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Review article

Community-based health insurance in low-income countries: a systematic review of the evidence

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Health policy makers are faced with competing alternatives, and for systems of health care financing. The choice of financing method should mobilize resources for health care and provide financial protection. This review systematically assesses the evidence of the extent to which community-based health insurance is a viable option for low-income countries in mobilizing resources and providing financial protection. The review contributes to the literature on health financing by extending and qualifying existing knowledge. Overall, the evidence base is limited in scope and questionable in quality. There is strong evidence that community-based health insurance provides some financial protection by reducing out-of-pocket spending. There is evidence of moderate strength that such schemes improve cost-recovery. There is weak or no evidence that schemes have an effect on the quality of care or the efficiency with which care is produced. In absolute terms, the effects are small and schemes serve only a limited section of the population. The main policy implication of the review is that these types of community financing arrangements are, at best, complementary to other more effective systems of health financing. To improve reliability and validity of the evidence base, analysts should agree on a more coherent set of outcome indicators and a more consistent assessment of these indicators. Policy makers need to be better informed as to both the costs and the benefits of implementing various financing options. The current evidence base on community-based health insurance is mute on this point.

Key words: community health financing, health insurance, resource mobilization, financial protection, systematic review, evidence base

Introduction

Health care policy makers the world over are faced with competing alternatives, and also for systems of health care financing. Regardless of the particular option, the choice of financing should mobilize resources for health care and provide financial protection (WHO 2000). Over the past two decades or so, many low-income countries have found it increasingly difficult to sustain sufficient financing for health care. Recent estimates of national health care spending show that the group of least-developed countries on average spent US$11 per person per year in the period 1997–99, compared with US$23 for other low-income countries, US$93 for the group of lower middle-income countries, and US$1907 in high-income countries (WHO 2001, p. 58). Although no definite answer exists to the question as to how much a country should spend on health (in absolute money terms or as a share of gross income), recent policy-oriented work suggests that a country spending less than an estimated threshold value of US$80 per capita per year would fail to achieve its potential of care compared to similar countries whose spending per capita is at or above this value (WHO 2000). As shown, the group of low-income countries is currently far from this level.

Moreover, spending also varies by type with people in low-income countries mostly paying for health care out-of-pocket (OOP) at the time of need, while higher income countries have made arrangements for various types of pre-payment and health insurance (Musgrove and Zaramdini 2001). It has been found that OOP expenditures for health care can be 'catastrophic' in the sense of leading to or aggravating poverty by crowding-out other essential consumption items such as food, housing and clothing (World Bank 1999, 2000, 2001; WHO 2000). To address the situation, national and international policy and decision makers have suggested a range of different measures, including user-fees, insurance and other cost-sharing arrangements (see, for example, World Bank 1987, Mwabu 1990 and World Bank 1997 on discussions for financing options). Recently, various types of 'community financing' have been proposed as a way forward (WHO 2001). Community financing is defined in Dror and Preker (2002, p. 2) as 'a generic expression used to cover a large variety of health-financing arrangements ... micro-insurance, community health funds, mutual health organizations, rural health insurance, revolving drug funds, and community involvement in user-fee management.'

This review assesses the evidence of the extent to which a particular type of community financing – voluntary, not-for-profit community-based health insurance (CBHI) – is a viable option for health care financing in low-income countries. Specifically, the research questions addressed in this review are the extent to which voluntary, not-for-profit CBHI

(1) mobilizes additional resources for health care in the operating area, and (2) provides financial protection for the target population.

The reasons for setting up CBHI differ, but include both resource mobilization for health care and financial protection (see, for example, Arhin-Tenkorang 2001).[1] Also, the characteristics of these programmes vary considerably, but many of them are community-based to some extent, voluntary in nature and not-for-profit in their financial operational aims.[2] An important dimension of CBHI and its ability to mobilize resources and provide financial protection concerns the relationship between the insurance scheme and the service provider. Some schemes are integrated with the provider while others operate outside of the service providers. These are termed provider-based and community-based schemes, respectively. In addition, some schemes are national in coverage but operate at the community level. Possibly, such schemes may be able to draw on economies of scale and the experiences of others in their functioning. The review will present findings from all of these types.

The existing evidence on community financing (broadly defined) is summarized in Preker et al. (2002). The authors claim there is good evidence that community financing has a positive impact on health financing in low-income countries. Further, there is evidence to suggest that, overall, community financing does provide poor people with financial protection by improving access to care and reducing out-of-pocket spending. Finally, there are indications that community financing may exclude the very poorest sections of the population due to their inability to pay premiums. In addition, Dror and Preker (2002) summarize the experiences of community-based financing and propose various ways in which such financing can be improved and extended. By undertaking a systematic review of a particular sub-set of community financing arrangements, this review contributes to the literature on community financing by extending and qualifying some of these conclusions.

Thus, this review differs in important respects from the existing review literature on community financing (notably Bennett et al. 1998, and Jakab and Krishnan 2001). First, this review focuses on a specific sub-set of community financing alternatives: voluntary, not-for-profit pre-payment that involves an element of insurance.[3] Second, the review looks exclusively at two particular aspects of CBHI of critical policy importance: resource mobilization and financial protection. Finally, it adopts a systematic approach with the intent of being able to assess the firmness with which conclusions can be drawn. Both of the two abovementioned previous narrative reviews have broader definitions of community financing, which may result in differences in conclusions.

Although no exact estimate exists as to the number of CBHI schemes, it seems evident that the CBHI 'movement' has proliferated at a high rate in recent years, now involving both national and local governments, civil societies, and international donor organizations and financers, with several tens of millions of dollars in 'turn-over'.[4] Consequently, the findings from this review will inform overall health sector planning and constitute an important part of the base on which decisions on health care financing can be taken, both at the national and the international level. Ideally, such decisions should be based on the systematic compilation of the best available evidence. In addition, subjecting these kinds of studies to such a systematic quality assessment is, in itself, a contribution to the health policy literature in general.[5] It should be emphasized, however, that a direct consequence of the above is that a systematic review of the evidence base for a specific topic is not able to present any 'new' evidence about the effects of a particular programme or scheme. On the contrary, such a review assesses the quality of the existing evidence as presented by previous researchers.

Methods

The approach taken in this systematic review of the evidence base adopts and extends the ones described in Clark and Oxman (2002), AHRQ (2002), and McKee and Britton (1997).[6] A systematic review of the literature, in contrast to a narrative review, develops a study protocol that specifies: (1) a focused analytical question(s); (2) a specific search strategy; (3) the types of data to be abstracted from each article; (4) how the data will be synthesized, and (5) a formal assessment of the quality of the individual studies and of the full body of evidence. These measures are taken to ensure, as far as possible, that the findings of the review are protected against various types of biases. Quality is defined as 'the extent to which a study's design, conduct, and analysis has minimized selection, measurement, and confounding biases' (AHRQ 2002, p. 19). Though it is recognized that the vast majority of systematic reviews in the health sector are performed on studies designed to analyze experimental data [e.g. randomized control trials (RCTs)], there is, in principle, no reason why the approach cannot be used also for studies analyzing non-randomized observational data such as those looked at here. As noted by Clarke and Oxman (2003, p. 11f), 'The basic principles... are the same, whatever type of evidence is being reviewed'. Indeed, methodologies for performing such reviews are being elaborated by the Cochrane Collaboration.[7]

Accordingly, this review was conducted in a series of steps. First, the specific research questions were defined. The rationale for these was discussed in the previous section. Second, the search strategy involved defining the inclusion criteria and identifying the databases and search terms. The inclusion criteria were:

- Intervention (object of study): voluntary, not-for-profit, health and/or health-related insurance mechanism;
- Outcome or effect: resource mobilization; quality of care; provider efficiency; moral hazard; financial protection; OOP spending; access to care;
- Type of study (study design): RCT, controlled before and after study, interrupted time series, cost-effectiveness analysis, case study; evaluation; review; survey;
- Publication: academic journal (peer reviewed); grey literature (external/internal or non-reviewed reports);
- Population: low-income countries;

- Time period: 1980 to present; and
- Language: English, French, Portuguese and Spanish.

