatment, patients stay for up to 15 days per year and households. Premium is US$ 0.50

24 Fonta WM (2010)	Enugu State, south-eastern Nigeria, (Rural)	
25 Gnawali D (2009)	Nouna, Burkina Faso, Ghana, (Rural)	• Unit of enrolment is household • Premium is on individual level US$ 2.53 per adult per annum premium and for children it is around US$ 0.84 • It covers a wide range of first-line services available at local health facilities and second-line services available at district hospital without any co-payment at the point of service use • 221 are insured and community-based insurance
26 Gumber A (2001)	SEWA, Ahmedabad, Gujarat, (both Rural and Urban)	• Premium is US$ 0.47 • It covers maternity coverage, hospitalisation coverage for a wide range of diseases, and coverage for occupational illnesses and diseases specific to women • This community-based insurance scheme is run by an NGO • 360 households are insured
28 Ito S (2009)	Yeshasvini, Karnataka, India, (Rural)	• It is open to all co-operative society members and member's age should be 0–75 years • The policy is for one year and members have to pay for premium up front • Premium is US$ 2.4 for an adult or a child per year and for families of five or more members the premium is discounted by 15 percent • The pay-out is limited to US$ 4,000 per year per individual and US$ 2,000 per surgery per individual
29 Jutting J (2003)	Les mutuelles de santés, Senegal, (Rural)	• US$ 0.01 premium for a treatment and if the members need surgery, they will pay 50 percent of the total costs for the operation themselves. The daily cost of hospitalisation including laboratory analysis, consultations, and in some cases radiography is paid by the mutual
30 Kuwawenaruwa A.(2011)	Tiba Kwa Kadi (CHF/ TIKA); (Morogoro, ilala, and Kinondoni), (Kigoma, Kilosa, Mbulu and singida), Tanzania, (Urban)	• Voluntary insurance scheme with premium US$ 2.23–6.7 per annum per households, and covers a couple and their children under 18 years • Scheme covers primary-level public facilities and limited referral care in some districts • 1,061insured household heads
32 Lammers J (2010)	Lagos, Nigeria, (Urban)	• Highly subsidised premium because 90 percent of the total premium subsidised and the remaining amount the target group pays for the insurance is 0.48 percent of the annual per capita consumption • Unit of enrolment is individual • 133 (6 percent) individuals are enrolled
33 Liu H (2013)	NCMS, China, (Rural)	• The NCMS seeks to provide low-cost basic healthcare services including inpatient, catastrophic, and some types of outpatient care for the entire rural population

34 Mathiyazhagan K (1998)	Karnataka, India, (Rural)	
36 Msuya J (2004)	Igunga, Tanzania, (Rural)	• Voluntary and household-based enrolment • It covers health package, dispensary and first referral • Premium is US$ 10 for the household with maximum five members per annum and US$ 0.45 per household member
37 Msuya J (2007)	Igunga, Tanzania, (Rural)	
38 Noubiap JJN (2013)	Bonassama, Doula, Cameroon, (Rural)	• Per household is unit of enrolment • Premium is US$ 0.5 for per adult per month and for a child US$ 0.25 per month
39 Onwujekwe O (2009)	Igboukwu and Neni communities in Anambra, Nigeria, (both Rural and Urban)	
41 Onwujekwe O (2011)	Enugu and Anambra, southeast Nigeria, (both Rural and Urban)	
40 Onwujekwe O (2010)	Enugu and Anambra, southeast Nigeria, (both Rural and Urban)	
42 Oriakhi H (2012)	Edo state, Nigeria, (Rural)	
43 Ozawa S (2009)	Cambodia, (Rural)	
44 Panda P (2013)	Uttar Pradesh and Bihar, India, (Rural)	1- Pratapgarh (Sanjivani scheme) • Annual CBHI premium per person/per year is US$ 2.78 , health coverage is hospitalisation as well maternity care, and unit of enrolment is both individual and household, with 604 individuals enrolled in the scheme 2- Kanpur Dehat (Jeeven sanjivani) • Annual CBHI premium per person/per year is US$ 3.03 and household as well individual are both units of enrolment. Health coverage for hospitalisation fees, coverage in outpatient services, 334 individuals enrolled 3- Vaishali (Swastha Kamal) • Annual CBHI premium per person/per year US$ 3.11 and household as well individual are both units of enrolment. Health coverage for wage loss in hospitalisation, coverage of outpatient services, 868 individuals
46 Ranson K (2001)	Armenia, (Rural)	• Unit of enrolment is individuals and women only 14 insured households enrolled • US$ 18.93 is premium for medical insurance

47 Rao KD (2009)	Afghanistan, (Rural)	• Poor households were enrolled as members free of cost and their co-payment charges were waived • Member households paying an annual premium were entitled to unlimited use of health services at the cost of a nominal co-payment of US$ 0.02 The annual reference premium was set at US$ 6 for smaller households with 1–5 members • Subscription is voluntary and membership was on household basis and covered all services offered at the designated health facility in addition to inpatient care at the nearest district hospital
48 Schneider P (2001)	Byumba, Kabgayi and Kabutare, Rwanda, (Rural)	• Family-level annual premium of US$ 7.50 per family up to 7 members • 88,303 members enrolled • This scheme is managed by Rwandan Ministry of Health in collaboration with major agencies • Healthcare package covering all services and drugs provided in their preferred health centre. Including ambulance transfer to the district public or church-owned hospitals where a limited package is covered
50 Shafie AA (2013)	Penang Malaysia, (Urban)	• Annual premium • Unit of enrolment is household • Healthcare at the government health clinic/hospital and free medicines if prescribed by doctor if care at higher levels is needed, the insured patient will be supported by an amount based on the cost per bed day at the government hospital • US$ 114.38 per month
53 Uzochukwu BSC (2009)	Anambra State, Nigeria, (Rural)	• Premium flat rate whether monthly or yearly instalments • Government refurbished and equipped the health facilities involved in the scheme • 43.7 percent registered for CBHI
27 Hong W (2005)	Fengshan Township, Guizhou, China, (Rural)	• Enrolment is voluntary • Especial focus on poor farmers • US$ 1.2 premium individually and low premium • Unit of enrolment is individual • Only drugs are reimbursed, the scheme does not cover medical examinations and other service fees • The actual reimbursement is only 10 percent of total expenditure
54 Zhang L (2006)	Fengshan Township, Guizhou, China , (Rural)	• Voluntary and community based, prepayment • US$ 1.25–2.50 annual premium • Unit of enrolment is individual
12 Bhat R (2007)	Krupa, Anand, Gujarat, India, (Rural)	1- KRUPA • Anybody can join • Premium range is US$ 1.42–36.68 and hospitalisation, OPD as well maternity insurance coverage • Some medicines and diagnostic tests are excluded • Members of this scheme get some discount on diagnostic services and pharmacy

		• Unit of analysis is household • Voluntary, prepayment and not community based
21 Dong H (2009)	Nouna, Burkina Faso, (both Rural and Urban)	
51 Sinha T (2006)	VIMO SEWA, Ahmedabad, Gujarat, (Urban)	
35 Mladovsky P (2014)	Senegal, (Rural)	• Unit of enrolment is household • Up to 12 members in household can be enrolled • Premium is paid monthly • 227 members and 14 households of enrolled members

Appendix 4.1b Scheme-related factors of included qualitative studies

Ref no. study	Setting	Scheme-related factors
3 Alatinga K (2011)	Kassena-Nankana East Scheme, Ghana (rural)	
4 Allegri M De (2006a)	Nouna Health District, Burkina Faso, Ghana (rural and urban)	• Voluntary • Unit of enrolment is household • Premium- individual in which US$ 2.53 is for adults and US$ 0.84 for children per year
5 Allegri M De (2006b)	Nouna Health District, Burkina Faso, Ghana (rural and urban)	• Voluntary • Unit of enrolment is household • Premium is set on the basis of individual in which US$ 2.53 is for adults and US$ 0.84 for children per year
7 Atim C (2000)	Nkoranza Community Financing Health Insurance Scheme, Ghana (rural)	• 100 percent coverage for hospitalisation, drug refund when purchased outside and referral to other hospitals • Premium flat • Enrolment fee is US$ 1,326.19 and renewal fee is US$ 1,060.95
8 Basaza R (2007)	Ugandan Community Health Insurance Scheme, Uganda (rural)	1- Save for health Uganda (SHU) • Unit of enrolment is village based • Premium per individual member is US$ 2.0 per annum • Flat fees and fees per service item • Includes consultation, diagnostic tests, and drugs • 12 percent discount on hospital bills 2- ISHAKA CHI scheme • Premium is US$ 2 per family member every three months • Outpatient and inpatient services • Unit of enrolment is group based

