The impact of health insurance in Africa and Asia: a systematic review
Ernst Spaan, Judith Mathijsen, Noor Tromp, Florence McBain, Arthur ten Have & Rob Baltussen

Objective To evaluate the impact of health insurance on resource mobilization, financial protection, service utilization, quality of care, social inclusion and community empowerment in low- and lower-middle-income countries in Africa and Asia.

Methods A systematic search for randomized controlled trials, quasi-experimental and observational studies published before the end of 2011 was conducted in 20 literature databases, reference lists of relevant studies, web sites and the grey literature. Study quality was assessed with a quality grading protocol.

Findings Inclusion criteria were met by 159 studies – 68 in Africa and 91 in Asia. Most African studies reported on community-based health insurance (CBHI) and were of relatively high quality; social health insurance (SHI) studies were mostly Asian and of medium quality. Only one Asian study dealt with private health insurance (PHI). Most studies were observational; four had randomized controls and 20 had a quasi-experimental design. Financial protection, utilization and social inclusion were far more common subjects than resource mobilization, quality of care or community empowerment. Strong evidence shows that CBHI and SHI improve service utilization and protect members financially by reducing their out-of-pocket expenditure, and that CBHI improves resource mobilization too. Weak evidence points to a positive effect of both SHI and CBHI on quality of care and social inclusion. The effect of SHI and CBHI on community empowerment is inconclusive. Findings for PHI are inconclusive in all domains because of insufficient studies.

Conclusion Health insurance offers some protection against the detrimental effects of user fees and a promising avenue towards universal health-care coverage.

Introduction
Health insurance is attracting more and more attention in low- and middle-income countries as a means for improving health care utilization and protecting households against impoverishment from out-of-pocket expenditures. The health financing mechanism was developed to counteract the detrimental effects of user fees introduced in the 1980s, which now appear to inhibit health care utilization, particularly for marginalized populations, and to sometimes lead to catastrophic health expenditures. The World Health Organization (WHO) considers health insurance a promising means for achieving universal health-care coverage.

Various types of health insurance are available. National or social health insurance (SHI) is based on individuals’ mandatory enrolment. Several low- and middle-income countries, including the Philippines, Thailand and Viet Nam, are establishing SHI. Voluntary insurance mechanisms include private health insurance (PHI), which is implemented on a large scale in countries like Brazil, Chile, Namibia and South Africa, and community-based health insurance (CBHI), now available in countries like the Democratic Republic of the Congo, Ghana, Rwanda and Senegal.

The various types of health insurance have different impacts on the populations they serve. For example, PHI is said to mainly serve the affluent segments of a population, but CBHI is often put forward as a health financing mechanism that can especially benefit the poor. Countries wishing to introduce health insurance schemes into their health systems should be aware of how their impact varies.

The impact of health insurance in low- and middle-income countries has unfortunately been documented only partially. Previous reviews have evaluated the performance of CBHI in terms of enrolment, financial management and sustainability. A recent review provides an overview of the scope and origin of CHI in low- and middle-income countries, with a particular focus on China, Ghana, India, Mali, Rwanda and Senegal, and also assesses CHI’s performance in terms of population coverage, range of services included and reimbursement rate. The authors concluded that the picture in Africa and Asia is very patchy, with large heterogeneity in institutional designs and organizational models and enormous variation in population coverage, services covered and costs achieved. No systematic reviews are available on the impact of SHI and PHI, which limits a direct comparison of their options and limitations. Also, health insurance is known to have effects on domains beyond those reported in existing reviews, such as social inclusion.

Furthermore, most reviews available on the rapid development of health insurance in low- and middle-income countries are somewhat outdated.

To address the gaps described, this paper provides an up-to-date review of the impact of SHI, PHI and CBHI on a comprehensive set of domains. Following the conceptual framework by Preker & Carrin, we evaluate whether the different types of health insurance can: (i) mobilize resources, i.e. generate sufficient and stable resources for adequate functioning of health services; (ii) provide financial protection to clients against catastrophic health expenditures; (iii) improve utilization of health-care services by all socioeconomic groups; (iv) improve health care quality; (v) improve social inclusion, i.e. the provision of health services in alignment with the needs of various population groups, especially the poor and vulnerable; and (vi) improve community empowerment, i.e. involvement of the community in the organization of health services. Our review covers all low-
and lower-middle-income countries in Africa and Asia.

