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„Factors affecting enrolment rates, healthcare utilization, and claims submission associated with community-based health insurance (CBHI) in developing countries“

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Abstract

This thesis investigates factors possibly contributing to low enrolment rates of community-based health insurance (CBHI), and to low levels of healthcare utilization and claims submission among scheme members. Findings from the literature and from the analysis of WHO health-related data reveal the following factors: socio-economic and socio-demographic characteristics, individual's health status, quality of health services, scheme management structure, knowledge and perception of CBHI, social capital, individual's risk preference, transportation costs, living distance to a health facility or claims office, inability to collect all necessary documents before submission deadline, belief that the claim will be rejected again.

Keywords: community-based health insurance, microinsurance, healthcare, risk-pooling, insurance premium, insurance claim

Abstract (in German)

Diese Arbeit untersucht mögliche Einflussfaktoren, welche die Registrierungsraten der gemeindebasierten Krankenversicherung sowie die Nutzungsraten in der Gesundheitspflege und die Erhebungsraten von Versicherungsansprüchen durch die dort Versicherten gering halten. Die Literaturauswertung sowie die Analyse gesundheitsbezogener Daten der WHO zeigen folgende Einflussfaktoren: die sozioökonomischen und soziodemographischen Charakteristika; der Gesundheitszustand der Person; die Qualität der Gesundheitsdienstleistungen; die Führungsstruktur des Versicherungssystems, die Kenntnisse und Vorstellungen von der gemeindebasierten Krankenversicherung; das Sozialkapital; die Risikopräferenzen der Person; die Transportkosten; die Entfernung zu einer sanitären Einrichtung oder zum Schadensbüro; die Unfähigkeit, alle notwendigen Dokumenten vor der Abgabefrist einzureichen; die Überzeugung, dass der Versicherungsanspruch wieder zurückgewiesen wird.

Schlagwörter: gemeindebasierte Krankenversicherung, Mikroversicherung, Gesundheitspflege, Risikobündelung, Versicherungsprämie, Versicherungsanspruch

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List of abbreviations

CBHI	community-based health insurance
CHE	catastrophic health expenditures
CHF	Community Health Fund
EVI	economic vulnerability index
GH₵	Ghanaian cedi
GNI	gross national income
HAI	human asset index
IMF	International Monetary Fund
ISI	International Statistics Institute
LDC	least developed country
MDG	Millennium Development Goal
MFI	microfinance institution
MHI	micro health insurance
MHO	mutual health organization
MIU	micro health insurance unit
NAD	Namibian dollar
NB	net benefits
NGO	non-governmental organization
OOP	out-of-pocket
PPP	purchasing power parity
RMHC	Rural Mutual Health Care
Rs	Indian Rupee
SDG	Sustainable Development Goal
SES	socio-economic status
SEWA	Self Employed Women's Association
STD	sexually transmitted disease
UHC	universal health coverage
UN DESA	United Nations Department of Economic and Social Affairs
UN IGME	United Nations Inter-agency Group for Child Mortality Estimation
US$	United States dollar
WB	World Bank
WHO	World Health Organization
WTJ	willingness-to-join
WTP	willingness-to-pay

1. Introduction

Microinsurance is "the protection of low-income people against specific perils in exchange for regular premium payments proportionate to the likelihood and cost of the risk involved" (Churchill, 2006, p. 12). Micro health insurance (MHI) is a form of microinsurance that provides health insurance to low-income, mostly rural population groups in developing countries, which are at risk of many severe health issues but are unable to receive adequate insurance from the public or private sectors. MHI aims at increasing people's access to and affordability of health services, and at the same time improving the quality of basic healthcare (Onwujekwe et al., 2009).

MHI can be provided through different types of institutions and delivery channels, such as microfinance institutions (MFIs), non-governmental organizations (NGOs) or mutual health organizations (MHOs) (Churchill, 2006). MFIs provide MHI to vulnerable population groups through microcredit schemes. Microcredit is "the provision of collateral-free small loans, especially to women, to enable them to develop household-based micro enterprises" (Hamid, Roberts, & Mosley, 2011, p. 57). Grameen Bank, the first MFI to deliver banking services to rural, low-income households, was an action research project created in 1976 in Bangladesh by Professor Muhammad Yunus. In addition to loans and savings schemes, an MHI scheme was included in its services in the late 1990s, which was aimed at protecting its clients from serious health shocks that could diminish their work capacity and result in financial ruin (Hamid et al., 2011).

While MFIs and NGOs may or may not be community-based, i.e. organized as a mutual, the MHO is a solely community-based health insurance (CBHI) model. The CBHI scheme members are also its owners, decision-makers and policyholders, with the primary objective of gaining better access to basic health services. Even though membership is voluntary, high participation and control are required in order to increase the effectiveness of collective management. Featuring predominantly in sub-Saharan Africa since the late 1980s and early 1990s, MHOs offer CBHI schemes that use the concepts of risk-sharing and resource-pooling, and apply the theories of mutual aid and social solidarity (Churchill, 2006; Onwujekwe et al., 2009).

This thesis focuses specifically on the CBHI model of MHI. The benefits of CBHI include the protection of scheme members from catastrophic health expenditures (CHE) in India, which applies to low-income populations "if a household expenditure for hospitalization exceeded 10% of the total annual household income" (Devadasan, Criel, Van Damme, Ranson, & Van der Stuyft, 2007, p. 4). For poor households, CHE above this 10% threshold means that many basic needs have to be abandoned, useful assets must be sold, or debt may be incurred, which pushes them deeper into poverty (Devadasan et al., 2007). MHO membership has also delivered effective protection against excessively high hospitalization expenditures in Ghana, Mali, and Senegal (Chankova, Sulzbach, & Diop, 2008). By covering high hospitalization costs, CBHI schemes ensure the livelihoods of low-income people.

Nevertheless, survey data from around the world depict low enrolment/take-up rates of many CBHI schemes. Despite the benefits of MHI for low-income people, coverage remained relatively low. Numerous studies have been conducted in the literature on the issue of low enrolment rates: for example, Basaza, Criel, and Van der Stuyft (2008) hypothesized that there might be rational motives for declining to join CBHI schemes, and subsequently investigated several specific schemes and cases of low enrolment in East and West Africa. Ito and Kono (2009) inspected people's take-up decisions in Karnataka, India based on household data, and employed the concept of prospect theory to explain the issue. Moreover, enrolment in a CBHI scheme did not always increase healthcare utilization for all scheme members; some members reported higher utilization than others. In CBHI schemes requiring members to submit insurance claims after accessing health services, in order for their costs to be reimbursed, many members did not submit claims despite utilizing healthcare (Sinha, Ranson, Chatterjee, Acharya, & Mills, 2006).

This thesis explores the reasons behind low enrolment rates of CBHI, as well as the reasons for the low frequency of healthcare utilization and claims submission among CBHI scheme members in the developing world. In part one, I explain the need for CBHI as a result of the failure of public healthcare systems and private health insurance schemes to adequately provide health insurance to low-income people from the rural and informal sectors. I also describe the mechanisms and benefits of CBHI, along with several case studies of its successful implementation. In part two, I investigate various factors affecting enrolment rates, and rates of healthcare utilization and claims submission among CBHI scheme members, with the help of economic theories and research findings found in the literature. In part three, I analyze recent

socio-economic-demographic and health-related data from different countries in the world, to further explain the factors affecting rates of enrolment, healthcare utilization, and claims submission; and to further justify the need for well-functioning CBHI schemes in developing countries. In part four, I propose potential solutions to the problems revealed in part two, as well as suggest possible methods to improve public and private health insurance in developing countries (as mentioned in part one), in order to reduce and possibly eliminate all health-related financial risks among low-income populations.

2. The need for CBHI in developing countries

2.1. The failure of public healthcare systems

No individual is completely immune to health risks during his/her lifetime. Contracting a severe health problem can result in a decline in individual and/or household welfare due to a fall in earning ability, a loss of income, and a rise in expenditures incurred from seeking healthcare. Other household members may have to give up their income-earning activities in order to take care of sick family members (Tabor, 2005). To mitigate these risks and improve the standards of living, governments and private insurers around the world provide health insurance to the local population by covering the costs of medical care and investing in quality health services. Universal health coverage (UHC) is defined as

> "providing financial protection from the costs of using health services for all people of a country as well as enabling them to obtain the health services that they need, where these services should be of sufficient quality to be effective" (McIntyre & Kutzin, 2016, p. 2).

The World Health Organization (WHO) states three UHC policy goals, namely *equity in the use of health services*, *quality of care,* and *financial protection*. *Equity in the use of health services* narrows the gap between the need and the actual use of health services, both of which the individual must be aware of. *Quality of care* measures the extent to which medical care can achieve optimal outcomes or improve an individual's health. Services must be provided effectively and competently, and healthcare providers are required to communicate empathetically with patients. *Financial protection* is related to healthcare funding, so that

individuals and households can avoid suffering adverse financial effects resulting from paying for medical services. Striving for these goals enables countries to improve their financing arrangements for healthcare, and thus move closer towards achieving UHC (McIntyre & Kutzin, 2006).

Nation-wide healthcare can be financed by the state/public sector via taxation or social health insurance. In tax-funded systems, the population pays contributions to the government indirectly through taxes. In social health insurance systems, contributions are made by households and firms at an amount proportional to salary/income. Beneficiaries of these systems contribute according to their ability-to-pay, but are guaranteed access to the same health services, which makes these systems efficient and equitable (ILO, 2001, as cited in Carrin, Waelkens, & Criel, 2005).

While high-income countries have the appropriate infrastructure and funds to set up a well-functioning public healthcare system, it is not the case in low- and middle-income countries in the developing world[1]. In these countries, a tax-funded system may be impractical due to a weak tax base and a poor capacity for collecting taxes (ILO, 2001, as cited in Carrin et al., 2005). Social health insurance in developing countries is either provided and financed directly by the government, or by other institutions such as employer funds and sickness funds. However, these systems often fail to ensure sufficient financial protection and access to healthcare for the national population (Pauly, Zweifel, Scheffler, Preker, & Bassett, 2006). Poor infrastructure, and the lack of managerial equipment of many governments in poor countries, reduce their ability to "collect contributions and organize reimbursements, to manage revenues and assets and to monitor the necessary health and financial information" (Carrin et al., 2005, p. 799). All of above are indispensable for the organization of an effective social health insurance system. Low political and economic stability in many developing countries are also factors impeding the growth of a robust health sector: without strong political support, the prospect of raising taxes to develop social health insurance is greatly limited (Carrin et al., 2005).

Social health insurance was originally targeted at employees in the formal sector, while bypassing the self-employed, rural, and informal sector workers that make up a large section

[1] See Section 4.1. for a list of developing countries *(Figure 5)*, a classification of countries according to gross national income per capita *(Figures 7-10)*, and a list of least developed countries *(Figure 11)*.

of the population in developing countries (ILO, 2001, as cited in Carrin et al., 2005). In sub-Saharan Africa, most citizens are low-income rural and informal sector workers who cannot get access to social health insurance (World Bank, 1994, as cited in Wiesmann & Jütting, 2000). In India, social and voluntary insurance schemes are aimed at the formal/organized sector, which consists of only 10% of all Indian workers. Extending social health insurance schemes to cover the informal sector is difficult and unlikely, on account of logistical issues such as organizing an effective strategy for collecting premiums (Wyatt & Bhat, 1997, as cited in Ranson, 2003).

In addition, Peters et al. (2002) state that health services provided by the public sector are frequently unsatisfactory or of low quality (as cited in Devadasan, Ranson, Van Damme, Acharya, & Criel, 2006). Low budgetary allocations to the health sector in India have caused "poor utilisation of the primary health care facilities, overcrowding in hospitals, lack of adequate manpower, drugs, and equipment" (Gupte, 1993, as cited in Devadasan et al., 2006, p. 225). Another option is private for-profit health insurance, which is provided by private/commercial insurance companies on the market at a premium. However, premiums for these higher quality health insurance plans are costly (Devadasan et al., 2006). Moreover, serving the low-income population causes commercial insurers to incur high transaction costs from working with large quantities of small policies, targeting a market that has little experience with buying insurance, collecting premium payments from people without bank accounts, and evaluating and reimbursing minor claims. The distribution of insurance products to buyers via brokers, agents, or direct selling, while effective for corporate or high-income customers, is inappropriate for low-income customers. Insurance company employees are generally unaware of the needs of the poor population, while the poor population often does not trust insurance companies with their money. The fact that insurance companies usually reward their employees for selling larger and more expensive policies discourages them from selling smaller policies to the poor (Churchill, 2007).

2.2. Out-of-pocket payments for healthcare

In the absence of social health insurance and other affordable prepayment arrangements for healthcare, rural and informal sector populations in developing countries resort to paying out-of-pocket (OOP) for medical care at the time of need. The poor are particularly vulnerable to health shocks due to their limited resources: according to the World Bank (1999, 2000, 2001)

and the WHO (2000), OOP expenditures in the form of user fees per doctor visit can be high and catastrophic, which could reduce the consumption of indispensable items such as food, housing and/or clothing, and thus lead to or exacerbate poverty (as cited in Ekman, 2004). Kawabata, Xu, and Carrin (2002) claim that more than 150 million people are confronted by CHE each year, and 100 million people around the world are stricken by poverty after healthcare payments (as cited in Saksena, Antunes, Xu, Musango, & Carrin, 2011).

Accessing inpatient care in India frequently leads to CHE: 24% of the patients fall into poverty due to exorbitant user charges (Peters et al., 2002, as cited in Devadasan et al., 2006). According to the Ministry of Health & Family Welfare (2006), 72% of healthcare expenditures in India are paid OOP (as cited in Devadasan et al., 2007). As a result, only around 5% of an Indian family's total household expenditure is spent on health services (Garg & Karan, 2005, as cited in Devadasan et al., 2007). The poorest population quintile utilizes inpatient care six times less than the richest quintile, and is 2.6 times likelier to go without treatment in the case of illness (Peters et al., 2002, as cited in Ranson, 2003). In rural Senegal, a household member staying one night at a hospital can incur an expenditure of over 25% of the annual budget of the household. Older people are more likely to fall ill, and women are frequently hospitalized due to maternity complications (Jütting, 2004). The inability to afford preventative and curative care may result in a worsening of health for the poor.

While an unexpected health issue incurs direct costs such as medicine or treatment, it also generates indirect costs such as a drop in productivity, which lead to a decrease in economic resources (Asfaw, 2003, as cited in Jütting, 2004). Leliveld (2006) revealed in a study on risk-coping strategies in Uganda that households paid for the treatment of chronic illnesses by selling their productive assets such as land or livestock, and by using savings (as cited in Dekker & Wilms, 2010). Poor Chinese families frequently resorted to borrowing money or selling valuable possessions to pay for healthcare (Wang, Yip, Zhang, Wang, & Hsiao, 2005). These strategies are costly and can have a negative impact on the household's economic status, as a result of debt and a reduction in its ability to generate income in the future (Scheil-Adlung, Carrin, Jütting, & Xu, 2006, as cited in Dekker & Wilms, 2010).

2.3. An alternative strategy

To manage the health and economic risks of poor communities that cannot benefit from public or private health insurance schemes, community-based schemes were developed. These CBHI schemes operate on a voluntary, not-for-profit basis, with the main objectives of reducing the financial strain of high treatment costs and preventing individuals from undergoing suboptimal treatment. Suboptimal treatment involves self-treatment using traditional or modern medicine from a pharmacy without consulting a doctor, in order to avoid incurring CHE from seeking professional care (McCombie, 2002, as cited in Robyn, Fink, Sié, & Sauerborn, 2012).

CBHI uses the pooling of resources to cover unforeseeable, health-related costs incurred in the future. A group of people or a community (e.g. a village, a cluster of villages, or a town) pays small, regular amounts of money to a fund; this money serves as the insurance premium/subscription fee. The premium level depends on the perceived affordability by the community, and premiums are usually paid on a household basis: either a fixed price per household regardless of household size or a fixed price per household member. Formal healthcare for members of the community who fall ill is then paid through this common fund instead of OOP. By contributing regular premium payments, individuals and households are thus protected from the risk of CHE (Ranson, 2003; Tabor, 2005; Sinha et al., 2006). According to McCord (2002), basic premiums for a sample of CBHI schemes in Africa and Asia ranged between US$ 1.56 and US$ 11.68 per person per year (as cited in Tabor, 2005).

Figure 1 on the following page presents the basic model of how a CBHI scheme operates. Scheme members pay premiums to the scheme, and the scheme then pays hospitals and healthcare providers for certain health services utilized by its members:

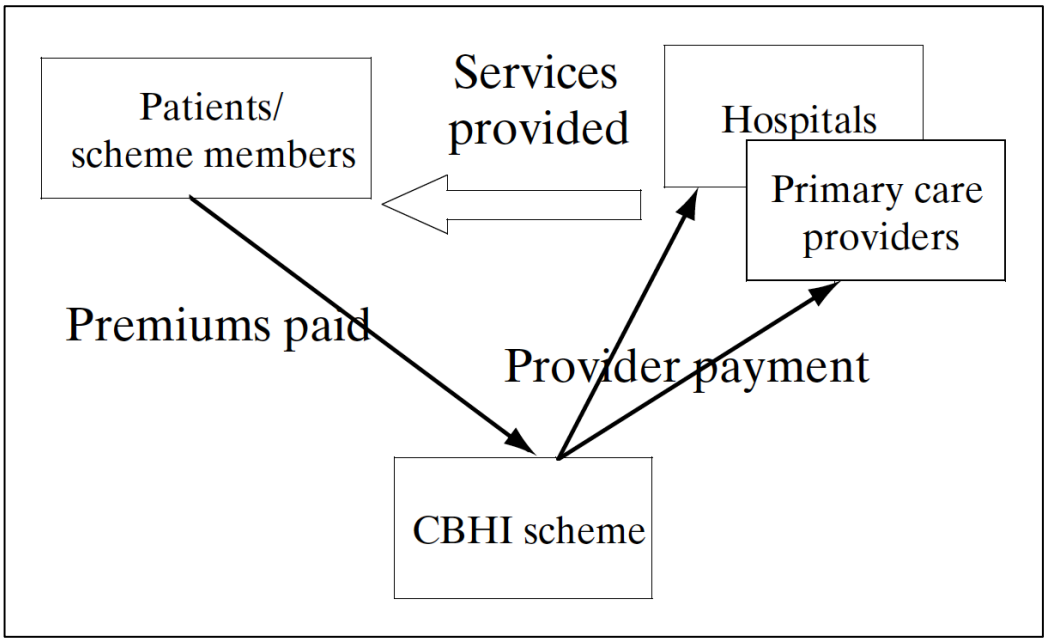

Figure 1. Basic model of a CBHI scheme (Bennett, 2004, p. 150).

Resource pooling enables *risk sharing*, since premiums are not based on an individual's probability of falling sick, and benefits are given to those who need them, i.e. the sickest people in the group. *Cross-subsidization* of healthcare also occurs in such arrangements if the premium level depends on the individual's income level, and there is equal access to healthcare among people of all income levels: the rich subsidize the poor (Ranson, 2003). Besides contributing premium payments, scheme members can usually participate in "defining the contribution level and collecting mechanisms, the content of the benefit package, and/or allocating the scheme's financial resources" (International Labour Office, 2002, as cited in Ranson, 2003, p. 80).

CBHI has been met with much enthusiasm from sub-Saharan African governments and communities since the 1980s and 1990s, and the number of CBHI schemes has expanded significantly: there were over 600 CBHI schemes in West Africa in 2004, compared to just 76 schemes in 1997 (La Concertation, 2004, as cited in Smith & Sulzbach, 2008). The various CBHI schemes differ from each other in terms of "ownership structures, funding flows, benefit package composition, and membership" (Bennett, 2004, p. 148). Memberships range from approximately 100 beneficiaries in many individual sub-Saharan African schemes to over one million beneficiaries in CBHI schemes with nation-wide networks, such as the Community Health Fund (CHF) in Tanzania. In Asia, even the smallest CBHI schemes can consist of several thousand members (Tabor, 2005). Some schemes were established by private NGOs, e.g. Nkoranza in Ghana; some were developed from microcredit schemes in MFIs, where

health insurance was offered as an additional product, e.g. the Self Employed Women's Association (SEWA) in India; and other schemes are provided by MHOs (traditionally named *mutuelles* in French-speaking countries), which are common in West and East Africa, e.g. CHF in Tanzania (Atim et al., 1998, as cited in Bennett, 2004).

In the Philippines, the governmental health insurance scheme PhilHealth covers only about 42% of the population, mainly civil servants and formal sector workers in urban centers. Private health insurers are also present in the formal sector only, and distribute their products to private employers or the rich self-employed. For the uninsured, healthcare must be financed OOP: the national average for OOP expenditure was 60.9% of total health expenditure in 2002. In order to provide financial protection to lower-income informal sector workers in the event of illness, voluntary, community-based grassroots organizations called micro health insurance units (MIUs) were initiated. While some MIUs were initiated by a single provider, commercial insurer, or public authority; others were established as cooperatives or mutual funds, where members were previously linked in another way, such as through a trade organization or an MFI; still other MIUs were launched by external providers such as health NGOs, local churches, or development projects (Dror et al., 2005; Dror, Koren, & Steinberg, 2006).

Benefit packages of CBHI schemes require different premiums, depending on the extent of their coverage of health services. They can include both primary and secondary care, or primary care only; some benefit packages include inpatient care, i.e. hospitalization services, in addition to outpatient care. Choosing a benefit package that provides health promotion services along with curative and preventative care could enhance health awareness, and enable the less educated population to develop better health practices. Benefit packages that only provide partial coverage for a health service require the patient to pay the uncovered costs OOP as a co-payment. Participating health facilities for CBHI scheme members can be private for-profit, private non-profit, or public (Bennett, 2004; Sinha et al., 2006; Hamid et al., 2011). The existence of a wide range of CBHI schemes and benefit packages makes it possible for potential members to choose from different types of protection, according to individual needs.

2.4. The benefits of CBHI

2.4.1. Overview of case studies

Since the introduction of CBHI in developing countries, numerous studies have been conducted using population survey data and statistical analysis methods to investigate the effectiveness of CBHI schemes in protecting members against unexpected health and economic shocks. Many such studies in the literature confirmed the positive impact of CBHI membership: research done in Rwanda by Schneider and Hanson (2006), and in Mali by Chankova et al. (2008) and Franco et al. (2008), has found an increase in medical service utilization among scheme members (as cited in Robyn et al., 2012). Several case studies of successful CBHI schemes in a number of Asian and African countries are presented in more detail in the following subsections.

