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Community-Based Health Insurance Can Contribute to Improvement of Environmental Health among Low-Income Communities in Uganda: A Review of Literature

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Abstract

Poor environmental health accounts for the vast majority of major disease etiologies in developing countries, like Uganda, with the poor bearing the highest burden. Although Uganda has a well-structured health care system, linking the community to the higher-level health services, the government has not given environmental health, an important aspect of preventive healthcare, the priority it deserves. Consequently, low-income settlements have become breeding grounds for disease, making the search for solutions to improve environmental health in such communities an utmost urgency. Community-based health insurance is much debated as a way of tackling the challenge of providing access to health care for the poor in developing countries, like Uganda, without worsening their economic situation. This is especially important at this time when the country is faced with high preventable disease burden, shrinking budgetary support to the public health services, and an unacceptably low quality of these services. This article provides an analytical framework for the health care systems in Uganda to integrate environmental health into community-based health insurance. The study was a qualitative systematic review of various books, peer reviewed journal articles, websites and relevant literature related to concepts. The author concludes that community-based health insurance could be a high impact, cost-effective and sustainable solution for improving environmental health, an important aspect of preventive healthcare, in low-income communities in Uganda.

Keywords: *environmental health, community-based health insurance, low-income settlements, WASH, village health team, universal healthcare.*

Introduction

Overview of uganda

Uganda is a landlocked country situated at the equator in Eastern Africa. It is bordered by Kenya in the east, South Sudan in the north, the Democratic Republic of the Congo in the west, by Rwanda in the southwest, and by Tanzania and Lake Victoria in the south. The country is well-watered and fertile due to Lake Victoria and numerous rivers including the Nile, rendering it suitable for agriculture. Despite water coverage of almost 15% of the country, the water is temporally or geographically unevenly distributed. Uganda's climate is generally rainy with two dry seasons though there is an extraordinary diversity within the country (Nnaggenda-Musana & Vestbro, 2013).

At 3%, Uganda's annual population growth rate is among the highest in the world, despite a reduction in fertility rates. Uganda's population of 40 million (July 2018 est.) is expected to reach 100 million by 2050, while the annual urban growth rate of 5.2% is among the highest in the world and is expected to grow from 6.4 million (2014) to 22 million by 2040 (The World Bank, 2020).

Uganda has achieved remarkable results in reducing poverty over the past decades, mainly driven by the agriculture sector. More than 70% of Ugandans are employed in agriculture, mainly on a subsistence basis. From 1992 to 2013, the percentage of Ugandan households living in poverty was halved, but vulnerability to external shocks (like regional instability, pandemic preparedness (Ebola and Coronavirus) and broader global trade uncertainty) remains high; for every three Ugandans who get out of poverty, two fall back in. All Uganda's regions registered an increase in the number of poor persons with the notable exception of the Northern region, which

is the poorest, and where poverty decreased from 44% to 33% (The World Bank, 2020). Uganda's total labor force is 10 million people in 2016/17, while unemployment is 9 percent (MoFPED, 2019). An average of one million young people is expected to reach working age between 2030-2040 (The World Bank, 2020).

The total expenditure on health as a percentage of Gross Domestic Product (GDP) is 7.3% (2015). Life expectancy at birth is 56.3 years (male, 54.8 years; female, 57.8 years). The percent of children under five considered to be underweight is 10.4%. The maternal mortality ratio (MM Ratio) is 375 deaths/100,000 live births. The risk of infectious diseases is very high. Major infectious diseases include: food or waterborne diseases such as bacterial diarrhea, hepatitis A and E, and typhoid fever; vector borne diseases like malaria, dengue fever, and trypanosomiasis-Gambiense (African sleeping sickness); water contact diseases such as schistosomiasis; and animal contact diseases such as rabies (Index Mundi, 2020). Safe water coverage in rural areas of Uganda is 70 percent, while that in urban areas is 77 percent. Access to hand washing facilities in rural areas at household level is 37 percent. The pupil: latrine stance ratio is 71:1 (MoFPED, 2019).