**Methods**

We carried out a systematic review of studies on the impact of SHI, PHI and CBHI in Africa and Asia that were published any year up to the end of 2011. Our search strategy is described in Box 1.

Studies were included if they: (i) were randomized controlled trials, cohort, case-control or cross-sectional studies, or qualitative descriptive case studies; (ii) studied the impact of health insurance on resource mobilization, service utilization, quality of care, financial protection, social inclusion or community empowerment; (iii) were carried out in a low- or lower-middle-income country either in 1987 or in 2007, to allow for changes in countries' income status over time11 (Appendix A, available at: http://www.niche1.nl/publications); and (iv) were written in English, French, Spanish or Portuguese. Studies were excluded if they: (i) were policy reviews, opinion pieces, editorials, letters to the editor, commentaries or conference abstracts; (ii) originated from a country on the American continent or (iii) were duplicate references from different databases.

Two pairs of independent reviewers (ES and NT, JM and FM) screened all titles and abstracts of the initially identified studies to determine if they satisfied the inclusion criteria. Any disagreement was resolved through consensus. Full text articles were retrieved for the selected titles. Reference lists of the retrieved articles, as well as previous review articles, were searched for additional publications (referred to as “snowballing”).

**Data extraction**

The reviewers used a data collection form to extract the relevant information from the selected studies from Africa (ES and NT) and Asia (JM and FM). The data collection form included questions on qualitative aspects of the studies (such as date of publication, design, geographical origin and setting), health insurance scheme characteristics (such as type of scheme, starting year and target group), study characteristics (such as study design and period), and information on the reported impact domains, including reported strengths and weaknesses of schemes and main study conclusions. Reviewers graded the impact according to the following categories: positive effect (A); negative effect (B); no effect (C); inconclusive or not assessed.

**Quality evaluation**

The pairs of reviewers evaluated the quality of the included studies using a quality-grading protocol adapted from existing protocols known as the HIP study Review Protocol on Health Insurance.17,22–24 The protocol, which is available from the corresponding author on request, covers 19 indicators to assess rigour, bias, validity and generalizability of the studies, type of study (qualitative; quantitative), whether research question(s), concepts, methods, sampling, and data eliciting are adequately described, and whether the robustness of presented data and results is critically examined. For each item 0–2 points are given and these are added up to get an overall quality score (ranging from 0 to 38 points). Studies were categorized as low quality (0–14 points), medium quality (15–29) or high quality (≥ 30). One in five studies was randomly selected for assessment by a second reviewer. Any disagreements on the quality evaluation between the pairs of reviewers were resolved through consensus.

**Impact judgements**

We formulated overall judgements on the impact of SHI, PHI and CBHI on the various domains if at least 10 studies of medium or better quality were performed in those domains. We judged the evidence as strongly positive if A + (A + B + C) ≥ 60%; weakly positive if A + (A + B + C) ≥ 30% and <60%; strongly negative if B + (A + B + C) ≥ 60%; weakly negative if B + (A + B + C) ≥ 30% and <60%; and inconclusive otherwise.

We adhered to PRISMA guidelines for the conduct of systematic reviews.25

**Results**

From the initial search for peer-reviewed articles based on title (8689 references), 8459 references were excluded and 230 full text references were retained for further scrutiny. Detailed inspection of abstracts and texts resulted in 159

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**Box 1. Search strategy employed in systematic review of studies on health insurance in Africa and Asia**

We searched Medline; PubMed; PopLine; Arts and Humanities Citation Index; World Health Organization Library Information System; International Bibliography in Social Sciences; Cochrane Library; Health Care Management Information System; Journal Storage; ScienceDirect; CSA Sociological Abstracts; American Economic Association's electronic bibliography; National Bureau of Economic Research; Research Papers in Economics; Institute of Development Studies, Sussex; ELDIS/International Development Studies, United Kingdom (ID21); British Library of Development Studies; Database of Institute de l’Information Scientifique et Technique, Banque de Données en Santé Publique and the Institute of Tropical Medicine Antwerp online library.