2.4.2. CBHI in India

Devadasan et al. (2007) reviewed insurance claim registers and scheme member hospitalization data to find out if CBHI membership would decrease the strength and prevalence of CHE in India. The two CBHI providers under study were ACCORD and SEWA: ACCORD is an NGO providing services to the indigenous population of the Gudalur sub-district in Tamil Nadu, while SEWA is a trade union of women from the informal sector that operates chiefly in Gujarat. SEWA members are mostly self-employed and do not receive regular salaries or welfare benefits, thus being vulnerable to financial shocks. Since 1992, it has been offering CBHI to its members and their husbands and children as part of the VimoSEWA scheme. The scheme does not cover outpatient care, only hospital-based care; in contrast to CBHI schemes that pay the healthcare provider initially, members at VimoSEWA pay for hospital treatment first and later submit an insurance claim to the scheme, which either accepts it and reimburses the amount covered by the specific benefit package, or rejects it (Ranson, 2002; Sinha, et al., 2006; Garand, 2005, as cited in Devadasan et al., 2007; SEWA, 2012, as cited in Desai, Sinha, Mahla, & Cousens, 2014).

Study results showed that enrolment in either of the two schemes (ACCORD or VimoSEWA) was able to reduce the number of households that would have faced CHE by half, and also decrease the number of OOP payments. Figure 2 on the following page shows that 49% of patients faced CHE (at the 10% threshold level of annual income) before insurance; after joining VimoSEWA and receiving a maximum reimbursement of US$ 45 for hospitalization

costs, only 23% of patients incurred CHE. These values were statistically significant at the 0.05 level. According to a sensitivity analysis, raising the maximum reimbursement limit from US$ 45 to US$ 90 would further reduce this value to 16% (Devadasan et al., 2007).

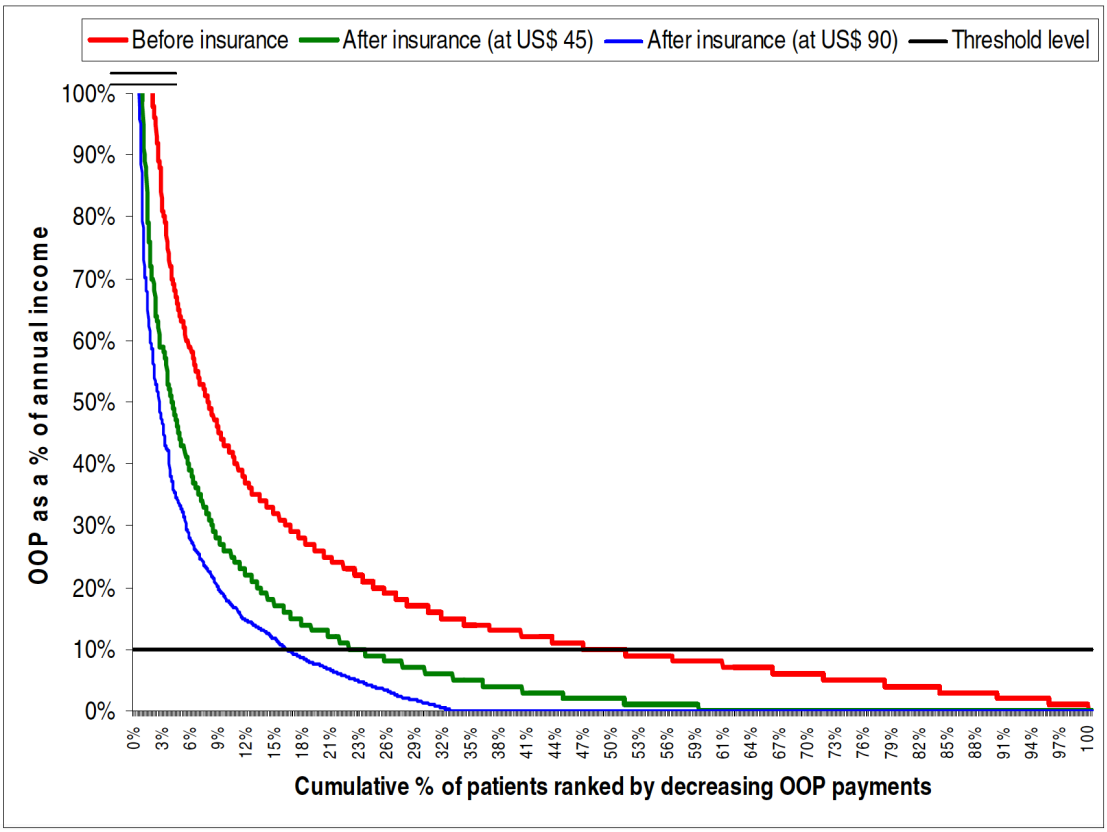

Figure 2. Percentage of patients facing CHE among members of SEWA (Devadasan et al., 2007, p. 8).

In another study, Aggarwal (2010) used propensity score matching techniques to assess the impact of the Yeshasvini CBHI program in Karnataka on four health and economic factors. Yeshasvini is a large community-based prepayment health insurance scheme for cooperative farmers and workers in the informal sector. It covers only surgical procedures that require hospitalization (which are extremely catastrophic) at a low premium. Since its conception in 2003, Yeshasvini reached three million members in 2010, or 15% of its target population. The premium is fixed at a very low flat-rate in order to be affordable: it was just Rs 120 (US$ 2.4) per person per year in 2010. The Yeshasvini scheme is innovative and efficient due to its well-designed structures and mechanisms: it cooperates with private healthcare providers, the cooperative sector, and the government; it improves trust among scheme members, healthcare providers, and scheme managers; and it offers inpatient surgical care that is of high quality and low cost. Yeshasvini has connections with numerous hospitals across the state to guarantee accessibility. The scheme can cover a maximum of Rs 200,000 (US$ 4,000) per person per

year, including free outpatient diagnosis and a price discount of 50% on laboratory tests. Such a benefit package is extremely favorable when taking into account that the average income per person in Karnataka is approximately US$ 516 (Aggarwal, 2010).

The four health and economic factors investigated were: healthcare utilization, financial protection, treatment outcomes, and economic wellbeing. Results of the study, which were based on a household survey sample of 4,109 insured and uninsured households in 82 villages of Karnataka between 2007-2008, depicted a higher probability of seeking outpatient services and surgical treatment among higher-income members; however, lower-income members utilized healthcare more intensively when sick. The goal of financial protection was also achieved: insured individuals were less likely to borrow money or sell assets to pay for medical expenses. The program even offers financial protection for non-surgical treatments such as outpatient diagnosis, for which lower-income households would normally need to borrow money despite its lower costs. Treatment outcomes and economic wellbeing were also better for scheme members than for nonmembers; however, treatment outcomes were more positive for higher-income households. This was likely due to higher-income members having better access to information and resources on healthcare, and residing in districts with better transport and health facilities. In light of these findings, it can be concluded that the Yeshasvini scheme has made a positive impact on the rural and informal sector population of Karnataka, despite merely covering 8.6% of the entire rural population in the state due to its voluntary nature. Making the scheme compulsory for all rural workers may be a step towards more extensive coverage, a wider pool of resources, and an even more favorable benefits package for all members (Aggarwal, 2010).

2.4.3. CBHI in the Philippines

In a study by Dror et al. (2005) in Northern Philippines, data from a 2002 household survey was used to examine membership in six different MIUs. Results indicated that, compared to the uninsured, the insured population utilized healthcare more often, paid more visits to the doctor, and were more frequently hospitalized. The inclusion of primary care in the benefit packages actually increased the rate of hospitalization, since the majority of hospitalization cases were requested by doctors for their patients, and not by the patients themselves. In addition, a higher rate of drug compliance was detected among the chronically-ill insured respondents than among the chronically-ill uninsured respondents, which was highly

significant at the 0.0015 level: 32.64% out of the 242 uninsured were not taking their medication regularly, compared to 20.22% out of the 262 insured. Better drug compliance among insured respondents may have resulted from improved health awareness, after having attended awareness groups organized by several MIUs. A similar study by Dror et al. (2006) investigating the effect of income on the equality of healthcare access using household survey data of five of the above six MIUs, discovered that, in spite of the disparities in household income among the insured, the increase in the access to healthcare was equal among all income groups. Despite the small-scale operations of these MIUs, all of which had 100-200 members, MIU enrolment ameliorated access equality to both inpatient and outpatient care. The results also showed that increasing access to healthcare for low-income groups did not affect the rate of access for higher-income groups, thus implying that risk-sharing is useful, affordable, and rewarding for all scheme members.

2.4.4. CBHI in West Africa

A study conducted in the rural Thiès region of Senegal revealed that CBHI schemes can make a difference in an area where most people have no access to good quality healthcare. While the extended family paid for high-frequency, low-cost illnesses, the cost of hospitalization risk was shared by the whole community through CBHI. Risk-sharing helps insured households to stabilize consumption, increase labor productivity, and improve health status (Jütting, 2004).

Smith and Sulzbach (2008) investigated the effects of CBHI membership on the access to maternal healthcare in Ghana, Mali, and Senegal. While every woman of reproductive age, i.e. between 15 and 49 years, was surveyed in Mali and Senegal in 2004, only women who had given birth a year earlier were surveyed in Ghana. In all three West African countries, a higher number of members compared to nonmembers delivered a child in a modern health facility, although only the results from Mali and Senegal were statistically significant at the 0.10 level. In Ghana, the Nkoranza scheme only insured hospitalization services involving complicated child deliveries, e.g. by caesarean section, and the sample of women who gave birth via caesarean was too small to be significant at the 0.10 level. However, the negative relationship between CBHI membership and OOP expenditures for complicated deliveries in Ghana was highly significant, with a correlation coefficient of -13.309 (log-linear model, CBHI scheme membership induces a fall in OOP expenditure) at the 0.01 significance level.

2.4.5. CBHI in Rwanda

A study by Saksena et al. (2011), which investigated the relationship between enrolment in mutual health insurance schemes and the degree of health service utilization and financial risk protection among the insured and uninsured populations of Rwanda, revealed that CBHI membership led to higher rates of health service utilization and to greater financial risk protection. Scheme members were more likely to use health services when ill, regardless of their level of wealth; the increase in utilization was also higher for members from lower socio-economic quintiles than for members from the highest socio-economic quintile. This suggests that CBHI schemes in Rwanda have the potential to reduce the gap in healthcare utilization between rich and poor households, and thus make access to healthcare more equitable.

A similar study in Rwanda was conducted by Shimeles (2010) to explore the impact of CBHI membership on healthcare utilization, the prevention of CHE, and the standards of living of the poor. A simple probit model was used to analyze data from a living standards survey in 2005-2006, which sampled 6,900 households with approximately 35,000 individuals. Results suggested that CBHI membership was able to increase the utilization of healthcare by 15% after a bout of illness; that households enrolled in CBHI had a lower probability of facing CHE (with a correlation coefficient of -0.2923) compared to unenrolled households; and that health-related consumption shocks decreased with enrolment in CBHI. In all of the above instances, the effects were highly significant at the 0.01 level, and stronger for members from lower socio-economic quintiles than for members from higher socio-economic quintiles. Even though healthcare utilization increased more among the poor, the overall degree of utilization was still higher among the non-poor, due to a greater proportion of the non-poor enrolled in CBHI and a smaller proportion of their incomes paid out as premiums. The flat premium rate among all socio-economic groups of around US$ 2 per person per year in 2008 was discriminatory towards those with low income, and would need to be changed if equity in healthcare utilization among the whole population is to increase.

2.4.6. Case study limitations

Despite the numerous benefits of CBHI schemes presented in the above research studies, the provision and take-up of CBHI are not without problems. As mentioned in the Yeshasvini study, the enrolment rate was only 15% of the target population despite the numerous benefits

of the scheme. In the second Rwanda study, a flat premium rate among all socio-economic groups was found to inhibit utilization equality between the poor and the non-poor.

Other limitations include the unequal demographic distribution among the insured and the uninsured in the West Africa study: insured women in Mali tend to have received more education, while insured women in Ghana were on average younger. In both countries, CBHI scheme members had a higher socio-economic status (SES) than nonmembers (Smith & Sulzbach, 2008). The financial protection obtained from CBHI membership also appears to be limited: CHE was still incurred by 15% of the surveyed members at VimoSEWA even after receiving reimbursement for hospitalization, due to costs not covered by the benefit package. Just 47% of the 1,712 reimbursed claims were fully reimbursed (Ranson, 2002). Additionally, households enrolled in the VimoSEWA scheme experienced difficulties in accessing its benefits: members reported barriers to access that were associated with the scheme's design and management, and with the living distance to a health facility (Sinha et al., 2006).

Another issue is the sustainability of CBHI schemes: if the pool of funds is too small, the premium too low, or the number of claims too high, the scheme may not be able to cover its operational costs or reimburse claims submitted by its members, due to a lack of financial resources. This could lead to bankruptcy in the future (Cohen, McCord, & Sebstad, 2003).

While CBHI has made a positive impact on the health and economic wellbeing of many low-income people, the issues found in various research studies associated with the enrolment in CBHI and the utilization of health services among different population groups in developing countries should not be ignored. These issues are examined in greater detail in the next section.

3. The problems of CBHI schemes

3.1. Low levels of enrolment, healthcare utilization and claims submission

One of the biggest problems related to CBHI schemes is low enrolment levels among the poor. Despite the benefits of CBHI for the rural and informal sector population, many still choose not to enrol. A WHO study of 82 CBHI schemes in 1998 found that very few of them covered large proportions of the target population: the median value was 24.9% of the target population (Carrin & World Health Organization, 2003). Waelkens and Criel (2004) also found from a survey on MHOs in sub-Saharan Africa that the insurance coverage was only 8.2% of the total target population (as cited in Tabor, 2005). Even CBHI schemes in populous Asian countries such as Bangladesh, China, India, and the Philippines achieved a coverage of not more than a third of their target population (Tabor, 2005). Not only are take-up rates of CBHI generally low, but drop-out rates are also high: Many members of a CBHI scheme in Nouna, Burkina Faso failed to renew their memberships after one year. Declining enrolment rates cause a reduction in the risk pool size, and threaten the financial sustainability of the CBHI scheme (Dong, De Allegri, Gnawali, Souares, & Sauerborn, 2009).

Even though scheme members no longer have to pay OOP for medical services, and can thus enjoy more affordable treatment, many members still do not increase their utilization of healthcare: a 2000 study in India comparing claim rates among members of VimoSEWA and nonmembers revealed no relationships that were significant at the 0.10 level between scheme enrolment and the likelihood of being hospitalized (Ranson, 2004, as cited in Sinha et al., 2006). Another issue is the low frequency of claims submission among certain member groups, which is unrelated to the frequency of healthcare utilization: Ranson et al. (2006) found that the poorest rural members were less likely to submit insurance claims to VimoSEWA than less-poor rural members, and members living further away from health facilities submitted fewer claims than members living in closer proximity.

The following subsections identify the factors affecting take-up and drop-out rates of CBHI, and the reasons behind lower healthcare utilization levels and lower claims submission rates among certain population groups, based on research studies in the literature and on my own interpretation of the research findings.

3.2. Factors affecting the level of enrolment

3.2.1. Affordability[2] of the premium

3.2.1.1. Socio-economic status

Many studies in the literature have found that a major factor preventing people from taking up CBHI is the level of premiums paid. In a 2000 qualitative study conducted by Criel and Waelkens (2003) among the target population of the Maliando MHO in Guinea, where coverage fell from 8% in 1998 to 6% in 1999, insufficient financial resources was the most frequently provided reason for not enrolling in the scheme. Many respondents cited personal illness or illness of the breadwinner in the household for not having the financial means to afford the premium. This suggests that those people of low SES who needed healthcare the most were being excluded. Since the household was identified as an enrolment unit, and every household member was required to enrol, large families were often discouraged from joining the scheme due to higher costs incurred.

Despite the risk-pooling mechanism and the relatively low subscription fees of CBHI schemes, the poorest populations still have trouble affording the premium, which is generally a flat-rate to be paid across all socio-economic groups. In five out of the six surveys carried out in Rwanda between 2000-2005, a premium higher than US$ 1 per person per year was found to surpass the monthly income of the lowest socio-economic quartile (Schmidt, Mayindo, & Kalk, 2006). Results from a 2000 household survey conducted among MHO members and nonmembers in four villages in Senegal showed that the lowest income group was underrepresented among members, while the highest income group had a 16% larger probability of enrolling (significant at the 0.05 level). Low-income nonmembers cited a lack of money to finance the premium as the main reason for not enrolling, despite showing knowledge and interest in health insurance (Jütting, 2004). In line with these findings, a major reason given by those respondents from Burkina Faso who did not renew their CBHI membership after one year was being unable to afford it anymore (Dong et al., 2009).

In the Greater Windhoek Area of Namibia, the majority of members of CBHI schemes were from higher-income households: only 4% of the lowest socio-economic quintile were enrolled in 2008 compared to 67% of the highest socio-economic quintile. Even though membership

[2] The term *affordability* is sometimes criticized in the traditional microeconomic literature (McCloskey, 1985). However, in this branch of literature, the use of this term is common.

was high at 44% of all households, enrolment across all income/socio-economic groups was inequitable (Namibia Okambilimbili Survey, 2008, as cited in Gustafsson-Wright, Asfaw, & van der Gaag, 2009). Thus, while low-income sections of a country's population can benefit from CBHI membership, the poorest people remain excluded unless premiums can be set even lower, or if the premium level for each individual were set according to his/her ability-to-pay. The SES of the target population plays an important role in determining the affordability of CBHI membership premiums.

3.2.1.2. Payment modalities

A further issue related to the affordability of premium payments is the timing and modalities of premium collection. De Allegri, Sanon, and Sauerborn (2006) found that the vast majority of household heads from Nouna, Burkina Faso that were interviewed believed the new local CBHI premium level to be fair; however, all respondents were critical of the restrictions in the timing of premium payments, and the fact that diluting the payment over a period of time was not allowed. Premiums were required to be paid for each member of an entire household at once, which deterred large households from enrolling due to the difficulty of producing a huge amount of cash. A nonmember mentioned that dividing the premium into smaller parts and being allowed to pay in instalments would have enabled him to enrol; a scheme member pointed out that not everyone has the money at the same time of year, but those who cannot pay upfront should still be permitted to enrol, as they will have the money later (De Allegri et al., 2006). The incomes of rural and informal sector workers are often irregular, unstable, or seasonal: farmers only earn income when they sell their produce during harvest season, so they are more capable of paying during some months than others. In Guinea, nonmembers and members of the Maliando scheme alike reported the same concerns regarding payment modalities (Criel & Waelkens, 2003).

3.2.2. Household income level and WTP

Even if premiums were affordable, some people are still less willing to regularly give up a proportion of their income for CBHI membership: ability-to-pay does not always translate to willingness-to-pay (WTP). In a qualitative study in Burkina Faso, a male interview participant commented that "many people cannot enrol because of lack of means, but others who have the money, just do not want to spend it" (De Allegri et al., 2006, p. 1522). A flat premium rate paid by members of all income/socio-economic groups is regressive, as the premium constitutes a

higher proportion of income for poorer individuals (Onwujekwe et al., 2009). Several studies have been carried out in the literature to investigate the differences in the WTP of individuals and households for health insurance, depending on their SES. The definition of WTP is as follows:

> "willingness-to-pay (WTP) is used to estimate utility in monetary terms. Economic theory argues that the maximum amount of money an individual is willing to pay for a commodity is an indicator of the utility or satisfaction to her of that commodity. WTP is one of the economic techniques for eliciting consumer preference" (Dong, Kouyate, Snow, Mugisha, & Sauerborn, 2003, p. 154).

In research studies, WTP is generally calculated using contingent valuation and a bidding game technique for a hypothetical benefits package (Dong, Kouyate, Cairns, & Sauerborn, 2004). In a 1997 pilot study in Ghana, results estimated from an ordered probit model showed that a rise in household income was associated with a WTP higher monthly premiums: an increase in income of 10% induced a 59.1% probability of being willing to pay GH₵ 5,000 per month. For a five-member household, 98.7% of respondents were willing to pay a low premium of GH₵ 1,000 per month, whereas only 63.6% of respondents were willing to pay a high premium of GH₵ 5,000 per month (Asenso-Okyere, Osei-Akoto, Anum, & Appiah, 1997).

In a study by Dror, Radermacher, and Koren (2007) that took place at seven MIU locations in India, multivariate analysis showed that the positive relationship between WTP and household income was significant at the 0.05 level for both the insured and uninsured respondents, with a standardized correlation coefficient of 0.139. Zhang, Wang, Wang, and Hsiao (2006) found a positive relationship between SES and farmers' willingness-to-join (WTJ) the Rural Mutual Health Care (RMHC) scheme in Guizhou, China: a rise in income of ¥ 100 increased the WTJ by 0.83-1.54%, significant at the 0.10 level. Owners of a luxury asset also had a higher probability of enrolling in CBHI than those who owned no luxury assets.

Gustafsson-Wright et al. (2009) analyzed data from 1,750 participants in the 2008 Namibia Okambilimbili Survey, and found that participants were willing to pay an average of 2.25% (NAD 47.50 or US$ 6.60) of their monthly income to enrol in a health insurance scheme. The average WTP value increased with income: the highest socio-economic quintile was willing to

pay almost three times the value of the lowest socio-economic quintile (NAD 85 vs. NAD 33 per person per month). However, the lowest socio-economic quintile was willing to pay over 11% of its income for the premium, compared to just 1.22% of the income of the highest socio-economic quintile. Dror, Radermacher, et al. (2007) also found that lower-income households were willing to pay a larger proportion of their income than higher-income households in India. These findings suggest that CBHI is more valuable to the poorest, who are also at a higher risk of incurring CHE.

3.2.3. Socio-demographic criteria

3.2.3.1. Overview

Apart from SES/household income level determining the decision to enrol, research done on various non-economic factors that affected people's WTP and WTJ a CBHI scheme have shown that certain demographic groups, and individuals living in certain household situations, were more likely to take up or drop out of health insurance than others.

3.2.3.2. Age, gender, and education level of the individual

Males are generally more willing to pay higher premiums than females: in the Ghana study by Asenso-Okyere et al. (1997), 15.6% of the men were willing to pay a high monthly premium of GH₵ 5,000 compared to 11.8% of the women, while only 17.8% of the men were willing to pay a low monthly premium of GH₵ 1,000 compared to 29% of the women. Dong et al. (2003) also found that men were willing to pay CFA 928 more for CBHI membership than women in Burkina Faso. Age has a negative impact on WTP: older people were less willing to pay higher premiums (Dong et al., 2003). These findings suggest that membership in CBHI schemes based on the household as the enrolment unit is an effective way to protect women and the aged, who are otherwise less likely to enrol on their own.