Structure of the health system in uganda

Uganda has an organized national health delivery system in place within the strategic frame work and focus. The national health system is structured into national and regional referral hospitals, general hospitals and, at district level, is divided into four levels (I–IV) – see Figure . The national health system is comprised of both private and public sectors. The private health sector is comprised of Private Not for Profit (PNFP), Private Health Practitioners (PHPs), and Traditional Contemporary Medicine Practitioners. (TCMPs). These private sectors contribute to about 50% of the Health care delivery. The public sectors include Government Health facilities; Health services departments of different Ministries. Several Ministry of Health functions have been delegated to National Autonomous Institutions like National Drugs Authority. Health services delivery is decentralized within national, districts and health sub-districts.

Health Centre Level I (HC-I) is the lowest level in the health system, and comprise the Village Health Teams (VHTs) or individual health volunteers (that may or may not be formally trained). The VHTs are community volunteers who are identified by their community members and are given basic training on major health programs so that they can in-turn mobilize and sensitize communities to actively participate in utilizing the available health services. The VHTs act as an important link between the communities and health facilities. These volunteers facilitate health promotion, environmental health, service delivery, community participation, and empowerment in villages. They provide treatment of uncomplicated diseases like Malaria, Pneumonia, Worm infestations, Diarrhea, Mass drug administration for Neglected Tropical Diseases, etc. They also participate in mobilizing communities during specific health campaigns and contribute to community disease surveillance through active data collection and reporting.

At the district levels are health center (HC) III and II, with health center II providing a first level of interaction between the formal health sector and communities. The HC II provide outpatient and community outreach services. Recently, the Ministry of Health (MoH) introduced community health extension workers (CHEWs) at HC II level. Unlike VHTs, the CHEWs are paid workers, accountable to government and spend 40% of their time providing health services at the facility level and 60% of their time working in the communities to promote health through the model family approach. The Health Center III provides basic preventive, promotive and curative services.

The next levels are general hospitals, which provide Health Center III broad services such as surgeries and blood transfusions. They are also for research and training. The regional referrals provide a higher level with more specialized clinical services and also involve teaching and research.

The national referral Hospitals are most comprehensive as they provide the highest level of specialist services in addition to all the other clinical services. The referral system is from the lowest to the highest level of care in the service delivery system (MoH, 2010).

The Environmental Health Division of Ministry of Health aims to contribute to the reduction of morbidity, mortality and disability among the people of Uganda through improvements in housing, use of safe water, food

hygiene promotion, waste management and control of vectors/vermin (MoH, 2020).

Research problem and purpose

Uganda has in the recent past experienced a rapid growth of low-income settlements both in urban and rural areas. These settlements have enormous socio-economic and disease burdens, resulting from mainly low latrine and water coverage and poor domestic and personal hygiene practices. Evidence has shown that environmental health is a vital key to improved health and to socio-economic development. Maintaining a healthy environment is central to increasing quality of life and years of healthy life. Proponents argue that Community-Based Health Insurance (CBHI) schemes can be effective for reaching a large number of poor people who would otherwise have no financial protection against the cost of illness, especially in countries where national insurance schemes do not exist and/or where public health care funding is insufficient.

The objective of this study is to provide an analytical framework for the health care systems in Uganda to integrate environmental health into CBHI. Specifically, the study sought to comprehend the meaning of environmental health, its purpose, the situation among low-income communities in Uganda, synopsis of community-based health insurance and its linkage with environmental health.