The search for studies was conducted involving three separate approaches: searches in electronic databases on the Internet, hand searches and iterative reviews of reference lists of papers.[8] The databases searched were the following: PubMed (Entrez; including HealthStar), Econlit, Cochrane Reviews (SSServer), EconBase (Elsevier), ingenta, InterScience (Wiley), Scirus, ScienceDirect (Elsevier), SSRN, Cambridge University Press, Kluwer on-line, and Synergy (Blackwell). In addition to these databases, searches were made on the web pages of international organizations and donors, including the World Bank, the WHO, PAHO, ILO, UNICEF. An initial search was conducted using the following search terms: 'health insurance', 'community based health insurance', 'micro health insurance', 'mutual health insurance' and 'pre-payment AND health'. All searches were performed between October 2002 and March 2003. Many of these initial searches produced not only multiple 'hits' but also an unmanageable number of potential studies, in all several thousands.

To reduce the number of hits, refined searches were performed whenever possible by imposing restrictions such as geographic location and country income level on searchable objects. This process reduced the number of studies drastically to some 120 separate papers. The next step involved going through the lists of search results for on-screen inspection of the titles of the identified articles, a process that further reduced the number of studies to around 75.[9] Once the electronic search was done, the papers were reviewed for final selection. In cases where essentially the same study appeared both as a published article and as a non-published report, the published article was consistently chosen. A number of studies were excluded on account of scant information on such criteria as type of scheme and methodology.

The above process resulted in a total of 36 separate studies being selected for inclusion in the systematic review.[10] Of these 15 are published articles in peer-reviewed journals and 21 are unpublished papers and reports (grey literature). Less than half of the studies (n = 16) use quantitative techniques reporting statistical significance levels. Most studies resort to simple non-statistical descriptive techniques. A total of five studies in the group of quantitative studies conduct econometric regression techniques estimating a model suggesting a causal effect of some nature. It may be noted that none of the studies are designed as an RCT, cost-effectiveness analysis, interrupted time series, or a controlled before and after study. Normally in systematic reviews, more than one person assesses the final selection of studies. In this case, only the author reviewed the identified studies.

The next step involved the development of two separate analytical instruments: the *Data information extraction sheet*, and the *Study quality assessment protocol*. The first tool collected relevant information on study design, implementation and findings (see Appendix 1 for details). The second instrument specifies a number of critical questions under seven different domains, each of which is deemed of vital importance for scientific quality. For each question, a score was given and after tallying the total score a quality grade of three stars (highest grade), two stars or one star was given to each study. See Appendix 2 for further details of the study quality assessment protocol.

An assessment of the evidence for the two specific questions requires that they be further broken down. Although such a break-down could follow any of several plausible alternatives, generally it is a question of whether insurance has a direct or an indirect effect on resource mobilization and financial protection, respectively. In the case of resource mobilization, the review includes studies on the effects of CBHI on (1) the cost-recovery ratio (CRR), (2) efficiency impact on care, (3) quality impact on care, and (4) moral hazard effects.[11] The CRR is viewed as a direct indicator of resource mobilization, while the others are indirect measures. The justification for also looking at sub-questions (2) and (3) is that even if the scheme fails to raise additional resources for care, it may still have an effect on either the quality of a given level of care, or the efficiency with which care is produced (i.e. more care for given costs), or both. Also, if the introduction of insurance leads to over-utilization of care [(4) moral hazard], the equivalent of a negative efficiency impact would occur. Similarly, to further refine the financial protection dimension, the review includes studies that have looked both directly and indirectly at this question. Direct assessment includes looking at individual (or household) levels of OOP spending before and after the introduction of insurance, or comparing spending between individuals with insurance and those without. Access to care is seen as an indirect measure of financial protection. For example, travelling costs may be substantial in poor environments, negatively affecting geographic, or physical, access to care. Although these may not be directly covered by insurance, they may become more affordable due to the coverage of other direct costs of care.

For both resource mobilization and financial protection, researchers have used various outcome measures and indicators. These have been assessed in different ways: before-after analysis, members vs. non-members, and qualitative descriptive analysis, including patient self-reporting. For resource mobilization, indicators include share of provider's costs covered by insurance premiums (CRR), structure and process of care, level of production of services, and excess utilization. The most frequent measure of financial protection is level or share of individual out-of-pocket spending for care, assessed either across time or across groups. A common indirect indicator is individual actual or expected service utilization rate. The indicators for resource mobilization and financial protection are provided in Appendix 3, columns 4 and 5, respectively. Moreover, this review takes a health systems perspective in the sense that the main concern is not solely with the existing members of a particular insurance scheme but rather with that of the whole target population. A scheme may provide protection to its members, but leave a certain section of the target population out due to, for example, high premiums. Such an 'exclusion effect' would clearly reduce the scheme's ability to provide financial

protection to the whole of the target population. Although it is beyond the scope of the review to quantitatively assess such an effect, it will note the extent to which it has been reported in the literature.[12]

Finally, based on the assessment of each individual study in line with the above-described approach, the strength of the evidence base as per the specific research questions was assessed. There is no generally accepted method for grading the overall quality of the evidence base (Clark and Oxman 2003). The review followed the levels used by SBU (2000). Specifically, the quality of the evidence base is graded according to the levels shown in Table 1.

Table 1. Quality grading of evidence base

Grade I: Strong evidence
• Two or more studies of high quality
Grade II: Moderately strong evidence
• One study of high quality and two or more studies of average quality
Grade III: Weak evidence
• At least two studies of average quality
Grade IV: Little or no evidence
• All other parts of evidence base

Source: SBU (2000).

The appropriateness of the specific approach in this review, including grading levels, is discussed below.

Results

This section contains three parts. The first part presents the main findings from the systematic review of the evidence base, looking first at the overall quality assessments of the included studies and then at the strength of the evidence base as to our two questions of interest: resource mobilization and financial protection. The second part presents findings on the separation of schemes into the three different types discussed above: provider-based, community-based and national level programmes. The final part highlights additional findings of policy interest.

Main findings

Quality assessment

The overall findings on study quality are summarized in Table 2. A separation has been made between published and unpublished work for expositional reasons.

The following key general findings are noted with regard to methodology, data and overall quality of the studies. First, in terms of methodology, studies have predominantly used descriptive analysis, with only five studies using regression analysis of data collected in household surveys to study behavioural relationships (regarding financial protection of schemes). Secondly, while around half of the studies have used household survey data as their principal source of information, most of these sets have been quite small in size (as seen by a much smaller median than the estimated mean size) giving rise to problems of statistically insignificant relationships as noted in some works. Moreover, the limited use of dynamic analysis is evident by the very short time series data; the majority of studies look at cross-sectional information, making it hard to draw conclusions as to the dynamic effects of schemes. And, thirdly, although the overall mean quality score for the two sub-groups may seem excessively low, it is burdened by a number of studies that failed in many respects to conform with the grading criteria set out above.[13] Five studies receive the highest grade and of the two-starred studies, several fail only barely to receive a top grade. However, this will have a bearing on the quality of the overall evidence base, as can be seen in the next section.