Results from Asenso-Okyere et al. (1997) showed that an increase of 10% in a person's years of schooling can increase his/her WTP a high household premium of GH₵ 5,000 by 12% in Ghana. Dong et al. (2003) and Dror, Radermacher, et al. (2007) also found that a higher number of years of schooling was positively correlated with WTP, in Burkina Faso and in India respectively. In rural Guizhou, China, farmers who received a junior high education had a greater likelihood of enrolling in the RMHC scheme than illiterate farmers (Zhang et al., 2006). These findings indicate that having a higher education level increases an individual's

probability of enrolment, which is likely linked to a higher-paying job or better knowledge and awareness of health-related risks.

3.2.3.3. Age, gender, and education level of the household head

In a study investigating the WTP of 698 household heads in Nouna, Burkina Faso for themselves (individual WTP) and for other household members (WTP per capita), male household heads had a higher WTP per capita than female household heads (Dong et al., 2004). Regarding the individual WTP, male household heads were willing to pay CFA 1,042 more for health insurance than female household heads (Dong et al., 2003). This supports previous findings that males have a higher WTP than females on average, whether paying for themselves or for household members. The age of the household head had a negative impact on both the individual WTP and the WTP per capita: the older the household head, the less he/she was willing to pay for health insurance (Dong et al., 2004).

A higher education level increased both the individual WTP and the WTP per capita for household heads in Burkina Faso and in Nigeria, according to Dong et al. (2004) and Onwujekwe et al. (2010) respectively. Dong et al. (2009) also found that the household heads surveyed who dropped out of CBHI had lower education levels than those who did not drop out. Better educated household heads are likely to work in higher-earning jobs, and thus have a higher level of disposable income.

3.2.3.4. Dependency ratio

An increase in the dependency ratio, i.e. the number of unemployed individuals in proportion to the number of employed individuals in a household, was found to reduce the WTP high premiums in Ghana. A higher dependency ratio indicates a lower income per capita, and hence less money available to pay for health insurance (Asenso-Okyere et al, 1997). In Burkina Faso, larger households were more likely to discontinue their CBHI membership. However, a larger number of children in a household was linked to a higher individual WTP, but a lower WTP per capita of the household head (Dong et al., 2004; Dong et al., 2009). This suggests that household heads value their own health more when they have more dependent children to feed and take care of.

3.2.3.5. Marital status

Dong et al. (2004) found that single household heads in Burkina Faso had a higher WTP per capita than married household heads. This is likely due to the fact that married people typically have several children, and an increased number of dependents decreases the WTP per capita, as stated earlier. Dong et al. (2003) reported that married women had a lower WTP than married men, while unmarried women had a higher WTP than unmarried men, age and income being largely the same. Possible reasons could be that unmarried women are more concerned with their health, and that unmarried men would rather spend their income on products other than health insurance.

3.2.3.6. Distance to a health facility

Dong et al. (2003) found that WTP fell with increased living distance to a contracted health facility in Burkina Faso: the smaller the distance, the higher the likelihood of enrolment in CBHI. Zhang et al. (2006) also reported that farmers living closer to a health facility were more willing to enrol in the new Chinese RMHC scheme. The reason could be that having easier and faster access to a healthcare facility motivates people to utilize its services more frequently.

However, Dong et al. (2009) found that living closer to a health facility actually increased the probability of dropping out. The explanation for this contradictory result would be that those living further away faced higher nonmedical costs, such as transportation costs, when seeking healthcare, and therefore viewed CBHI as a valuable tool to help relieve part of their financial burden, since these nonmedical costs were also covered by the benefit package. Those living in close proximity to a health facility were more likely to drop out, since they only incurred medical costs and thus felt more capable of paying them directly OOP.

3.2.3.7. Recent exposure to high medical costs

Dror, Radermacher, et al. (2007) found that Indian households which had gone through an episode of hospitalization in the past two years were willing to pay a higher premium. Incurring recent health expenditures had a positive effect on WTP in Burkina Faso, while having a smaller number of illness episodes in the last three months increased the likelihood of drop-out (Dong, Kouyate, Cairns, Mugisha, & Sauerborn, 2003, as cited in Dror, Radermacher, et al., 2007; Dong et al., 2009). These findings imply that being exposed to a recent health shock

makes people more willing to enrol in CBHI, in order to avoid paying high health-related expenses again in the future.

3.2.3.8. Health status and adverse selection

According to Churchill (2006), "adverse selection occurs when the risk profile of the group insured is worse than what would be expected in the general population" (p. 68). People with poor health status are more likely to join a health insurance scheme than people with good health status, in order to access the much-needed benefits. Asymmetric information is present between providers and consumers of health insurance, since consumers are aware of their own level of risk but providers do not know the consumers' risk levels. Thus, the premium set is based on the average risk, and does not reflect the higher risk of consumers with poor health status (Rothschild & Stiglitz, 1976, as cited in Wang, Zhang, Yip, & Hsiao, 2006). This premium level will be too low to cover all costs, and may lead to problems of financial sustainability for insurers (Cutler & Zeckhauser, 2000, as cited in Wang et al., 2006).

Wang et al. (2005) found that, in addition to the income level affecting enrolment, Chinese farmers with self-assessed poor health were more likely to join the RMHC scheme than farmers with self-assessed good health. The fact that income level was a greater influence on RMHC enrolment for healthy farmers, while having little effect on enrolment for less healthy farmers, implies that farmers with good health would only enrol if they had a sufficiently high disposable income. Farmers with poor health, on the other hand, would enrol regardless of their income level, in order to cure existing chronic illnesses. Alternatively, those from the low-income group participating in the RMHC scheme were more likely to have poor health. Health status has a larger influence on enrolment for lower-income people than for higher-income people.

Even though RMHC enrolment was at the household level, not all households turned out to be fully enrolled: in approximately a third of the 1,173 sampled households from the study by Wang et al. (2006), some individuals within a household were enrolled while others were not, which broke the scheme's rules. Research into adverse selection revealed that, in these partially enrolled households, the individuals who were not enrolled had the best health, whereas the individuals who were enrolled had the worst health. Despite a government subsidy on the premium, some people still chose not to enrol; health status was a bigger deciding factor for

RMHC enrolment, particularly in the partially enrolled households. To reduce/eliminate this problem of adverse selection and to increase scheme membership, enrolment at the household level could be better enforced.

Ito and Kono (2010) found a larger proportion of members with poor health enrolled in the Yeshasvini scheme than members with good health, which indicated that adverse selection was present in Karnataka, India. However, healthy household heads were more likely to enrol than sick household heads. A reason for this could be that sick household heads were less able to work and thus earned less income, which made affording the premium more difficult.

3.2.3.9. Interconnectedness between the factors

Many of the socio-demographic factors discussed above are related: Dong et al. (2003) found that compared to men, women in Burkina Faso had a lower education level, lower income and expenditure, a lower probability of becoming the household head, and a higher probability of getting married. This could explain why most women had a lower WTP than men, since less education and lower income were related to a lower WTP. Lower incomes are associated with lower expenditures, which means that women could not spend as much money as men. Since the household head is likely to be the main breadwinner, this implies that female-headed households have a lower total household income than male-headed households. Thus, all individuals in female-headed households should have a lower WTP than those in male-headed households, due to their lower SES. This is supported by data from the Namibia Okambilimbili Survey (2008), which reported that more individuals from male-headed households (31%) joined CBHI schemes in Windhoek than individuals from female-headed households (21%) (as cited in Gustafsson-Wright et al., 2009).

The higher marriage rate among females may explain their lower education and income levels compared to males: in Africa, men are traditionally the breadwinners, while women attend to domestic duties. Poor families prefer to send their sons to school first, so that they can earn higher incomes in the future; whereas their daughters are married off at a young age, so that the bride's family can receive an amount of money known as the *bride price* for the marriage. The typical female role in society does not call for much education, and illiteracy rates are particularly high among females: 89.6% of the women in Burkina Faso could not read or write, compared to 65.7% of the men (Dong et al., 2003).

The fact that women experienced fewer episodes of diseases than men may further clarify their lower WTP for health insurance: according to Sims (1994) and to the WHO (1998), men were more at risk for tropical infections such as malaria, HIV/AIDS, STDs, violence, and injuries that were possibly job-related (as cited in Dong et al., 2003).

WTP studies are useful for CBHI schemes to consider when setting the optimal premium level at which the largest number of individuals and households from different socio-economic and socio-demographic groups would be willing to pay, in order to achieve maximum coverage.

3.2.4. Quality of health services

Even though CBHI scheme members can get easier access to health services, utilize services more quickly, and pay less for the same services, many members are dissatisfied with the quality of health services. Healthcare provided in public health facilities are seen as inferior to that in private facilities and hospitals: focus group participants in the Guinea study by Criel and Waelkens (2003) complained that the Yende health center did not cure their illnesses, due to the ineffectiveness of the drugs distributed. Not only was the quality of drugs inadequate, but patients were often prescribed the same drugs for different illnesses. Moreover, the medical staff at the health center was labeled as unskilled and unfriendly towards patients; since the health workers could not receive any additional financial benefits from MHO members, they had little motivation to improve their service quality. As a result, respondents preferred to buy more expensive but effective drugs from the private sector, or go to a hospital to receive good quality medical care at a higher cost. 14 of the 137 participants believed that everyone would enrol in the Maliando MHO if it offered good quality healthcare, and eight participants remarked that potential members would be deterred from joining the scheme after observing the poor quality of care received by the members.

According to De Allegri et al. (2006), the respondents' complaints about the quality of healthcare in Burkina Faso were related to the length of time spent waiting to be treated, too many drugs prescribed, and discriminatory treatment associated with the patient's SES. One female member mentioned that "…there are times when you get there and they do not treat you, but if you arrive and the nurse knows you, he treats you well" (De Allegri et al., 2006, p.

1523). There was no criticism of the capabilities of the health workers in treating patients, only of their attitudes.

3.2.5. Scheme management structure

A good CBHI management structure is vital for procedures to run smoothly and to provide optimal member satisfaction. UMASIDA is a CBHI scheme in Dar es Salaam, Tanzania started in 1997. According to McCord (2001), individual premiums were pooled into a group fund, and members who wanted access to health services were required to obtain the group leader's permission first. UMASIDA groups frequently rejected member requests for early access, stating that they were not ill enough, and that it would be too expensive for the group. Thus, illnesses often progressed into later stages; one healthcare provider remarked that UMASIDA members appeared to seek medical treatment later than the average person. In addition, doctors often prescribed too much medication, or prescribed medication for which they could earn more money. Group leaders sometimes stole from the group fund. In such a poor management structure, the access to and quality of healthcare is undermined, and potential members have little incentive to enrol.

Regarding CBHI provided at VimoSEWA, McCord (2001) reported that its basic benefit package was structured in such a way that members had no incentive to get treatment in the early illness stages. Members could only obtain health insurance coverage when they got more ill, and had to be hospitalized for at least 24 hours; the reimbursement of hospitalization expenses was only received after three months. Ranson (2002) reported a waiting time of four months between hospital discharge and reimbursement throughout the SEWA study. As mentioned previously, many patients still faced CHE due to incurring costs that could not be reimbursed. These findings suggest that the design and structure of VimoSEWA's benefit packages were suboptimal, and failed to fully reduce the health risks and the financial burden of all members, which made the scheme less attractive to potential enrollees.

3.2.6. Knowledge and perception of CBHI

A lack of knowledge about the mechanisms of CBHI prevents people from valuing the importance of health insurance, and thus enrolling in a scheme. In the study by McCord (2001), several members at UMASIDA and SEWA were concerned about purchasing health insurance but not benefiting from it due to not falling sick; it felt like a waste of money, and these

respondents were unlikely to renew their memberships in the future. This shows that many people still have a poor understanding of the purpose of insurance. Education and marketing activities could be undertaken by CBHI schemes among the target population, in order to increase people's knowledge of and demand for health insurance.

Perceptions of CBHI are also influenced by inadequate knowledge. According to De Allegri et al. (2006), both members and nonmembers of a scheme in Burkina Faso believed that skepticism of CBHI hindered enrolment. Skepticism was associated with insufficient understanding of health insurance mechanisms, the unwillingness of health providers to cooperate with CBHI schemes (due to lower margins made on patients enrolled in CBHI), and negative experiences with mutual arrangements in the past. Even though the principles of insurance were well understood by all interviewees, only 10 of the 32 interviewees were able to accurately describe the scheme's main features and management structures, hence indicating a good knowledge of CBHI in general but a poor knowledge of the specific scheme. This creates mistrust in the providers of insurance. In Guinea, some focus group participants did not want to invest their limited resources in new microinsurance schemes, in case of embezzlement or fraud. Thus, it is important that CBHI management is transparent and can fulfill its tasks professionally, in order to improve the scheme's trustworthiness (Criel and Waelkens, 2003).

3.2.7. Social capital

Social capital is defined by Coleman (1990) and Putnam (1993) as "those features of social structures, such as levels of interpersonal trust and norms of reciprocity and mutual aid, which act as resources for individuals and facilitate collective action" (as cited in Zhang et al., 2006, p. 234). Demand for CBHI was affected by the solidarity and reciprocity aspects of social capital in rural Burkina Faso (Sommerfeld, Sanon, Kouyaté, & Sauerborn, 2002, as cited in Zhang et al., 2006).

Social capital was also found to increase farmers' WTJ the new RMHC scheme in China (Zhang et al., 2006). In 1978, the national CBHI scheme Cooperative Medical System (CMS), which was funded by the collective economy and insured around 90% of Chinese villages in the 1970s, began to collapse as a result of a shift in the country's economic system from collective agricultural production to private production. As a consequence, over 87% of the rural population had no health insurance in 1998, and the exclusion from basic outpatient care

was common due to an inability to pay user fees (Ministry of Health P.R.C., 1999, as cited in Zhang et al., 2006). To improve the rural population's accessibility to health services, the Chinese government launched a voluntary CBHI scheme, the RMHC, in Fengsan Township of Guizhou Province in 2002. Each member was also given a subsidy to the premium of ¥ 10-20 (US$ 1.25-2.50) per year to increase his/her ability-to-pay (Liu, 2004, as cited in Zhang et al., 2006; Zhang & Wang, 2008).

In an experimental study on the RMHC by Zhang et al. (2006), *trust* and *reciprocity* were adopted as indices to represent the level of social capital in a household survey. Using a five-point Likert scale, individuals from 1,157 rural households were asked various questions about their degree of trust in the other villagers of their community, as well as the degree of reciprocity between villagers in terms of helping and supporting each other. Results indicated that both the trust and reciprocity indices correlated positively with the probability of enrolling in the RMHC scheme: respondents in the high reciprocity group were 1.47 times more likely to enrol than respondents in the low reciprocity group (statistically significant at the 0.05 level), if the individual and the government both paid ¥ 20 towards the premium. Moreover, the number of villagers in the community who were willing to lend money to the respondent had a slight positive influence on the respondent's WTJ the scheme. This suggests that a fall in disposable income after paying the premium is more manageable for farmers when they can get access to external financial support and reciprocity. Respondents were also more likely to help others pay the premium, knowing that their good deed will be reciprocated.

Social capital can also contribute to better management and awareness of CBHI, which make it more attractive to the target population. The high degree of social capital among Indian microfinance groups, cooperatives, and trade unions can "help people in enrolling members, informing them about health insurance and possibly help in collecting premiums and managing claims and reimbursements" (Devadasan et al., 2006, p. 233). However, social capital was only secondary to the affordability of the premium, a rational scheme design, and maximum coverage by the benefit package in influencing the WTJ.

3.2.8. Individual risk preference

Ito and Kono (2010) examined the role of risk preference in determining the enrolment decision of an individual, using prospect theory from behavioral economics. Prospect theory was

developed by Kahneman and Tversky (1979) to explain the behavioral patterns of individuals in economic decision-making. While classic expected utility theory typically assumes people to be risk-averse, implying that the increase in utility due to an increase in wealth diminishes at increasingly higher wealth levels, prospect theory suggests that people are risk-averse towards gains in wealth but risk-loving towards losses in wealth (as cited in Ito & Kono, 2010). Individuals set their current wealth level as the reference point, and consider lower future wealth levels to be losses and higher future wealth levels to be gains, as depicted in Figure 3 below:

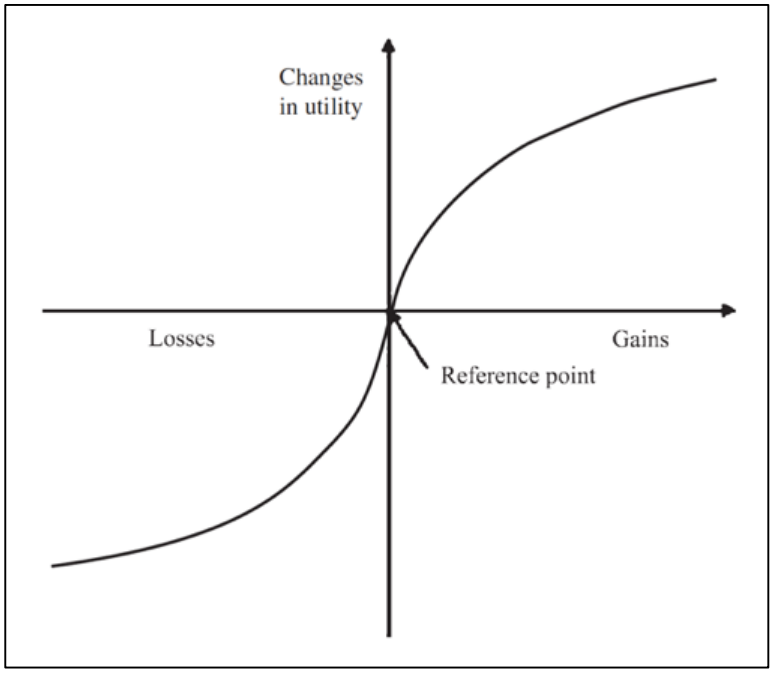

Figure 3. Utility function depending on gains and losses from a reference point (Ito & Kono, 2010, p. 81).

The utility function according to prospect theory is concave for gains but convex for losses. An example would be as follows: given the opportunity to choose between a 100% chance of gaining $500 (no risk) and a 50% chance of gaining either $1,000 or $0 via a coin toss (i.e. 50% risk of gaining double the certain amount or gaining nothing, respectively), people would tend to choose the $500 with certainty over the riskier "lottery". This shows that individuals are unwilling to take risks when it comes to certain vs. uncertain monetary gains: they are risk-averse. On the other hand, given the opportunity to choose between a 100% chance of losing $500 (no risk) and a 50% chance of losing either $1,000 or $0 via a coin toss (i.e. 50% risk of losing double the certain amount or losing nothing, respectively), people would tend to choose the riskier "lottery" over the certain loss of $500. This shows that individuals are more willing to take risks when it comes to suffering certain vs. uncertain losses: they are risk-loving.

Since insurance covers only monetary losses, individuals deciding to enrol in a health insurance scheme will behave risk-loving according to prospect theory. This implies that, given the choice between losing a fixed monetary amount (i.e. the premium) with certainty, and either losing a higher monetary amount due to healthcare costs in the case of illness, or losing nothing in the case of no illness in the future, people would tend to choose the riskier outcome and thus decide not to enrol. Probabilities of loss can be subjective and different from the objective probabilities, which means that some people may rate the risk of incurring a health-related cost higher than others (Slovic et al., 1997, as cited in Ito & Kono, 2010).

To explain the low enrolment levels in the Yeshasvini scheme using prospect theory, Ito and Kono (2010) collected data from questionnaires and lottery experiments among members of 209 households in rural Bangalore, Karnataka in 2008. In the lottery experiments, participants had to choose between two lotteries in four sets of different hypothetical situations, according to personal preference: a lottery A whose outcomes stayed constant in each set of situations, and a lottery B whose outcomes varied in every single situation. In some situations, lottery A was more attractive than lottery B, and vice versa. Outcomes consisted of either receiving a specific monetary amount (gain) in one set of situations, or paying a specific monetary amount (loss) in the three other sets of situations. The participants' risk preferences were then categorized as risk-averse, risk-neutral, or risk-loving for both gain and loss situations, according to their lottery choices. Findings were largely consistent with prospect theory: 62% of the respondents were risk-averse in gain situations, choosing the certain lottery A over the risky lottery B; and around 80% of the respondents were risk-loving in loss situations, choosing the risky lottery B over the certain lottery A. The fact that most people welcomed risks when faced with the possibility of loss contradicts the purpose of insurance, which is to reduce the risk of loss. On account of the differences in risk preference regarding gains and losses, buying insurance could be reframed as a certain gain (e.g. insurance benefits) rather than as a loss, in order to increase enrolment rates.

3.3. Factors affecting healthcare utilization and claims submission

3.3.1. Inequity of healthcare utilization

3.3.1.1. Overview

Even among enrolled individuals, certain people accessed and utilized health services more frequently than others. Factors found in the literature that caused inequity in healthcare utilization among different groups of CBHI members include: income level, health status, quality of health services, transportation costs due to living distance to a facility, and opportunity costs of time related to household responsibilities.

3.3.1.2. Income level

Wang et al. (2005) found that, among Chinese farmers with medium or good health status enrolled in the RMHC scheme, those with high income were more likely to utilize outpatient care than those with low income. The RMHC scheme has a system of low premiums and high co-payments, meaning that part of the costs not covered by the scheme must be paid OOP. This makes it less beneficial to low-income members, since the OOP amount constitutes a larger proportion of their income. Thus, low-income members are most likely to forego outpatient care, as it is usually prevention-oriented or for minor illnesses.

Net benefits (NB) is defined as "the difference between the value of services that an individual receives and the sum of premium and co-payment that the individual pays out-of-pocket" (Wang et al., 2005, p. 367). The higher the co-payment for a health service, the lower the NB derived from the service, and the less likely it will be consumed. According to Wang et al. (2005), high-income farmers with poor health received greater NB from both outpatient and inpatient care than low-income farmers with poor health; this is likely because high-income members can afford to pay higher co-payments than low-income members, as mentioned earlier. Inpatient services generated a smaller difference in NB than outpatient services among members of all income levels, which suggests that the RMHC scheme was fairly capable of protecting all members from CHE incurred as a consequence of hospitalization. The fact that high-income members in the study received NB that were ¥ 7.26-15.41 higher than the NB of low-income members, and utilized healthcare more frequently despite paying the same premium, implies that the low-income members were subsidizing the high-income members. Low-income members benefit less from the scheme due to the barrier of high co-payments, but reducing/eliminating these co-payments and charging a higher premium instead would pose as

a barrier to enrolment. To make healthcare utilization more equitable among all members, premiums and co-payments could be charged at different rates depending on the income level of the individual/household.

