The impact of health insurance in Africa and Asia: a systematic review
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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.1–3 The World Health Organization (WHO) considers health insurance a promising means for achieving universal health-care coverage.4 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,5 and community-based health insurance (CBHI), now available in countries like the Democratic Republic of the Congo, Ghana, Rwanda and Senegal.6–10 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.11–16 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.12,17–19 A recent review20 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.9 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,17 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 time (Appendix A, available at: http://www.nioh.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.22,23,24 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
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,23 Cambodia,26 the Democratic Republic of the Congo,20–30 and India25 reported improved cost recovery ratios after implementation of CBHI. Still, other schemes in countries such as Rwanda13 and Uganda26 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 Philippines30–32 and the Thai universal coverage scheme33 increased the number of insured indigents and poor. In other countries, social inclusion is not achieved to the same extent, and in Cameroon,35 Guinea36 and Senegal,37 to name a few examples, premiums that the poor cannot afford are reportedly the main reason. Both SHI and CBHI yield inconclusive findings on community empowerment, primarily because very few studies have been carried out. Findings for PHI are inconclusive on all domains because of insufficient studies.

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 increasing volume of studies, especially in recent years, the generated knowledge is patchy and of variable quality. Despite the above, 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 this 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. Yet 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.

There is very little evidence on the impact of health insurance on quality of care and community empowerment, and no (strong) conclusions can be drawn in this regard. Nonetheless, these domains are of critical importance to the performance of health insurance schemes. Many believe that health insurance schemes, through increased utilization patterns and subsequent income generation, can improve the quality of care, and that this, in turn, can lead to higher health insurance enrolment. Research is needed to explore this mutual reinforcement. The lack of evidence on the impact of CBHI schemes on community empowerment is especially disappointing. Such schemes have large potential to explicitly involve the community in the organization of health services, and whether this actually happens is a question deserving more attention.

The findings of the review should be interpreted with caution and obviously should not be taken as a basis for implementing any type of health insur-