9 Basaza R (2008)	Ugandan Community Health Insurance Scheme, Uganda (rural)	1- ISHAKA scheme • Premium for three months is US$ 4.22 for a family of 4 and US$ 1.04 for an additional person • Save for Health-Uganda (SHU Premium for individual person of family is US$ 1.07 as an initial payment and about US$ 0.23 per annum in ISHAKA scheme Premium for three months is US$ 4.22 for a family of 4 and US$ 1.04 for an additional person
10 Basaza R (2010)	Ugandan Community Health Insurance Scheme, Uganda (rural)	
16 Criel B (1998)	CBHI in Bwamanda, Democratic Republic of Congo (rural and urban)	• Premium flat • Annual subscription to be paid at the time when peasants are selling their crops of coffee and soya • Enrolment unit is family
17 Criel B (2003)	CBHI in Bandjoun, west province of Cameroon (rural)	• Unit of enrolment is household • Annual subscription fee per individual is US$ 2.5 • Membership gives free access to the benefits package
19 Dong H (2004)	Nouna health district, Burkina Faso (rural and urban)	• Unit of enrolment is household • Voluntary, prepayment, and community based • Premium is for HH US$ 12.63 • For adult it is US$ 2.43 and for children it is US$ 0.73 • Health coverage is maternity, family planning, inpatient, outpatient, training, essential drugs, lab tests, inpatient stays, surgery X-rays, consultation fees, and urgent transportation (transpiration service)
31 Kyomugisha E L (2009)	Community health insurance schemes (CHI) in Uganda (rural)	• Unit of enrolment is both individual and household • Flat premium

40 Onwujekwe O (2010)	CBHI in Enugu and Anambra, southeast Nigeria (rural and urban)	• Prepayment and community based • Individual-based unit of enrolment • Premium is US$ 2.51 monthly • Coverage includes inpatient, outpatient services, and emergencies, but inpatient care will be limited to only 45 days per year in a standard way
43 Ozawa S (2009)	Community-based health insurance schemes in Cambodia (rural)	• Unit of enrolment is household • Insurance covers almost all primary healthcare and hospital costs at public facilities with no user fees • Prepayment and voluntary and community based • Per family per year premium is US$ 12.00 and per person per year premium is US$ 2.00 • Insured individuals are 25,000 and insured families are 6,000
45 Poletti T (2007)	Rural setting, community health insurance schemes (CHI) in Uganda (rural)	• Provide primary healthcare via village health posts and it covers unlimited first aid, basic PHC and drugs, and some referrals to higher-level facilities • Premium is fixed quarterly US$ 4.5 per family
49 Schneider P (2005)	Community-based health insurance in Rwanda (rural)	• Flat rate premium annual • Health centre, district hospital, with health centre referral • Premium individual US$ 2.76 and household US$ 3.45 up to 7 people
51 Sinha T (2006)	VIMO SEWA, Ahmedabad, Gujarat (urban)	

52 Turcotte Tremblay A-M (2012)	Mutual health organisations (MHO) in Benin, Senegal (rural and urban)	1- CIDR • Fee based on family is US$ 33.81 • Voluntary family enrolment and it covers usually 75 percent of fees for ambulance, prenatal consultations, hospitalisation, urgent surgery, complicated deliveries, and observation in local health centres 2- PROMUSAF • Insurance for family is US$ 3.95 • Unit of enrolment is individual and covers 75 percent of services in healthcare centres and 60 percent of services in hospital 3- PISAF • US$ 4.74 for whole family • Voluntary family enrolment and it covers 75–80 percent of services offered in the government's minimum package of activities in healthcare centres and hospital care 4- ADMAB • US$ 4.62 for family • Voluntary family enrolment • Health savings: covers healthcare services offered in peripheral healthcare centres; solidarity: covers completely or partially fees for evacuation to a hospital 5- ILO-STEP • US$ 19.84 is for family insurance • Enrolment for the MHO affiliated with the state: individual enrolment and automatic enrolment of member of groups that joined the MHO • Coverage depends upon the MHO
53 Uzochukwu BSC (2009)	Community-based health insurance scheme in Anambra State, Nigeria (rural)	

Appendix 4.2: Quality Assessment of Included Studies

(a) Quality Assessment of Quantitative Studies

	Aggarwal A (2010)	**Akotey OJ et al. (2011)**	**Allegri M De et al. (2006c)**	**Bendig M et al. (2011)**	**Boateng EN et al. (2013)**	**Chankova S et al. (2008)**	**Donfouet HP et al. (2012)**	**Dong H et al. (2005)**	**Dong H et al. (2009)**	**Dror DM (2010)**	**Eckhardt M et al. (2011)**	**Msuya J et al. (2004)**	**Fonta WM et al. (2010)**
1. Is the research aim clearly stated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Description of the context?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. Description of the sampling procedures?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4. Are sample characteristics sufficiently reported? (sample size, location, and at least one additional characteristic)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. Is it clear how the data were collected (e.g.: for interviews, is there an indication of how interviews were conducted?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6. Methods of recording of data reported?	No	No	Yes	No	No	Yes	No	Yes	No	Yes	Yes	Yes	No
7. Methods of analysis explicitly stated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8. Is there a clear link to relevant literature/theoretical framework?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9. Is the design appropriate to answer the research	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

question?													
10. Was the sampling strategy appropriate to the aims of the research?	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11. Were the data collected in a way that addressed the research issue?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12. Yes Is there a detailed description of the analysis process?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12.2. Does the data support the findings?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12.3. If the findings are based on quantitative analysis of survey data, then are multivariate techniques used to control for potential confounding variable?	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes
16. Does the paper discuss ethical considerations related to the research?	No	No	Yes	No	Yes	Yes	No	No	No	No	Yes	No	No

Source: Waddington H, Snilstveit B, Hombrados GJ, Vojtkova M, Anderson J, White H (2012) Protocol: Farmer Field Schools for Improving Farming Practices and Farmer Outcomes in Low- and Middle-income Countries: *A Systematic Review. http://campbellcollaboration.org/lib/project/203/*.
Note: Questions are answered as *Yes* and *No*.
Question No 13-15 is not given in this table because these are not appropriate for the current table.

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	Gnawali D et al. (2009)	Gumber A (2001)	Hong W. et al. (2005)	Ito S (2009) et al.	Lammers J et al. (2010)	Jutting J (2003)	Kuwawenaruwa A et al. (2011)	Mathiyazhagan K (1998)	Msuya J at al. (2007)	Noubiap JJN et al. (2013)	Onwujekwe O et al. (2009)	Onwujekwe O et al. (2011)
1. Is the research aim clearly stated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Description of the context?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. Description of the sampling procedures?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4. Are sample characteristics sufficiently reported? (sample size, location, and at least one additional characteristic)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. Is it clear how the data were collected (eg: for interviews, is there an indication of how interviews were conducted?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6. Methods of recording of data reported?	Yes	No	No	No	No	Yes	Yes	No	No	Yes	Yes	Yes
7. Methods of analysis explicitly stated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8. Is there a clear link to relevant literature/theoretical framework?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9. Is the design appropriate to answer the research question?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
10. Was the sampling strategy appropriate to the aims of the research?	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
11. Were the data collected in a way that addressed the research issue?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes

12. Yes Is there a detailed description of the analysis process?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12.2. Does the data support the findings?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12.3. If the findings are based on quantitative analysis of survey data, then are multivariate techniques used to control for potential confounding variable?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
16. Does the paper discuss ethical considerations related to the research?	Yes	No	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No

Source: Waddington H, Snilstveit B, Hombrados GJ, Vojtkova M, Anderson J, White H (2012) Protocol: Farmer Field Schools for Improving Farming Practices and Farmer Outcomes in Low- and Middle-income Countries: *A Systematic Review. http://campbellcollaboration.org/lib/project/203/.*

Note: Questions are answered as *Yes* and *No*.