Since VimoSEWA reimburses its members' claims only after treatment, poor members often have to take out a loan in order to pay for hospitalization initially. This is problematic if such loans are unavailable, or the interest on the loan is high and cannot be paid back; healthcare remains unaffordable for many low-income people in India despite being insured (Ranson et al., 2006). In a study by Sinha et al. (2006), the participants of a focus group discussion cited a lack of financial resources as a reason for not seeking hospitalization; a member believed that not going to a doctor was better than borrowing money. A claims system that offers reimbursement of costs only after treatment hinders the poor from accessing much-needed outpatient care.

3.3.1.3. Health status and moral hazard

Concerning the inequity of healthcare utilization associated with health status, Wang et al. (2005) reported that members with poor health utilized inpatient care more often and received greater NB from the RMHC scheme than members with good health, regardless of their income level. The reason could be that sick members are more likely to be hospitalized, so they value to a larger extent the ability to access health services at a lower cost under the scheme.

Gumber (2001) suggested that female VimoSEWA members were more likely to seek hospitalization for minor illnesses such as persistent fever, diarrhea, and gastroenteritis as an initial treatment, since only inpatient care was covered by the scheme (as cited in Desai, Sinha, Mahal, & Cousens, 2014). This is a form of moral hazard, which occurs when "people with insurance use more services than they would if they did not have coverage only because they know that they are protected" (Churchill, 2006, p. 68). Not providing outpatient care in the scheme's benefits package induces members with common ailments to consume more inpatient care, in order to avoid paying OOP for outpatient care *(demand-side moral hazard)*. However, there was no indication of moral hazard in the study by Desai et al. (2014): the risk of hospitalization for a sample of 1,934 female VimoSEWA members and nonmembers in Gujarat was evenly distributed among all types of severe and non-severe illnesses, and treatment-seeking behavior within a period of 30 days revealed that scheme members were no more likely

than nonmembers to be hospitalized for at least 24 hours. Most scheme members chose to seek outpatient care first, due to the higher opportunity costs associated with hospitalization (Sinha, Desai, & Mahal, 2013, as cited in Desai et al., 2014). However, scheme members were more likely to agree to being hospitalized when it was proposed to them by doctors, such as when minor illnesses increased in their severity. This would not be considered as moral hazard if hospitalization was necessary and beneficial, unless the doctors prescribed inpatient care more often for the insured *(provider-induced moral hazard)*. Further research is needed to completely rule out moral hazard of any kind among VimoSEWA members (Desai et al., 2014).

3.3.1.4. Quality of health services

Poor quality of health services at a health facility is another factor influencing utilization levels. In southeast Nigeria, many of the respondents in the study by Onwujekwe et al. (2009) who did not increase their utilization of medical services after enrolling in the local CBHI mentioned reasons such as inadequate medical equipment, the lack of medicine, delays in getting treatment, OOP payment for some services, the unavailability of medical staff, and dissatisfaction with the skills of medical staff. Suggestions from the respondents on improving the quality of healthcare included: providing more medical staff at the health facilities, making medicine available to patients, and acquiring better medical equipment.

3.3.1.5. Transportation costs and opportunity costs of time

Poor CBHI scheme members living in rural areas far away from urban centers and health facilities may choose not to seek inpatient care upon falling ill, due to unavailable or costly transportation. A female respondent who worked at VimoSEWA remarked that reimbursement fees for hospital-based care in Ahmedabad city, Gujarat would only be enough to cover the transportation costs of those living in remote rural districts (Ranson et al., 2006; Sinha et al., 2006).

Opportunity costs of time also hinder healthcare seeking; rural women with many household duties such as cooking, childcare, and the care of livestock were often unable to take time off to be hospitalized. These women preferred to take some medicine and carry on with their chores (Ranson et al., 2006; Sinha et al., 2006).

3.3.2. Inequity of claims submission and reimbursement

3.3.2.1. Overview

For CBHI schemes requiring members to submit claims after treatment, not all members who utilized healthcare submitted insurance claims for cost reimbursement, and not all claims were accepted by the scheme's administrators. According to Ranson (2002), the rate of claims submission among VimoSEWA members was on average only 18 claims per 1,000 members per year. Ranson et al. (2006) examined the difficulties experienced by certain vulnerable population groups (i.e. those of low SES, females, and residents in remote areas) when seeking reimbursement from VimoSEWA. Sinha et al. (2006) investigated the various barriers hindering VimoSEWA members from submitting claims or getting reimbursed. Findings showed that these barriers were related to the costs and constraints faced in the claims process.

3.3.2.2. Socio-economic status

While claims submission among urban members was found to be equitable across all income groups, it was found to be inequitable among rural members. The average SES of rural members who submitted claims was higher than the average SES of all rural members, thus indicating that those of a higher SES submitted more claims. Members of low SES were more likely to be illiterate, and were therefore unable to read or understand the documents needed for filing a claim. Traveling to a VimoSEWA claims office to submit claims, or traveling several times to a hospital in order to obtain the necessary documents, was costly for low-income members. On some occasions, doctors even asked for money for the preparation of invoices and certificates (Ranson et al., 2006; Sinha et al., 2006).

3.3.2.3. Gender and education level

Even though the vast majority of adult VimoSEWA members were female (83% in rural areas and 80% in urban areas), male members submitted more claims. Men were 1.8 times more likely to submit claims than women in the 16 rural sub-district areas surveyed, and 1.3 times more likely in the four urban areas surveyed (both values were statistically significant at the 0.05 level). A reason could be that more women than men were illiterate, and thus found it challenging to fill out forms or negotiate with doctors. In many cases, the husbands filed claims for their wives (Ranson et al., 2006; Sinha et al., 2006).

3.3.2.4. *Place of residence*

The claim rate, defined as the number of claims per 1,000 members per nine months in the study by Ranson et al. (2006), was higher in urban areas than in rural sub-district areas. Living 100 km away from Ahmedabad City led to a fall in the claim rate of 4.2 claims per 1,000 members per nine months (highly significant at the 0.014 level). Living further away from a claims office or hospital also negatively influenced claim rates, due to higher transportation costs and the opportunity cost of time. As depicted in Figure 4 below, there was a higher claim rate in urban areas compared to rural areas for both genders (the graph's vertical axis shows the claim rate). In both rural and urban areas, men submitted more claims than women.

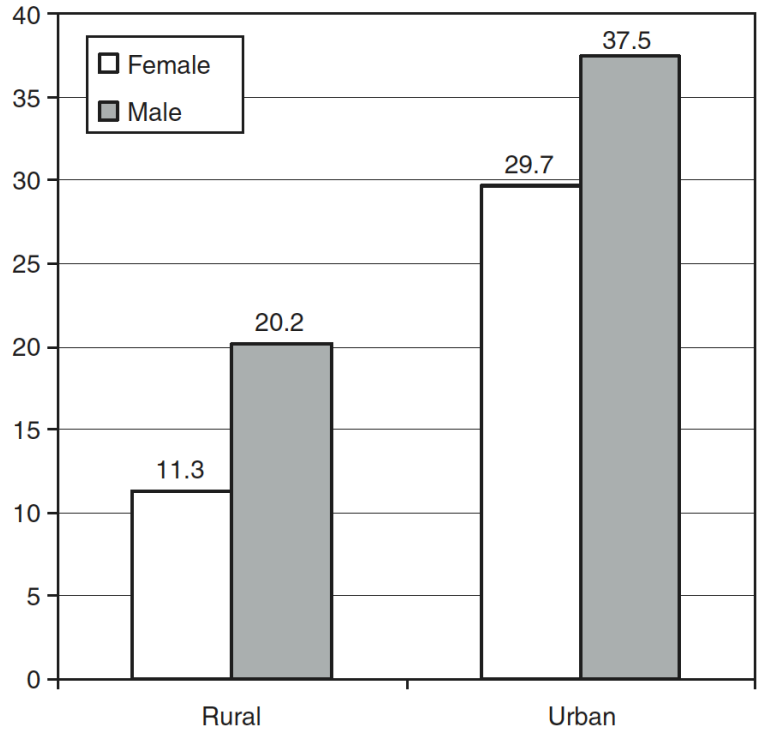

Figure 4. Number of claims per 1,000 members over a time period of 9 months in and around Ahmedabad City, India (Ranson et al., 2006, p. 716).

3.3.2.5. *Other barriers to submission*

Sinha et al. (2006) found that members who forgot to collect their hospitalization documents at the end of their hospital stay were sometimes refused to be given them later by the doctor, thus rendering claims submission impossible; a respondent mentioned that this generally happened at public hospitals. In addition, members who failed to submit before the deadline of three months after the treatment date, due to not being informed about the deadline or not being able to collect all necessary documents in time, were not allowed to submit later. Members who

have had a claim rejected in the past often did not submit another claim, believing that it will be rejected again.

3.3.2.6. Barriers to cost reimbursement

The likelihood of a claim being accepted is influenced by the knowledge of the local staff working at VimoSEWA called *aagewans*, who are the members' main contact persons. Since many members ask the aagewans for advice, their lack of knowledge of the scheme's terms and conditions could result in a patient's claim being rejected for being ineligible for reimbursement in the first place, e.g. if the costs are not actually covered by the benefit package. Some respondents commented that being on good relations with an aagewan increased their probability of getting reimbursed (Sinha et al., 2006).

A submitted claim could be rejected if the necessary hospitalization documents were found to be incorrect or incomplete. Claims that were approved did not mean automatic reimbursement: much of the poor rural population do not have bank accounts, or they live a long distance away from a bank. Making cost reimbursements via checks led to delays and additional costs, due to members having to travel to the nearest bank and opening a new account in order to receive the money (Sinha et al., 2006).

4. Applying CBHI to achieve development goals

4.1. Country classifications

In this subsection, countries are classified according to socio-economic indicators. Figure 5 below is a list of all developing countries, consisting of both developing economies and emerging market economies, as classified by the International Monetary Fund (IMF) (2015) and the International Statistics Institute (ISI) (2016):

Figure 5. List of developing countries as classified by the IMF and the ISI (adapted from IMF, 2015; ISI, 2016).

Afghanistan	Ghana	Panama
Albania	Grenada	Papua New Guinea
Algeria	Guatemala	Palau
Angola	Guinea	Paraguay
Antigua and Barbuda	Guinea-Bissau	Peru

Argentina	Guyana	Philippines
Armenia	Haiti	Poland
Azerbaijan	Honduras	Qatar
Bahamas, The	Hungary	Romania
Bahrain	India	Russian Federation
Bangladesh	Indonesia	Rwanda
Barbados	Iran	Samoa
Belarus	Iraq	São Tomé and Príncipe
Belize	Jamaica	Saudi Arabia
Benin	Jordan	Senegal
Bhutan	Kazakhstan	Serbia
Bolivia	Kenya	Seychelles
Bosnia and Herzegovina	Kiribati	Sierra Leone
Botswana	Korea, Dem. Rep.	Solomon Islands
Brazil	Kosovo	Somalia
Brunei Darussalam	Kuwait	South Africa
Bulgaria	Kyrgyzstan	South Sudan
Burkina Faso	Lao PDR	Sri Lanka
Burundi	Lebanon	St. Kitts and Nevis
Cabo Verde	Lesotho	St. Lucia
Cambodia	Liberia	St. Vincent and the Grenadines
Cameroon	Libya	Sudan
Central African Republic	Macedonia, FYR	Suriname
Chad	Madagascar	Swaziland
Chile	Malawi	Syria
China	Malaysia	Tajikistan
Colombia	Maldives	Tanzania, United Rep.
Comoros	Mali	Thailand
Congo, Dem. Rep.	Marshall Islands	Timor-Leste
Congo, Rep.	Mauritania	Togo
Costa Rica	Mauritius	Tonga
Côte d'Ivoire	Mexico	Trinidad and Tobago
Croatia	Micronesia, Fed. States	Tunisia
Cuba	Moldova	Turkey
Djibouti	Mongolia	Turkmenistan
Dominica	Montenegro	Tuvalu
Dominican Republic	Morocco	Uganda
Ecuador	Mozambique	Ukraine
Egypt	Myanmar	United Arab Emirates
El Salvador	Namibia	Uruguay
Equatorial Guinea	Nauru	Uzbekistan
Eritrea	Nepal	Vanuatu
Ethiopia	Nicaragua	Venezuela

Fiji	Niger	Vietnam
Gabon	Nigeria	Yemen
Gambia, The	Oman	Zambia
Georgia	Pakistan	Zimbabwe

A new type of classification developed by the World Bank (WB) divides countries into four income groups, according to their gross national income (GNI) per capita. GNI per capita is calculated in US$ using the World Bank Atlas method (World Bank Data Team, 2016). The GNI per capita of each WB income group – low-income, lower-middle-income, upper-middle-income, and high-income – is shown in Figure 6 below:

Figure 6. GNI per capita in US$ of each WB income group (adapted from World Bank Data Team, 2016).

WB income group	GNI per capita in US$ (for 2016)
Low-income	< 1,025
Lower-middle-income	1,026 – 4,035
Upper-middle-income	4,036 – 12,475
High-income	> 12,475

The following are lists of countries in each of the four WB income groups (Figures 7-10):

Figure 7. List of countries in the low-income group (adapted from The World Bank, 2016).

Afghanistan	Eritrea	Madagascar	Sierra Leone
Benin	Ethiopia	Malawi	Somalia
Burkina Faso	Gambia, The	Mali	South Sudan
Burundi	Guinea	Mozambique	Tanzania
Central African Republic	Guinea-Bissau	Nepal	Togo
Chad	Haiti	Niger	Uganda
Comoros	Korea, Dem. Rep.	Rwanda	Zimbabwe
Congo, Dem. Rep.	Liberia	Senegal	

Figure 8. List of countries in the lower-middle-income group (adapted from The World Bank, 2016).

Armenia	Guatemala	Mongolia	Swaziland
Bangladesh	Honduras	Morocco	Syria
Bhutan	India	Myanmar	Tajikistan
Bolivia	Indonesia	Nicaragua	Timor-Leste
Cabo Verde	Kenya	Nigeria	Tonga
Cambodia	Kiribati	Pakistan	Tunisia
Cameroon	Kosovo	Papua New Guinea	Ukraine
Congo, Rep.	Kyrgyzstan	Philippines	Uzbekistan
Côte d'Ivoire	Lao PDR	Samoa	Vanuatu
Djibouti	Lesotho	São Tomé and Príncipe	Vietnam
Egypt	Mauritania	Solomon Islands	Yemen
El Salvador	Micronesia, Fed. States	Sri Lanka	Zambia
Ghana	Moldova	Sudan	

Figure 9. List of countries in the upper-middle-income group (adapted from The World Bank, 2016).

Albania	Dominica	Lebanon	Romania
Algeria	Dominican Republic	Libya	Russian Federation
Angola	Ecuador	Macedonia, FYR	Serbia
Azerbaijan	Equatorial Guinea	Malaysia	South Africa
Belarus	Fiji	Maldives	St. Lucia
Belize	Gabon	Marshall Islands	St. Vincent and the Grenadines
Bosnia and Herzegovina	Georgia	Mauritius	Suriname
Botswana	Grenada	Mexico	Thailand
Brazil	Guyana	Montenegro	Turkey
Bulgaria	Iran	Namibia	Turkmenistan
China	Iraq	Palau	Tuvalu
Colombia	Jamaica	Panama	Venezuela
Costa Rica	Jordan	Paraguay	
Cuba	Kazakhstan	Peru	

Figure 10. List of countries in the high-income group (adapted from The World Bank, 2016).

Andorra	Denmark	Liechtenstein	Seychelles
Antigua and Barbuda	Estonia	Lithuania	Singapore
Argentina	Finland	Luxembourg	Slovakia
Australia	France	Malta	Slovenia
Austria	Germany	Monaco	Spain
Bahamas, The	Greece	Nauru	Sweden
Bahrain	Hungary	Netherlands	Switzerland
Barbados	Iceland	New Zealand	Trinidad and Tobago
Belgium	Ireland	Norway	United Arab Emirates
Brunei Darussalam	Israel	Oman	United Kingdom
Canada	Italy	Poland	United States
Chile	Japan	Portugal	Uruguay
Croatia	Korea, Rep.	Qatar	
Cyprus	Kuwait	San Marino	
Czech Republic	Latvia	Saudi Arabia	

Low-, lower-middle-, and upper-middle-income countries are all developing countries, whereas high-income countries are mostly developed countries, with a few exceptions. While high GNI per capita does not always translate to higher development, due to an unequal distribution of funds or a lack of investment in public infrastructure, GNI per capita is still an important determinant of a country's level of development. Countries with very low GNI per capita are also classified as least developed countries (LDCs) by the United Nations Department of Economic and Social Affairs (UN DESA). LDCs have the lowest levels of socio-economic development based on three criteria: GNI per capita, human asset index (HAI), and economic vulnerability index (EVI). GNI per capita measures a country's income level, and is a three-year average derived from national accounts data. The threshold for inclusion as

an LDC in 2015-2016 is a GNI per capita of US$ 1,035 or lower. HAI measures a country's human capital using four indicators of equal weighting: two indicators for the level of health and nutrition *(percentage of population undernourished, mortality rate for children aged five years or under)*, and two indicators for the level of education *(gross secondary school enrolment ratio, adult literacy rate)*. EVI measures a country's structural vulnerability to external economic and environmental shocks, using eight indicators (UN DESA, 2014). Figure 11 on the following page is a list of LDCs as of May 2016:

Figure 11. List of least developed countries (LDCs) in 2016 (adapted from UN DESA, 2016, p. 1).

Afghanistan	Gambia	Rwanda
Angola	Guinea	São Tomé and Príncipe
Bangladesh	Guinea-Bissau	Senegal
Benin	Haiti	Sierra Leone
Bhutan	Kiribati	Solomon Islands
Burkina Faso	Lao PDR	Somalia
Burundi	Lesotho	South Sudan
Cambodia	Liberia	Sudan
Central African Republic	Madagascar	Tanzania, United Rep.
Chad	Malawi	Timor-Leste
Comoros	Mali	Togo
Congo, Dem. Rep.	Mauritania	Tuvalu
Djibouti	Mozambique	Uganda
Equatorial Guinea	Myanmar	Vanuatu
Eritrea	Nepal	Yemen
Ethiopia	Niger	Zambia

Ghana, Papua New Guinea, and Zimbabwe, though classified as LDCs, refused to be added to the above list, insisting that the analysis of their own socio-economic conditions was not indicative of reality (Social Council, 2008). For the purpose of this study, I included these three countries as LDCs. For a country with LDC-status to graduate, i.e. leave the list, the value for each criterion must surpass a certain graduation threshold level, which has been set slightly higher or lower than the inclusion threshold level depending on the criterion. For GNI per capita, the graduation threshold is US$ 1,242 in 2015-2016. However, if a country were to graduate based on GNI per capita only, while the two other criteria remain unmet, the threshold must be double the usual threshold for graduation, i.e. US$ 2,484 in 2015-2016 (UN DESA, 2014).

4.2. Analysis of health-related data

4.2.1. From MDGs to SDGs

The characteristics of low GNI per capita, low levels of health and nutrition, and low levels of education (the last two as indicated by low HAI) among LDCs imply a lack of health insurance provision/consumption and a lack of healthcare utilization. In these countries, governments do not have enough funds to invest in public healthcare systems; people have trouble affording user fees or health insurance premiums; undernourishment increases the risk of health problems and premature death; high child mortality rates indicate poor quality of maternal care; low education levels and high illiteracy rates hinder the prospect of earning higher incomes, and also imply a lack of awareness of good health practices and a greater difficulty in understanding the concepts of insurance and claims submission. To examine the above issues in developing countries in more detail, and to compare them with the situation in developed countries, I analyzed various health-related data of WHO member countries from recent years. This data is published online in the WHO Global Health Observatory data repository, and used to measure progress in reaching the eight Millennium Development Goals (MDGs). The MDGs were established at the United Nations General Assembly in September 2000, to substantially improve living standards in developing countries by 2015. The eight MDGs are:

> "(1) eradicate extreme poverty and hunger; (2) achieve universal primary education; (3) promote gender equality and empower women; (4) reduce child mortality; (5) improve maternal health; (6) combat HIV/AIDS, malaria and other diseases; (7) ensure environmental sustainability; (8) develop a global partnership for development" (World Health Organization, 2015, p. 4).

The MDGs (4), (5), and (6) are directly related to health, while the other MDGs can improve health as a result of improved living standards. Even though the MDGs have been effective in accelerating development in poor countries, such as reducing the number of people living in extreme poverty (i.e. surviving on less than US$ 1.25 per day) by over a half between 1990 and 2015, and increasing the enrolment rate in primary schools from 83% in 2000 to 91% in 2015, there has been criticism regarding the use of only aggregate targets and indicators to track progress: the poorest countries, or the poorest population groups within a country, were still not developing as quickly as their slightly richer counterparts. In September 2015, the eight MDGs were replaced by 17 Sustainable Development Goals (SDGs) and 169 targets to be

achieved by 2030, which focus on economic, social, and environmental sustainable development (World Health Organization, 2015). The 17 SDGs are listed in Figure 12 below:

Figure 12. List of the 17 SDGs (adapted from World Health Organization, 2015, p. 8).

SDG No.	Sustainable Development Goal
1	End poverty in all its forms everywhere
2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3	Ensure healthy lives and promote well-being for all at all ages
4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5	Achieve gender equality and empower all women and girls
6	Ensure availability and sustainable management of water and sanitation for all
7	Ensure access to affordable, reliable, and sustainable and modern energy for all
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
10	Reduce inequality within and among countries
11	Make cities and human settlements inclusive, safe, and resilient and sustainable
12	Ensure sustainable consumption and production patterns
13	Take urgent action to combat climate change and its impacts
14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
17	Strengthen the means of implementation and revitalize the global partnership for sustainable development

SDG 3 focuses on health, and is accompanied by 13 specific targets aimed at reducing the global maternal, infant, and child mortality ratios (targets 3.1 and 3.2); decreasing the number of deaths caused by noncommunicable diseases (target 3.4); and increasing the financing for health in developing countries (target 3.c), among others. Other SDGs such as numbers 1, 2, and 6 are also related to health, since higher incomes, adequate nutrition, and good sanitation can improve health status. Health affects and is affected by various economic, social, and environmental factors; health policies play an important part in sustainable development (World Health Organization, 2015).