Resource mobilization, financial protection and the strength of the evidence base

The main findings regarding our two questions of interest, and the strength with which each issue can be addressed, are summarized in Table 3.

Resource mobilization

There is evidence of moderate strength in the literature to suggest that community-based health insurance schemes have a positive effect on resource mobilization in the operating areas. While this is an important finding, it is also evident that the actual amounts raised are limited; see Appendix 3 for details. The average cost-recovery ratio is only around 25%, with only two studies reporting ratios in excess of 50%. The evidence that these types of financing arrangements affect the efficiency with which care is produced is weak, despite a handful of studies assessing the issue. Finally, we find no evidence that such programmes have an impact on the quality of care or lead to moral hazard and thereby affect service provision. This last finding is partly driven by the small number of studies and the low quality of the current contributions.

Financial protection

Regarding the role of community-based health insurance programmes in financial protection, there is strong evidence that such programmes do provide effective protection to the members of the schemes by significantly reducing the level of OOP payment for care, although the reports are mixed. Three high quality (three-star) studies find that protection is only 'marginal' or 'limited' (Carrin et al. 1999; Jütting 2001; Jowett et al. 2002), while Ranson (2001; also three-stars) finds no evidence of an effective protection effect. Moreover, the findings suggest that most schemes fail to cover the least well-off groups in the catchment areas. This 'exclusion effect' has been observed in previous work (Jakab and Krishnan 2001). Lastly, there is moderately strong evidence to suggest that CBHI schemes provide protection by increasing access to health care in the operating areas. Access to care has mostly been assessed by measuring utilization rates, comparing members and non-members, and by making a before-after appraisal of utilization of services. Increased access to care also accrues predominantly to the members of the schemes, resulting in an exclusion effect.

Table 2. Analysis, methods and study quality

Indicator	Published	Unpublished	Total
Total number of			
Papers	15	21	36
Schemes	23	155	178[a]
Relevant analytic question[b]			
(1) Resource mobilization			
Direct assessment	3	5	8
Indirect assessment	6	5	13
(2) Financial protection			
Direct assessment	3	4	7
Indirect assessment	8	8	16
Methodology[c]			
(1) Regression analysis	2	3	5
(2) Statistical descriptive analysis	7	4	11
(3) Non-statistical descriptive analysis	6	14	20
Data/sample sizes[d]			
(1) Survey sample size (n = no. individuals)	Mean: 885 (6 studies); median: 380; max: 1751; min: 63	Mean: 933 (10 studies); median: 213; max: 3476; min: 49	16 studies
(2) Average time series length (years)	4.6 (7 studies; range: 1–9)	2.5 (10 studies; range: 0.5–10)	17 studies
Exclusion effect	5	4	9
Quality score[e]			
Mean	18	15	16
Median	19	14	16
Maximum	25	23	25
Minimum	8	8	8
Grade[e]			
One star	4	15	19
Two stars	8	4	12
Three stars	3	2	5

[a] Approximately.
[b] Does not sum to 36 as some papers have looked at both resource mobilization and financial protection.
[c] See Methods section and Appendix 1 for details.
[d] See Appendix 1 for details.
[e] See Appendix 2 for details.

Table 3. Strength of the evidence base in relation to outcomes (resource mobilization and financial protection)[a]

Outcome	Study quality grade			Strength of evidence base[b]
	***	**	*	Grade I–IV
Resource mobilization				
(1) Direct effect: cost-recovery ratio	1	5	1	II
(2) Indirect effect: efficiency impact on care	0	3	2	III
(3) Indirect effect: quality impact on care	0	1	0	IV
(4) Indirect effect: moral hazard	1	1	1	IV
Financial protection				
(1) Direct effect: level of OOP spending	4	3	0	I
(2) Indirect effect: access to care	1	8	3	II

[a] See Appendix 3 for details.
[b] See Table 1 for details.

Adding to these results that the quantitative effect from these types of health financing mechanisms is rather small are the important findings that effective population coverage is small (on average around 10% of target populations) and that the renewal rate is reported to be diminishing for many schemes; see Appendix 3, last column, for details.

Specific findings

Resource mobilization and financial protection by type of scheme

As pointed out above, this review has focused on a specific sub-set of community financing arrangements in order to

obtain a firm grip on the actual status of the evidence base relative to our two main research questions. Clearly, however, even this narrow group of schemes still contains a relatively wide array of arrangements, suggesting a need to further delineate this group of schemes. Table 4 shows the impact of each identifiable scheme assessed in the reviewed studies as classified in three different categories. Category A contains five provider-based schemes, while category B shows 12 community-based schemes and category C five nationwide insurance programmes operating at the local level.[14]

Provider-based schemes seem to have had a moderately positive effect on resource mobilization and a limited positive effect on financial protection, as indicated by increased access to care for members. In addition, there is no evidence that these schemes have a strong exclusion effect. This is contrasted by the schemes in the second category where several studies report that these schemes fail to reach the least well-off segments of the target population. The impact of these schemes on resource mobilization varies considerably, with most showing only limited positive effects. These schemes seem, however, to be somewhat more

Table 4. Scheme impact on resource mobilization and financial protection by type of identifiable scheme

CBHI scheme	Resource mobilization	Financial protection
(A) Provider-based schemes		
(1) Bwamanda hospital pre-payment scheme (D.R. Congo)	Limited positive effect on cost-recovery rates (35%); inconclusive effect on quality of care	Limited positive effect on members' access to care
(2) Chogoria (Kenya)	Marginal positive effect on CRR (2.1%)	Inconclusive, unclear reporting
(3) Kisiizi hospital pre-payment scheme (Uganda)	Marginal positive effect on CRR (6.6%)	Inconclusive, unclear reporting
(4) Masisi hospital pre-payment scheme (D.R. Congo)	n.a.	Limited positive effect: members seven times higher utilization rates compared with non-members
(5) Nkoranza hospital pre-payment scheme (Ghana)	No effect on provider effectiveness; moral hazard suggests negative effect on rational use of resources	Limited positive effect: members report increased access to care
(B) Community-based schemes		
(1) Baboantou (Cameroon)	No/marginal effect on provider efficiency	Inconclusive, not explicitly reported
(2) Bakoro (D.R. Congo)	Inconclusive due to data limitations	Limited positive effect: members have higher access to care compared with non-members
(3) CASOP (D.R. Congo)	Inconclusive due to data limitations	Limited positive effect: members have higher access to care compared with non-members
(4) Community Health Fund (Tanzania)	Marginal positive effect on CRR (<8%)	Positive effects reported: members use services relatively more than non-members (moral hazard is suspected)
(5) Grameen Bank (India)	Limited positive effects on CRR (17%)	Marginal/limited positive effects as members have higher access to care than non-members
(6) Gonosasthya (India)	Limited positive effect on CRR (23%)	Marginal/limited positive effects as members have higher access to care than non-members
(7) GRET (Cambodia)	Positive effect on quality of care (self-reported)	Positive effect on access to primary health care for members
(8) MHO (Senegal)	n.a.	Limited positive effect: members have increased financial access to care compared with non-members
(9) NHHP/FU (Uganda)	Limited/substantial positive effect on CRR (30–60%)	Positive effect on access to care (self-reported)
(10) SEWA (India)	No effect on provider resources, effectiveness or quality	No positive effect found; 'claims-coverage ratio' of 22%
(11) St. Alphonse (D.R. Congo)	Marginal positive effect on CRR (2–4%)	Limited positive effect: members have higher access to care compared with non-members
(12) UMASIDA (Tanzania)	No positive effect on provider resources, effectiveness or quality found	Marginal positive effect: members' access to care increased (self-reported)
(C) National schemes		
(1) Abota (Guinea-Bissau)	Limited positive effect on CRR (23%)	n.a.
(2) Health Card Programme (Thailand)	Marginal/limited: large variations in scheme reimbursement rates to providers	Limited positive effect as scheme is reported to ease financial burden of care
(3) Rural Co-operative Medical Schemes (P.R. China)	No/marginal positive effect on CRR	Marginal positive effect: 'ratio of insurance protection' varies from 5–30%; members pay more for drugs
(4) Voluntary Health Insurance (Vietnam)	n.a.	Positive effect as members pay significantly less than non-members

successful in providing improved access to care for their members. Finally, the effects of the schemes with national coverage vary substantially, both across countries and within the same country. Most, however, are found to have limited resource mobilization and financial protection effects.