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### 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>Type of insurance</th>
<th>No. of observations</th>
<th>Quality (%) of observations</th>
<th>Year of publication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa (n = 68)</td>
<td>Social health insurance</td>
<td>18</td>
<td>Low</td>
<td>1990–1994</td>
</tr>
<tr>
<td>Social health insurance</td>
<td>33</td>
<td>Medium</td>
<td>1995–1999</td>
<td></td>
</tr>
<tr>
<td>Social health insurance</td>
<td>22</td>
<td>High</td>
<td>2000–2004</td>
<td></td>
</tr>
<tr>
<td>Social health insurance</td>
<td>0</td>
<td>Medium</td>
<td>2005–2009</td>
<td></td>
</tr>
<tr>
<td>Social health insurance</td>
<td>1</td>
<td>High</td>
<td>2010–2011</td>
<td></td>
</tr>
<tr>
<td>Private health insurance</td>
<td>7</td>
<td>Low</td>
<td>1990–1994</td>
<td></td>
</tr>
<tr>
<td>Private health insurance</td>
<td>11</td>
<td>Medium</td>
<td>1995–1999</td>
<td></td>
</tr>
<tr>
<td>Private health insurance</td>
<td>11</td>
<td>High</td>
<td>2000–2004</td>
<td></td>
</tr>
<tr>
<td>Private health insurance</td>
<td>0</td>
<td>Medium</td>
<td>2005–2009</td>
<td></td>
</tr>
<tr>
<td>Private health insurance</td>
<td>0</td>
<td>High</td>
<td>2010–2011</td>
<td></td>
</tr>
<tr>
<td>Community-based health insurance</td>
<td>11</td>
<td>Low</td>
<td>1990–1994</td>
<td></td>
</tr>
<tr>
<td>Community-based health insurance</td>
<td>11</td>
<td>Medium</td>
<td>1995–1999</td>
<td></td>
</tr>
<tr>
<td>Community-based health insurance</td>
<td>22</td>
<td>High</td>
<td>2000–2004</td>
<td></td>
</tr>
<tr>
<td>Community-based health insurance</td>
<td>0</td>
<td>Medium</td>
<td>2005–2009</td>
<td></td>
</tr>
<tr>
<td>Community-based health insurance</td>
<td>0</td>
<td>High</td>
<td>2010–2011</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>77</td>
<td>30%</td>
<td>1990–1994</td>
<td></td>
</tr>
<tr>
<td>Asia (n = 91)</td>
<td>Social health insurance</td>
<td>68</td>
<td>Low</td>
<td>1990–1994</td>
</tr>
<tr>
<td>Social health insurance</td>
<td>48</td>
<td>Medium</td>
<td>1995–1999</td>
<td></td>
</tr>
<tr>
<td>Social health insurance</td>
<td>17</td>
<td>High</td>
<td>2000–2004</td>
<td></td>
</tr>
<tr>
<td>Social health insurance</td>
<td>21</td>
<td>Medium</td>
<td>2005–2009</td>
<td></td>
</tr>
<tr>
<td>Social health insurance</td>
<td>0</td>
<td>High</td>
<td>2010–2011</td>
<td></td>
</tr>
<tr>
<td>Private health insurance</td>
<td>1</td>
<td>Low</td>
<td>1990–1994</td>
<td></td>
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<tr>
<td>Private health insurance</td>
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<td>Medium</td>
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<tr>
<td>Private health insurance</td>
<td>0</td>
<td>High</td>
<td>2010–2011</td>
<td></td>
</tr>
<tr>
<td>Community-based health insurance</td>
<td>30</td>
<td>Low</td>
<td>1990–1994</td>
<td></td>
</tr>
<tr>
<td>Community-based health insurance</td>
<td>22</td>
<td>Medium</td>
<td>1995–1999</td>
<td></td>
</tr>
<tr>
<td>Community-based health insurance</td>
<td>0</td>
<td>High</td>
<td>2000–2004</td>
<td></td>
</tr>
<tr>
<td>Community-based health insurance</td>
<td>1</td>
<td>Medium</td>
<td>2005–2009</td>
<td></td>
</tr>
<tr>
<td>Community-based health insurance</td>
<td>0</td>
<td>High</td>
<td>2010–2011</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>70%</td>
<td>1990–1994</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.
Table 2. Strength of the evidence on the impact of different types of health insurance on certain domains in Africa and Asia*  

<table>
<thead>
<tr>
<th>Health insurance type</th>
<th>Resource mobilization</th>
<th>Social inclusion</th>
<th>Quality of care</th>
<th>Financing protection</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHI</td>
<td>Strongly positive</td>
<td>Inconclusive</td>
<td>Strongly positive</td>
<td>Strongly positive</td>
<td>Inconclusive</td>
</tr>
<tr>
<td>CBHI</td>
<td>Strongly positive</td>
<td>Inconclusive</td>
<td>Strongly positive</td>
<td>Strongly positive</td>
<td>Inconclusive</td>
</tr>
<tr>
<td>PHI</td>
<td>Inconclusive</td>
<td>Inconclusive</td>
<td>Inconclusive</td>
<td>Inconclusive</td>
<td>Inconclusive</td>
</tr>
</tbody>
</table>

* Only includes studies of medium quality or higher. See text for more detail on quality assessment.

+1/1: The proportion represents net number of negative or positive studies over the total number of included studies on a certain domain.

The review revealed a large variation in study design and quality. Very few studies used experimental or quasi-experimental study designs, and most relied on observational analysis to compare, for example, patterns of utilization among insured individuals with those in a control group (perhaps the same individuals but formerly insured, or different individuals without prior insurance) – a design that can introduce a selection bias and affect results. Relatively few studies reported on resource mobilization and community empowerment, and those that did were of poor quality, which illustrates the challenges involved in measuring impact in these domains. Overall, our review shows the need to develop more rigorous study designs and impact indicators for health insurance scheme impact evaluations. It also suggests the potential usefulness of developing guidelines for appropriately measuring impact.