In the next subsection, I examine data from the WHO Global Health Observatory related to the health issues mentioned in the MDGs/SDGs, and link it to CBHI as a tool for solving these

issues. I analyze various socio-economic and demographic indicators to explain several factors affecting CBHI enrolment rates, healthcare utilization, and claims submission in developing countries, as identified in the previous section. I then make recommendations on what CBHI should focus on in order to help achieve the SDGs, based on my own interpretations. Raw data sources and explanations on how specific values presented here are calculated can be found in the Appendix.

4.2.2. Government and total health expenditure per capita

Figure 13 below presents the 2014 values for per capita total health expenditure and per capita government health expenditure of each WB income group, calculated at purchasing power parity (PPP) international dollars ($) for better international comparison:

Figure 13. Per capita health expenditures in different income groups in 2014 (adapted from WHO, 2016d).

WB income group	Per capita total expenditure on health (PPP int. $)	Per capita government expenditure on health (PPP int. $)	Ratio of government to total expenditure on health per capita
Low-income	92.1	37.9	0.41
Lower-middle-income	267.6	95.4	0.36
Upper-middle-income	869.1	494.6	0.57
High-income	4608.3	2825.3	0.61

There is an exponential increase in both total and government expenditures on health as GNI per capita increases. The ratio of government health expenditure to total health expenditure per capita was calculated to see what proportion of total health expenditure was financed by the government. Higher ratios of 0.57 and 0.61 for upper-middle- and high-income countries suggest that more than half of the total health expenditure comes from the government in richer countries, where there is likely to be a social health system or a government-financed insurance scheme. Lower ratios of 0.41 and 0.36 for low- and lower-middle-income countries respectively suggest that governments in poorer countries finance less than half of their total health expenditure. The majority of health expenditures are made by the population via OOP payments, or via private or community-based insurance schemes. The data confirms the importance of CBHI in satisfying a need that is not being met by the government in most developing countries.

4.2.3. Adult literacy rate

The adult literacy rate is the percentage of the population aged 15 and above that is able to read and write simple statements about daily life. It also includes numeracy, which is the capability of doing easy arithmetic calculations (WHO, 2016g). Figure 14 below shows the average adult literacy rate of each WB income group among 132 countries surveyed in 2007-2012:

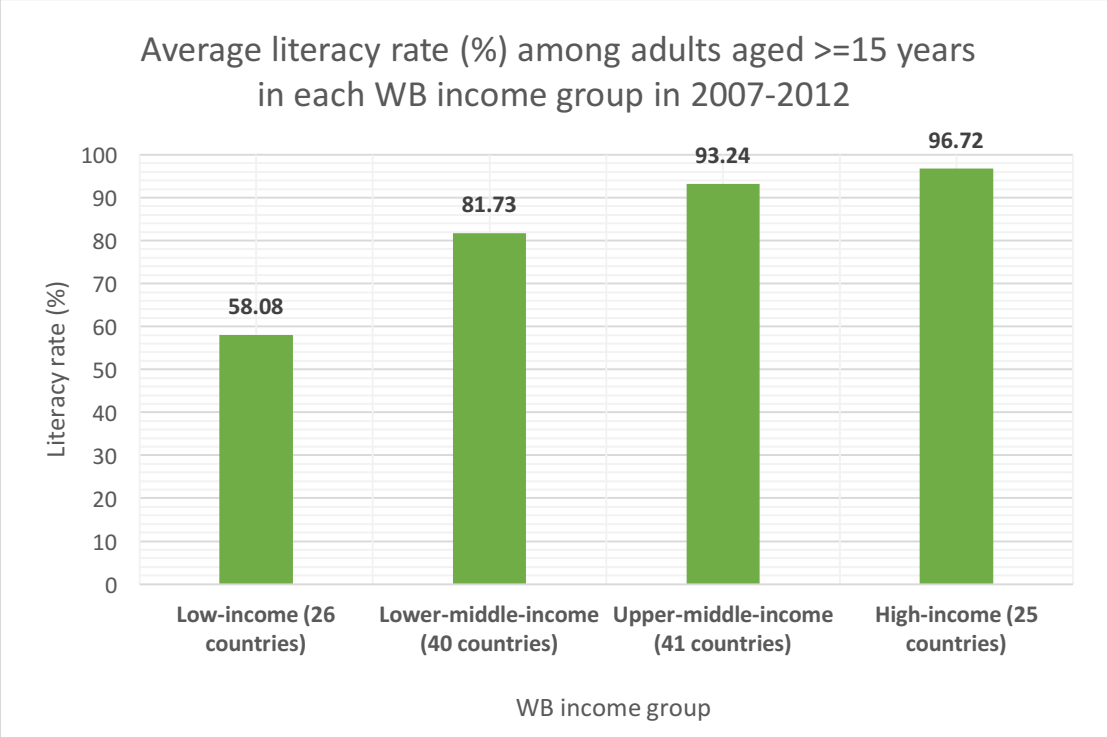

Figure 14. Average literacy rate among adults aged 15 and above in different WB income groups in 2007-2012 (adapted from WHO, 2016f).

Average adult literacy increases slightly with each higher income group, until it is close to 100% in high-income countries. The gap between low- and lower-middle-income countries is the widest. Since education was found to increase CBHI enrolment rates in developing countries, low-income countries with an average adult literacy rate of slightly above 50% are most likely to have low enrolment rates. Claim submission rates are also likely to be low, since a large number of people are unable to understand or fill out claims documents. Making progress in achieving SDG 4 can help improve the take-up of health insurance and thus mitigate the financial risks related to health.

4.2.4. Density of physicians

The density of physicians per 1,000 of the population measures the number of generalist and specialist doctors of medicine for every thousand people (WHO, 2016a). The average physician

density of each WB income group among 110 countries surveyed in 2010-2014 is depicted in Figure 15 below:

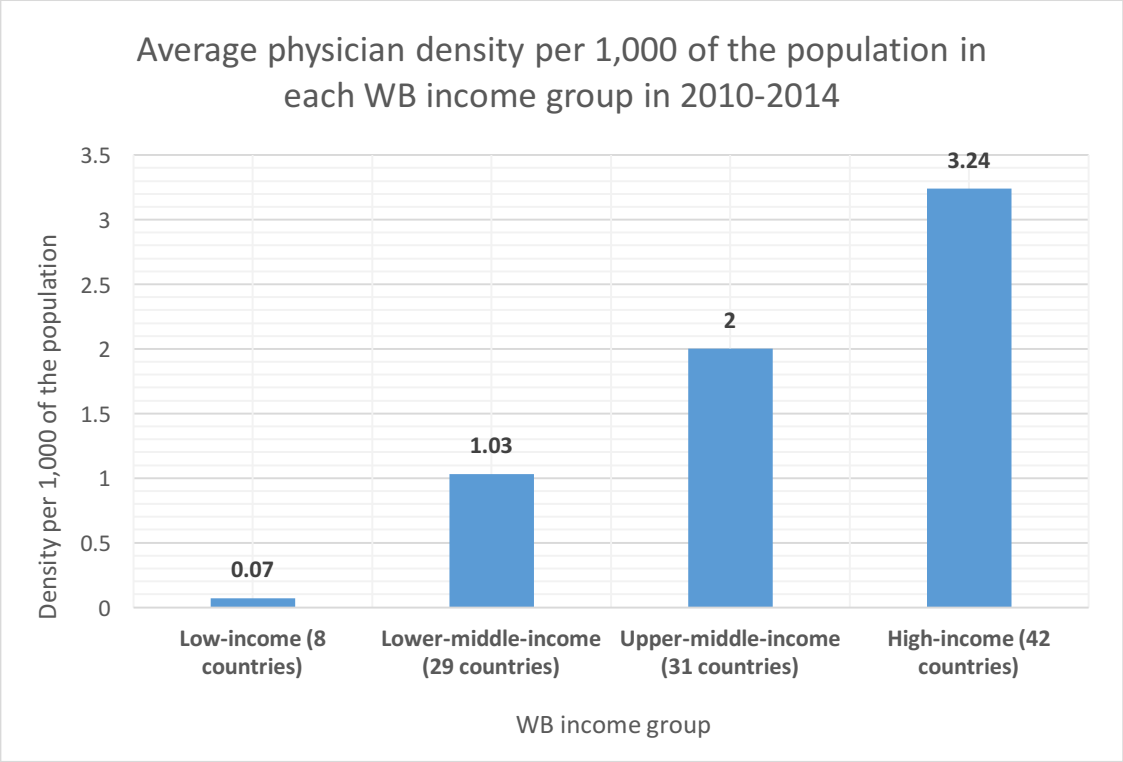

Figure 15. Average physician density per 1,000 of the population in different WB income groups in 2010-2014 (adapted from WHO, 2016b).

The graph above shows that the higher the income group, the higher the average physician density. This suggests that the more money a country has, the more medical practitioners there are in the country, likely as a result of more funding for medical school and hospitals/clinics. Lower adult literacy rates in low-income countries also means that fewer people have the opportunity to go to medical school. In countries with low physician density, people may not want to enrol in CBHI or use the health facilities that contract with CBHI schemes, since more affordable healthcare means that more people will seek out physicians, which results in longer waiting lines and shorter consultation sessions per patient. It is difficult for poorer countries to provide good quality health services due to a lack of physicians; thus, CBHI schemes would need to obtain external funding from NGOs or governments, or import foreign doctors, in order to increase the number of skilled health workers and improve the quality of treatment. This contributes towards achieving SDG target 3.c, which aims to "substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least-developed countries and small island developing States" (World Health Organization, 2015, p. 8).

4.2.5. Infant and child mortality rates

Figure 16 below shows the average infant mortality rates (probability of dying before age one) and the average under-five mortality rates (probability of dying before age five) per 1,000 live births for each WB income group in 2015, as estimated by the United Nations Inter-agency Group for Child Mortality Estimation (UN IGME) (WHO, 2016k, 2016l):

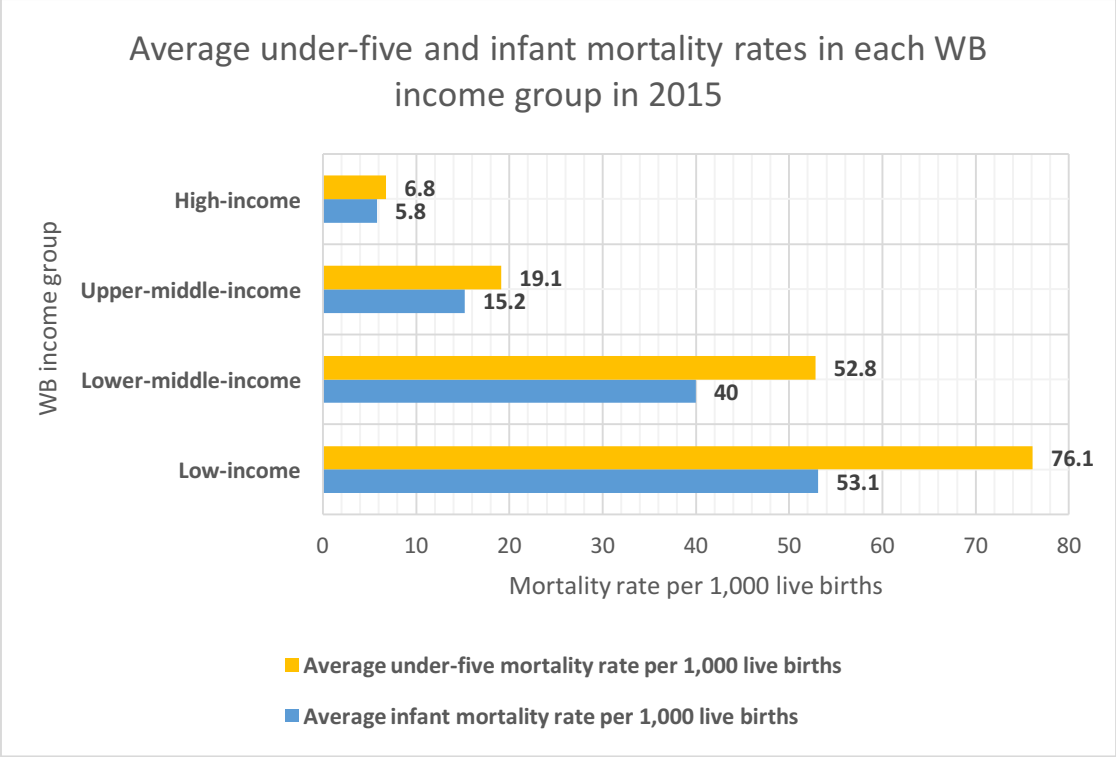

Figure 16. Average under-five and infant mortality rates per 1,000 live births in different WB income groups in 2015 (adapted from WHO, 2016j).

Under-five mortality rates are higher than infant mortality rates for each WB income group (due to a larger number of children between 1-5 years old than the number of infants between 0-1 years old), but both show a downward trend as GNI per capita rises. High infant and child mortality rates indicate a poor living environment with a high risk of catching infectious diseases through air and water pollution, poor health practices, malnutrition, and unaffordable or low quality health services. CBHI could help reduce infant and child mortality rates by providing good quality maternal and pediatric healthcare at a low cost, thus contributing to achieving SDG target 3.2, which aims to "end preventable deaths of newborns and children under five years of age" (World Health Organization, 2015, p. 8).

4.2.6. Births attended by skilled health personnel

Among the 28 LDCs surveyed in 2010-2013, the average percentage of births attended by skilled health personnel in the two or three years preceding the survey was 49.40% in rural regions and 84.90% in urban regions, as depicted in Figure 17 below:

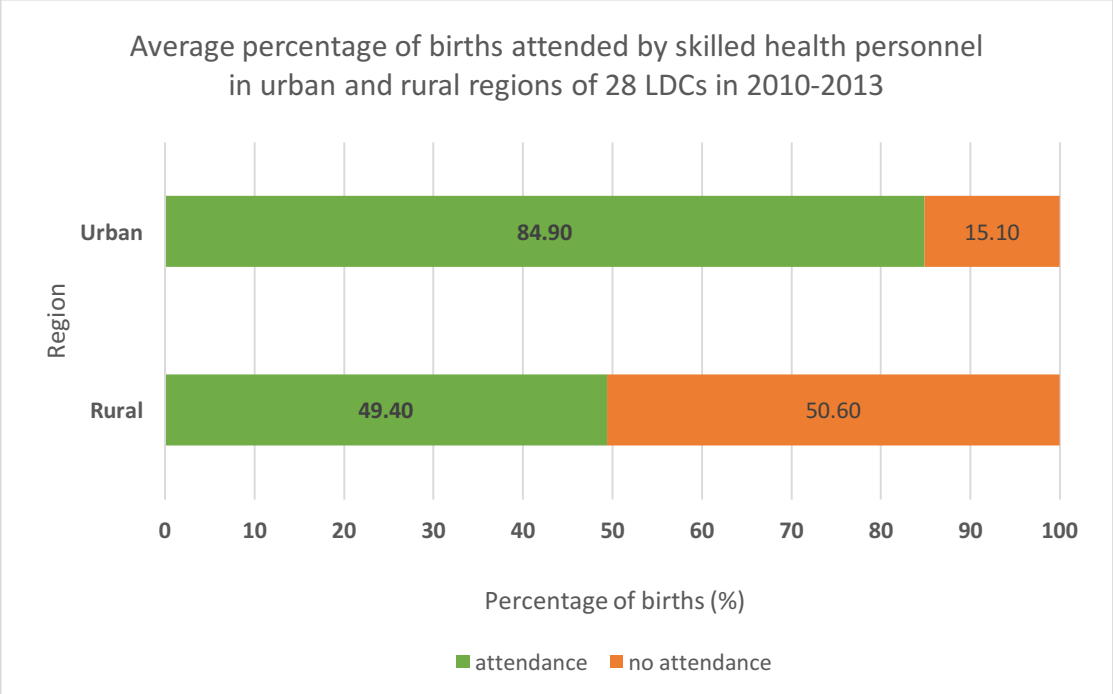

Figure 17. Average percentage of births attended/not attended by skilled health personnel in 28 LDCs in 2010-2013 (adapted from WHO, 2016e).

The large disparity between urban and rural birth attendance, and the fact that almost half of the births in rural regions were unattended, indicate a limited access to maternal health services for the rural population in LDCs. This is possibly due to unaffordability, a lack of health facilities and skilled health personnel close by, or a lack of awareness of proper medical care during child delivery. Poor sanitation and complications during delivery can lead to the death of the infant and/or the mother; the high average infant mortality rate in low-income countries as discussed previously could be related to the absence of skilled health personnel during childbirth. The fact that women in developing countries are less likely to enrol in CBHI schemes according to research studies further explains the low utilization of maternal health services. Thus, CBHI schemes could focus on providing adequate prenatal, postnatal, and child delivery services at affordable premiums for the rural population in LDCs, and on actively encouraging women to enrol via educational and promotional programs. Hospitals could be located in or close to rural regions for easier access, since a longer distance to a health facility was found to hinder healthcare utilization.

4.2.7. Maternal mortality ratio

Maternal mortality is death that occurs to a female during pregnancy, childbirth, or within six weeks after the end of a pregnancy (WHO, 2016i). Figure 18 below depicts the average maternal mortality ratios per 100,000 live births in the WB income groups consisting of 181 countries surveyed in 2015:

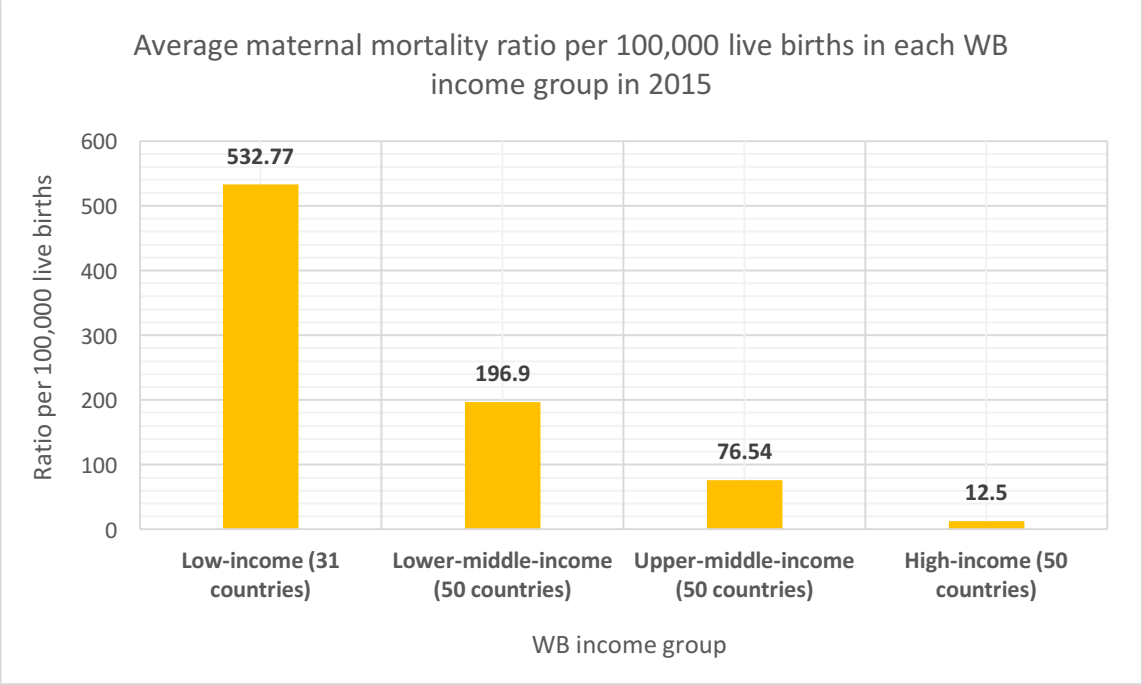

Figure 18. Average maternal mortality ratios per 100,000 live births in different WB income groups in 2015 (adapted from WHO, 2016h).

The graph above shows that the higher the income group, the lower the maternal mortality ratio. An extremely high average maternal mortality ratio in low-income countries implies a lack of adequate sanitation and poor maternal healthcare. These deaths are likely related to the fact that childbirth among more than half of the rural population in LDCs is not attended by skilled health personnel, as discussed previously. This highlights the importance of health insurance schemes such as VimoSEWA and Yeshasvini, which offer their female members full or partial coverage of inpatient care and surgery procedures (such as the caesarean section) for complicated deliveries. Such CBHI schemes could help achieve SDG target 3.1, which aims to "reduce the global maternal mortality ratio to less than 70 per 100,000 live births" (World Health Organization, 2015, p. 8) by 2030.

4.2.8. Percentage of deaths from noncommunicable diseases

In 2012, the average percentage of deaths between ages 30-70 from either cardiovascular disease, cancer, diabetes, or chronic respiratory disease for the 138 developing countries surveyed was 20.64%, while the average percentage for the 34 developed countries surveyed was 12.38%, as presented in Figure 19 below:

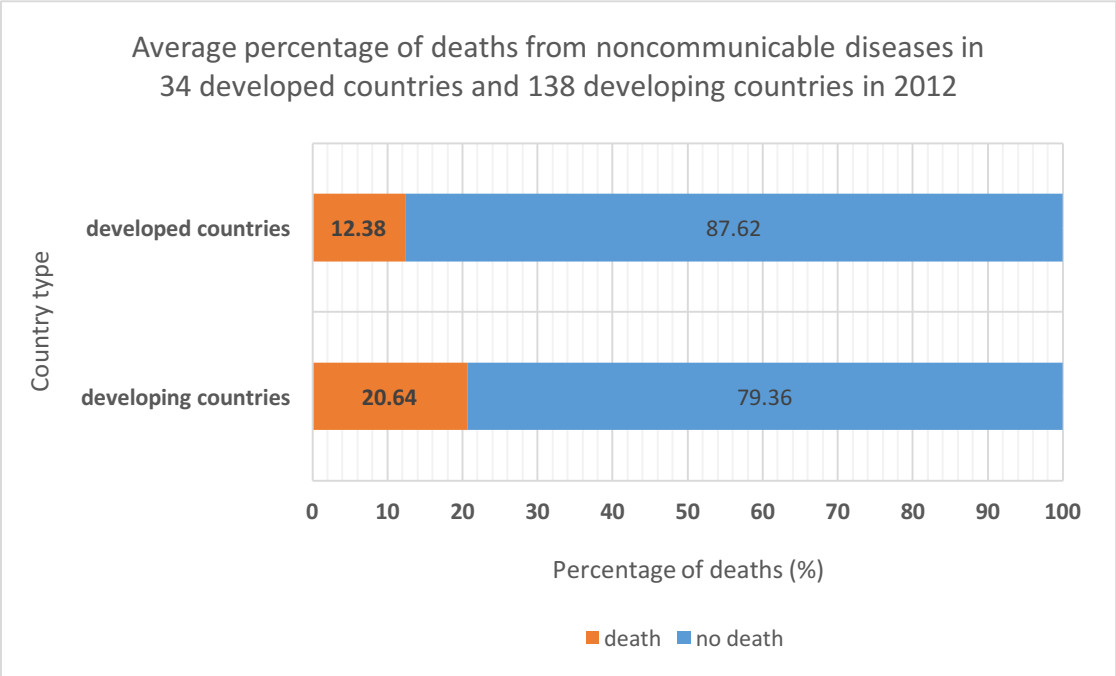

Figure 19. Average percentage of deaths from noncommunicable diseases in developed and developing countries in 2012 (adapted from WHO, 2016m).