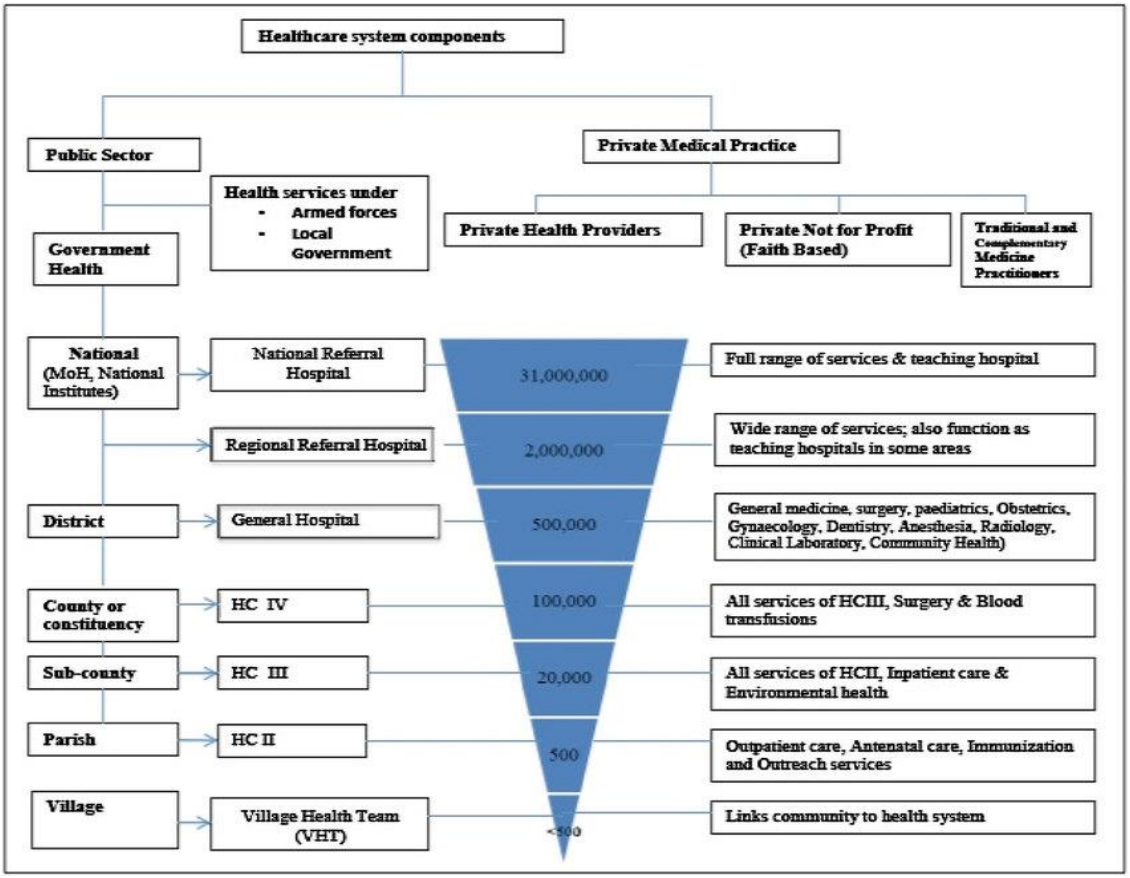

Figure 1. Structure of the health system in Uganda

(Source: Acup, C., et al., Factors influencing passive surveillance for T. b. rhodesiense human African trypanosomiasis in Uganda. Acta Trop. (2016), http://dx.doi.org/10.1016/j.actatropica.2016.05.009).

Methods

The study was a qualitative systematic review of literature related to the concepts from Environmental Health, Health Economics and Financing and Public Health Research to provide a framework on how to incorporate environmental health into CBHI. The author reviewed various published research studies, books, peer reviewed journal articles, websites and relevant literature related to concepts. Each source was systematically and consistently reviewed and pieces of evidence extracted, summarized and critiqued.

Results

Environmental health definition

The World Health Organization (WHO) defines environment, as it relates to health, as "all the physical, chemical, and biological factors external to a person, and all the related behaviors" (WHO, 2006). Environmental Health is the branch of public health that focuses on the interrelationships between people and their environment, promotes human health and well-being, and fosters healthy and safe communities. As a fundamental component of a comprehensive public health system, environmental health works to advance policies and programs to reduce chemical and other environmental exposures in air, water, soil and food to protect residents and provide communities with healthier environments (APHA, 2020).