Question No 13-15 is not given in this table because these are not appropriate for the current table.

	Oriakhi H et al. (2012)	Panda P et al. (2013)	Mladovsky P (2014)	Bhat R et al. (2007)	Rao KD et al. (2009)	Schneider P et al. (2001)	Shafie AA et al. (2013)	Zhang L et al. (2006)
1. Is the research aim clearly stated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Description of the context?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. Description of the sampling procedures?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4. Are sample characteristics sufficiently reported? (sample size, location, and at least one additional characteristic)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. Is it clear how the data were collected (eg: for interviews, is there an indication of how interviews were conducted?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6. Methods of recording of data reported?	Yes	Yes	No	Yes	No	Yes	Yes	Yes
7. Methods of analysis explicitly stated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8. Is there a clear link to relevant literature/theoretical framework?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9. Is the design appropriate to answer the research question?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10. Was the sampling strategy appropriate to the aims of the research?	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
11. Were the data collected in a way that addressed the research issue?	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes

12.1. Is there a detailed description of the analysis process?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12.2. Does the data support the findings?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12.3. If the findings are based on quantitative analysis of survey data, then are multivariate techniques used to control for potential confounding variable?	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
16. Does the paper discuss ethical considerations related to the research?	No	Yes	Yes	No	No	No	No	No

Source: Waddington H, Snilstveit B, Hombrados GJ, Vojtkova M, Anderson J, White H (2012) Protocol: Farmer Field Schools for Improving Farming Practices and Farmer Outcomes in Low- and Middle-income Countries: *A Systematic Review. http://campbellcollaboration.org/lib/project/203/*.

Note: Questions are answered as *Yes* and *No*.

Question No 13-15 is not given in this table because these are not appropriate for the current table.

(Continued)……..…

(b) Quality Assessment of Qualitative Studies

	Allegri M De et al. (2006a)	Allegri M De et al. (2006b)	Atim C et al. (2000)	Basaza R et al. (2007)	Basaza R et al. (2008)	Criel B et al. (1998)	Criel B et al. (2003)	Kyomugisha E L et al. (2009)	Poletti T et al. (2007)	Schneider P (2005)	Turcotte Tremblay A-M et al. (2012)
1. Is the research aim clearly stated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Description of the context?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. Description of the sampling procedures?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4. Are sample characteristics sufficiently reported? (sample size, location, and at least one additional characteristic)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. Is it clear how the data were collected (eg: for interviews, is there an indication of how interviews were conducted?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6. Methods of recording of data reported?	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
7. Methods of analysis explicitly stated?	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
8. Was there clear statement of aims of the research?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9. Is a qualitative methodology appropriate?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

10. Was the research design appropriate to address the aims of the research?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11. Was the recruitment strategy appropriate to the aims of the research?	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
12. Were the data collected in a way that addressed the research issue?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13. Has the relationship between researcher and participants been adequately considered?	Yes	No	Yes	No	Yes	No	Yes	No	No	Yes	Yes
14. Have ethical issuers been taken into consideration?	Yes	No	No	Yes	No	No	No	Yes	No	No	Yes
15. If there is an in depth description of the analysis process?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16. Is there a clear statement of findings? IF the findings are explicit?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source:
Question No. (1-7) from Waddington H, Snilstveit B, Hombrados GJ, Vojtkova M, Anderson J, White H (2012) Protocol: Farmer Field Schools for Improving Farming Practices and Farmer Outcomes in Low- and Middle-income Countries: *A Systematic Review.* Available at *http://campbellcollaboration.org/lib/project/203/*
Question No. (8-16) from Critical Appraisal Skills Programme (CASP) (2006). *10 questions to help you make sense of qualitative research.* Public Health Resource Unit: England. Available at *http://www.casp-uk.net/#!casp-tools-checklists/cYes8f8*
Note: Questions are answered as *Yes* and *No*.

(c) Quality Assessment of Mixed Method Studies

	Dong H et al. (2004)	Onwujekwe O et al. (2010)	Uzochukwu BSC et al. (2009)
1. Is the research aim clearly stated?	Yes	Yes	Yes
2. Description of the context?	Yes	Yes	Yes
3. Description of the sampling procedures?	Yes	Yes	Yes
4. Are sample characteristics sufficiently reported? (sample size, location, and at least one additional characteristic)	Yes	Yes	Yes
5. Is it clear how the data were collected (e.g.: for interviews, is there an indication of how interviews were conducted?	Yes	Yes	Yes
6. Methods of recording of data reported?	No	Yes	Yes
7. Methods of analysis explicitly stated?	Yes	Yes	Yes
Quantitative			
8. Is there a clear link to relevant literature/theoretical framework?	Yes	Yes	Yes
9. Is the design appropriate to answer the research question?	Yes	Yes	Yes
10. Was the sampling strategy appropriate to the aims of the research?	Yes	Yes	Yes
11. Were the data collected in a way that addressed the research issue?	Yes	Yes	Yes
12.1.Is there a detailed description of the analysis process?	Yes	Yes	Yes
12.2. Does the data support the findings?	Yes	Yes	Yes
12.3. If the findings are based on quantitative analysis of survey data, then are multivariate techniques used to control for potential confounding variable?	No	No	No
16. Does the paper discuss ethical considerations related to the research?	No	Yes	Yes
Qualitative			
8. Was there clear statement of aims of the research?	Yes	Yes	Yes
9. Is a qualitative methodology appropriate?	Yes	Yes	Yes
10. Was the research design appropriate to address the aims of the research?	Yes	Yes	Yes
11. Was the recruitment strategy appropriate to the aims of the research?	Yes	Yes	Yes

12. Were the data collected in a way that addressed the research issue?	Yes	Yes	No
13. Has the relationship between the researcher and the participants adequately considered?	Yes	Yes	Yes
14. Have ethical issues been taken into consideration?	No	Yes	Yes
15. If there is an in depth description of the analysis process?	Yes	Yes	Yes
16. Is there a clear statement of findings? IF the findings are explicit?	Yes	Yes	Yes

Source:

Question No. (1-16) from Waddington H, Snilstveit B, Hombrados GJ, Vojtkova M, Anderson J, White H (2012) Protocol: Farmer Field Schools for Improving Farming Practices and Farmer Outcomes in Low- and Middle-income Countries: *A Systematic Review.* Available at *http://campbellcollaboration.org/lib/project/203/*.

Question No. (8-16) in qualitative section from Critical Appraisal Skills Programme (CASP) (2006). *10 questions to help you make sense of qualitative research.* Public Health Resource Unit: England. *http://www.casp-uk.net/#!casp-tools-checklists/cYes8f8*

Note: Questions are answered as *Yes* and *No*.

Note: Question No 13-15 is not given in the quantitative section of Table because these are not appropriate for the current table.