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-
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Ernst Spaan et al.

Acknowledgements
We gratefully acknowledge the support of the Dutch Platform for Health Insurance for the Poor (HIP) for this research.

Funding: The study was funded by the Dutch Platform for Health Insurance for the Poor (http://www.hip-platform.org/). The funding body had no role in study design, data collection and analysis, interpretation of outcomes, decision to publish, or preparation of the manuscript.

Competing interests: None declared.

690

Systematic reviews

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Ernst Spaan et al.

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et 20 avaient une conception quasi expérimentale. La protection financière, l'utilisation des services et l'inclusion sociale étaient des sujets beaucoup plus communs que la mobilisation des ressources, la qualité des soins et l'autonomisation des communautés. Il existe des preuves solides que l'AMS et l'AMC améliorent l'utilisation des services et protègent financièrement les membres, en réduisant leurs paiements directs, et que l'AMC améliore aussi la mobilisation des ressources. De faibles preuves indiquent un effet positif de l'AMS et de l'AMC sur la qualité des soins et l'inclusion sociale. L'effet de l'AMS et de l'AMC sur l'autonomisation des communautés n'est pas concluant. Les résultats de l'AMP ne sont pas concluants dans tous les domaines, car les études sont insuffisantes. 

Conclusion L'assurance maladie offre une certaine protection contre les effets néfastes des frais d'utilisation et une voie prometteuse vers l'accès à une couverture de soins de santé universelle.

**Resumen**

**El impacto de los seguros médicos en África y Asia: un examen sistemático**

**Objetivo** Evaluar el impacto de los seguros médicos en la movilización de recursos, la protección financiera, el uso de los servicios, la calidad de la atención, la inclusión social y el empoderamiento de la comunidad en países de ingresos bajos y medios de África y Asia.

**Métodos** Se llevó a cabo una búsqueda sistemática de ensayos aleatorios controlados, estudios cuasiexperimentales y de observación publicados antes de finalizar el año 2011 en 20 bases de datos bibliográficas, listas de referencia de estudios relevantes, páginas web y literatura gris. La calidad de los estudios se evaluó por medio de un protocolo de clasificación por calidad.

**Resultados** De los estudios analizados, 159 reunieron los criterios de inclusión, 68 de ellos en África y 91 en Asia. La mayoría de estudios africanos informaron acerca de los seguros médicos basados en la comunidad, y representaban una calidad relativamente muy alta, los estudios acerca de seguros sociales de enfermedad fueron en su mayoría asiáticos y de calidad media. Sólo un estudio asiático se ocupó de los seguros médicos permanentes. La mayoría de estudios fueron de observación, cuatro de ellos presentaban controles aleatorios y 20 tenían un diseño de investigación cuasiexperimental. La protección financiera, el uso y la inclusión social fueron temas mucho más comunes que la movilización de recursos, la calidad de la atención o el empoderamiento de la comunidad. Existen pruebas importantes de que los seguros médicos basados en la comunidad y los seguros sociales de enfermedad mejoran el uso del servicio y ofrecen una protección financiera para los socios porque reducen sus gastos directos y que los seguros médicos basados en la comunidad también mejoran la movilización de los recursos. Por el contrario, hay pruebas poco sólidas acerca del efecto positivo sobre la calidad de la atención y la inclusión social de los seguros sociales de enfermedad y los seguros médicos basados en la comunidad. El efecto de los seguros sociales de enfermedad y los seguros médicos basados en la comunidad en el empoderamiento de la comunidad no es concluyente. Los resultados para los seguros médicos permanentes son inconclusivos en todos los campos porque los estudios son insuficientes.

**Conclusión** Las ofertas de los seguros médicos ofrecen cierta protección contra los efectos perjudiciales de las cuotas de usuarios y son un camino prometedor hacia la cobertura sanitaria integral.
References


Ernst Spaan et al.