Environmental health is one of the largest fields within public health because of the myriad ways external forces can impact how we eat, live, and grow. These forces can be about addressing our natural environment (as in the case for clean water or sanitation), but they can also be the consequence of human beings' actions—including societal norms. Environmental health is crucial to the health of communities in various ways, including: outdoor air quality, surface and ground water quality, toxic substances and hazardous wastes, homes and communities, infrastructure, surveillance and global environmental health (Healthy People 2020, 2020).

Environmental health encompasses isolation of excreta from the environment, maintenance of personal hygiene, housing sanitation, water sanitation, food hygiene and safety, health education, school health services, air pollution control, safe disposal of solid and liquid waste, safe drinking water and vector control, sanitation of markets and business premises, prevention and control of communicable diseases, and control of noise pollution. It embraces a concept which includes hygiene promotion and individual action for change (Morgan, 1997).

Importance of environmental health

Environmental health is a multi-disciplinary sector which is a vital key to improved health and to socio-economic development. Maintaining a healthy environment is central to increasing quality of life and years of healthy life. Globally, 23% of all deaths and 26% of deaths among children under age 5 are due to preventable environmental factors. Stroke, ischaemic heart disease, diarrhea and cancers head the list. People in low-income countries bear the greatest disease burden, with the exception of non-communicable diseases (WHO, 2006).

An estimated 12.6 million deaths each year are attributable to unhealthy environments - nearly one in four of total global deaths. Environmental risk factors, such as air, water and soil pollution, chemical exposures, climate change and ultraviolet radiation, contribute to more than 100 diseases and injuries (WHO, 2020).

Climate change affects the social and environmental determinants of health – clean air, safe drinking water, sufficient food and secure shelter. Between 2030 and 2050, climate change is expected to cause approximately 250 000 additional deaths per year, from malnutrition, malaria, diarrhea and heat stress. The direct damage costs to health (i.e. excluding costs in health-determining sectors such as agriculture and water and sanitation), is estimated to be between USD 2-4 billion/year by 2030. Areas with weak health infrastructure – mostly in developing countries – will be the least able to cope without assistance to prepare and respond (WHO, 2020).

Premature death and disease can be prevented through healthier environments – and to a significant degree (WHO, 2006). Improved excreta disposal, hygiene and water reduce diarrheal morbidity and mortality. Evidence from many studies indicates that reductions in diarrhea can be achieved by improvements in excreta disposal (36%), better hygiene (33%), more water (20%) and improvements in drinking water quality (15%). In addition, evidence indicates that the under 5-year mortality rate is reduced by 60% and overall diarrheal mortality by 65%. Better excreta disposal and hygiene practices also reduce other diseases such as schistosomiasis (77%), ascariasis (29%) and trachoma (27-50%), while improved water quality alone produced reductions in guinea worm (78%). Because mortality is reduced more than morbidity, this suggests that excreta disposal, hygiene and water reduce the incidence and severity of diarrhea (Esrey, Potash, Roberts, & Shiff, 1991). Further studies on the effect of water and sanitation on nutritional stunting indicated that severe and moderate stunting may be reduced by 39% when

improved excreta disposal is made available, and 5% by the provision of household water (Esrey S. , 1995).

To achieve a healthy community, homes should be safe, affordable, and healthy places for families to gather. Workplaces, schools, and child-care centers should be free of exposures that negatively impact the health of workers or children. Nutritious, affordable foods should be safe for all community members. Access to safe and affordable multimodal transportation options, including biking and public transit, improves the environment and drives down obesity and other chronic illnesses. Outdoor and indoor air quality in all communities should be healthy and safe to breathe for everyone. Children and adults alike should have access to safe and clean public spaces such as parks. When a disaster strikes, a community needs to be prepared and should have the tools and resources to be resilient against physical (infrastructure and human) and emotional damage (Healthy People 2020, 2020).