(d)Quality Assessment of Cohort Studies

		Quantitative		Qualitative	Mixed Method		
		Liu H et al. (2013)	**Ranson K (2001)**	**Basaza R et al. (2010)**	**Alatinga A (2011)**	**Ozawa S et al. (2009)**	**Sinha T. et al. (2006)**
1.	Is the research aim clearly stated?	Yes	Yes	Yes	Yes	Yes	Yes
2.	Description of the context?	Yes	Yes	Yes	Yes	Yes	Yes
3.	Description of the sampling procedures?	Yes	Yes	Yes	Yes	Yes	Yes
4.	Are sample characteristics sufficiently reported? (sample size, location, and at least one additional characteristic)	Yes	Yes	Yes	Yes	Yes	Yes
5.	Is it clear how the data were collected (e.g.: for interviews, is there an indication of how interviews were conducted?	Yes	Yes	Yes	Yes	Yes	Yes
6.	Methods of recording of data reported?	Yes	Yes	Yes	Yes	Yes	No
7.	Methods of analysis explicitly stated?	Yes	Yes	Yes	Yes	Yes	Yes
8.	Did the study address a clearly focused issue?	No	Yes	Yes	Yes	Yes	Yes
9.	Was the cohort recruited in an acceptable way?	No	Yes	Yes	Yes	Yes	Yes
10.	Was the exposure accurately measured to minimise bias?	Yes	Yes	No	Yes	Yes	No
11.	Was the outcome accurately measured to minimise bias?	Yes	Yes	No	Yes	Yes	No
12.	Have the authors identified all important confounding factors?	Yes	Yes	Yes	Yes	Yes	Yes
13.	Have they taken account of the confounding factors in the design and/or analysis?	Yes	Yes	Yes	Yes	Yes	Yes
14.	Was the follow up of subjects	Yes	Yes	Yes	Yes	Yes	Yes

	complete enough?						
15.	Was the follow up of subjects long enough?	Yes	Yes	Yes	Yes	Yes	Yes
16.	Do you believe the results?	Yes	Yes	Yes	Yes	Yes	Yes
17.	Can the results be applied to the local population?	Yes	Yes	Yes	Yes	Yes	Yes
18.	Do the results of this study fit with other available evidence?	Yes	Yes	Yes	Yes	Yes	Yes

Source:

Question No. (1-7) from Waddington H, Snilstveit B, Hombrados GJ, Vojtkova M, Anderson J, White H (2012) Protocol: Farmer Field Schools for Improving Farming Practices and Farmer Outcomes in Low- and Middle-income Countries: *A Systematic Review.* Available at *http://campbellcollaboration.org/lib/project/203/*.

Question No. (8-21) Critical Appraisal Skills Programme (CASP). (2013).*10 questions to help you make sense of cohort study.* Public Health Resource Unit: England. *http://www.casp-uk.net/#!casp-tools-checklists/cYes8f8*; Note: Questions are answered as *Yes* and *No*

(e) Quality Assessment of RCT Study

		Bonan J et al.(2012)
1	Is the research aim clearly stated?	Yes
2	Description of the context?	Yes
3	Description of the sampling procedures?	Yes
4	Are sample characteristics sufficiently reported? (sample size, location, and at least one additional characteristic)	Yes
5	Is it clear how the data were collected (e.g.: for interviews, is there an indication of how interviews were conducted?	Yes
6	Methods of recording of data reported?	Yes
7	Methods of analysis explicitly stated?	Yes
8	Random sequence generation: selection bias due to inadequate generation of a randomised sequence.	Low Risk
9	Allocation concealment: selection bias due to inadequate concealment of allocations prior to assignment.	Low Risk

10	Performance bias: due to knowledge of the allocated interventions by participants and personnel during the study	Low Risk
11	Detection bias: due to knowledge of the allocated interventions by outcome assessors.	Low Risk
12	Attrition Bias: due to amount, nature or handling of incomplete outcome data	Low Risk
13	Reporting bias: due to selective outcome reporting.	Low Risk
14	Other bias: due to problems not covered anywhere else.	Unclear Risk

Source:

Question No. (1-7) from Waddington H, Snilstveit B, Hombrados GJ, Vojtkova M, Anderson J, White H (2012) Protocol: Farmer Field Schools for Improving Farming Practices and Farmer Outcomes in Low- and Middle-income Countries: *A Systematic Review.* Available at *http://campbellcollaboration.org/lib/project/203/.*

Question No. (8-14) from Higgins, J., & Green, S. (Eds.) (2011). *Cochrane handbook for systematic reviews of interventions. (Version 5.0.2, updated September 2009).* The Cochrane Collaboration. Available at *www.cochrane-handbook.org*

Note: Questions are answered as *Yes, low risk and unclear risk*

Appendix 4.3 List of variables (household characteristics) reported in various studies

Authors	Country/province	Variables																
		Acute illness (HH)	Age (HH)	Education (HH)	Caste/ethnicity (HH)	Religion (HH)	Presence of adults	Presence of children	Gender (HH)	Chronic diseases	Distance to health facility	Income/expenditure	Wealth index	Self-perceived health status	No of cases hospitalised	Household size	Marital status (HH)	Occupation (HH)
Ranson K	India (Gujrat)	√	√	√	√	√							√			√	√	√
Panda P et al.	India (Kanpur Dehat)	√	√	√	√		√	√	√	√		√			√			√
Panda P et al.	India (Pratapgarh)	√	√	√	√		√	√	√	√		√			√			√
Panda P et al.	India (Vaishali)	√	√	√	√		√	√	√	√		√			√			√
Oriakhi H et al.	Nigeria (Edo State)		√	√					√	√						√	√	√
Gumber A	India (Gujrat)		√	√						√		√				√	√	√
Allegri M De et al.	Burkina Faso		√	√	√				√	√	√	√						√
Gnawali D et al.	Burkina Faso		√	√	√		√	√	√		√	√				√		√
Kuwawenaruwa A et al.	Tanzania		√	√		√	√		√				√	√		√	√	√
Schneider P et al.	Rwanda		√	√				√	√			√				√		
Chankova S et al.	Ghana		√	√					√			√				√		√
Chankova S et al.	Mali		√	√					√	√		√				√		√
Chankova S et al.	Senegal		√	√					√	√		√				√		√
Mathiyazhagan K	India (Karnataka)		√	√	√	√					√	√		√		√		√
Lammers J et al.	Nigeria			√		√			√			√				√		
Hong W et al.	China(Guizhou)			√				√	√		√	√		√			√	
Aggarwal A	India (Karnataka)			√	√					√	√	√	√			√		

Appendix 4.4 List of variables (household characteristics) reported in various studies

Authors	Country/province	Variables																			
		Place of residence	Travel time to health facility	Outpatient visit	Participation in other risk-sharing	Preventive care	Product knowledge	Quality of care	Referral facilities	Age dividend	Availability of nurse	Beneficiaries of natural disasters	Care provider	Ill since launch	Medicines availability	Medicines expense	Member of other association	Membership in formal organisation	No of times doctor consulted	No of working days lost due to ill health
Ranson K	India (Gujrat)																			
Panda P et al.	India (Kanpur Dehat)	√	√																	
Panda P et al.	India (Pratapgarh)	√	√																	
Panda P et al.	India (Vaishali)	√	√																	
Oriakhi H et al.	Nigeria (Edo State)															√		√		
Gumber A	India (Gujrat)	√																		
Allegri M De et al.	Burkina Faso				√	√			√				√							
Gnawali D et al.	Burkina Faso	√						√			√				√					
Kuwawenaruwa A et al.	Tanzania	√		√																
Schneider P et.al.	Rwanda	√	√																	
Chankova S et al.	Ghana	√																		
Chankova S et al.	Mali	√																		
Chankova S et al.	Senegal	√																		
Mathiyazhagan K	India (Karnataka)		√																√	√
Lammers J et al.	Nigeria						√							√						
Hong W et al.	China(Guizhou)																			
Aggarwal A	India (Karnataka)									√		√					√			

Appendix 4.5 List of variables (household characteristics) reported in various studies

Authors	Country/province	Variables														
		Number of episodes	Child–adult ratio	Exemption eligibility	Expenditure on medical treatment	Female membership gram panchayat	Socio-economic inequality	Source of healthcare service utilised	Time to open	Hospitalised	Household index of concentration of income sources	Economic status	Formal insurance and risk pooling	Living index	Index of the quality of district level health infrastructure	CRRA (HHL)
Ranson K	India (Gujrat)															
Panda P et al.	India (Kanpur Dehat)												√			
Panda P et al.	India (Pratapgarh)												√			
Panda P et al.	India (Vaishali)												√			
Oriakhi H et al.	Nigeria (Edo State)				√											
Gumber A	India (Gujrat)									√						
Allegri M De et al.	Burkina Faso		√				√									
Gnawali D et al.	Burkina Faso	√							√							
Kuwawenaruwa A et al.	Tanzania			√												
Schneider P et.al	Rwanda											√				
Chankova S et al.	Ghana															
Chankova S et al.	Mali															
Chankova S et al.	Senegal															
Mathiyazhagan K	India (Karnataka)	√						√								
Lammers J et al.	Nigeria															√
Hong W. et al.	China(Guizhou)															
Aggarwal A	India (Karnataka)					√					√	√		√	√	