Additional findings

This review also noted a number of additional findings that may be of interest to both researchers and policy makers. First, no attempt seems to have been made to assess the health benefits of introducing health insurance. Secondly, the evidence base on CBHI does not contain any studies adopting a randomized control trial (RCT) study design. And, thirdly, this review has not identified a single study looking at both the costs and the benefits of implementing a health insurance programme compared with an alternative intervention with the same intent. Although the first two observations should not come as a surprise given the prohibitive methodological challenges involved, the last finding can be seen as a serious shortcoming of the body of evidence. From the perspective of a policy maker, it is of critical importance that both the costs and the benefits of health care interventions, including financing options, are assessed.

Discussion

This study has reviewed the literature on the effectiveness of community-based health insurance in low-income countries to mobilize resources for health care and provide financial protection to the target population. The systematic approach adopted has produced a series of findings that are of relevance to the current international debate on health care financing in these countries. This section discusses three separate issues of importance when interpreting the results: potential sources of bias in this review; methods for assessing resource mobilization and financial protection; and the scope for generalization of experiences.

Sources of bias in the current review

There are, at least, three potential sources of bias in this review. First, the risk of 'publication bias', i.e. that studies reporting positive effects in various dimensions get disseminated predominantly, should not be disregarded. The type of health care financing mechanisms reviewed here are receiving increased attention from several different sources and much interest is being vested in the success of these programmes. However, judging from the findings in this and other reviews, this source of bias does not appear to be very large, as also many less successful experiments have been evaluated. The second potential source of bias is the appropriateness of the quality-grading tool given the type of studies under review. Three points are worth mentioning in this regard. As pointed out above, although most systematic reviews in health are applied to RCTs, it is suggested that the principles of the approach are appropriate also for these non-randomized data analyses. Also, applying the same quality grading criteria to all studies, even when some are written for vastly different purposes than publication in scientific journals, may seem unfair as the risk for receiving an inferior grade inevitably becomes larger. The grading system in this review, however, does not imply that any particular study does not have other virtues not assessed here that are well worth receiving wide attention. Finally, this protocol puts much weight on quantitative statistical methods, and while these methods are not, *a priori*, superior to qualitative methods, for the issues being analyzed here they would seem to present an analytical advantage.

The third and last potential source of bias is that while the grading tool may be sufficiently appropriate, its actual application may be flawed. To avoid this sort of bias due to subjective considerations on account of the reviewer, two measures are taken. First, the Methods section above has outlined as extensively as possible the methodological steps taken, and secondly, all quality grading forms for all studies are available from the author upon request.

Methodological issues

The methods used to assess resource mobilization and financial protection in the reviewed studies give rise to questions concerning internal validity, reliability and transparency of the body of evidence. First, assessing internal validity for these studies is difficult, as information on sampling is scant for the majority of studies. Indeed, sampling may not even have been done. As a general point, however, it has been noted that internal validity for non-randomized designs is low due to difficulties in blinding study subjects and behavioural changes of subjects (Kristiansen and Gosden 2002). Secondly, the reliability of findings, particularly with regard to resource mobilization, can only be regarded as low, given the fact that no generally accepted measure of this outcome seems to exist. Instead, indicators for resource mobilization varied considerably across studies, and definitions seem to differ even when the cost-recovery ratio was used as the outcome variable. In particular, it was rarely clear of what the denominator in this measure consisted. Lastly, with a few exceptions, transparency of methodology was hampered by scant information on several accounts. For example, the general context in which the scheme operated was not always clearly described, leading to difficulties in assessing the replicability of the experiences.

Scope for generalizations

This last observation is made worse by the difficulties in obtaining high external validity in non-randomized designs. Clearly, many factors that have an effect on the functioning of these schemes have a tendency to change not only across space, but also over time. The fact that very few schemes have been studied for longer periods of time or have been subjected to systematic follow-up studies, in which the performance of the same outcome indicator of interest is assessed, would seem to reduce the validity of findings, and thereby, compromise the scope for drawing on these experiences.

Conclusions

This review has contributed to the current collection of knowledge regarding the performance of one particular

health financing option: voluntary, not-for-profit community-based health insurance in low-income countries. In particular, the results extend and modify those found in earlier reviews, both in terms of performance of schemes and in terms of study designs. Based on the findings presented above, a number of conclusions of importance to national policy makers, researchers and international donors are drawn.

The most important conclusion of policy relevance is that, generally, there is little convincing evidence that voluntary CBHI can be a viable option for sustainable financing of primary health care in low-income countries. These types of programmes have been found to mobilize insufficient amounts of resources. This finding qualifies that reported by Preker et al. (2002, p. 146), who claimed to have found 'good evidence that community financing arrangements make a positive contribution to the financing of health care at low income levels'. In particular, this conclusion seems to be based on the performance of user-fee and non-voluntary type of programmes, such as those reported in Diop et al. (1995). There is evidence that CBHI provides financial protection by reducing OOP spending and by increasing access to health care, as seen by increased rates of utilization of care. The very low and diminishing population coverage rates, however, put the implications of this finding in doubt. There are also strong indications that they still exclude the poorest and perhaps those most in need, with little effect on access to care for these target groups. On the other hand, the review has also shown that there are examples of successful schemes that have operated for several years, suggesting that CBHI can be a feasible option in certain contexts and situations. Little systematic information has been compiled, however, on the particulars of the scheme contexts.

An additional policy implication is that it would seem pertinent for national policy makers to demand improved information as to both the costs and the benefits of these types of insurance schemes, so they can compare different financing options with a view to choosing the optimal policy mix. The current body of evidence does not contain this information. Consequently, it is not possible to address one of the most fundamental questions in health policy: is this a cost-effective intervention?

Moreover, the evidence base suffers from methodological shortcomings, with inconsistencies regarding both outcome measures and study designs. Consequently, for further assessment of these and similar policy options, researchers should seek more concerted analytical approaches than seen hitherto. In particular, the following three aspects may be emphasized. First, given the changing nature of the operational contexts that many schemes face, knowledge about the dynamic effects of schemes need to be improved by looking at longer time series. Alternatively, schemes ought to be subjected to systematic follow-up studies. Secondly, while consistency requires the use of a multitude of methods, the evidence base would most likely benefit from the application of quantitative analysis of individual or household level data. Continued research along the lines of Jowett et al. (2002), Jütting (2001) and Ranson (2001) should be of particular interest (see Appendix 3 for details). And, lastly, even with the application of rigorous quantitative analyses based on improved data collection, comparisons and generalizations still require that future analytical works agree on the various outcome measures and indicators as per the particular research questions. To ensure viability, the future research agenda should include a coherent set of outcome measures and a consistent follow-up of these indicators.