Environmental health situation among low-income communities in Uganda

The term "low-income" is already an expression whose meaning is conditioned by contrasting variables such as "median" or "high-income" (NZDL, 2020). Assembly Bill (AB) 1550 defines low-income communities and households as the census tracts and households, respectively, which are either at or below 80 percent of the statewide median income, or at or below the threshold designated as low-income by the state (CARB, 2020). According to the New Zealand Digital Library, a positive approach to defining what is perceived as a "low- income settlement" is to describe the most common or repeated characteristics: a place that does not provide healthful living conditions for its inhabitants, that lacks the minimum of amenities and infrastructure to sustain the harmonic development of the community, whose inhabitants do not have resources to improve that condition by themselves, or whose improvement demands efforts beyond the capacity of local or national agencies. Low-income human settlements have common characteristics which can be conveniently classified into socio-cultural, economic, physical, infrastructure, health and education aspects. Settlements thus categorized occur both in urban and rural areas (NZDL, 2020).

In Uganda, low-income settlements exist in both urban and rural areas of the country. Despite impressive economic national performance indicators; sustained high GDP growth rate of 7.8%, low inflation, and stable exchange rates etc. (MoFPED, 2004), the number of the poor people in Uganda has not significantly decreased. Slums are the most conspicuous manifestation of urban poverty (UN-HABITAT, 2007). Like many African countries, there has been rapid growth of slum populations that are majorly situated in urban settings in Uganda such as town and cities (Hove, Ngwerume, & Muchemwa, 2013).

Low-income dwellings are characterized by several problems that only vary in magnitude from one place to another including lack supportive social network and infrastructure; roads; no secure tenure; high rates of unemployment; poor solid waste management; improper excreta and wastewater management; unequipped drainage especially of storm water; poor housing conditions; insufficient drinking water; unsafe food; poor vector and vermin control; and inadequate personal and general hygiene (UN-HABITAT, 2007; Hogrewe, Joyce, & Perez, 1993; Mukama, Ndejjo, Musoke, & et al., 2016). The situation is aggravated by the fact that local authorities lack the resources to satisfactorily provide required services and infrastructure (Hove, Ngwerume, & Muchemwa, 2013). As a result, low-income settlements have become breeding grounds for disease (Hogrewe, Joyce, & Perez, 1993), making the search for solutions to improve health in such communities an utmost urgency.

In low-income settlements of Uganda, the majority of community members have insufficient knowledge of the link between water, sanitation, hygiene, and health, evidenced by the epidemics of cholera and typhoid, and a high incidence of diarrheal diseases particularly in children under 5 years of age (Bwire, et al., 2013; WHO, 2015). Diarrhea alone, one of three major childhood killers in Uganda, kills 33 children every day. In most cases, children get the disease by drinking unsafe water or coming into contact with contaminated hands — theirs or parents or caregivers — that have not been washed with soap. Early childhood diarrhea is not only deadly; it also contributes to Uganda’s high levels of stunting, which in turn affects children’s cognitive development and performance at school. In school, lack of proper sanitation

facilities also leads to high absenteeism and dropouts, especially for girls. (UNICEF, 2020).

Low-income settlements in Uganda, like slums, are among the areas that have experienced majority of the cholera (Bwire, et al., 2013) and typhoid (WHO, 2015) outbreaks. Available evidence shows that poor water, sanitation, and hygiene (WASH) plays an important role in the transmission of diarrheal diseases (Clasen, Schmidt, Rabie, Roberts, & Cairncross, 2007; Bartram & Cairncross, 2010). Moreover, cholera is almost always transmitted by consumption of contaminated drinking water and food (WHO, 2015).

Other health conditions common in low-income settlements which affect mostly children include malnutrition, malaria, and pneumonia. Available evidence shows that undernutrition is high and stunting affects one-third of all children in Uganda aged five years and below (The World Bank, 2020). Diseases related to poor water supply and poor hygiene and sanitation practices accounted for 49% of inpatient diagnoses in 1996 (including malaria) (MoH, 1997). Many districts are frequently experiencing epidemics of diarrheal disease. Expenditure in the health system each year on treatment of sanitation related diseases including malaria amounts to some 26,999.6 million Uganda shillings and diarrheal diseases alone consume 4,022.4 million Uganda Shillings (MoH, 1997).