Appendix 4.6 List of variables (household characteristics) reported in various studies

Authors	Country/province	Variables							
		Curative care	Distance from Panchayat	Delivery	Disability	Gender vulnerability	Health facilities	Role in the household	Co-operative societies per capita
Ranson K	India (Gujrat)								
Panda P et al.	India (Kanpur Dehat)								
Panda P et al.	India (Pratapgarh)								
Panda P et al.	India (Vaishali)								
Oriakhi H et al.	Nigeria (Edo State)								
Gumber A	India (Gujrat)			√					
Allegri M De	Burkina Faso	√							
Gnawali D et al.	Burkina Faso	√							
Kuwawenaruwa A et al.	Tanzania								
Schneider P et.al.	Rwanda			√					
Chankova S et al.	Ghana				√		√		
Chankova S et al.	Mali				√		√		
Chankova S et al.	Senegal				√		√		
Mathiyazhagan K	India (Karnataka)								
Lammers J et al.	Nigeria								
Hong W et al.	China(Guizhou)								
Aggarwal A	India (Karnataka)		√			√		√	√

Appendix 4.7 Effect size for level of education of the head of the household on enrolment estimated from individual studies (Asia region)

Author	Country/province	Type of variables	Base	Categories	ES	SE(ES)	N
Aggarwal A	India (Karnataka)	Con			0.04	0.0072	3772
Gumber A	India (Gujrat)	Cat	No schooling	1–4 std	0.19	0.1722	1200
				5–7 std	-0.22	0.1496	
				8–9 std	-0.34	0.2166	
				10–12 std	-0.18	0.1814	
				Graduate and above (12+)	0.22	0.3430	1200
Ranson K	India (Gujrat)	Cat	No schooling	LITERATE (1+)	0.082	0.2000	987
Mathiyazhagan A	India (Karnataka)	Cat	No schooling	Formal education (1+)	-0.09		1000
Panda P et al.	India (Kanpur Dehat)	Cat	No schooling	Primary (1–5)	0.23	0.2387	369
				Middle (6–8)	0.22	0.2460	
				Secondary and above (8+)	0.23	0.2277	
	India (Pratapgarh)	Cat	No schooling	Primary (1–5)	0.30	0.1054	417
				Middle (6–8)	0.15	0.1073	
				Secondary and above (8+)	0.14	0.0961	
	India (Vaishali)	Cat	No schooling	Primary (1–5)	0.20	0.3169	508
				Middle (6–8)	-0.09	0.3200	
				Secondary and above (8+)	0.03	0.2070	
Hong W et al.	China(Guizhou)	Cat	No schooling	Elementary (1–5)	0.12	0.0676	4046
				Junior high (6–10)	0.22	0.0859	

Appendix 4.8 Effect size for level of education of the head of the household on enrolment estimated from individual studies (sub-Saharan African region)

Author	Country/province	Type of variables	Base	Categories	ES	SE(ES)	N
Schneider P et al.	Rwanda	Con			0.39	0.0540	2518
Oriakhi H et al.	Nigeria (Edo State)	Con			-0.02	0.0166	360
Allegri M De et al.	Burkina Faso	Cat	No schooling	Primary (1–5 years)	0.75	0.1843	530
				Secondary (6–10)	1.11	0.2929	
Chankova S et al.	Ghana	Cat	No schooling	Primary (1–5 years)	-0.01		6712
				Secondary or higher (6+)	0.23		
	Mali	Cat	No schooling	Primary (1–5 years)	0.32		10526
				Secondary or higher (6+)	0.89		
	Senegal	Cat	No schooling	Primary (1–5 years)	0.06		9226
				Secondary or higher (6+)	0.10		
Gnawali D et al.	Burkina Faso	Cat	No schooling	Primary (1–5 years)	0.35	0.1298	1309
				Secondary (6–10)	0.57	0.1580	
Kuwawenaruwa A et al.	Tanzania	Cat	No schooling	Primary and above (1+)	0.24	0.1547	757
Lammers J et al.	Nigeria	Cat	No schooling	Secondary (6–10)	0.30		1979

Appendix 4.9 Effect size for socio-economic status of the household on enrolment estimated from individual studies (Asia)

Base	Country/province	Type of variables	Base	Categories	ES	SE(ES)	N
Gumber A	India (Gujrat)	Cat	Quintile1 (lowest)	Quintile 2	-0.079	N.A.	1200
				Quintile 3	0.09	N.A.	
				Quintile 4	0.05	N.A.	
				Quintile 5	0.35	N.A.	
Ranson K	India (Gujrat)	Cat	Quintile1 (lowest)	Quintile 2	0.36	0.17	987
				Quintile 3	0.36	0.28	
				Quintile 4	-0.02	0.15	
				Quintile 5	0.14	0.21	
Mathiyazhagan K	India (Karnataka)	Cat	Low income	Middle income	0.26	N.A.	1000
				High income	0.42	N.A.	
Panda P et al.	India (Kanpur Dehat)	Cat	Quintile1 (Poorest)	Quintile 2 (20–40 Poor)	0.43	0.21	369
				Quintile 3 (40–60 middle)	0.468564	0.254697	
				Quintile 4 (60–80 Rich)	0.308452	0.254646	
				Quintile 5 (80–100 Richest)	0.250508	0.318741	
Panda P et al.	India (Pratapgarh)	Cat	Quintile1 (Poorest)	Quintile 2 (20–40 Poor)	0.096256	0.108045	417
				Quintile 3 (40–60 middle)	0.152606	0.112111	
				Quintile 4 (60–80 Rich)	0.062496	0.117262	
				Quintile 5 (80–100 Richest)	0.151096	0.126512	
Panda P et al.	India (Vaishali)	Cat	Quintile1 (Poorest)	Quintile 2 (20–40 Poor)	0.079389	N.A.	508
				Quintile 3 (40–60 middle)	0.411485	N.A.	
				Quintile 4 (60–80 Rich)	0.372555	N.A.	
				Quintile 5 (80–100 Richest)	0.436276	N.A.	
Hong W et al.	China(Guizhou)	Cat	Low income	Medium income	0.177947	0.103775	4046
				High income	0.179985	0.121622	

Appendix 4.10 Effect size for socio-economic status of the household on enrolment (estimated from individual studies sub-Saharan Africa)

Base	Country/province	Type of variables	Base	Categories	ES	SE(ES)	N
Allegri	Burkina Faso	Cat	Quartile 1 (poorest)	Quartile 2	0.68	0.2726	530
				Quartile 3	0.69	0.30	
				Quartile 4 (wealthiest)	1.13	0.25	
Chankova et al.	Ghana	Cat	Poorest 20 percent	Middle-poor 20 percent	0.18	N.A.	6712
				Middle 20 percent	0.20	N.A.	
				Middle-rich 20 percent	0.58	N.A.	
				Richest 20 percent	0.78	N.A.	
Chankova et al.	Mali	Cat	Poorest 20 percent	Middle-poor 20 percent	0.05	N.A.	10526
				Middle 20 percent	-0.03	N.A.	
				Middle-rich 20 percent	0.21	N.A.	
				Richest 20 percent	0.43	N.A.	
Chankova et al.	Senegal	Cat	Poorest 20 percent	Middle-poor 20 percent	0.03	N.A.	9226
				Middle 20 percent	0.04	N.A.	
				Middle-rich 20 percent	0.37	N.A.	
				Richest 20 percent	0.19	N.A.	
Gnawali et al.	Burkina Faso	Cat	Quartile (poorest)	2nd quartile	0.15	0.16	1309
				3rd quartile	0.29	0.15	
				4th quartile (richest)	0.57	0.15	
Lammers J et al.	Nigeria	Cat	Q1 quintile	Q2	-0.18	0.38	1979
				Q3	0.05	0.31	
				Q4	0.52	0.26	
				Q5	1.51	0.33	
Schneider P et al.	Rwanda	Cat	Quartile 1 (poorest)	Quartile 2	0.009208	N.A.	2518
				Quartile 3	-0.01889	N.A.	
				Quartile 4 (wealthiest)	-0.09611	N.A.	