Finally, donors and international organizations can play instrumental roles in at least two respects. External partners should continue supporting national governments in obtaining the necessary information on health care financing options. In particular, this requires supporting improved data collection in countries on both the costs and the benefits of competing alternatives. International donors may also be instrumental in supporting continued research in the area of health financing, including community financing. For example, continued implementation of the guidelines on conducting case studies on micro-health insurance of the ILO/STEP programme should be encouraged (ILO/STEP 2000). While the evidence base on community financing, including CBHI, is growing at an impressive rate, only the systematic assessment of reliable and generally agreed upon performance indicators will ensure that also the quality of the body of evidence improves.

Endnotes

[1] Other reasons include obtaining a provider-purchaser split in health care financing (Ensor 1999), or raising social mobilization to increase local participation in the running and decision-making of services (Atim 1999).

[2] Despite the varying characteristics of these schemes, Bennett et al. (1998) defined two main types of CBHI schemes: Type I (cover high cost/low frequency events, are hospital based/owned, have a large catchment area, use actuarial or variable costs for premiums, and are committed to meeting certain designated costs), and Type II (cover low cost/high frequency events, are community based/owned, have a small catchment area, use ability-to-pay premiums, and only raise extra revenues for services or drugs costs). Also, Atim (1999), McCord (2000a,b, 2001a,b), Hsiao (2001) and Arhin-Tenkorang (2001) all attempt different typologies of community financing schemes.

[3] This rules out, for example, community involvement in user-fee management, revolving drug-funds and other cost-sharing arrangements with no risk sharing.

[4] See, for example, CGAP at [http://www.ids.ac.uk/cgap/microinsurance/index.html], or the World Bank web-page for community financing at [http://www.worldbank.org].

[5] Calls for more systematic reviews in health economics have been made by, for example, Jones (2000).

[6] See also Heller and Page (2002) for evidence-based public health, ScHARR (1996) and Lindgren (2000).

[7] See Clarke and Oxman (2003), and the references therein. Also, see Kristiansen and Gosden (2002) for an example of systematic review in the context of physician remuneration systems.

[8] See Eyers (1998) on searching databases effectively.

[9] Criteria such as type of scheme, geographic location and outcome measures are often given in the title, allowing for exclusion when these were violated.

[10] Together these studies report findings from some 178 separate CBHI schemes, all of which are not explicitly identified in all dimensions.

[11] See Liu and Mills (1999) for a discussion on measuring health care.

[12] See Jakab and Krishnan (2001) for a discussion on social inclusion and community financing.

[13] Published studies appear to be of higher methodological quality than non-published papers as average mean score is higher ($p = 0.087$).

[14] See also the discussion in the Methods section on this approach.

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Biography

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Appendix 1. Data information extraction sheet

Information	Remarks
Author(s) • Name(s): • Affiliation (Academic, Organization, Consultant): • Country or region: *Study* • Year: • Overall aim/purpose (as stated on page X): • Research/analytical question(s): • Relation to (directly, indirectly, none) indicator(s): _ Resource mobilization: _ Financial protection: • Type* (Research, Consultancy, Evaluation, Impact assessment, Appraisal): • Methodology: _ Data eliciting: Survey (household, scheme, provider, other; n = #), Interviews, Focus group discussions, Review of key documents, Observation: _ Data analysis: Quantitative (statistical) analysis (descriptive/regression (incl. significance level); Qualitative analysis; discussion of outcomes: • Data: _ Cross-sectional/Time-series (t = X years): _ Primary/Secondary: _ Survey (Level, Type): • Controls included?: • Findings: *Resource mobilization* • Effect (Quantity): • Indicator: • Comment: *Financial protection* • Effect (Quantity): • Indicator: • Comment (Exclusion effect):	

* This typology is largely based on the studies' own information such that if the study contains the term 'evaluation' or 'to evaluate . . .' in the title or stated aim it is an *Evaluation*, if the study claims to be analyzing the 'impact' (however defined) of a scheme it is an *Impact assessment*, and, finally, if the study 'discusses' and/or 'reviews' (specified aspects), the paper is classified as an *Appraisal*.

Appendix 2. Study quality assessment protocol

	(3)	2	1	0	COMMENT
(1) Research/analytical question(s) (i) Does the study have a clear and well-defined analytical/ research question? The overall aim and possible subsequent specific research question(s) should be clearly stated. *(2) Rationale* (i) Does the study motivate its research question? The rationale of the study may include references to other studies, an empirical policy problem, or a theoretical issue of relevance. *(3) Methodology* (i) Does the study clearly describe the methods used to answer the analytical question(s)? The paper should describe, motivate and explain the methodological approach taken. (ii) Does the study make use of cross-sectional or time series statistical (descriptive/non-parametric) analysis, incl. significance levels in relevant sections? (iii) Does the study make use of statistical regression analysis? (iv) Does the study use any kind of controls or alternative comparisons? *(4) Data* (i) Is the type of information used in the study in terms of source, sample size, time period, levels etc. clearly described? (ii) Does the study make use of primary data for its key analyses? (iii) Does the study make use of household or provider level data? *(5) Goal achievement* (i) Does the study answer (all of) the research/sub- question(s)? There should be no hesitation as to the congruence between the stated research question(s) and the reported findings of the study. *(6) Findings and results* (i) Are all of the stated findings and results the outcome of the particular methods used in the current study? All findings and results should be supported by evidence originating from the present study. (ii) Are the results/findings credible with respect to method and data? *(7) Discussion and conclusions* (i) Does the study critically discuss the robustness of findings, potential sources of bias, and possible limitations of the approaches of choice?					

Total points: **Quality rating:**

Note:

Total points possible: 25

- 2 points are credited if the paper *conforms fully* to the question.
- 1 point is credited if the paper *conforms partially* to the question.
- 0 points are credited if the paper *does not conform at all* to the question.
- 3 points are credited if the paper uses statistical regressions analysis under question 3(iii), consequently precluding a score on 3(ii).

Grading scale

- 22–25 points: 3 stars (***)
- 17–21 points: 2 stars (**)
- 0–16 points: 1 star (*)

Source: Author.

Appendix 3. Summary of evidence base, by identifiable scheme

Author (ref) Country (scheme) Study year Type of study	Analytical question(s): a) Resource mobilization b) Financial protection	a) Methodology b) Data	Results: Resource mobilization (substantial, limited marginal, indicator, quantified)	Results: Financial protection (substantial limited, marginal, indicator, etc.)	Other findings	Score/ Grade	Survey n = X (individuals, households	t = X years	Statistical significance levels (Yes, No)	Descriptive or regression analysis?	Scheme target population coverage rate
Category A. Published articles											
(**1**) Arhin (1994) Burundi (CAM) 1992–1994 Evaluation/ impact assessment	a) Indirect: moral hazard/ financial performance b) Indirect: access to health care	a) HH survey, FGD, retrospective outpatient survey b) Qualitative, quantitative; cross-sectional	Marginal: Weak financial viability of scheme due to MH; low levels of cost recovery reported; cost coverage	Marginal: Share of members with OOP expenditures compared with non-members (28% vs. 40%)	Exclusion effect; Adverse selection	15 *	300	n.a.	Yes	Descriptive	23%
(**2a**) Atim (1999) Cameroon (Babouantou) 1996 Evaluation	a) n.a. b) Indirect: access effects	a) Survey, interviews, document review b) Qualitative, quantitative, secondary, cross-sectional	n.a.	Inconclusive: not explicitly stated	Negative trend in renewal rates; Exclusion effect	High on clarity, rigour and readability 20 **	n.g.	3	No	Descriptive (non-statistical)	22%
(**2b**) Atim (1999) Ghana (Nkoranza) 1996 Evaluation	a) n.a. b) Indirect: access effects	a) Survey, interviews, document review b) Qualitative, quantitative, secondary, cross-sectional	n.a.	Positive: enhanced financial access to care; indicator not given	Negative trend in renewal rates	High on clarity, rigour and readability 20 **	n.g.	3	No	Descriptive (non-statistical)	23%
(**3**) Carrin et al. (1999) China (RCMS) 1994–95 Appraisal	a) n.a. b) Direct: 'overall level of insurance'; population coverage rates	a) Survey, statistical analysis b) Quantitative, financial data	n.a.	Marginal to limited effects: ratio of insurance protection vary from less than 5% to over 30%	Limited pooling between groups	22 ***	580 families per county	n.a.	No	Descriptive	31–100%
(**4**) Criel and Kegels (1997) Zaire (Bwamanda) n.g. Impact assessment	a) Direct: revenue share; Indirect: moral hazard b) Indirect: access to care effects reported	a) Review of provider level data b) Financial data	Limited: insurance premiums account for 35% of total revenue in 1989 (own calculations); No cost-recovery rate shown	Limited positive indirect effect: members have significantly higher access to care		22 ***	n.a.	n.a.	Yes	Descriptive	Around 60%