In addition to the disease burden, the low latrine and water coverage and poor domestic and personal hygiene practices result in an enormous socio-economic burden. Water collection in most families, mostly borne by women and girls - and boys up to the age of 12 years. Survey figures indicate that 1.3% of all student's time and 1.8% of all work time is lost due to sanitation related diseases, i.e. some 39.51 million working days amounting to an annual household income loss of 42.36 million Uganda Shillings lost each year due to poor sanitation (MoFEP, 1994). Girls at schools reported that lack of sanitation facilities at schools was their worst experience at schools and a contributing factor in low performance and high dropout rates particularly after the onset of puberty (Carasco, Munene, Kasente, & Odada, 1996).

Lack of sanitation is also a major threat to the environment. Examples include degradation of urban environment by indiscriminate disposal of solid and liquid wastes and eutrophication of freshwater lakes by untreated human waste (aggravating the water hyacinth nuisance). Costs of environmental damage include; discouragement of tourism, reduced exports of Ugandan fish products to lucrative European markets, reduced fisheries production and billions of Uganda Shillings spent on environmental clean-up operations (Morgan, 1997).

The key behaviors affecting sanitation related diseases are handwashing, excreta disposal and water collection, handling and storage practices. Surveys have suggested that many Ugandans:

do not have access to handwashing facilities and materials at key times (after defecation (88%) and after handling infant's excreta (97%), do not consider children's stools dangerous and therefore do not dispose of them safely, do not teach children to use latrines until after the age of 3 years (average 51%), do not have access to safe and hygienic excreta disposal systems (average 52.2% households without access), do not have access to safe and adequate drinking water supplies (average of 60% households without access within 1.5km from homes), contaminate drinking water before consumption (81%) (Morgan, 1997).

Low-income communities live in poverty and experience several barriers to receiving treatment and accessing health services. One of the primary barriers is the lack of health insurance, which prevents families from being able to afford treatment. There is also a limited number of health providers under managed care plans, making it harder to access treatment at reduced costs. Families living in rural areas also have to travel greater distances to access care. Stigma is another barrier faced by low-income communities which ultimately can lead to self-discrimination as well as lack of self-confidence (ADAA, 2020).

The responsibility for delivery of WASH interventions in Uganda is shared between the Ministries of Education (WASH in schools), Health (community sanitation), and Water and Environment (infrastructure and public sanitation plus sewerage services). A memorandum of understanding (MOU) that was signed by the three ministries in 2001 on sanitation has not translated into an improved sanitation situation as there have been challenges in coordination and resource commitments. Uganda’s Local Government Act (1997), as amended, mandates local governments at district and sub-county levels to provide services including WASH to the

community and the institutions and to provide adequate support for operation and maintenance of water systems by the users in liaison with the Ministry of Water and Environment (CSBAG, 2017).

Overview of community-based health insurance

Community-Based Health Insurance (CBHI) is an emerging concept for providing financial protection against the cost of illness and improving access to quality health services for low-income rural households who are excluded from formal insurance (Donfouet & Mahieu, 2012). According to Friends of Women's World Banking, CBHI is defined as "any not-for-profit insurance scheme that is aimed primarily at the informal sector and formed on the basis of a collective pooling of health risks, and in which the members participate in its management". Such schemes are operated by communities, government or non-government organizations and have often been created as an extension of a microfinancing scheme. These schemes generally operate on a relatively small scale, with a small risk pool and limited cross-subsidization (Sudha, 2006).

Small voluntary CBHI schemes are generally characterized by the following institutional design features: the community is involved in driving its setup and in its management; a scheme is a prepayment mechanism with pooling of health risks and of funds taking place at the level of the community or a group of people who share common characteristics (such as geographical or occupational); membership premiums are often a flat rate (community-rating) and are independent of individual health risks; entitlement to benefits is linked to making a contribution in most cases; affiliation is voluntary; and it operates on a non-profit basis (Mathauer, Mathivet, & Kutzin, 2017).