Appendix 4.11 Effect size for age of the household head on enrolment estimated from individual studies (Asia)

Author	Country/province	Type of variables	Base	Categories	ES	SE(ES)	N
Panda P et al.	India (Pratapgarh)	Con			0.0016	0.0031	1294
	India (Kanpur Dehat)	Con			0.0042	0.0059	417
	India (Vaishali)	Con			0.0007	0.0065	369
Ranson K	India (Gujrat)	Cat	18-29	30-39	0.6679	0.138	987
				40+	0.6793	0.1378	
Gumber A	India (Gujrat)	Cat	16-25	26–35	0.4443	0.1672	1200
				36–45	0.9362	0.2637	
				46–55	1.0532	0.2966	
				56 +	0.8251	0.2664	
Mathiyazhagan K	India (Karnataka)	Cat	Youthful	Middle	-0.0283	NA	1000
				Old	-0.238	NA	

Appendix 4.12 Effect size for age of the household head on enrolment estimated from individual studies (sub-Saharan Africa)

Author	Country/province	Type of variables	Base	Categories	ES	SE(ES)	N
Kuwawenaruwa A et al	Tanzania	Con			-0.0022	0.0055	757
Oriakhi H et al.	Nigeria (Edo State)	Con			-0.008	0.0077	360
Allegri M De et al.	Burkina Faso	Cat	20–40	41–60	0.1053	0.1273	530
				61+	0.0914	0.3343	
Gnawali D et al.	Burkina Faso	Cat	20–40	41–64	0.1525	0.1121	1309
				65+	0.4818	0.2093	
Schneider P	Rwanda	Cat	Below 40	40+	0.0675	0.1243	2518
Chankova S et al.	Ghana	Cat	Below 40	40–49	0.1492	NA	6712
			Below 40	50–59	0.3633	NA	
			Below 40	60+	0.3661	NA	
	Mali	Cat	Below 40	40–49	0.0109	NA	10526
			Below 40	50–59	0.1007	NA	
			Below 40	60+	0.1144	NA	
	Senegal	Cat	Below 40	40–49	0.1099	NA	9226
			Below 40	50–59	0.0626	NA	
			Below 40	60+	0.1053	NA	

Appendix 4.13 Effect size for household size on enrolment estimated from individual studies (Asia)

Author	Country/province	Type of variables	Base	Categories	ES	SE(ES)	N
Aggarwal A	India (Karnataka)	Con			0.01	0.0096	3772
Panda P et al.	India (Pratapgarh)	Con			0.00	0.02	417
	India (Kanpur Dehat)				-0.01	0.03	369
	India (Vaishali)				0.01	0.04	508
Gumber A	India (Gujrat)	Cat	1 to 4	5 to 6	-0.21	0.1500	1200
				6 to 8	-0.50	0.1700	
				9 to 10	-0.51	0.2000	
				11+	-0.77	0.2700	
Ranson K	India (Gujrat)	Cat	1 to 2	3 to 4	-0.44	0.4010	987
				5 to 9	-0.11	0.3420	
				>=10	-0.26	0.2270	
Mathiyazhagan K	India (Karnataka)	Cat	Small size (0–4)	5-8	0.43	N.A.	1000
				9+	0.30	N.A.	

Appendix 4.14 Effect size for household size on enrolment estimated from individual studies (sub-Saharan Africa)

Author	Country/province	Type of variables	Base	Categories	ES	SE(ES)	N
Kuwawenaruwa J et al.	Tanzania	Con			-0.03	0.02	757
Gnawali D et al.	Burkina Faso	Con			-0.03	0.01	1309
Lammers J et al.		Con			0.31	0.12	1979
Oriakhi H et al.	Nigeria (Edo State)	Con			0.28	0.1182	360
Chankova S et al.	Ghana	Cat	Less than 3	3 to 5	0.33	N.A.	6712
				6 to 8	0.21	N.A.	
				9+	0.18	N.A.	
Chankova S et al.	Mali	Cat	Less than 3	3 to 5	-0.07	N.A.	10526
				6 to 8	0.23	N.A.	
				9+	0.30	N.A.	
Chankova S et al.	Senegal	Cat	Less than 3	3 to 5	-0.03	N.A.	9226
				6 to 8	0.01	N.A.	
				9+	0.28	N.A.	
Schneider P et al.	Rwanda	Cat	Less than 5 (small)	5+ (large)	0.26	0.07	2518

Appendix 4.15 Effect size for presence of chronic illnesses in the household estimated from individual studies

Author	Type of variable	Name of variable	Base	Categories	ES	SE(ES)	N
ASIA							
Aggarwal A	Cat	Presence of any chronic disease	Absence of chronic illnesses	Presence of chronic illnesses	0.12	0.04	3772
Panda P et al.	Cat	Presence of any chronic disease			0.04	0.04	417
Panda P et al.	Cat	Presence of any chronic disease			0.09	0.07	369
Panda P et al.	Cat	Presence of any chronic disease			0.05	0.09	508
Gumber A	Cat	Presence of any chronic disease			0.08	0.17	1200
SUB-SAHARAN AFRICA							
Gnawali et al.	Cat	Presence of any chronic disease	Absence of chronic illnesses	Presence of chronic illnesses	-1.40	0.53	1309
Allegri M De et al.	Cat	Presence of any chronic disease			0.02	0.10	530
Chankova S et al.	Cat	Presence of any chronic disease			0.19	N.A.	9226
Chankova S et al.	Cat	Presence of any chronic disease			0.11	N.A.	10526

Appendix 4.16 Effect size for presence of acute illnesses in the household estimated from individual studies

Author	Region	Country/province	Variable name	Types of variable	ES	SE(ES)	N
Ranson K	Asia	India (Gujrat)	Number of acute illness episodes reported during the last 30 days prior to the survey	Con	0.290	0.1078	987
Panda P et al.	Asia	India (Pratapgarh)		Con	0.04	0.03	417
Panda P et al.	Asia	India (Kanpur Dehat)		Con	0.09	0.06	369
Panda P et al.	Asia	India (Vaishali)		Con	-0.04	0.07	508

Appendix 4.17 Effect size for presence of adult in the household estimated from individual studies

Author	Country/province	Type of variable	Name of variable	Base	Categories	ES	SE(ES)	N
ASIA								
Panda P et al.	India (Pratapgarh)	Cat	Presence of adult > 65 years	None	At least 1	-0.16	0.10	417
Panda P et al.	India (Kanpur Dehat)	Cat				-0.15	0.19	369
Panda P et al.	India (Vaishali)	Cat				-0.30	0.26	508
SUB-SAHARAN AFRICA								
Gnawali D et al.	Burkina Faso	Cat	Presence of adult > 65 years	None	At least 1	-0.29	0.47	1309
Kuwawenaruwa A et al.	Tanzania	Cat				0.07	0.13	757

Appendix 4.18 Effect size for marital status of the head of the household estimated from individual studies

Author	Country/province	Type of variable	Base	Categories	ES	SE(ES)	N
ASIA							
Gumber A	India (Gujrat)	Cat	Unmarried	Ever married	0.41	0.25	1200
Gumber A	India (Gujrat)	Cat	Unmarried	Ever married	0.08	0.31	1200
Ranson K	India (Gujrat)	Cat	Unmarried	Ever married	-0.02	0.11	987
Hong W et al.	China(Guizhou)	Cat	Unmarried	Ever married	0.23	0.08	4046
Hong W et al.	China(Guizhou)	Cat	Unmarried	Ever married	0.07	0.12	4046
SUB-SAHARAN AFRICA							
Oriakhi H et al.	Nigeria (Edo State)	Cat	Unmarried	Ever married	-0.09	0.18	360
Kuwawenaruwa A et al.	Tanzania	Cat	Unmarried	Ever married	0.04	0.15	757

Appendix 4.19 Effect size for gender of the head of the household estimated from individual studies