Continued

Appendix 3. *Continued*

Author (ref) Country (scheme) Study year Type of study	Analytical question(s): a) Resource mobilization b) Financial protection	a) Methodology b) Data	Results: Resource mobilization (substantial, limited marginal, indicator, quantified)	Results: Financial protection (substantial limited, marginal, indicator, etc.)	Other findings	Score/ Grade	Survey n = X t = X (individuals, years households	Statistical significance levels (Yes, No)	Descriptive or regression analysis?	Scheme target population coverage rate
(**5**) Criel et al. (1999) Zaire (Bwamanda) n.g. Impact assessment	a) Indirect: rational health care production b) Indirect: utilization across district	a) Bed-census, retrospective study b) Primary, routine hospital information	Inconclusive: no difference between insured/ non-insured length of stay	Limited: increased access to needed care for members; distance aspects are not overcome with insurance except for 'high priority care'		Fails to answer all research questions 17 **	n.g. 1–5 years	Yes	Descriptive	60%
(**6**) Dave (1991) India (12 schemes) n.g. Appraisal	a) Indirect: efficiency contribution b) Indirect: 'socio-economic subsidies'	a) Survey, interview b) Qualitative, secondary	Variation, 10–96% of costs covered by schemes	Inconclusive		13	n.g. n.g.	No	Descriptive (non-statistical)	550 HHs to 500 000 individuals
(**7a**) Desmet et al.(1999) Bangladesh (Gonosasthya) n.g. Appraisal	a) Indirect: financial viability of scheme b) Indirect: subscription rates	a) Interviews with both subscribers and scheme b) Quantitative; qualitative; secondary data; cross-sectional	Limited: around 23% of provider recurrent costs covered by scheme	Limited: weak indications of increased access to care for members, but seems to favour higher income individuals most	Indications of exclusion effect	Draws heavily on findings of other studies for own conclusions 8 *	n.g. 0	No	Descriptive (non-statistical)	27.5%
(7b) Desmet et al. (1999) Bangladesh (Grameen Bank) n.g. Appraisal	a) Indirect: financial viability of scheme b) Indirect: subscription rates	a) Interviews with both subscribers and scheme b) Quantitative; qualitative; secondary data; cross-sectional	Limited: around 17% of provider recurrent costs covered by scheme	Limited: weak indications of increased access to care for members	Exclusion effect	8 *	n.g. 0	No	Descriptive (non-statistical)	41%
(8) Dong et al. (1999) China (RCMS) 1995 Appraisal	a) Indirect: efficiency contribution to care b) Indirect: individual drug expenditures	a) Outpatient interviews b) Quantitative, qualitative, primary	No/marginal effects found; no. of drug prescriptions insured vs. non-insured	Negative, indications that cooperative insurance patients pay more for drugs		20 **	1320 outpatients n.a.	Yes	Regression analysis	5%

Appendix 3. *Continued*

Author (ref) Country (scheme) Study year Type of study	Analytical question(s): a) Resource mobilization b) Financial protection	a) Methodology b) Data	Results: Resource mobilization (substantial, limited marginal, indicator, quantified)	Results: Financial protection (substantial limited, marginal, indicator, etc.)	Other findings	Score/ Grade	Survey n = X t = X (individuals, years households	Statistical significance levels (Yes, No)	Descriptive or regression analysis?	Scheme target population coverage rate
(**9**) Gumber and Kulkarni (2000) India (SEWA) n.g. Impact assessment	a) n.a. b) Direct: burden of higher care expenditures under different insurance environments	a) Survey; comparing FP under health different insurance regimes; non-insured as control b) Quantitative, expenditure data	n.a.	No/marginal: SEWA members have net total cost of treatment (Rs 4323) even than non-insured (Rs 3502); OOP expenditure: SEWA – 21.4%; non-insured – 19. 9; ESIS – 17.9	Positive WTP for full coverage insurance; community based insurance preferred by interviewed	18 **	360 n.a. SEWA members (120–360)	No	Descriptive (non-statistical)	47–66%
(**10**) Jowett et al. (2002) Vietnam (VHI) 2001 Impact assessment	a) n.a. b) Direct: comparing health care expenditures for members vs. non-members	a) Survey; statistical analysis b) Quantitative	n.a.	Positive, insured spend significantly less than non-insured	Poor spend relatively less than non-poor	25 ***	1751 n.a. individuals	Yes	Regression analysis	0.6% (20% of children)
(**11**) Moens (1990) Zaire (now DR Congo) (Bwamanda) 1987 Evaluation	a) Direct: financial sustainability of provider b) Indirect: access to care	a) 'Operations research approach', survey, statistical analysis b) Secondary provider data; quantitative	Positive: provider cost recovery increased after scheme introduction	Positive: members more likely to be hospitalized	Exclusion effect	21 **	n.g. 5	Yes	Descriptive	70
(**12**) Noterman et al. (1995) Zaire (Masisi) 1987–90 Evaluation	a) n.a. b) Indirect: access to care	a) Longitudinal retrospective study, control group b) Quantitative primary and secondary	n.a.	Limited positive effects: increased admission rates for members compared with non-members (by factor of 7)	Exclusion effect	21 **	n.g. 4	Yes	Descriptive	6.7–26

Continued

Appendix 3. *Continued*

Author (ref) Country (scheme) Study year Type of study	Analytical question(s): a) Resource mobilization b) Financial protection	a) Methodology b) Data	Results: Resource mobilization (substantial, limited marginal, indicator, quantified)	Results: Financial protection (substantial limited, marginal, indicator, etc.)	Other findings	Score/ Grade	Survey n = X t = X (individuals, years households	Statistical significance levels (Yes, No)	Descriptive or regression analysis?	Scheme target population coverage rate
(**13**) Pannarunothai et al. (2000) Thailand (Health card) 1996–97 Impact assessment	a) Direct: providers' cost-recovery rates b) n.a.	a) Retrospective cross-sectional study, interviews, in-depth study b) Quantitative, cost-data	Inconclusive, large variations in scheme reimbursement to providers (50–100%)	n.a.	Insufficient management, high admin. costs	15 *	n.g. 9	No	Descriptive (non-statistical)	2.7–13.5%
(**14**) Ranson and John (2001) India (SEWA) 2000 Appraisal	a) Indirect: quality of care b) n.a.	a) Survey, interview, observational b) Quantitative, qualitative, primary medical records	a) Inconclusive, large variation in quality across provider; no impact from scheme found; structure: quality of staff and facilities; process: inadequate treatment facilities	n.a.	Effective financial protection ratio is 25% (own calculations)	Unclear how scheme effect on quality has been assessed 18 **	63 9 claimants	No	Descriptive (non-statistical)	16
(**15**) Supakankunti (2000) Thailand (Health Card) 1994–95 Appraisal	a) Indirect: scheme reimbursement ratios to providers b) Indirect: utilization rates and expenditure levels	a) Survey, b) Qualitative, expenditure data	Limited: scheme only reimburses 58% as compared with expected 80% to providers	Limited positive, scheme eases financial burden, but not statistically significant	Employment status, level of education, and illness determine card purchase	18 **	1000 HHs n.a.	Yes	Descriptive, non-parametric	n.g.