We used combinations of text words and thesaurus terms that included health insurance [Mesh term], health insurance [Title/Abstract], community-based health insurance [Title/Abstract], social health insurance [Title/Abstract], private health insurance [Title/Abstract], developing countries [Mesh term] and developing countries [Title/Abstract]. For databases lacking a thesaurus system we used free text searches using similar search terms. Below is an example of the search syntax we used for Medline:

**Example of MedLine (exploded) search terms:**

DEVELOPING COUNTRIES (MedLine Thesaurus Term) [Including: developing countries; countries, developing; country, developing; developing country; under-developed countries; countries, underdeveloped; country, under-developed; under developed countries; under-developed country; third-world countries; countries, third-world; country, third-world; third world countries; third-world country; developing nations; developing nation; nation, developing; nations, developing, under-developed nations; nation, under-developed, nations, under-developed; under developed nations; under-developed nation; third-world nations; nation, third-world; nations, third-world; third world nations; third-world nation; less-developed countries; countries, less-developed; country, less-developed; less developed countries; less-developed country; less-developed nations; less-developed nation; nation, less-developed; nations, less-developed] AND HEALTH INSURANCE (Thesaurus term) [Including: insurance, health; health insurance; health insurance, voluntary; insurance, voluntary health; voluntary health insurance; group health insurance; health insurance, group; insurance, group health].

**Other examples of search syntax used:**

articles. This includes references found through screening reference lists in retrieved articles, snowballing and additional screening of organizational websites (Fig. 1).

Characteristics of included studies

Table 1 shows the summary characteristics of the 159 included studies – 68 from Africa and 91 from Asia (Appendix B, available at: http://www.niche1.nl/publications). Some studies stem from the same reference but are listed here individually. In Africa, most of the studies stem from only seven countries: the Democratic Republic of the Congo, Ghana, Kenya, Rwanda, Senegal, Uganda and the United Republic of Tanzania. The majority of these studies reported on CBHI and were of relative high quality. Fewer studies were on SHI and PHI, and these were of lower quality. In Asia, almost all studies originate from five countries only: China, India, the Philippines, Thailand and Viet Nam. The majority of Asian studies were on SHI and were, on average, of medium quality. Fewer studies were on CBHI and only one on PHI. Most studies used an observational design and only a few used a randomized controlled (4) or quasi-experimental design (20). The number of studies increased over time, with almost half of them published in 2005–2011.

Impact of health insurance

High and medium quality studies reported frequently on the impact of health insurance on financial protection (90), utilization (91) and social inclusion (65), but less often on resource mobilization (28), quality of care (21) or community empowerment (6). A full overview of the included studies and the detailed impact reported by each on the various domains is provided in Appendix B; the indicators employed in the included studies are listed in Appendix C (available at: http://www.niche1.nl/publications).

Table 2 shows that studies on the impact of CBHI on resource mobilization for health showed an overall positive effect. For example, studies in Bangladesh,35 Cambodia,36 the Democratic Republic of the Congo13,14,20,27–29 and India30 reported improved cost recovery ratios after implementation of CBHI. Still, other schemes in countries such as Rwanda13 and Uganda30 showed weak financial sustainability because of low renewal rates, high claims-to-revenue ratios and high operational costs. There is no conclusive evidence that SHI or PHI affects, positively or negatively, resource mobilization for health.

There is, however, strong evidence that CBHI and SHI provide financial protection for their members in terms of reducing their out-of-pocket expenditures, and that they improve utilization of inpatient and outpatient services. Weak evidence suggests that both SHI and CBHI have a positive impact on the quality of care. To illustrate this, CBHI schemes in Kenya, Uganda and the United Republic of Tanzania were found to improve service quality in health facilities, increase essential drug availability and shorten waiting times. Another study on a CBHI scheme in Burundi reported that health workers discriminated against card holders and provided preferential treatment to patients paying in cash.31

There is weak evidence that both SHI and CBHI have a positive impact on social inclusion as indicated by enrollment and utilization patterns among vulnerable groups. Health insurance schemes undertake various initiatives to reach the vulnerable segments of the populations, such as discount cards, exemption schemes or free enrollment for vulnerable populations. For example, targeted policies of the National Health Insurance Program in the Philippines32–34 and the Thai universal coverage scheme35 increased the number of insured indigents and poor. In other countries, social inclusion is not achieved to the same extent, and in Cameroon,36 Guinea37 and Senegal,38 to name a few examples, premiums that the poor cannot afford are reportedly discriminated against card holders and to reach the vulnerable segments of the populations, such as discount cards, exemption schemes or free enrollment for vulnerable populations. For example, targeted policies of the National Health Insurance Program in the Philippines32–34 and the Thai universal coverage scheme35 increased the number of insured indigents and poor. In other countries, social inclusion is not achieved to the same extent, and in Cameroon,36 Guinea37 and Senegal,38 to name a few examples, premiums that the poor cannot afford are reportedly discriminated against card holders and.