Author	Country/province	Type of variable	Base	Categories	ES	SE(ES)	N
ASIA							
Panda P et al.	India (Pratapgarh)	Cat	Female	Male	-0.15	0.11	417
Panda P et al.	India (Kanpur Dehat)	Cat	Female	Male	-0.11	0.25	369
Panda P et al.	India (Vaishali)	Cat	Female	Male	-0.15	0.53	508
Hong W et al.	China(Guizhou)	Cat	female	Male	-0.02	0.03	4046
SUB-SAHARAN AFRICA							
Chankova S et al.	Ghana	Cat	Female	Male	-0.28	N.A.	6712
Chankova S et al.	Senegal	Cat	Female	Male	-0.26	N.A.	9226
Chankova S et al.	Mali	Cat	Female	Male	-1.00	N.A.	10526
Kuwawenaruwa A et al.	Tanzania	Cat	Female	Male	0.46	0.15	757
Oriakhi H et al.	Nigeria (Edo State)	Cat	Female	Male	0.21	0.16	360
Gnawali D et al.	Burkina Faso	Cat	Female	Male	-0.01	0.15	1309
Allegri M De et al.	Burkina Faso	Cat	Female	Male	-0.01	0.13	530
Schneider P et al.	Rwanda	Cat	Female	Male	0.24	0.09	2518
Lammers J et al.	Nigeria	Cat	Female	Male	-0.03	0.16	1979

Appendix 5.1 Quotations from the studies illustrating various themes

Knowledge and understanding of insurance principle and CBHI

'I did not have adequate information about health insurance.' [8]
'Health Insurance is a form of the Lotto.' [7]
'In each village, they have chosen some people as leaders so that the work of the insurance proceeds well. No activity can be good if there is no chief.' [5]
'Some authorities are badly informed about MHI: they discourage MHI enrolment by saying that MHI is useless, by not enrolling in MHI or not collaborating with the health personnel, and by not being interested in MHI.' [49]
'I don't understand much, so I decided to stop taking VIMO.' [51]
'The population lacks a clear understanding of insurance and the need to pay in advance to ensure that they can get care when they need it.' [45]
'Some people drop out when it gets to three times of payment without falling sick.' [9]
'God will reward us one day.' 'If this money does not benefit us it is an offering to the community.' [16]
'It is not only money. It is because people have not understood that they are not entering.' [4]
'Even if you do not fall sick, your money is taken to care for others in your community who have fallen sick… and you gain the blessing of God.' [4]
'We have no information about the organisation.' and '[We] want staff of organisation to come to our village and explain clearly to villagers about the goal of the organisation.' [43]
'I did not have adequate information about health insurance; we were not informed about registration time-table.' [8]

Quality of healthcare

Technical competence of provider

'I have subscribed to Maliando in order to be able to treat our many illnesses. But since the staffs at the Yende health centre do exactly the opposite (are not welcoming towards the patients, are not skilled, do not have good medicine, do not even talk with the patients…' [17]
'Providers are unfriendly, unskilled and incompetent.' and 'Providers' incompetence creates mistrust among people in MHI causing them not to enrol.' [49]

Patient–provider interaction

'The MHIS is very good but one thing that we (insured) encounter is when you have the insurance card and you don't receive quick services.' [3]
'With the insurance, there will be more security, because they will run a survey to make sure that people are treated well… but if you go to the hospital today with no insurance, they do not treat you well.' [5]
'I would say that the percentage of members who leave (MHOs) because of the negative behaviour of health professionals is 30 percent.' [52]
'We are called ignorant or stubborn; they look down on us; we are ashamed to appear at the hospital.' and 'Subscribers are neglected in the hospital in favour of non-subscribers who have money.' and 'We have an alliance with the health service, but subscribers are not warmly received.' and 'We feel bad when we have to go to hospital.' [16]
'We would sustain ourselves better if membership in the scheme was high but because some health workers are rude, some members keep dropping out of the scheme.' [31]

‘The doctors did not even look at me.’ [17]
‘People’s mistrust in providers is among the main reasons for non-enrolment.’ [49]
‘Sometimes you have to wait for a long time… you suffer and you feel they are neglecting you… but once they treat me, I am satisfied.’ [4]
‘It is hard to speak about the quality of care, there are times when you get there and they do not treat you, but if you arrive and the nurse knows you, he treats you well.’ [4]

Features of health facilities
‘We go more quickly to the health centre than non-members, but very often they do not cure our illness.’ [17]
‘The presence of the medical advisor is very important because healthcare workers are uncontrolled… He can really sensitise and negotiate with healthcare workers. ‘ [52]
‘Health facilities are dirty, lack qualified personnel, drugs, ambulances, clean bedding, and electricity.’ [49]
‘You pay a lot and get lower quality care than you would in the hospital.’ [45]

Trust
Trust in insurance scheme management
‘They perform their duties so we don’t bother if they are trusted or not; nothing more important than getting what one wants for at the end of the day. It is the same with everyone.’ and ‘Yes we have trust in them. For example, Her Royal Highness had managed a hospital before and knows anything about hospital. She is not a politician and puts her own personal efforts. And those that are helping her are also reliable and trustworthy people that like the progress of their brothers. This is because we see the kind of suffering they undergo. At times, they use car to go around and at times they cook begging people to come. So we have faith in them.’ (Trust) ‘I would not say I have faith in them. If they are accountable then there will not be lack of drugs.’ [53]
‘I trust the organisation and want to take a photograph (and join the scheme) in order to protect my health (because) one day, I can be sick.’ [43]
‘The organisation is good. We see with our own eyes that they pay everything for us; the organisation only takes money after they give the (CBHI) card to us; when the organisation staff take a photograph, (they do) not yet take money.’ [43]
‘MHI should be managed by providers because the population trust providers.’ [49]
‘The insurance people have said that they will tell the doctors to treat you well and fast… But they (the providers) would not do it… the insurance alone cannot change the behaviour of Adam’s sons (human beings).’ [4]
‘One day, I passed the hospital and heard the nurses complain about the insurance. They were sceptical… they did not want to sign the contract… When people hear this, they do not enrol’. [4]
‘I have enrolled, but many people have not enrolled because the insurance has told they have to go to Dara. And many of us from Pa do not like to go to Dara. Our people argued with the people of Dara, so even if the quality is good, we do not like to go there’ [5]
‘Accounting is the best way to eliminate rumours, which is the main obstacle against MHI enrolment.’ and ’MHI have to reimburse providers promptly to ensure the availability of drugs in health facilities.’ [49]
‘Now pregnant women don’t die at home again. At first when there was no insurance, many women died in labour at home but such cases are now very rare. So the scheme is very good’. [3]
‘We pay less than non-members of the scheme at the health facilities but we all get same treatment. This is very fair.’ [31]

‘They want to see whether the MHO is serious and whether it is managed well before they enrol; this allows people to understand that this initiative is real.’ [52]
‘The scheme is under the control of the hospital and the communities have hardly any say in running of the scheme.’ [8]
‘It is only our group leader who knows what happens in the scheme.’ [8]
‘Almost all the people in our village were registered by relatives and are not aware of the role they are supposed play in the scheme.’ [8]
‘It is we who decide on the type of services to pay for and it depends on how much we are able to contribute as scheme members.’ [8]
‘Not making decisions on everything such as the premium.’ [9]
‘If the money disappears we can’t know.’ [16]
‘The mutuelle is a good thing, but it does not belong to us, since we play no part in its management.’ [16]
‘The first year, I wanted first to observe whether what had been said would be done.’ [17]
‘In the beginning, the people in charge told us good things about Maliando, but we have not seen anything.’ [17]
‘You have to admit that the mutual health organisation does not manage to satisfy our expectations.’ [17]

Trust within community
‘…in our village? I do not think it would be a good idea to keep the money in our village. Here? In the hands of farmers? Better give it to those who know how to care for it.’ [5]
‘I trust it because it is a collective affair. It is because people in my village have joined that I trust the insurance. I know it is something serious.’ [5]

Past bad experiences with other schemes
‘[We] don’t believe the organisations. Before, there was an organisation that came, took a photo and asked for 50 Baht (US$ 1.25) each but they cheated us. They said they will come again but never come back. All the villagers [in this village] gave him 50 Baht each. [We] do not know what they took the money for. We do not trust organisations because of this cheating.’ [43]
‘I fear joining groups because of previous theft of contributions by the owners of the organisations. We cannot immediately trust the scheme, even if it was from the church because of previous experience with our local societies.’ [8]
‘A health organisation collected money from us and promised to help but they never returned.’ [9]
‘We had the bad experience with the Credit Mutuelle, we paid the money and the people in charge used it all for their personal benefit.’ [17]
‘The bitter memories of Soguicaf or the Credit Mutuelle can’t be the real causes.’ [17]
‘Some time ago people formed a *groupement* and they put together money, but some of them took this money and this is not good… it is because of them it all failed…’ [4]
‘To wait and see whether MHI will keep its promise.’ [49]