One of its key strengths, as a community-owned model, is community ownership and involvement in the setup, governance and management of the scheme. Given CBHI's participatory decision-making and management structures, it is said to improve the transparency and accountability of the scheme. It also has the potential to enhance community empowerment and allow the voicing of community members' concerns and expectations in the management of local health systems. It can also build trust and encourage familiarity with the concept of insurance (Mathauer, Mathivet, & Kutzin, 2017).

CBHI schemes can take several forms: where a non-governmental organization (NGO) acts as an intermediary between a formal insurance provider and the insured community; and where the NGO itself provides insurance to the target community. In the latter case, where an NGO itself ensures the target population, the NGO may itself be the health service provider or may have an arrangement with the health service provider. Each of these forms may be relevant depending on the local conditions that vary considerably across regions. Where CBHI schemes are critically dependent on external funding, extending the reach of these schemes then depends on the amount of such funding available. Furthermore, the insurance schemes launched either by national or state-level governments when elections are in sight tend to be populist or vote-catching ploy. Since such schemes have to be renewed every year, these tend to be dropped once the elections are over. It is to be seen if universal health insurance scheme belongs to this category (Ahuja R. , 2004).

The real benefit of CBHI lies in keeping the transaction costs low, in the design of scheme suited to the community needs, in influencing health behavior through health education, and in influencing the supply of health care. In CBHI schemes, costs such as marketing, premium collection, verification and reimbursement of claims, can be kept low because many of these tasks can be performed by the community members themselves. In CBHI non-financial barriers can be overcome through the design of schemes which ought to take into account characteristics of the community. All these aspects can best be handled if the scheme is community based. Additionally, the problems of adverse selection and moral hazard that arise due to informational asymmetries too can be reduced by making use of local knowledge that is readily available among people living in close communities. CBHI scheme is more appropriate in reducing informational asymmetries. CBHI schemes also help in influencing provision of health services. By its very nature, CBHI scheme can be designed to meet health care needs that are specific to a community (Ahuja R. , 2004).

There is ongoing research about the impact of CBHI on the well-being of the poor in these areas (Donfouet & Mahieu, 2012). Current evidence

generally shows a positive impact on health services utilization and access rates. However, this increase in health service use may also explain why out-of-pocket expenditure also sometimes increases, for example when people need to purchase health care or medicines not covered in the scheme (Mathauer, Mathivet, & Kutzin, 2017).

Much hope has been put into CBHI, with both several donors and governments promoting their establishment (Jütting, 2003). CBHI schemes exist in many developing countries around the world (Mathauer, Mathivet, & Kutzin, 2017; Donfouet & Mahieu, 2012), including Uganda. In Uganda, some CHBI schemes are linked to engozi (mutual benefit) societies. Under this arrangement, the engozi societies use their monthly meetings for the collection of premiums, either for the first-time members or for those who renew their membership (WHO, 2003).

Linkage between environmental health and CBHI

For many people living in developing nations, illness and health risks represent a permanent threat to their income earning capacity and, therefore, their livelihood (Sudha, 2006; Arhin-Tenkorang, 2001). Health shocks have a direct impact on human capital formation. It thrusts health expenditure on a poor household precisely at a time when they can ill-afford it due to income shortfall resulting from the shock. Moreover, the uncertainty of the timings of illness and unpredictability of its costs make financial provision for illness difficult for households receiving low and irregular income (Arhin-Tenkorang, 2001). Furthermore, given the strong link between health and income at low-income levels, a health shock affects the poor the most (Jütting, 2003).

Health, it is said, is wealth. Governments thus have a responsibility for ensuring the soundness of mind and body of the populations they serve, for their countries to be prosperous (PSI, 2020). Moreover, the need for stepping up public health spending is endorsed by many expert studies (Ahuja R. , 2004). Poverty reigns where health outcomes are poor (PSI, 2020). Poor people lack access to health care with a negative impact on their dignity, human capital formation and their risk-management options (Jütting, 2003). The spread of emerging infectious diseases, particularly in low- and middle- income countries, points at the need for greater concern of governments to preventative health (PSI, 2020).