This indicates a disparity between developing countries and developed countries in terms of living standards and access to good quality healthcare. Developing countries need better access to preventative and curative treatment in the case of illness, better working and living conditions such as clean air and minimal exposure to toxic substances, and better awareness of health risks. CBHI schemes could help minimize premature deaths from noncommunicable diseases and contribute to making progress in SDG target 3.4 by providing good quality health services. However, people from countries with lower GNI per capita generally have lower household incomes, and are thus less likely to enrol. CBHI schemes would need to be made more attractive through lowering its premiums, providing greater coverage by their benefit packages, and improving the scheme design and management structure, so that people are motivated to enrol and to utilize healthcare more frequently.

4.2.9. Stunting prevalence in children

Stunting in children means having a height that is over two standard deviations lower than the median height of each age group, according to the WHO Child Growth Standards (WHO, 2016n). Figure 20 below shows the average percentage of stunting among children under five years of age surveyed in 45 developing countries in 2010-2013, divided according to maternal education level:

Figure 20. Average percentage of stunting prevalence in children under five years old according to maternal education level in developing countries in 2010-2013 (adapted from WHO, 2016c).

Maternal education	Average stunting prevalence in children aged < 5 years (%)
None	39.69
Primary	32.56
Secondary or higher	21.64

The average percentage of stunting falls as maternal education increases. Stunting in children is mainly caused by malnutrition, and recurrent diseases due to malnutrition of the mother before birth. Malnutrition is directly linked to low income and poverty, as many people in poor countries do not have enough money to buy nutritious food. A higher maternal education level enables mothers to work in higher-paying jobs, and thus improve the living standards of all household members. A higher education level was found to increase the likelihood of enrolling in CBHI schemes, which suggests that children with better educated mothers have greater access to healthcare. They are therefore more likely to obtain essential vitamin and mineral supplements at a lower cost, and are less likely to suffer from untreated chronic illnesses that could stunt growth. This helps to achieve SDG target 2.2 of eliminating all types of malnutrition by 2030, and reducing the incidences of stunting and wasting in children below the age of five to a certain level by 2025 (World Health Organization, 2015).

To examine the prevalence of stunting in LDCs only, Figure 21 below shows the average percentage of stunting among children under five years of age in the 27 LDCs (out of the 45 developing countries) surveyed in 2010-2013, divided according to maternal education level:

Figure 21. Average percentage of stunting prevalence in children under five years old according to maternal education level in LDCs in 2010-2013 (adapted from WHO, 2016c).

Maternal education	Average stunting prevalence in children aged < 5 years (%)
None	42.91
Primary	36.74
Secondary or higher	25.60

The average percentage of stunting also falls as maternal education increases, but average percentages are larger for LDCs than that for all developing countries, at each of the three maternal education levels. This can be seen more clearly in Figure 22 below:

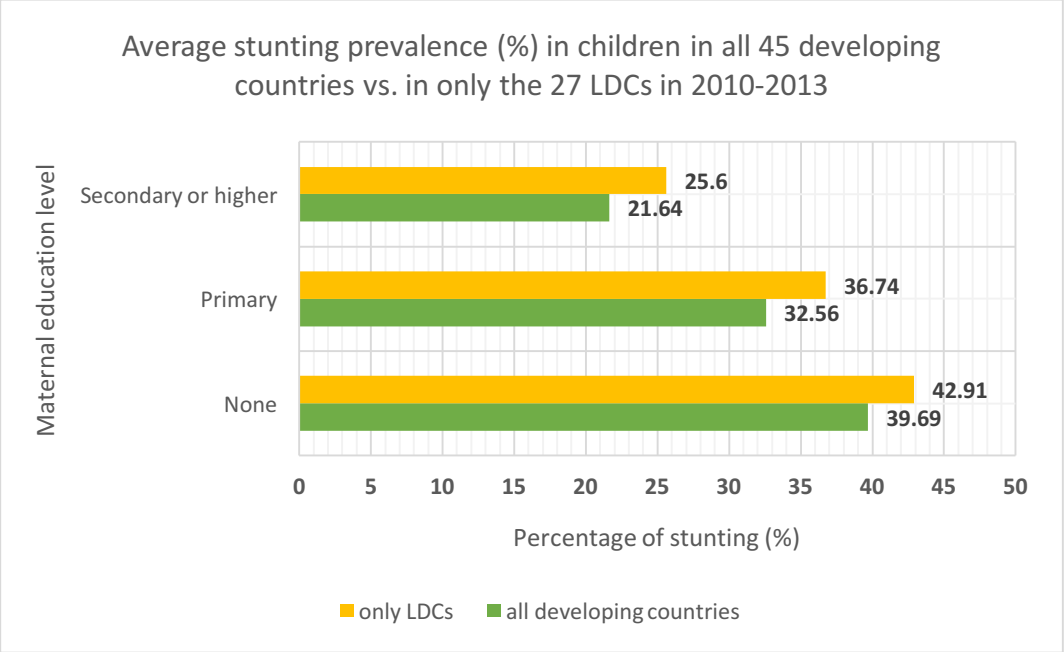

Figure 22. Average percentage of stunting prevalence in children under five years old according to maternal education level in developing countries/LDCs in 2010-2013 (adapted from WHO, 2016c).

The prevalence of stunting among young children is stronger in LDCs, which are the poorest countries out of all developing countries. The education level of mothers may be unlikely to improve the health and nutrition of their children as much if the country has an overall low level of economic development and poorly-paid jobs, even for the better-educated. Lower household incomes and lower HAI related to the undernourishment of the population are more prevalent in LDCs; therefore, CBHI is most needed in LDCs where human capital and living standards are lowest.

5. Potential solutions to the problems

5.1. Methods to increase demand for CBHI

5.1.1. Overview

As demonstrated in the previous sections, CBHI is a useful tool for mitigating risks and improving the living standards of the poor population in developing countries. However, the numerous problems associated with scheme enrolment, healthcare utilization, and claims submission have prevented CBHI from reaching as many vulnerable people as possible and providing all of its members with the maximum benefit. This section examines possible solutions to the problems in more detail, based on findings and suggestions in research studies and on my own analysis.

5.1.2. Facilitating access to CBHI membership and benefits

Since one of the most important reasons for low enrolment was unaffordable/expensive premiums, lowering the premium to a rate the vast majority of the target population is willing to pay (as determined from WTP studies) could lead to higher levels of enrolment. Minimizing the level of co-payments for health services would also induce members to utilize healthcare more frequently. However, premiums and co-payments that are too low may not cover all costs of operating a scheme or running a health service, unless external funding can be obtained. Tabor (2005) suggested for governments and development agencies to support CBHI schemes by financing part of their premiums and startup costs via subsidies. Subsidies from governments, NGOs, donors, and hospitals/health organizations could help CBHI schemes operate more sustainably, even at a low revenue level.

Premium subsidies for only the poorest population quintiles could be an effective method to achieve total coverage of the target population. Schmidt et al. (2006) proposed subsidizing the poorest 20-30% of the population in Rwanda, since a premium of US$ 1 per person per year would only cover 70-80% of the whole population, and an even lower premium level would threaten the financial sustainability of the scheme. The premium level could be made progressive, i.e. based on the individual's income level and ability-to-pay instead of being the same flat-rate for all enrollees (Dong et al., 2005, as cited in Onwujekwe et al., 2010). This way, the rich indirectly subsidize the poor by paying a higher premium rate, which guarantees socio-economic equity in enrolment. More flexible premium payment modalities could also improve people's ability-to-pay, as discussed previously. The timing of premium payments

could depend on the income-generation patterns of each enrollee, e.g. seasonal payments for farmers or bimonthly payments for workers receiving semi-regular wages. Respondents from Guinea suggested ways to increase enrolment such as paying the premium in instalments, making the premium per person lower for large households, and only requiring part of the household to pay the premium (Criel & Waelkens, 2003).

To facilitate access to basic health services, health facilities could be established near the residence of the target population, especially in or close to rural regions. Given the high infant and maternal mortality rates in low-income countries, it is particularly useful for rural women to have fast and easy access to proper medical services before, after, and during childbirth. Since transportation was found to be an important financial obstacle, CBHI schemes could cover full transportation costs in their benefit packages, or arrange for cheap and practical transportation from remote rural areas to urban hospitals. This also applies to transportation to claims offices.

To make the claims submission process easier for members with low education levels, complex paperwork could be avoided, and the text on claim forms could be formulated as simply as possible. CBHI schemes could also offer free expert assistance to those who are illiterate, those who encounter problems in obtaining documents from physicians, or those who are unfamiliar with the claims process deadlines and requirements. An option to reimburse in cash could also be established.

5.1.3. Ameliorating the quality of health services

Another major issue is the poor quality of health services. Good quality health services may not be available, or may be too expensive to be fully covered by cheaper benefit packages. To improve the quality of healthcare, CBHI schemes could seek to partner with higher quality health service providers, and offer incentives such as paying a higher price for good quality care (Schneider, 2005). Subsidies could be obtained from the government and/or NGOs and used to invest in better medical equipment, a larger number of skilled doctors and nurses, effective drugs, more efficient management practices at health facilities, and to make higher quality healthcare provided in private facilities and hospitals less expensive and more widely available to CBHI members. The continued education of nurses may also improve the quality and expertise of medical staff (Criel & Waelkens, 2003). Doctors could receive the same

amount of payment for treating CBHI members as for treating nonmembers, so that unfriendly and discriminatory attitudes towards members would be eliminated. The distribution of questionnaires on treatment satisfaction to scheme members would be useful for tracking progress and identifying areas for improvement.

5.1.4. Improving the benefit package design

Benefit packages would need to be designed and assembled in a way that would provide the maximum benefit to CBHI members, and be attractive to potential members. Indeed, people who were more satisfied with the design of benefit packages in a West African CBHI scheme were more likely to enrol (De Allegri, Sanon, Bridges, & Sauerborn, 2006, as cited in Dror, Koren, et al., 2007).

To have a more accurate idea of what kind of medical services poor people perceive as useful and utilize the most, CBHI members could be questioned on their preferences. A study by Dror, Koren, et al. (2007) involving 302 participants from villages and towns in Karnataka and Maharashtra in India investigated the priorities of the poor concerning health insurance benefits, and examined whether their choices were rational by comparing them to the actual utilization levels of various benefits. The participants, most of whom were illiterate and innumerate, and who had barely any experience with insurance, were asked to choose among ten different benefit types and three levels of coverage for each benefit type, with just Rs 500 (US$ 11) per household per year. The ten benefit types were: cost of drugs, outpatient care, inpatient care, diagnostic tests, dental care, medical equipment, preventive care, maternity care, indirect costs (of transportation and wage loss due to hospitalization), and mental health. The three levels of coverage were: basic (covering 50% of costs), medium (coverage increases at specifically defined rates as costs increase), and high (covering 100% of costs). Data on the actual utilization of different benefit types came from a 2005 household survey in India, where the socio-economic and socio-demographic characteristics of the survey participants were similar to those of the participants in this study.

Results showed that participants overwhelmingly preferred to include all benefit types except dental care and medical equipment in their benefit packages. Most participants preferred a basic coverage of benefits (chosen 1626 times) over a high coverage of benefits (chosen 521 times). Very few benefits were chosen at medium coverage (chosen 49 times). 100% of the participants

chose maternal care for their benefit packages, which included antenatal and postnatal care for mothers, child delivery, childcare until the age of one, and family planning; this shows the importance of maternal care to the poor. 90.4% of the participants chose indirect costs to be covered, which further confirms that transportation costs and opportunity costs of time are of great concern to the poor. More participants chose inpatient care than outpatient care (82.1% vs. 56.6%), most likely because inpatient care was more expensive to pay OOP. Most participants began by choosing among cost of drugs, outpatient care, inpatient care, and diagnostic tests, all of which are essential services in the event of an illness, and make up the largest aggregate costs. At least three of these four benefits were chosen by 88.4% of the participants, at basic coverage levels due to their high costs. The other 11.6% of the participants preferred higher coverage levels, but chose just two out of these four benefits (Dror, Koren, et al., 2007).

Dror, Koren, et al. (2007) used three criteria to compare a benefit package's perceived effectiveness to its actual effectiveness: the average rate of reimbursement for costs of a benefit type, the extent to which the rate of reimbursement increases with increased health expenditure (*fairness*), and the extent to which coverage prevents incidences of CHE. Data from the 2005 household survey confirmed that the benefit packages chosen most frequently also satisfied all of the three criteria: including inpatient care was most effective in protecting against CHE and ensuring *fairness*, and including the cost of drugs induced the highest average rate of reimbursement. Insuring against aggregate health-related expenses was as crucial as insuring against rare cases of illness that could cause CHE, and participants generally preferred a large number of benefit types at basic coverage as opposed to a small number of benefit types at high coverage. This suggests that benefit packages could include both hospitalization services and primary healthcare, and could offer types of care that are high-probability and low-cost rather than low-probability and high-cost, in order to be attractive to potential enrollees. Providing outpatient care along with inpatient care would reduce moral hazard among members who may otherwise choose hospitalization for minor ailments, as discussed previously. The poor could be actively involved in benefit package design, since they are capable of choosing rationally despite their low education levels.

5.1.5. Building management capacity and consumer trust

For a scheme to run smoothly and sustainably, good administration and management in the form of competent employees would be needed for tasks specific to CBHI schemes, such as "the setting of contributions, collection of contributions and compliance, determination of the benefit package, marketing and communication, contracting with providers, management information systems, and accounting" (Carrin & World Health Organization, 2003, p. 25). Health service providers could determine ways of improving and monitoring service quality, set prices, negotiate contracts, evaluate various methods of payment, and prepare accurate accounts. Subsidies could be used wisely, and employees could be given financial incentives for motivation. The scheme's distributional impact could also be assessed regularly. These measures may require technical assistance, which could be financed by the government and/or donors (Tabor, 2005; Ranson et al., 2006).

To make sure members of CBHI schemes are not taken advantage of, and that premium payments are used to their benefit, administrative processes and financial accounts could be made more transparent. This creates a degree of trust and positive perception in members and potential members of mutual health insurance, which increases the rate of take-up and reduces the rate of drop-out. According to Mechanic and Rosenthal (1999), people needed to have trust in the management of funds and in the healthcare providers contracted by the community-based MHI scheme before they were willing to enrol (as cited in Schneider, 2005). An exploratory study by Schneider (2005) used a focus group survey in Rwanda to assess the impact of consumer trust on MHI enrolment, according to three dimensions: the reputation of the scheme in terms of its management, response to member needs and concerns, and expertise (Mechanic & Rosenthal, 1999, as cited in Schneider, 2005); the reputation and the competence of healthcare providers contracted by the scheme; and the collaboration with legal institutions and government authorities to enhance trust (Mechanic, 1998, as cited in Schneider, 2005).

Among the eight focus groups surveyed in each district, four groups were from high-enrolment regions and four groups were from low-enrolment regions. Each group in a region consisted of 3-10 participants that were either exclusively MHI members, nonmembers, MHI managers, or healthcare providers. Regarding the first trust dimension, respondents from both high- and low-enrolment regions believed that MHI managers should be elected by the members at general assemblies. The co-management of the scheme by providers and non-providers was also approved of. However, two groups consisting of healthcare providers suggested that providers

should manage MHI schemes, due to the people's trust in them; a group of nonmembers proposed that premiums should be paid to a healthcare provider rather than to the scheme's administrators, in order to prevent incidences of fraud. All members and nonmembers believed that "MHI managers must be close to the population, learn about people's problems, and inform people about MHI; and they must defend members' interest when negotiating with providers for better quality care" (Schneider, 2005, p. 1434). This implies that people would trust the scheme if its managers cared about their needs. According to Gilson (2003), the general assembly promotes the exchange of ideas and issues related to MHI between managers and scheme members, which builds trust if managers can demonstrate their honesty, solidarity, and transparency (as cited in Schneider, 2005). Trust in management is an important determinant of the decision to enrol.

The second trust dimension is concerned with the quality of health services from contracted healthcare providers. Poorly equipped health centers, poor sanitation, and the unsatisfactory interpersonal skills of health workers indicated incompetence, which led many people to mistrust MHI schemes and thus decide not to enrol (Schneider, 2005). Building consumer trust in MHI requires ameliorating the quality of healthcare and choosing the right providers to partner with.

Concerning the third trust dimension, many members and nonmembers expected governmental and legal institutions to manage the relationship between MHI schemes, healthcare providers, and MHI members. Participants of an MHI managers group from a low-enrolment region mentioned a lack of solidarity within the community in contributing payments to the group fund; they proposed that government representatives should set an example and demonstrate solidarity and altruism, by subsidizing the premiums of low-income people and supporting rural development. Other institutional activities to build trust in MHI could be informational campaigns, the supervision of MHI schemes and healthcare providers, and the promotion of the use of legal procedures in court for members harmed by healthcare providers. All of the above findings suggest that mutual health insurance schemes should come with a series of structures and practices that could help provide the best outcomes to their members, so that trust is embedded within the health insurance system (Schneider, 2005).

5.2. The future of healthcare in developing countries

5.2.1. Governmental support of CBHI schemes

The solutions suggested in the previous subsection all require much external funding to implement; hence, subsidies from governments and donor organizations are crucial for the improvement and the financial sustainability of a CBHI scheme. Since governments in developing countries have been largely unable to provide adequate social health insurance to the poor, it would be more practical and effective if governments were to promote and support the growth of CBHI schemes instead. Under a national health system, CBHI schemes could be financed by government tax revenues and allowed to expand throughout the country instead of being limited to certain regions (Carrin & World Health Organization, 2003).

Benin, Ghana, Rwanda, Senegal, and Tanzania were some of the first African countries to adopt CBHI into their national health financing programs (Smith & Sulzbach, 2008; Shimeles, 2010). CBHI schemes in Rwanda received solid administrative and political support from policymakers in the country, which helped coverage to increase rapidly from 35% of the target population in 2006 to close to 85% in 2008 (Mladovsky & Mossialos, 2007, as cited in Shimeles, 2010). The CHF in Tanzania and the Health Card Scheme in Thailand were developed by their respective governments via premium contributions; the National Rural Health Mission of India also planned to support CBHI by subsidizing the premium payments of the low-income population (Bennett, 2004; Dror, Radermacher, et al., 2007). However, enrolment did not increase for all farmers in rural China despite government subsidies for the new RMHC scheme, due to other issues such as adverse selection (Wang et al., 2006). This suggests that governments need to provide other kinds of support in addition to premium contributions, in order to address and eliminate all problems related to CBHI.

Carrin and World Health Organization (2003) set four basic tasks for the government: advising on the design of CBHI schemes, monitoring the activities associated with CBHI, training, and co-financing. Concerning scheme design, governments should aim for UHC via CBHI, and reduce adverse selection by initiating a CBHI scheme only when a certain proportion of the target population is willing to enrol, by introducing waiting periods to prevent people from enrolling only when they get sick, and by enforcing enrolment on a household basis. Setting up a national network of CBHI schemes would expand the risk pool, and thus acquire enough available funds to insure all members. Creating a reinsurance process could minimize the

financial risk of smaller schemes. Additionally, the government could make suggestions on the contents of the benefit packages, based on information on the healthcare needs of the poor population.

Monitoring and tracking the performance of CBHI schemes would enable the government to uncover possible CBHI-related problems, and subsequently offer solutions to the schemes' administrators. The organization of nation-wide promotional activities would help raise awareness among the target population, and nation-wide training programs would ensure the expertise of CBHI employees (Carrin & World Health Organization, 2003). As mentioned previously, governments could also invest in the training and education of medical staff by funding medical schools, laboratorial research and high-tech medical equipment. LDCs with insufficient government funds for healthcare could establish partnerships with NGOs and foreign donor countries.

5.2.2. Expanding private health insurance

To further increase the take-up of health insurance in developing countries, and to move closer towards achieving the SDGs and UHC, MHI could alternatively be provided by private for-profit insurance companies. As mentioned previously, private health insurance is too expensive for low-income people, and the low-income market is deemed to be unprofitable for private/commercial insurers. However, Churchill (2007) asserts that commercial insurers can create strategies that would make insuring the poor population possible. Commercial insurers would first need to understand the needs and preferences of the poor, and subsequently promote MHI in the low-income market to foster demand.

To better understand the low-income market and its risks, Churchill (2007) suggests for commercial insurers to conduct surveys, focus groups, and interviews among the target population. Simply designed microinsurance products and plainly formulated insurance contracts would improve comprehensibility among people who are illiterate. Unconventional informational campaigns such as street theater could be useful for educating the poor on the concept of insurance. Since comprehensive coverage is unaffordable for low-income people, they would have to decide for themselves which benefits to include and how much to pay. To build trust among customers, insurers would need to be quick in paying claims and avoid

rejecting any claims, by making sure that policyholders are fully aware of which benefits are covered and which are not, and by making the claims process very basic.

Offering simple insurance products would make it feasible to hire less costly employees, preferably those from local communities who are familiar with the concerns of the target population. Working together with community-based organizations and community leaders could facilitate the distribution of insurance and improve the insurer's credibility. Employing dedicated staff, investing some time and money into experimentation and innovation, and setting different types of goals and incentives for employees selling microinsurance products to the poor, could all help insurance companies succeed in the low-income market. Although the low-income market may be less profitable in the short term, higher revenues may be generated many years later when low-income households move out of poverty and become middle-income households able to afford comprehensive coverage. This makes building customer loyalty pay off for insurance companies in the long run (Churchill, 2007).

6. Conclusion

Health risks are a big problem for poor populations in developing countries. Without sufficient health insurance coverage, health-related issues could cause a severe decline in the financial situation of an individual or household after paying OOP, which leads to greater poverty. Even though UHC is the goal of all nations worldwide, it has not yet been achieved due to the inability of low-income people from rural and informal sectors to access public or private health insurance. To support these uninsured and vulnerable population groups, CBHI was developed as an alternative by MFIs, NGOs, and MHOs. CBHI schemes are usually set up in local communities, where scheme members contribute payments to a common pool; the money from this pool is eventually used to pay for healthcare when any of the members get sick. CBHI has been able to increase the frequency of healthcare utilization, reduce the likelihood of facing CHE, and improve treatment outcomes and economic wellbeing among scheme members in countries such as Ghana, India, Mali, the Philippines, Rwanda, and Senegal.