Benefits package
Coverage of benefits
‘People with chronic diseases receive care from the doctor at the ambulatory; they get their drugs from the pharmacy where they often have to pay for the drugs. They can be a burden on their families; it is difficult to afford the drugs for many people. CBHI should cover these costs if possible.’ [45]

‘Some services are included and some are excluded. They have excluded some services because the money would not be enough to pay for them. I would like if one day they could cover all services, but today it is good as it is, so that the insurance can have money till the end of the year.’ [5]
‘Subscribers pay the same price at the health centre as non-subscribers.’ [16]
‘Why the body of a subscriber who has died in hospital can’t be transported to the villages?’ [16]
‘There are contradictions that arise where members are interested in having a product but they are not ready to make an effort to increase the membership fees. They are not ready to make sacrifice… We discuss the risk… They have a choice to make.’ [52]

Premium
‘The neediest people in our community especially the orphans, the disabled and the elderly still pay in the schemes. They have more health needs and should be excused.’ [31]
‘They are punishing us… with the scheme.’ [3]
‘If people cannot afford to pay now, how will they afford to pay if you increase the premiums?’ [45]
‘But on the other hand, the schemes are not equitable because a rich man in the village pays the same amount as the poor man.’ [31]
‘Why should it be the same premium for everyone, when there are different charges for adults and children at the health centre and the hospital? [16]
‘In our case, we did all we could to pay the entire premium. We looked for the money and we managed to find it.’ [5]
‘It is a good thing to have a lower premium for the children. Since they cannot work, it is their parents who help them, who care for them. It is for this reason that the insurance has a lower premium for the children, so that in the future, children will help their parents.’ [5]

Payment modalities
‘There are very hard periods where people do not have any money at all, not even to eat…’ [52]
‘How can you suffer to pay for an insurance premium or registration fees, and when you are going for your card they ask you to pay additional GH 1.50 before your card is given to you?’ [3]
‘We have paid the premium but they want more money at the hospital.’ and ‘Even if you are a member of the mutuelle you still need money when you are ill, though you have used all your resources to subscribe to the mutuelle.’ and ‘If subscribers don’t pay they are refused admission to hospital.’ [16]
‘Because of problems at home, I did not take VIMO this year. Also it was festive time. So we did not take VIMO this year. We also had a wedding in our house and my husband does not earn money so we could not pay for the VIMO this year. There was no other reason. Now we will take VIMO from this year. If God allows us to take VIMO, then we will definitely take VIMO this year.’ [51]
‘Out here in the countryside, the availability of money poses a problem… we, the farmers, have money after the harvest, but by the time the rainy season arrives, we have nothing left in our hand and out here you cannot find where to borrow money. [5]
‘In our case, we did all we could to pay the entire premium. We looked for the money and we managed to find it. But for large families, this is very hard. It would be better if they could pay little by little. So, when they have some money, they turn that in. Then, when they find the rest, they pay again.’ [5]
‘If the CBI people had said that I could divide the whole amounts in parts, I could have managed to enrol.’ [4]

Unit of enrolment

‘For us 1,500 CFA per person is not a lot… but we are only three adults. But for large families, this is very hard, it would be better if they could pay little by little. So, when they have some money, they turn that in. Then when they find the rest, they pay again.’ [5]

‘If you only register yourself and leave the rest of your family behind, if a disease catches someone else in your family, then it is still your problem to pay for the care.’ [5]

‘I want to join but paying for my 10 children is a problem.’ [9]

How can you suffer to pay for an insurance premium or registration fees and when you are going for your card they ask you to pay an additional GH 1.50 before your card is given to you? I paid the insurance premium for 8 of us in my family and now they are telling me to come and pay for the card holder or purse before I can collect the cards. Now how am I going to get GH 1.50 for each card for 8 cards (GH 12.00)? You can imagine the cost. So I am worried. Are they trying to say that the covers are more important than the cards? [3]

‘1,500 CFA is not much because when you need care, 1,500 CFA is really not much. But paying 1500 for all people in the family becomes much.’ [4]

Rules of CBHI scheme

‘Rules should be changed so that those who don’t fall sick get something from the scheme.’ [9]

‘But on the other hand, the schemes are not equitable because a rich man in the village pays the same amount as the poor man.’ [31]

‘The neediest people in our community especially the orphans, the disabled and the elderly still pay in the schemes. They have more health needs and should be excused.’ [31]

‘Hardly, any marketing of CHI is carried out because of the abolition of user fees.’ [8]

‘No policy or any guidelines on promotion of CHI amid absence of user fees in government units.’ [8]

Cultural beliefs

‘It is the old people who say that if you keep an idea in your head, this thing will happen, but nowadays we do not think like this anymore.’ [4]

‘When we save, we do not talk of diseases.’ [4]

‘Paying before you fall sick is like buying a disease.’ [9]

‘Why join when I am healthy.’ [9]

‘In our culture, it is only when someone becomes sick that we ask the community to contribute financially to help a person.’ [52]

Affordability

‘In our case though, it was only money. If we get money, maybe next year…’ [4]

‘There is nobody who does not want to be enrolled in MHIS but poverty is making us unable to pay the premium or registration fees. The cost is too high. Over here there is poverty. Some of us want to register but the money is a problem. You know getting food alone is a problem. So just imagine, if you have no food and someone comes to tell you to pay this amount to register with health insurance, will that not be a problem? I think if the government can subsidise the insurance premiums or registration fees it will help us the poor to also enrol in the MHIS.’ [3]

‘Another thing is penalty … problem.’ [3]

‘We are not refusing to pay, but we cannot afford to.’ [16]

'…if you have 10 family members at 3,400 FG per person, it is a bit difficult.' [17]
'I wanted to enrol, but I did not find the means, may be next year…' [4]
'The only reason for not joining is money. If we had money we would join, but our village is the poorest of the poor.' [45]
'2,000 drams is a lot of money, and in our village there are many poor people who do not have money.' [45]
'There are many people who do not have the means to subscribe to the mutual health organisation.' [17]
'The care given to us at the hospital is good but we cannot afford joining the scheme.' [8]
'I want to join but paying for my 10 children is a problem.' and 'There are competing basic needs like buying food and paying school fees.' [9]
'Out here in the countryside, the availability of money poses a problem…' [5]

Distance to health facility

'Transport is a problem. Our village is isolated and the road is not good. In winter it is very difficult to even get to Vayk.' [45]
'Transport is expensive. It costs 15,000 to 20,000 drams to get to the hospital. We cannot expect the Oxfam scheme to cover such a cost.' [45]
'It was expensive for me to travel 27 km to and from ISHAKA hospital.' [9]
'The scheme should use health centres near the people.' [9]
'If the doctor was in our village, our hearts would be lighter… Still some people would not enrol. It is money not distance.' [4]
'If there was a doctor in our village, more people would enrol… To have a doctor right at your side would encourage many to enter.' [4]

Legal framework and policy framework

'For me, the solution is that (health insurance) becomes obligatory and that there's a real constraint to enrol. Without this, MHOs will not survive.' [52]
'It should be feasible to roll out CBHI schemes nationally, but technical and managerial oversight would be needed. There is no role for the government in this; it should be provided by NGOs.' [45]
'CHI is mentioned in the health financing strategy and the sector strategic plan.' [8]
'No policy yet but CHI is a component of the ministerial policy statement.' [8]
'The ministry does not have a CHI policy or guidelines.' [8]
'Hardly any marketing of CHI is carried out because of the abolition of user fees.' [8]
'No policy or any guidelines on promotion of CHI amid absence of user fees in government units.' [8]
'The schemes are not regulated by any organisation.' [8]
'Health is something that everyone needs to maintain, and therefore CHI has a place in Uganda. Let us start with national policies facilitating CHI… Regulations are very important and gradual implementation is needed.' [10]