Appendix 3. *Continued*

Author (ref) Country (scheme) Study year Type of study	Analytical question(s): a) Resource mobilization b) Financial protection	a) Methodology b) Data	Results: Resource mobilization (substantial, limited marginal, indicator, quantified)	Results: Financial protection (substantial limited, marginal, indicator, etc.)	Other findings	Score/ Grade	Survey n = X t = X (individuals, years households	Statistical significance levels (Yes, No)	Descriptive or regression analysis?	Scheme target population coverage rate
Category B. Unpublished papers										
(**16**) Atim and Sock (2000) Ghana (Nkoranza) 1999 (2000) Evaluation	a) Indirect: discuss problem of low population coverage; moral hazard b) Indirect: find out reasons for higher bills among insured; role of poverty in membership	a) HH survey, FGD, interviews b) Primary quantitative and qualitative	Indirect indications of no or limited direct effect; moral hazard does lead to irrational use of resources	Authors claim positive FP effect, but this is not shown or substantiated in study	Adverse selection	17 **	3476 individuals 0.5 years	Yes	Descriptive	30%
(**17**) Atim (1998a) West & Central Africa (50 schemes) 1997 Impact assessment	a) Direct: cost-recovery rates assessed b) Indirect: access to health care effect	a) Survey (schemes), interviews, FGD, review of key documents b) Primary and secondary, cross-sectional, financial, utilization	Limited effect on RM, some positive effect on efficiency of care, little effect on quality of care; Budgetary and cost-recovery rates	Positive effect on access to care, but low population coverage rates	Exclusion effect from no exemption mechanisms	Scarcity of supporting data 19 **	n.g. n.a.	No	No	
(**18**) Atim (1998b) Tanzania (UMASIDA) (1998) Evaluation	a) n.g., but reports on RM b) n.g., but reports on FP	a) Survey, interviews, review of key documents b) Qualitative, financial data	Marginal (no effect found)	Limited positive effect	Continued OOP payments	Limited data coverage 11 *	39–49 individuals 1	No	Descriptive (non-statistical)	500 individuals
(**19**) Chee et al. (2002) Tanzania (CHF) (2002) Assessment	a) Directly: fund contribution to overall district health budget b) Indirectly: service utilization rates	a) Interviews, FGDs, review of key documents b) Time series; secondary, (primary)	Marginal positive effects (<8%)	Members use services much more than non-members (53% of all visits while only 2.4% of population)	Clear indications of exclusion effects: financial limitations main reason for not joining Fund	13 *	n.a. <3 years	No	Descriptive (non-statistical)	2.8%

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Appendix 3. *Continued*

Author (ref) Country (scheme) Study year Type of study	Analytical question(s): a) Resource mobilization b) Financial protection	a) Methodology b) Data	Results: Resource mobilization (substantial, limited marginal, indicator, quantified)	Results: Financial protection (substantial limited, marginal, indicator, etc.)	Other findings	Score/ Grade	Survey n = X t = X (individuals, years households	Statistical significance levels (Yes, No)	Descriptive or regression analysis?	Scheme target population coverage rate
(**20**) DeRoeck et al. (1996) Ecuador (SSC) 1995 Evaluation	a) n.a. b) Direct: OOP expenditure	a) Survey: household/ provider b) Primary; socio-economic, expenditure	n.a.	Limited positive effect: members had lower OOP than non-members; more prone to seek care	Inclusive effect – low income households belong to scheme	21 **	300 HHs	Yes	Descriptive	8%
(**21**) Diop et al. (2000) Rwanda (3 districts; 54 schemes) 1998–2000 (2000) Evaluation	a) Indirect: quality of care b) Indirect: financial accessibility to care	a) Survey (HH, providers), routine data collection; control districts; member vs. non-members b) Primary, time series, individual, provider; financial, expenditure	Positive effects on available resources found, higher cost-recovery rates; average costs at HCC increased	Positive effect on access to care; consultation rates		The short study period should imply great care with findings 16 *	n.g. 1 year	No	Descriptive (non-statistical)	7.9% on average
(**22**) Eklund and Stavum (1996) Guinea-Bissau (Abota) 1989 Consultancy evaluation	a) Direct: quality of care and cost-recovery b) n.a.	a) Interviews, FGDs, review of key documents b) Cross-sectional; primary and secondary	Limited positive effect: 23% of costs covered from scheme; drug availability	n.a.		16 *	18 villages 0	Yes	Descriptive	90%
(**23**) Gumber (2001) India (SEWA) 1998–99 Impact assessment	a) n.a. b) Directly: probability of visiting provider; OOP expenditures	a) Quantitative analysis b) Household data	n.a.		Marginal: SEWA members are not financially protected through membership	Short on clarity, high on method 21 **	1200 HHs n.a.	Yes	Regression	n.g.

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Appendix 3. *Continued*

Author (ref) Country (scheme) Study year Type of study	Analytical question(s): a) Resource mobilization b) Financial protection	a) Methodology b) Data	Results: Resource mobilization (substantial, limited marginal, indicator, quantified)	Results: Financial protection (substantial limited, marginal, indicator, etc.)	Other findings	Score/ Grade	Survey n = X (individuals, households	t = X years	Statistical significance levels (Yes, No)	Descriptive or regression analysis?	Scheme target population coverage rate
(**24**) ILO/PAHO (1999) LAC (11 schemes) 1999 Appraisal	a) Indirect: financial viability of schemes and effect on supply of care b) n.a.	a) n.g. b) Secondary, cross-sectional and time series	Positive effects on quality and efficiency of care; no effect on supply of care; low levels of financial sustainability of schemes found	Increased health care coverage for target population, low target population coverage rates		Low on clarity on data and methodology 9 *	n.g.	4 years	No	Descriptive (non-statistical)	Low: <50%
(**25**) ILO/STEP (2001) India (SEWA) (2001) Appraisal	a) n.a. b) n.g., but findings on financial protection are reported	a) Review of secondary data and other studies b) Secondary financial	n.a.	Inconclusive, but suggestions are given of no or limited effects; 6-year weighted average claims ratio		10 *	n.a.	10 years	No	Descriptive (non-statistical)	16%
(**26**) ILO/STEP (undated) Nigaragua (SSU/AMC) n.g. Consultancy appraisal	a) n.a. b) Indirect: self reported access to care	a) Beneficiary interviews b) Cross-sectional; primary	n.a.	Positive – self-reported increased access to care		Very short on method and data 9 *	n.a.	n.a.	No	Descriptive (non-statistical)	
(**27**) Jütting (2001) Senegal (Mutuelle) 2000 Impact assessment	a) n.a. b)Direct: utilization and OOP payments	a) Survey, statistical analysis b) Household level	n.a.	Positive for members	Exclusion effect reported as the poorest do not participate	23 ***	346 HHs; 2900 individuals	n.a.	Yes	Regression	n.g.
(**28**) Kelley and Quijada (2002) Sub-Saharan Africa (24 MHOs) 2001 Consultancy assessment	a) Indirectly: quality of care *vis*. MHO b) n.a.	a) Interviews, document review b) Secondary	Marginal/ limited positive effect – many MHO report weak bargaining position *vis*. providers; large variation	n.a.		8 *	n.a.	n.a.	No	n.a.	n.g.