Discussion

This study is the first systematic review to broadly examine the impact of different types of health insurance schemes in low- and lower-middle-income countries in Africa and Asia on various domains. Our review points to an

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Systematic reviews

Health insurance in Africa and Asia

Fig. 1. Flow diagram showing study selection for systematic review of studies on health insurance in Africa and Asia

Records identified through database searching (n = 8599)

Records after duplicates removed (n = 8385)

Records screened (n = 8385)

Records excluded (n = 8155)

Full-text articles assessed for eligibility (n = 230)

Full-text articles excluded, (not on impact of health insurance) (n = 71)

Studies included in qualitative synthesis (n = 159)

Characteristics of included studies

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Discussion

This study is the first systematic review to broadly examine the impact of different types of health insurance schemes in low- and lower-middle-income countries in Africa and Asia on various domains. Our review points to an
Despite an incomplete evidence base. Despite an increasing volume of studies, especially in recent years, the generated knowledge is patchy and of variable quality. The available evidence clearly demonstrates that health insurance can be an alternative to user fees as a health financing mechanism. The strong evidence that CBHI and SHI can improve financial protection and enhance service utilization patterns is especially critical in this respect, but the weaker evidence that CBHI and SHI can foster social inclusion is also important. Although that type of impact is not unexpected in the case of CBHI because of its community orientation, it is more surprising in the case of SHI, which some claim underrepresents the informal sector.

Y et targeted policies in the Philippines and Thailand have shown that SHI can reach this sector. Our findings thereby support the view of entities such as WHO that consider prepaid health financing mechanisms an important alternative capable of mitigating the detrimental effects of user fees, as well as a promising means for achieving universal coverage. The review is inconclusive concerning any impact of PHI because very few studies have been conducted. Hence, the absence of evidence of impact does not mean that PHI has no impact.

Table 1. Key characteristics of studies included in systematic review of studies on the impact of health insurance in Africa and Asia

<table>
<thead>
<tr>
<th>Study site</th>
<th>No. of observations</th>
<th>Type of article</th>
<th>Quality (% of observations)</th>
<th>Study design</th>
<th>Year of publication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Peer-reviewed</td>
<td>Grey</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Africa (n = 68)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social health insurance</td>
<td>18</td>
<td>7</td>
<td>11</td>
<td>33</td>
<td>44</td>
</tr>
<tr>
<td>Private health insurance</td>
<td>9</td>
<td>6</td>
<td>3</td>
<td>67</td>
<td>11</td>
</tr>
<tr>
<td>Community-based health insurance</td>
<td>50</td>
<td>24</td>
<td>26</td>
<td>30</td>
<td>48</td>
</tr>
<tr>
<td>Total</td>
<td>77</td>
<td>38*</td>
<td>30*</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Asia (n = 91)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social health insurance</td>
<td>68</td>
<td>48</td>
<td>17</td>
<td>21</td>
<td>59</td>
</tr>
<tr>
<td>Private health insurance</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Community-based health insurance</td>
<td>30</td>
<td>22</td>
<td>8</td>
<td>17</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>70*</td>
<td>21*</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

RCT, randomized controlled trial.

* Some articles refer to more than one study, and the number of articles can therefore be less than the number of studies.
Inconclusive - Judgement
Proportion - Inconclusive

Table 2

<table>
<thead>
<tr>
<th>Health insurance type</th>
<th>Community empowerment</th>
<th>Quality of care</th>
<th>Financial protection</th>
<th>Resource mobilization</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social health insurance</td>
<td>Inconclusive</td>
<td>-9</td>
<td>-29/47</td>
<td>-19/31</td>
<td>-29/47</td>
</tr>
<tr>
<td>Community-based health insurance</td>
<td>Strongly positive</td>
<td>+10/22</td>
<td>+30/42</td>
<td>+23/29</td>
<td>+24/47</td>
</tr>
<tr>
<td>Private health insurance</td>
<td>Inconclusive</td>
<td>0/0</td>
<td>+12/24</td>
<td>Inconclusive</td>
<td>+12/24</td>
</tr>
</tbody>
</table>

This table presents the proportion of positive to negative studies on different domains of health insurance impact, with the proportion (%) indicating the net number of positive or negative studies over the total number of included studies on a certain domain.