However, the enrolment rate in many CBHI schemes has not been very high, not all scheme members increased their utilization of healthcare, and not all those who utilized healthcare

submitted claims for cost reimbursement (to schemes with a reimbursement structure). A number of factors have been found to affect take-up rates and drop-out rates of CBHI in various Asian and sub-Saharan African developing countries in the literature: affordability of the premium influenced by individual/household SES and premium payment modalities; household income level; age, gender and education level of the individual/household head; dependency ratio in a household; marital status of the individual/household head; living distance to a health facility; recent exposure to high medical costs; health status of the individual; quality of health services; management structure of the scheme; the individual's knowledge and perception of CBHI; social capital of the community; the individual's risk preference. Many of these factors are also interrelated.

Concerning the unequal utilization of healthcare among members, the following factors have been found among schemes in China, India, and Nigeria: individual/household income level; health status of the individual; quality of health services; transportation costs and opportunity costs of time. Factors influencing claims submission rates for the VimoSEWA scheme in India include: individual/household SES; gender and education level of the individual; place of residence, i.e. distance to a claims office or hospital; refusal of the doctor to provide claim documents at a later date; inability to collect all necessary documents before submission deadline; unawareness of the deadline; and belief that the claim will be rejected again. Moreover, claims may be rejected for reasons such as being ineligible for reimbursement (and not knowing earlier on account of deficient information provided by the scheme's staff members), or having incorrect or incomplete documents. Reimbursements were often not received in time due to many poor people not having bank accounts.

I then applied the factors affecting enrolment rates, healthcare utilization, and claims submission related to CBHI to help interpret several sets of health-related data from the WHO Global Health Observatory, which were collected over the last six years from countries belonging to different WB income groups according to their GNI per capita. Conclusions made from these data sets were used to underline the importance of producing solutions to the problems associated with CBHI, so that CBHI schemes can function optimally and help achieve the health-related SDGs set by the United Nations in 2015. According to the WHO data results, the low ratio of government to total expenditure on health per capita in countries with lower GNI per capita, compared to that of countries with higher GNI per capita, confirms that governments in developing countries do not or are unable to provide public health

insurance to all of their citizens. Average adult literacy rate is positively correlated with GNI per capita of a country, which explains the high illiteracy among low-income populations that hindered enrolment and claims submission. The positive relationship between average physician density and GNI per capita implies a lack of health practitioners in lower-income countries, and thus a lower quality of healthcare. Higher average infant and child mortality rates, and high average maternal mortality ratios in lower-income countries, indicate the importance of enrolling in CBHI and the utilization of affordable, good quality maternal care. The low number of births attended by skilled health personnel in rural areas compared to urban areas in LDCs could be explained by the lower take-up of CBHI, and the lower frequency of healthcare utilization among women and those living further away from health facilities (which are usually located in urban areas). The average stunting prevalence in children, which was especially high in LDCs, suggests that affordable CBHI is greatly needed in countries with low HAI, and where the majority of the people are of low SES. The higher percentage of deaths by noncommunicable diseases in developing countries compared to developed countries underlines the importance of increasing CBHI enrolment and healthcare utilization among people of all ages.

To solve the problems of low enrolment rates in CBHI, and low frequency of healthcare utilization and claims submission among members, I suggested several possible solutions: the access to CBHI membership and healthcare benefits could be facilitated by reducing premium rates, reducing co-payment levels, acquiring premium subsidies from governments and NGOs, adjusting individual/household premium rates to the individual's/household's income level, making payment modalities more flexible, setting up health facilities near the residence of the target population, covering transportation costs, making the claims submission process simpler and providing assistance during the process, and reimbursing members in cash. The quality of health services could be ameliorated by CBHI schemes through contracting good quality healthcare providers; offering incentives to improve quality; acquiring subsidies from governments and NGOs to invest in better health services, equipment, drugs, and personnel; and monitoring member satisfaction. Benefit packages could be made more attractive to potential members by asking for their opinions and preferences in the benefit package design process, and by offering higher coverage of essential services that represent high aggregate expenses, such as the cost of drugs, inpatient care, outpatient care and diagnostic tests. Management capacity and consumer trust could also be built, so that people would be more willing to enrol in a CBHI scheme: administrative processes could run more smoothly and be

monitored regularly, managers could make decisions more transparently and be more aware of the members' needs, subsidies could be used wisely, and more competent and better quality healthcare providers could be found.

Finally, I considered the prospect of increasing the scope and reach of CBHI schemes within a country, through the support of the central government. Taking up CBHI in a developing country's national health financing program, with the financial aid of NGOs and foreign governments, would be a viable strategy for protecting and insuring its low-income population, achieving the SDGs, and ensuring the CBHI scheme's financial sustainability. The provision of health insurance by private insurance companies is an alternative possibility, which could succeed if private insurers made the effort to understand the needs of the low-income population, design simpler products, formulate insurance contracts in plain language, launch interesting informational campaigns, involve clients in choosing the benefits and the pricing of insurance products, foster trust by paying claims and not rejecting claims, and provide incentives for employees to sell health insurance to poor households.

In conclusion, CBHI is an effective method for protecting poor households from health-related economic risks, provided that the schemes function optimally, and the benefits are accessible and of good quality to the members. If the implementation of the solutions suggested above is successful, the enrolment rates, healthcare utilization rates, and claims submission rates would increase. This would result in an improvement in the health and economic wellbeing of the poor population in developing countries, which contributes to the mitigation of health-related issues presented in the WHO data. The achievement of health-related SDGs and UHC for a developing country, particularly for an LDC, is a step closer towards higher economic and social development, and the graduation from a lower-income group to a higher-income group.

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Appendix

Data source

The following are the raw data sets for all the indicators discussed in section 4.2., including explanations for how the values presented in section 4.2. were derived. The data can be found on the website of the World Health Organization Global Health Observatory.

Government and total health expenditure per capita (section 4.2.2.)

Below is the data set obtained from 2014. Ratio of government to total expenditure on health per capita as shown in Figure 13 was calculated by dividing per capita government expenditure on health by per capita total expenditure on health.

Data source: WHO (2016d).

World Bank income group	Year	Per capita total expenditure on health (PPP int. $)	Per capita government expenditure on health (PPP int. $)
Low-income	2014	92.1	37.9
Lower-middle-income	2014	267.6	95.4
Upper-middle-income	2014	869.1	494.6
High-income	2014	4,608.3	2,825.3

Adult literacy rate (section 4.2.3.)

Below is the data set from 2007-2012 of each of the 132 countries surveyed.

Data source: WHO (2016f).

	Literacy rate among adults aged >= 15 years (%)		Literacy rate among adults aged >= 15 years (%)
Country	**2007-2012**	**Country**	**2007-2012**
Albania	97	Liberia	61
Angola	70	Libya	90
Antigua and Barbuda	99	Lithuania	100
Argentina	98	Madagascar	65
Armenia	100	Malawi	61
Azerbaijan	100	Malaysia	93
Bahrain	92	Mali	33
Bangladesh	58	Mauritania	59
Belarus	100	Mauritius	89
Benin	42	Mexico	94

Bolivia (Plurinational State of)	91	Mongolia	97
Bosnia and Herzegovina	98	Montenegro	99
Botswana	85	Morocco	67
Brazil	90	Mozambique	56
Brunei Darussalam	95	Myanmar	93
Bulgaria	98	Namibia	89
Burkina Faso	29	Nepal	57
Burundi	67	Nigeria	61
Cote d'Ivoire	57	Oman	87
Cabo Verde	85	Pakistan	55
Cambodia	74	Panama	94
Cameroon	71	Papua New Guinea	62
Central African Republic	57	Paraguay	94
Chad	35	Peru	90
Chile	99	Philippines	95
China	95	Poland	100
Colombia	94	Portugal	95
Comoros	76	Qatar	96
Costa Rica	96	Republic of Moldova	99
Croatia	99	Romania	98
Cuba	100	Russian Federation	100
Cyprus	99	Rwanda	66
Democratic People's Republic of Korea	100	Samoa	99
Democratic Republic of the Congo	67	Sao Tome and Principe	89
Dominican Republic	90	Saudi Arabia	87
Ecuador	92	Senegal	50
Egypt	74	Serbia	98
El Salvador	85	Seychelles	92
Equatorial Guinea	94	Sierra Leone	43
Eritrea	69	Singapore	96
Estonia	100	Slovenia	100
Ethiopia	39	South Africa	93
Gabon	89	Spain	98
Gambia	51	Sri Lanka	91
Georgia	100	Suriname	95
Ghana	67	Swaziland	88
Greece	97	Syrian Arab Republic	84
Guatemala	76	Tajikistan	100
Guinea	41	The former Yugoslav republic of Macedonia	97
Guinea-Bissau	55	Timor-Leste	58
Guyana	85	Togo	60

Honduras	85	Trinidad and Tobago	99
Hungary	99	Tunisia	79
Indonesia	93	Turkey	94
Iran (Islamic Republic of)	85	Turkmenistan	100
Iraq	79	Uganda	73
Italy	99	Ukraine	100
Jamaica	87	United Republic of Tanzania	73
Jordan	96	Uruguay	98
Kazakhstan	100	Uzbekistan	99
Kenya	87	Vanuatu	83
Kuwait	94	Venezuela (Bolivarian Republic of)	96
Kyrgyzstan	99	Viet Nam	93
Latvia	100	Yemen	65
Lebanon	90	Zambia	71
Lesotho	90	Zimbabwe	84

These 132 countries were divided into the four WB income groups according to classifications in Figures 7-10. The average adult literacy rate of each WB income group was calculated to obtain the values in the table below, which were used to create the graph in Figure 14.

Adapted from WHO (2016f).

WB income group	Average literacy rate among adults aged >=15 years (%)
Low-income *(26 countries)*	58.08
Lower-middle-income *(40 countries)*	81.73
Upper-middle-income *(41 countries)*	93.24
High-income *(25 countries)*	96.72

Density of physicians (section 4.2.4.)

On the following page is the data set of the 110 countries surveyed in 2010-2014. Some countries were surveyed more than once during this time period, and thus have more than one physician density value for different years; the last column shows the average physician density value (out of all the values) of each country.

Data source: WHO (2016b).

Country	Year	Physicians density (per 1,000 population)	*Average physicians density (per 1,000 population) in 2010-2014*
Afghanistan	2013	0.266	*0.22975*
Afghanistan	2012	0.225	
Afghanistan	2011	0.234	
Afghanistan	2010	0.194	
Albania	2013	1.145	*1.13375*
Albania	2012	1.145	
Albania	2011	1.113	
Albania	2010	1.132	
Andorra	2010	4	*4*
Argentina	2013	3.859	*3.859*
Armenia	2013	2.698	*2.69725*
Armenia	2012	2.687	
Armenia	2011	2.661	
Armenia	2010	2.743	
Australia	2011	3.273	*3.562*
Australia	2010	3.851	
Azerbaijan	2013	3.402	*3.4995*
Azerbaijan	2012	3.432	
Azerbaijan	2011	3.379	
Azerbaijan	2010	3.785	
Bahrain	2012	0.915	*1.105666667*
Bahrain	2011	0.913	
Bahrain	2010	1.489	
Bangladesh	2011	0.356	*0.356*
Belarus	2013	3.925	*3.764*
Belarus	2012	3.858	
Belarus	2011	3.759	
Belarus	2010	3.514	
Belgium	2010	3.782	*3.782*
Bhutan	2012	0.259	*0.259*
Bolivia (Plurinational State of)	2011	0.473	*0.456*
Bolivia (Plurinational State of)	2010	0.439	
Bosnia and Herzegovina	2013	1.93	*1.8335*
Bosnia and Herzegovina	2012	1.876	
Bosnia and Herzegovina	2011	1.834	
Bosnia and Herzegovina	2010	1.694	
Brazil	2013	1.891	*1.845333333*
Brazil	2011	1.857	
Brazil	2010	1.788	

Brunei Darussalam	2012	1.443	*1.433666667*
Brunei Darussalam	2011	1.498	
Brunei Darussalam	2010	1.36	
Bulgaria	2012	3.866	*3.813*
Bulgaria	2010	3.76	
Burkina Faso	2010	0.047	*0.047*
Cabo Verde	2011	0.306	*0.3005*
Cabo Verde	2010	0.295	
Cambodia	2012	0.169	*0.203666667*
Cambodia	2011	0.23	
Cambodia	2010	0.212	
Canada	2010	2.068	*2.068*
China	2011	1.491	*1.4735*
China	2010	1.456	
Colombia	2010	1.471	*1.471*
Costa Rica	2013	1.113	*1.113*
Cuba	2010	6.723	*6.723*
Cyprus	2012	2.329	*2.5505*
Cyprus	2010	2.772	
Denmark	2010	3.485	*3.485*
Dominican Republic	2011	1.49	*1.49*
Ecuador	2011	1.724	*1.724*
Estonia	2012	3.242	*3.2925*
Estonia	2010	3.343	
France	2013	3.19	*3.2855*
France	2011	3.381	
Georgia	2013	4.272	*4.272*
Germany	2012	3.889	*3.889*
Ghana	2010	0.096	*0.096*
Guyana	2010	0.214	*0.214*
Hungary	2012	3.08	*3.244*
Hungary	2010	3.408	
Iceland	2012	3.476	*3.623615385*
Iceland	2011	3.456	
Iceland	2010	3.733	
India	2012	0.702	*0.711666667*
India	2011	0.743	
India	2010	0.69	
Indonesia	2012	0.204	*0.1735*
Indonesia	2010	0.143	
Iraq	2010	0.607	*0.607*
Ireland	2013	2.67	*2.67*

Israel	2012	3.344	*3.344*
Italy	2012	3.764	*3.764*
Japan	2010	2.297	*2.297*
Jordan	2010	2.558	*2.558*
Kazakhstan	2013	3.617	*3.67175*
Kazakhstan	2012	3.583	
Kazakhstan	2011	3.624	
Kazakhstan	2010	3.863	
Kenya	2013	0.198	*0.18775*
Kenya	2012	0.189	
Kenya	2011	0.181	
Kenya	2010	0.183	
Kiribati	2010	0.376	*0.376*
Kyrgyzstan	2013	1.969	*2.278666667*
Kyrgyzstan	2011	2.469	
Kyrgyzstan	2010	2.398	
Lao People's Democratic Republic	2012	0.182	*0.182*
Latvia	2012	3.579	*3.559*
Latvia	2011	3.561	
Latvia	2010	3.537	
Lebanon	2011	3.2	*3.135*
Lebanon	2010	3.07	
Lithuania	2012	4.116	*3.8785*
Lithuania	2010	3.641	
Luxembourg	2013	2.9	*2.9*
Malaysia	2010	1.198	*1.198*
Maldives	2010	1.415	*1.415*
Mali	2010	0.083	*0.083*
Malta	2013	3.486	*3.26225*
Malta	2012	3.294	
Malta	2011	3.157	
Malta	2010	3.112	
Marshall Islands	2010	0.438	*0.438*
Mexico	2011	2.095	*2.043*
Mexico	2010	1.991	
Monaco	2012	7.167	*7.1115*
Monaco	2011	7.056	
Mongolia	2011	2.837	*2.751*
Mongolia	2010	2.665	
Montenegro	2013	2.113	*2.03*
Montenegro	2012	2.002	

Montenegro	2011	1.979	
Montenegro	2010	2.026	
Mozambique	2012	0.04	*0.038666667*
Mozambique	2011	0.038	
Mozambique	2010	0.038	
Myanmar	2012	0.612	*0.564666667*
Myanmar	2011	0.581	
Myanmar	2010	0.501	
Nauru	2010	0.714	*0.714*
New Zealand	2010	2.735	*2.735*
Nicaragua	2014	0.897	*0.8358*
Nicaragua	2013	0.901	
Nicaragua	2012	0.864	
Nicaragua	2011	0.818	
Nicaragua	2010	0.699	
Norway	2012	4.281	*4.281*
Oman	2012	2.429	*2.233333333*
Oman	2011	2.223	
Oman	2010	2.048	
Pakistan	2010	0.827	*0.827*
Palau	2010	1.381	*1.381*
Panama	2013	1.65	*1.58125*
Panama	2012	1.662	
Panama	2011	1.554	
Panama	2010	1.459	
Papua New Guinea	2010	0.058	*0.058*
Paraguay	2012	1.227	*1.227*
Peru	2012	1.132	*1.132*
Poland	2012	2.219	*2.1435*
Poland	2010	2.068	
Portugal	2012	4.1	*3.990333333*
Portugal	2011	4.003	
Portugal	2010	3.868	
Qatar	2010	7.739	*7.739*
Republic of Korea	2012	2.143	*2.087333333*
Republic of Korea	2011	2.095	
Republic of Korea	2010	2.024	
Republic of Moldova	2013	2.984	*3.233*
Republic of Moldova	2011	3.643	
Republic of Moldova	2010	3.072	
Romania	2012	2.448	*2.448*
Rwanda	2010	0.056	*0.056*

San Marino	2013	5.1	*5.038666667*
San Marino	2012	5.133	
San Marino	2011	4.883	
Saudi Arabia	2012	2.491	*2.451333333*
Saudi Arabia	2011	2.477	
Saudi Arabia	2010	2.386	
Seychelles	2012	1.067	*1.162666667*
Seychelles	2011	1.231	
Seychelles	2010	1.19	
Sierra Leone	2010	0.022	*0.022*
Singapore	2013	1.95	*1.8635*
Singapore	2012	1.835	
Singapore	2011	1.748	
Singapore	2010	1.921	
Slovakia	2012	3.32	*3.312*
Slovakia	2011	3.262	
Slovakia	2010	3.354	
South Africa	2013	0.776	*0.767*
South Africa	2011	0.758	
Spain	2013	4.949	*4.463*
Spain	2012	4.894	
Spain	2011	4.874	
Spain	2010	5.08	
Sri Lanka	2010	0.68	*0.68*
Sweden	2011	3.926	*3.926*
Switzerland	2012	4.049	*4.049*
Syrian Arab Republic	2010	1.455	*1.455*
Tajikistan	2013	1.918	*1.918*
Thailand	2010	0.393	*0.393*
Timor-Leste	2011	0.073	*0.0705*
Timor-Leste	2010	0.068	
Tonga	2010	0.563	*0.563*
Tunisia	2010	1.222	*1.222*
Turkey	2011	1.711	*1.646*
Turkey	2010	1.581	
Ukraine	2013	3.543	*3.543*
United Arab Emirates	2010	2.533	*2.533*
United Kingdom of Great Britain and Northern Ireland	2013	2.809	*2.809*
United Republic of Tanzania	2012	0.031	*0.031*
United States of America	2011	2.452	*2.431*
United States of America	2010	2.41	

Uzbekistan	2013	2.534	*2.5625*
Uzbekistan	2012	2.565	
Uzbekistan	2011	2.613	
Uzbekistan	2010	2.538	
Viet Nam	2013	1.19	*1.1835*
Viet Nam	2012	1.275	
Viet Nam	2011	1.159	
Viet Nam	2010	1.11	
Yemen	2010	0.197	*0.197*
Zambia	2012	0.173	*0.137*
Zambia	2011	0.172	
Zambia	2010	0.066	
Zimbabwe	2011	0.083	*0.0755*
Zimbabwe	2010	0.068	

The countries were then divided into WB income groups according to classifications in Figures 7-10, and the average physician density of each WB income group was calculated to obtain the values in the table below, which were used to create the graph in Figure 15.

Adapted from WHO (2016b).

WB income group	Average physician density per 1,000 of the population
Low-income *(8 countries)*	0.07
Lower-middle-income *(29 countries)*	1.03
Upper-middle-income *(31 countries)*	2.00
High-income *(42 countries)*	3.24

Infant and child mortality rates (section 4.2.5)

On the following page is the data set for each WB income group surveyed in 2015. The values in square brackets are the range of values surveyed in countries within each WB income group; the values outside the brackets are the average infant and under-five mortality rates in each WB income group, which are used to create the graph in Figure 16.

Data source: WHO (2016j).

Income group	Year	Infant mortality rate (probability of dying between birth and age 1 per 1,000 live births)	Under-five mortality rate (probability of dying by age 5 per 1,000 live births)
Low-income	2015	53.1 [50.0-57.8]	76.1 [71.1-85.2]
Lower-middle-income	2015	40.0 [37.7-43.0]	52.8 [49.3-57.7]
Upper-middle-income	2015	15.2 [13.9-17.3]	19.1 [17.0-22.8]
High-income	2015	5.8 [5.5-6.3]	6.8 [40.9-45.6]

Births attended by skilled health personnel (section 4.2.6)

Below is the data set for the 28 LDCs surveyed in 2010-2013. LDCs were classified according to Figure 12 (including the countries Ghana and Zimbabwe). The values in square brackets in the table are the range of values surveyed in each rural or urban region; the value outside the brackets is the average value for each region. Since three of the countries were surveyed twice during this time period and have two different percentages for different years (marked in italics in the table), the average of these two percentages was taken as the average percentage value for each region. The average of all countries' average rural region values and the average of all countries' average urban region values were calculated to produce the average percentage of births attended in each region (rural or urban). These values were used to create the graph in Figure 17.

Data source: WHO (2016e).

		Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	
Country	**Year**	**Rural**	**Urban**
Afghanistan	2010	30.5 [27.4-33.9]	74.7 [70.1-78.7]
Bangladesh	2011	25.2 [22.9-27.7]	53.7 [49.0-58.4]
Benin	2011	80.1 [76.9-83.0]	92.4 [90.1-94.2]
Bhutan	2010	54.2 [50.6-57.7]	89.4 [85.0-92.5]
Burkina Faso	2010	67.5 [64.1-70.8]	95.6 [94.1-96.7]
Burundi	2010	62.7 [60.1-65.3]	91.1 [87.2-93.9]
Cambodia	2010	72.3 [69.1-75.3]	95.4 [93.4-96.9]
Central African Republic	2010	38.1 [34.4-42.1]	82.9 [79.1-86.1]
Comoros	2012	80.0 [75.5-83.8]	94.3 [91.3-96.3]
Democratic Republic of the Congo	*2013*	*74.5 [70.1-78.5]*	*94.3 [92.4-95.8]*
Democratic Republic of the Congo	*2010*	*67.4 [61.8-72.6]*	*94.0 [91.3-95.9]*
Ethiopia	2011	5.1 [4.1-6.4]	55.9 [48.1-63.3]
Ghana	2011	53.9 [49.9-57.7]	88.2 [84.9-90.8]

Guinea	2012	32.0 [27.5-36.9]	84.5 [80.9-87.5]
Haiti	2012	26.8 [23.2-30.6]	61.7 [57.1-66.2]
Lao People's Democratic Republic	2011	30.7 [28.0-33.4]	79.6 [75.0-83.6]
Liberia	2013	53.8 [49.4-58.1]	74.2 [68.0-79.5]
Malawi	2010	71.4 [69.4-73.3]	85.4 [79.9-89.7]
Mali	2012	53.3 [49.0-57.5]	93.7 [90.8-95.7]
Mozambique	2011	46.8 [42.8-50.8]	80.6 [76.4-84.2]
Nepal	*2011*	*36.7 [32.3-41.2]*	*78.5 [73.2-83.0]*
Nepal	*2010*	*26.1 [20.8-32.2]*	*53.2 [43.6-62.5]*
Niger	2012	24.1 [21.3-27.0]	85.3 [82.3-87.9]
Rwanda	2010	76.0 [74.0-77.9]	85.9 [81.4-89.4]
Senegal	*2012*	*35.7 [31.4-40.3]*	*78.9 [73.5-83.4]*
Senegal	*2010*	*48.9 [44.9-53.0]*	*89.4 [87.0-91.4]*
Sierra Leone	*2013*	*56.4 [51.9-60.9]*	*80.6 [75.0-85.2]*
Sierra Leone	*2010*	*58.9 [54.5-63.1]*	*71.8 [64.2-78.2]*
Togo	2010	43.2 [38.6-48.0]	91.1 [87.3-93.8]
Uganda	2011	54.5 [51.1-57.9]	89.6 [86.5-92.0]
United Republic of Tanzania	2010	42.0 [38.3-45.8]	82.1 [73.8-88.3]
Zimbabwe	2010	56.7 [53.0-60.3]	84.4 [78.0-89.2]

Maternal mortality ratio (section 4.2.7.)

Below is the data set for the 181 countries surveyed in 2015. The values in square brackets are the range of values surveyed; the value outside the brackets is the average ratio for each country.

Data source: WHO (2016h).

Country	Year	Maternal mortality ratio (per 100,000 live births)
Afghanistan	2015	396 [253-620]
Albania	2015	29 [16-46]
Algeria	2015	140 [82-244]
Angola	2015	477 [221-988]
Argentina	2015	52 [44-63]
Armenia	2015	25 [21-31]
Australia	2015	6 [5-7]
Austria	2015	4 [3-5]
Azerbaijan	2015	25 [17-35]
Bahamas	2015	80 [53-124]
Bahrain	2015	15 [12-19]
Bangladesh	2015	176 [125-280]

Barbados	2015	27 [19-37]
Belarus	2015	4 [3-6]
Belgium	2015	7 [5-10]
Belize	2015	28 [20-36]
Benin	2015	405 [279-633]
Bhutan	2015	148 [101-241]
Bolivia (Plurinational State of)	2015	206 [140-351]
Bosnia and Herzegovina	2015	11 [7-17]
Botswana	2015	129 [102-172]
Brazil	2015	44 [36-54]
Brunei Darussalam	2015	23 [15-30]
Bulgaria	2015	11 [8-14]
Burkina Faso	2015	371 [257-509]
Burundi	2015	712 [471-1 050]
Cote d'Ivoire	2015	645 [458-909]
Cabo Verde	2015	42 [20-95]
Cambodia	2015	161 [117-213]
Cameroon	2015	596 [440-881]
Canada	2015	7 [5-9]
Central African Republic	2015	882 [508-1 500]
Chad	2015	856 [560-1 350]
Chile	2015	22 [18-26]
China	2015	27 [22-32]
Colombia	2015	64 [56-81]
Comoros	2015	335 [207-536]
Congo	2015	442 [300-638]
Costa Rica	2015	25 [20-29]
Croatia	2015	8 [6-11]
Cuba	2015	39 [33-47]
Cyprus	2015	7 [4-12]
Czech Republic	2015	4 [3-6]
Democratic People's Republic of Korea	2015	82 [37-190]
Democratic Republic of the Congo	2015	693 [509-1 010]
Denmark	2015	6 [5-9]
Djibouti	2015	229 [111-482]
Dominican Republic	2015	92 [77-111]
Ecuador	2015	64 [57-71]
Egypt	2015	33 [26-39]
El Salvador	2015	54 [40-69]
Equatorial Guinea	2015	342 [207-542]
Eritrea	2015	501 [332-750]
Estonia	2015	9 [6-14]

Ethiopia	2015	353 [247-567]
Fiji	2015	30 [23-41]
Finland	2015	3 [2-3]
France	2015	8 [7-10]
Gabon	2015	291 [197-442]
Gambia	2015	706 [484-1 030]
Georgia	2015	36 [28-47]
Germany	2015	6 [5-8]
Ghana	2015	319 [216-458]
Greece	2015	3 [2-4]
Grenada	2015	27 [19-42]
Guatemala	2015	88 [77-100]
Guinea	2015	679 [504-927]
Guinea-Bissau	2015	549 [273-1 090]
Guyana	2015	229 [184-301]
Haiti	2015	359 [236-601]
Honduras	2015	129 [99-166]
Hungary	2015	17 [12-22]
Iceland	2015	3 [2-6]
India	2015	174 [139-217]
Indonesia	2015	126 [93-179]
Iran (Islamic Republic of)	2015	25 [21-31]
Iraq	2015	50 [35-69]
Ireland	2015	8 [6-11]
Israel	2015	5 [4-6]
Italy	2015	4 [3-5]
Jamaica	2015	89 [70-115]
Japan	2015	5 [4-7]
Jordan	2015	58 [44-75]
Kazakhstan	2015	12 [10-15]
Kenya	2015	510 [344-754]
Kiribati	2015	90 [51-152]
Kuwait	2015	4 [3-6]
Kyrgyzstan	2015	76 [59-96]
Lao People's Democratic Republic	2015	197 [136-307]
Latvia	2015	18 [13-26]
Lebanon	2015	15 [10-22]
Lesotho	2015	487 [310-871]
Liberia	2015	725 [527-1 030]
Libya	2015	9 [6-15]
Lithuania	2015	10 [7-14]
Luxembourg	2015	10 [7-16]

Madagascar	2015	353 [256-484]
Malawi	2015	634 [422-1 080]
Malaysia	2015	40 [32-53]
Maldives	2015	68 [45-108]
Mali	2015	587 [448-823]
Malta	2015	9 [6-15]
Mauritania	2015	602 [399-984]
Mauritius	2015	53 [38-77]
Mexico	2015	38 [34-42]
Micronesia (Federated States of)	2015	100 [46-211]
Mongolia	2015	44 [35-55]
Montenegro	2015	7 [4-12]
Morocco	2015	121 [93-142]
Mozambique	2015	489 [360-686]
Myanmar	2015	178 [121-284]
Namibia	2015	265 [172-423]
Nepal	2015	258 [176-425]
Netherlands	2015	7 [5-9]
New Zealand	2015	11 [9-14]
Nicaragua	2015	150 [115-196]
Niger	2015	553 [411-752]
Nigeria	2015	814 [596-1 180]
Norway	2015	5 [4-6]
Oman	2015	17 [13-24]
Pakistan	2015	178 [111-283]
Panama	2015	94 [77-121]
Papua New Guinea	2015	215 [98-457]
Paraguay	2015	132 [107-163]
Peru	2015	68 [54-80]
Philippines	2015	114 [87-175]
Poland	2015	3 [2-4]
Portugal	2015	10 [9-13]
Qatar	2015	13 [9-19]
Republic of Korea	2015	11 [9-13]
Republic of Moldova	2015	23 [19-28]
Romania	2015	31 [22-44]
Russian Federation	2015	25 [18-33]
Rwanda	2015	290 [208-389]
Saint Lucia	2015	48 [32-72]
Saint Vincent and the Grenadines	2015	45 [34-63]
Samoa	2015	51 [24-115]
Sao Tome and Principe	2015	156 [83-268]

Saudi Arabia	2015	12 [7-20]
Senegal	2015	315 [214-468]
Serbia	2015	17 [12-24]
Sierra Leone	2015	1 360 [999-1 980]
Singapore	2015	10 [6-17]
Slovakia	2015	6 [4-7]
Slovenia	2015	9 [6-14]
Solomon Islands	2015	114 [75-175]
Somalia	2015	732 [361-1 390]
South Africa	2015	138 [124-154]
South Sudan	2015	789 [523-1 150]
Spain	2015	5 [4-6]
Sri Lanka	2015	30 [26-38]
Sudan	2015	311 [214-433]
Suriname	2015	155 [110-220]
Swaziland	2015	389 [251-627]
Sweden	2015	4 [3-5]
Switzerland	2015	5 [4-7]
Syrian Arab Republic	2015	68 [48-97]
Tajikistan	2015	32 [19-51]
Thailand	2015	20 [14-32]
The former Yugoslav republic of Macedonia	2015	8 [5-10]
Timor-Leste	2015	215 [150-300]
Togo	2015	368 [255-518]
Tonga	2015	124 [57-270]
Trinidad and Tobago	2015	63 [49-80]
Tunisia	2015	62 [42-92]
Turkey	2015	16 [12-21]
Turkmenistan	2015	42 [20-73]
Uganda	2015	343 [247-493]
Ukraine	2015	24 [19-32]
United Arab Emirates	2015	6 [3-11]
United Kingdom of Great Britain and Northern Ireland	2015	9 [8-11]
United Republic of Tanzania	2015	398 [281-570]
United States of America	2015	14 [12-16]
Uruguay	2015	15 [11-19]
Uzbekistan	2015	36 [20-65]
Vanuatu	2015	78 [36-169]
Venezuela (Bolivarian Republic of)	2015	95 [77-124]
Viet Nam	2015	54 [41-74]
Yemen	2015	385 [274-582]

Zambia	2015	224 [162-306]
Zimbabwe	2015	443 [363-563]

The 181 countries were divided into the four WB income groups according to classifications in Figures 7-10, and the average maternal mortality ratio of each WB income group was calculated from the average ratios of each country within the WB income group to obtain the values in the table below, which were used to create the graph in Figure 18.

Adapted from WHO (2016h).

WB income group	Average maternal mortality ratio per 100,000 live births
Low-income *(31 countries)*	532.77
Lower-middle-income *(50 countries)*	196.90
Upper-middle-income *(50 countries)*	76.54
High-income *(50 countries)*	12.50

Percentage of deaths from noncommunicable diseases (section 4.2.8.)

Below is the data set of 172 countries surveyed in 2012. These countries are classified into 138 developing countries and 34 developed countries according to Figure 5 (developed countries are marked in italics in the table). The average value of the percentage deaths of each developing country and the average value of the percentage deaths of each developed country were calculated to produce the average percentage of deaths of each country type (developing or developed). These values were used to create the graph in Figure 19.

Data source: WHO (2016m).

Country	Probability (%) of dying between exact ages 30 and 70 from any of cardiovascular disease, cancer, diabetes, or chronic respiratory disease (in 2012)	Country	Probability (%) of dying between exact ages 30 and 70 from any of cardiovascular disease, cancer, diabetes, or chronic respiratory disease (in 2012)
Afghanistan	31	Myanmar	24
Albania	19	Namibia	20
Algeria	22	Nepal	22
Angola	24	Nicaragua	19
Argentina	17	Niger	20
Armenia	30	Nigeria	20
Azerbaijan	23	Oman	18

Bahamas	14	Pakistan	21
Bahrain	13	Panama	12
Bangladesh	18	Papua New Guinea	26
Barbados	14	Paraguay	19
Belarus	26	Peru	11
Belize	14	Philippines	28
Benin	22	Poland	20
Bhutan	21	Qatar	14
Bolivia (Plurinational State of)	18	Republic of Moldova	26
Bosnia and Herzegovina	18	Romania	23
Botswana	21	Russian Federation	30
Brazil	19	Rwanda	19
Brunei Darussalam	17	Saudi Arabia	17
Bulgaria	24	Senegal	17
Burkina Faso	24	Serbia	25
Burundi	24	Sierra Leone	27
Cote d'Ivoire	23	Solomon Islands	24
Cabo Verde	15	Somalia	19
Cambodia	18	South Africa	27
Cameroon	20	South Sudan	20
Central African Republic	18	Sri Lanka	18
Chad	23	Sudan	17
Chile	12	Suriname	14
China	19	Swaziland	21
Colombia	12	Syrian Arab Republic	19
Comoros	23	Tajikistan	29
Congo	20	Thailand	16
Costa Rica	12	The former Yugoslav republic of Macedonia	22
Croatia	18	Timor-Leste	24
Cuba	17	Togo	20
Democratic People's Republic of Korea	27	Trinidad and Tobago	26
Democratic Republic of the Congo	24	Tunisia	17
Djibouti	19	Turkey	18
Dominican Republic	15	Turkmenistan	41
Ecuador	12	Uganda	21
Egypt	25	Ukraine	28
El Salvador	17	United Arab Emirates	19

Equatorial Guinea	23	United Republic of Tanzania	16
Eritrea	24	Uruguay	17
Ethiopia	15	Uzbekistan	31
Fiji	31	Venezuela (Bolivarian Republic of)	16
Gabon	15	Viet Nam	17
Gambia	19	Yemen	23
Georgia	22	Zambia	18
Ghana	20	Zimbabwe	19
Guatemala	14	*Australia*	*9*
Guinea	21	*Austria*	*12*
Guinea-Bissau	22	*Belgium*	*12*
Guyana	28	*Canada*	*11*
Haiti	24	*Cyprus*	*9*
Honduras	16	*Czech Republic*	*17*
Hungary	24	*Denmark*	*13*
India	26	*Estonia*	*19*
Indonesia	23	*Finland*	*11*
Iran (Islamic Republic of)	17	*France*	*11*
Iraq	24	*Germany*	*12*
Jamaica	17	*Greece*	*13*
Jordan	20	*Iceland*	*10*
Kazakhstan	34	*Ireland*	*11*
Kenya	18	*Israel*	*9*
Kuwait	12	*Italy*	*10*
Kyrgyzstan	29	*Japan*	*9*
Lao People's Democratic Republic	24	*Latvia*	*24*
Lebanon	12	*Lithuania*	*22*
Lesotho	24	*Luxembourg*	*11*
Liberia	21	*Malta*	*12*
Libya	18	*Netherlands*	*12*
Madagascar	23	*New Zealand*	*11*
Malawi	19	*Norway*	*11*
Malaysia	20	*Portugal*	*12*
Maldives	16	*Republic of Korea*	*9*
Mali	26	*Singapore*	*11*
Mauritania	16	*Slovakia*	*19*
Mauritius	24	*Slovenia*	*13*
Mexico	16	*Spain*	*11*
Mongolia	32	*Sweden*	*10*

Montenegro	22	*Switzerland*	*9*
Morocco	23	*United Kingdom of Great Britain and Northern Ireland*	*12*
Mozambique	17	*United States of America*	*14*

Stunting prevalence in children (section 4.2.9)

Below is the data set of 45 developing countries surveyed in 2010-2013. The values in square brackets are the range of percentages surveyed for each education level; the value outside the brackets is the average percentage for each education level of a country. Some of the countries were surveyed 2-3 times during this time period, and thus have different percentages for different years (marked in italics in the table); the average of these percentages was then taken as the average value for each education level of the country. The average of all countries' average percentage values for each education level was calculated to obtain the average stunting prevalence percentage of each education level depicted in Figure 20.

To obtain the average stunting prevalence percentage of each education level in LDCs, as depicted in Figure 21, the same calculations were done but only with the average values from the 27 LDCs surveyed (marked with a star in the table below). The LDCs were classified according to Figure 12 (including the countries Ghana and Zimbabwe). The percentages in Figures 20 and 21 were then combined to create the graph in Figure 22, for better comparison.

Data source: WHO (2016c).

		Stunting prevalence in children aged < 5 years (%)		
Country	**Year**	**None**	**Primary**	**Secondary or higher**
Afghanistan *	2010	53.0 [50.1-55.9]	43.9 [39.7-48.3]	39.4 [34.4-44.6]
Bangladesh *	2011	51.0 [47.8-54.3]	46.9 [44.2-49.6]	33.6 [31.7-35.6]
Belize	2011	28.4 [19.0-40.1]	26.7 [22.7-31.2]	10.3 [7.9-13.3]
Benin *	2011	46.3 [44.5-48.0]	37.5 [34.3-40.7]	38.8 [34.5-43.2]
Bhutan *	2010	37.4 [35.0-39.8]	30.5 [26.0-35.3]	22.7 [19.3-26.6]
Burkina Faso *	2010	37.1 [35.4-38.8]	25.9 [22.5-29.5]	10.8 [7.5-15.4]
Burundi *	2010	61.5 [58.9-64.0]	57.7 [54.4-60.8]	31.1 [25.2-37.6]
Cote d'Ivoire	2011	32.0 [29.5-34.6]	28.7 [23.9-34.0]	16.7 [12.0-22.9]
Cambodia *	2010	46.3 [41.9-50.9]	40.2 [37.3-43.2]	30.9 [26.8-35.2]
Cameroon	2011	46.0 [41.6-50.4]	33.2 [31.1-35.4]	18.8 [16.5-21.3]
Central African Republic *	2010	44.1 [41.6-46.6]	41.2 [38.9-43.5]	30.4 [27.0-34.0]
Colombia	2010	30.8 [23.9-38.6]	18.3 [16.7-19.9]	10.8 [10.0-11.7]

Comoros *	2012	33.1 [29.5-36.9]	32.5 [27.5-37.8]	21.6 [17.8-26.0]
Congo	2011	26.3 [21.4-31.8]	29.3 [25.8-33.1]	19.4 [16.9-22.3]
*Democratic Republic of the Congo * *	*2013*	*51.0 [48.1-54.0]*	*47.1 [44.4-49.7]*	*32.3 [29.7-34.9]*
*Democratic Republic of the Congo * *	*2010*	*49.9 [46.5-53.3]*	*46.0 [43.2-48.8]*	*35.2 [32.7-37.7]*
Ethiopia *	2011	46.6 [44.5-48.7]	41.8 [38.7-45.0]	20.0 [14.6-26.8]
Gabon	2012	14.1 [8.1-23.5]	23.5 [20.2-27.1]	13.2 [10.4-16.6]
Ghana *	2011	29.2 [26.7-31.9]	25.2 [21.5-29.4]	16.9 [15.1-19.0]
Guinea *	2012	33.5 [31.2-35.9]	25.2 [20.2-31.0]	16.8 [12.0-22.9]
Haiti *	2012	34.2 [29.5-39.3]	22.0 [19.7-24.5]	11.5 [9.6-13.9]
Honduras	2011	48.6 [43.4-53.8]	27.5 [25.8-29.3]	10.0 [8.8-11.4]
Iraq	2011	23.8 [22.4-25.3]	22.4 [21.2-23.6]	19.6 [18.1-21.2]
Jordan	2012	11.8 [7.5-18.1]	12.1 [8.2-17.5]	7.3 [6.1-8.7]
Lao People's Democratic Republic *	2011	57.9 [55.5-60.2]	43.2 [41.0-45.3]	29.1 [27.0-31.4]
Liberia *	2013	32.4 [29.1-35.9]	28.6 [25.5-32.0]	28.5 [23.4-34.2]
Malawi *	2010	53.2 [48.4-57.9]	47.5 [45.1-49.9]	38.2 [33.0-43.8]
Mali *	2012	40.3 [38.0-42.7]	33.1 [27.8-38.7]	24.1 [18.6-30.7]
Mongolia	2010	28.2 [22.6-34.7]	21.1 [16.8-26.2]	14.1 [12.6-15.8]
Mozambique *	2011	47.1 [44.8-49.4]	42.9 [40.7-45.1]	26.9 [23.4-30.6]
Nepal *	2011	47.5 [43.1-51.9]	41.2 [35.6-47.1]	29.3 [25.3-33.7]
Niger *	2012	44.6 [42.4-46.9]	39.4 [33.7-45.4]	23.8 [17.8-30.9]
Nigeria	*2013*	*49.7 [47.8-51.7]*	*33.0 [30.8-35.2]*	*20.8 [19.3-22.4]*
Nigeria	*2011*	*53.0 [51.4-54.5]*	*31.7 [29.6-33.9]*	*18.2 [16.5-20.0]*
Pakistan	2012	54.9 [51.3-58.4]	45.6 [39.4-51.9]	23.7 [19.6-28.3]
Peru	*2012*	*45.5 [38.4-52.8]*	*32.9 [30.5-35.3]*	*10.3 [9.3-11.4]*
Peru	*2011*	*53.4 [46.1-60.5]*	*35.4 [32.8-38.1]*	*10.3 [9.1-11.6]*
Peru	*2010*	*55.1 [48.3-61.7]*	*38.9 [36.6-41.3]*	*13.4 [12.1-14.8]*
Rwanda *	2010	51.7 [47.8-55.4]	44.4 [42.2-46.7]	23.3 [18.7-28.7]
*Senegal **	*2012*	*20.7 [18.8-22.7]*	*15.0 [12.5-18.0]*	*9.9 [6.9-14.0]*
*Senegal **	*2010*	*29.6 [27.0-32.4]*	*22.7 [18.6-27.4]*	*11.8 [7.6-17.9]*
*Sierra Leone **	*2013*	*38.9 [36.5-41.4]*	*38.4 [33.4-43.8]*	*32.3 [27.5-37.5]*
*Sierra Leone **	*2010*	*46.5 [44.5-48.5]*	*40.3 [36.8-44.0]*	*37.3 [33.9-40.8]*
Suriname	2010	17.0 [13.3-21.5]	10.6 [8.4-13.3]	6.0 [4.7-7.8]
Swaziland	2010	39.9 [34.0-46.1]	38.2 [34.5-42.0]	24.5 [21.9-27.4]
Tajikistan	2012	34.8 [27.5-42.8]	25.3 [19.8-31.8]	25.9 [24.1-27.9]
Togo *	2010	36.7 [34.2-39.3]	27.2 [24.2-30.4]	17.1 [13.9-20.9]
Uganda *	2011	40.2 [34.7-46.0]	34.6 [31.4-38.0]	24.7 [19.5-30.8]
United Republic of Tanzania *	2010	45.0 [41.8-48.1]	42.1 [40.0-44.3]	22.0 [17.0-28.0]
Viet Nam	2010	40.8 [34.0-48.0]	28.7 [24.6-33.1]	19.9 [17.9-22.2]
Zimbabwe *	2010	37.9 [26.7-50.6]	33.8 [31.1-36.5]	29.6 [27.7-31.5]