Appendix 3. *Continued*

Author (ref) Country (scheme) Study year Type of study	Analytical question(s): a) Resource mobilization b) Financial protection	a) Methodology b) Data	Results: Resource mobilization (substantial, limited marginal, indicator, quantified)	Results: Financial protection (substantial limited, marginal, indicator, etc.)	Other findings	Score/ Grade	Survey n = X (individuals, households	t = X years	Statistical significance levels (Yes, No)	Descriptive or regression analysis?	Scheme target population coverage rate
(**29**) McCord (2000a) Uganda (NHHP/FU) 2000 Evaluation/ Appraisal	a) n.g., but reports on RM b) n.g., but reports on FP	a) Interviews, review of key documents, PRA, FGD b) Qualitative, accounting data	Limited/ substantial: 30–60% cost-coverage rates	Positive for members; self-reported effect on utilization		13 *	n.a.	9 months	No	Descriptive (non-statistical)	<5% (negative trend)
(**30**) McCord (2000b) Tanzania (UMASIDA) 2000 Evaluation/ Appraisal	a) d.o. b) d.o.	a) Interviews, review of key documents, PRA, FGD b) Qualitative, accounting data	None	Positive for members; self-reported		13 *	n.a.	n.a.	No	Descriptive (non-statistical)	n.g. (negative trend)
(**31**) McCord (2001a) Cambodia (GRET) 2000 Evaluation	a) d. o. b) d. o.	a) Interviews, review of key documents b) Qualitative, accounting data	Positive indirect effect on quality; self-reported	Positive effect at PHC-level; no effect on SHC-level	Exclusion effect	13 *	n.a.	1 year	No	Descriptive (non-statistical)	27% (negative trend)
(**32**) McCord (2001b) India (SEWA) 2000 Evaluation	a) d. o. b) d. o.	a) Interviews, review of key documents b) Qualitative, accounting data	None	Limited positive effect; claims coverage ratio at 22%		13 *	n.a.	4 years	No	Descriptive (non-statistical)	29 140 individuals
(**33a**) Musau (1999) East and Southern Africa (CHF, Tanzania) n.g. Impact assessments	a) Directly: cost recovery rates b) Indirectly: access to care	a) Interviews, review of key documents, site visits b) Secondary, cross-sectional	Marginal positive effect: CRR 7.2%; moral hazard is indicated	Inconclusive, but negative suggestions are given		15 *	n.a.	n.a.	No	Descriptive (non-statistical)	5%
(**33b**) Musau (1999) East and Southern Africa (Chogoria, Kenya) n.g. Impact assessments	a) Directly: cost recovery rates; indirect b) Indirectly: access to care	a) Interviews, review of key documents, site visits b) Secondary, cross-sectional	Marginal positive effect: CRR 2.1%; service delivery	Inconclusive; unclear reporting; utilization		15 *	n.a.	n.a.	No	Descriptive (non-statistical)	0.3%

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Appendix 3. *Continued*

Author (ref) Country (scheme) Study year Type of study	Analytical question(s): a) Resource mobilization b) Financial protection	a) Methodology b) Data	Results: Resource mobilization (substantial, limited marginal, indicator, quantified)	Results: Financial protection (substantial limited, marginal, indicator, etc.)	Other findings	Score/ Grade	Survey n = X t = X (individuals, years households	Statistical significance levels (Yes, No)	Descriptive or regression analysis?	Scheme target population coverage rate
(**33c**) Musau (1999) East and Southern Africa (Kisiizi, Uganda) n.g. Impact assessments	a) Directly: cost recovery rates b) Indirectly: access to care	a) Interviews, review of key documents, site visits b) Secondary, cross-sectional	Marginal positive effect: CRR 6.6%; service delivery	Inconclusive; unclear reporting; utilization		15 *	n.a. n.a.	No	Descriptive (non-statistical)	6.5%
(**34**) Ranson (2001) India (SEWA) 2000 Impact assessment	a) n.a. b) Direct: hospitalization costs, utilization rates, and population coverage	a) HH survey; b) Primary quantitative	n.a.	No FP effect; inclusion effect; lower costs for members, but not due to insurance coverage		High on rigour and soundness 23 ***	700 HHs; 1102 individuals n.a.	Yes	Regression	15%
(**35a**) Shepard et al. (1996) Zaire (St. Alphonse) 1989 Assessment	a) Directly: cost recovery rates; indirectly: moral hazard b) Indirectly: access to care	a) Survey interview b) Primary; patient and provider level	Marginal positive effect: CRR 4.2%-2.2% 1988–89; moral hazard is indicated	Limited positive effects: access to care marginally higher for members		10 *	Patient interview survey (n = 79) n.a.	Yes	Descriptive	6.2%
(**35b**) Shepard et al. (1996) Zaire (CASOP) 1989 Assessment	a) Directly: cost recovery rates; indirectly: moral hazard b) Indirectly: access to care	a) Survey interview b) Primary; patient and provider level	Cannot tell due to data limitations	Limited positive effects: access to care higher for members; utilization rate		10 *	Patient interview survey (n = 126) n.a.	Yes	Descriptive	n.g.
(**35c**) Shepard et al. (1996) Zaire (Bwamanda) 1989 Assessment	a) Directly: cost recovery rates; indirectly: moral hazard b) Indirectly: access to care	a) Survey interview b) Primary; patient and provider level	Limited positive effect: 33% of operating revenues from scheme	Positive effects: access to care marginally higher for members		10 *	Patient interview survey (n = 50) n.a.	Yes	Descriptive	n.g.
(**35d**) Shepard et al. (1996) Zaire (BAKORO) 1989 Assessment	a) Directly: cost recovery rates; indirectly: moral hazard b) Indirectly: access to care	a) Survey interview b) Primary; patient and provider level	Cannot tell due to data limitations	Limited positive effects: access to care higher for members		10 *	Patient interview survey (n = 50) n.a.	Yes	Descriptive	n.g.

Appendix 3. *Continued*

Author (ref) Country (scheme) Study year Type of study	Analytical question(s): a) Resource mobilization b) Financial protection	a) Methodology b) Data	Results: Resource mobilization (substantial, limited marginal, indicator, quantified)	Results: Financial protection (substantial limited, marginal, indicator, etc.)	Other findings	Score/ Grade	Survey n = X t = X (individuals, years households	Statistical significance levels (Yes, No)	Descriptive or regression analysis?	Scheme target population coverage rate
(**36**) Walford and Baine (1997) Uganda (Kisiizi) 1997 Evaluation	a) Indirect: stability of funding source b) Indirect: access to care	a) Survey, interviews b) Primary quantitative and financial data	Limited effect, some contribution to overheads	Positive: self-reported		12 *	n.g. 1 year	No	Descriptive (non-statistical)	5768 individuals

n.a. = not available ; n.g. = not given ; HH = household; FGD = focus group discussion ; PRA = Participatory Rapid Assessment ; RM = ? ; FP = ? ; MHO = mutual health organization; d.o. = ?.