Limitations of the review

Our study has several limitations. First, we observed a large variety of study designs and indicators for assessing the impact of health insurance and their interpretation was not always straightforward. For those studies that used a control group, the use of self-selected controls in many cases may have biased the results and we carefully considered this in discussions among the pairs of reviewers. Second, we arbitrarily defined strength of the evidence on the basis of study quality, number of studies and percentage of positive findings. While this seems reasonable, the use of other parameters could have led to different review findings.

Summary

There is strong evidence that CBHI improves resource mobilization for health and that both CBHI and SHI improve health service utilization and provide financial protection for members in terms of reducing their out-of-pocket expenditure. There is weak evidence suggesting that both SHI and CBHI have a positive impact on the quality of care and social inclusion. Findings for both SHI and CBHI are inconclusive on community empowerment. Those for PHI are inconclusive on all domains because of insufficient studies.

Conclusion

CBHI and SHI hold strong potential to improve financial protection and en-
health care utilization among their enrolled populations, and they can also foster social inclusion. This underscores the importance of health insurance as an alternative health financing mechanism capable of mitigating the detrimental effects of user fees, and as a promising means for achieving universal health-care coverage.

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Competing interests: None declared.

Abstract
Health insurance in Africa and Asia: a systematic review

Objective
To evaluate the impact of health insurance on resource mobilization, financial protection, service utilization, quality of care, social inclusion and community empowerment in low-income and lower-middle-income countries in Africa and Asia.

Methods
A systematic review of randomized controlled trials, quasi-experimental and observational studies published before December 2011 from 20 databases and relevant websites, and grey literature. Study quality was assessed using a quality grading scheme.

Results
Fifty-nine studies met the inclusion criteria – 68 studies on Africa and 91 on Asia. Most of the African studies were on community-based health insurance (CBHI), with high quality. Social health insurance (SHI) studies were mostly from Asia, of medium quality. Only one study in Asia was on private health insurance (PHI). The majority of studies were observational; 4 of the RCTs were conducted in Africa and 6 in Asia. The results show that CBHI and SHI can improve service utilization and offer financial protection to members. CBHI improves resource mobilization, while SHI has a mixed effect on care quality and social inclusion. The impact of PHI on all outcomes is uncertain. Despite the lack of studies, PHI has not been ruled out.

Conclusion
Health insurance provides some protection against the negative effects of user fees and offers a route towards universal health-care coverage.

Résumé
L’impact de l’assurance maladie en Afrique et en Asie: une étude systématique

Objectif
Évaluer l’impact de l’assurance maladie sur la mobilisation des ressources, la protection financière, l’utilisation des services, la qualité des soins, l’inclusion sociale et l’autonomisation des communautés dans les pays à faible revenu et à revenu intermédiaire de la tranche inférieure, en Afrique et en Asie.

Métodes
Une recherche systématique d’essais contrôlés randomisés, d’études quasi-experimentales et observationnelles publiées avant la fin de l’année 2011 a été effectuée sur 20 bases de données de publications, des listes de références ou des études pertinentes, sur des sites Web et dans la littérature grise. La qualité des études a été évaluée au moyen d’un protocole de classement de la qualité.

Résultats

Conclusion
L’assurance maladie offre une protection contre les effets négatifs des frais de santé et une voie vers une couverture sanitaire universelle.
Objective Evaluate the impact of health insurance in the mobilization of resources, the protection of financing, the use of services, the quality of the attention, the social inclusion and the empowerment of the community in countries of low and middle income in Africa and Asia.

Methods Systematic search of randomized controlled studies, quasi-experimental and observational studies. A search was conducted until 2011 on 20 databases of information sources, lists of references of relevant studies, websites and unofficial publications. The quality of the studies was assessed in the protocol of the level of quality.

Results Of the analyzed studies, 159 met the inclusion criteria – 68 in Africa and 91 in Asia. The majority of African studies were conducted in countries with low and middle income; the majority of studies were of experimental character; 4 studies were randomized controlled, 20 were of quasi-experimental design, and 159 were of non-experimental studies, published before the end of 2011 in 20 databases of information sources, lists of references of relevant studies, websites and unofficial publications. The quality of the studies was assessed in the protocol of the level of quality.

Conclusion The impact of health insurance in Africa and Asia is still unclear. There is insufficient evidence to conclude the effects of health insurance.

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