However, most governments, especially in developing countries, have not given environmental health, an important aspect of preventive healthcare, the priority it deserves. Despite verbal commitment to primary health care, more resources are used on curative care in practice. Further, the importance of environmental health as an integral element of primary health care is often not recognized (PSI, 2020). This seems to suggest lack of seriousness in providing health security to the poor (Ahuja R. , 2004). It is without doubt that environmental health, if properly harnessed, will contribute significantly to achieving universal healthcare. Investing in essential environmental health services through dedicated resources will create an effective environmental health system that proactively protects communities and helps everyone attain good health (CDC & APHA, 2020).

In the current debate on health security for the poor, health insurance is made out to be panacea for all the ills facing the poor (Ahuja R. , 2004). Health insurance (i.e. the practice of risk-pooling) has been progressively more recognized as a tool to finance healthcare provision in the developing world (Sudha, 2006; Ahuja R. , 2004). This is mainly because many health risks such as those relating to isolated illness, injury, disability, maternity and the like are considered to be eminently insurable as these risks are mostly independent or idiosyncratic, that is, not correlated among community members. Secondly, insurance separates time of payment from time of use of health services for each member, and thereby makes possible demand for such services by its members who would not have otherwise been able to afford the cost. Insurance is particularly beneficial to the poor who often bear high indirect costs of treatment due to their limited ability to mitigate risk on account of imperfect labor and credit markets (Jütting, 2003).

The high demand for good quality healthcare and the extreme underutilization of existing health services have given rise to the need for community-based health insurance—an arrangement that may both increase access to healthcare as well as theoretically improve its quality (Sudha, 2006). Community-based

insurance is considered to be pro-poor as it strengthens the demand side and thereby helps the poor to articulate their own needs (Jütting, 2003; Ahuja R. , 2004). While alternative forms of healthcare financing have been scrutinized, the option of insurance seems to be promising as it offers the opportunity to pool risk by converting unpredictable healthcare costs into fixed annual premiums (Sudha, 2006).

There is now a growing realization that even the poor can make small, periodic contributions that can go towards meeting their health care needs. Recently, the emerging movement of CBHI schemes has attracted the attention of policy makers and researchers (Jütting, 2003). There is a general need for re-orientation of the Public Health System, and development of a comprehensive approach to CBHI (Ahuja R. , 2004).

CBHI schemes could be designed in a number of ways, depending on the socio-economic characteristics of the target population, health profile of the population, and the health risks prevalent in the region. Even within states different schemes could be designed for different districts. Health insurance scheme for the poor should take care of not just the inpatient or outpatient or hospital care, as designed in the current schemes, but also be a stimulant for preventive healthcare and environmental health. Both the provision and access to health care services should be a part of a bigger health strategy which includes other public health programs such as safe drinking water, sanitation, family planning, etc., as each of these are important determinants of health outcomes. This calls for scientific approach which begins with good experimentation, and fine-tuned subsequently as experience accumulates (Ahuja R. , 2004).

Discussion

Uganda has a high burden of preventable diseases related to poor environmental health, with the poor people living in low-income settlements being the most afflicted. Moreover, the country has a well-structured health care system, linking the community to the higher-level health services. The existence of VHTs and CHEWs at village and parish levels, charged with the responsibility of provision of basic preventive, promotive and curative services, presents an opportunity for eradication of these ailments, especially if there is a robust, community-responsive and sustainable financing mechanism for health care at these lower levels.

Fortunately, CBHI, a pro-poor health insurance, has already taken root in the country. There are several CBHI schemes operating within different parts of Uganda, though they are mainly focused on curative services. These CBHI schemes could be suitable mechanisms for financing environmental health services in low-income communities, both in the rural and urban areas, if they were re-designed to suit the socio-economic characteristics, health profile and health risks prevalent in this population.

The CBHI schemes could collaboratively work with the VHTs and CHEWs in the provision of basic preventive, promotive and curative services to the low-income communities. After all, evidence from other countries like India has shown that CBHI schemes successfully linked non-curative health services such as family planning to health insurance (Ahuja R. , 2004). Therefore, CBHI could be used to promote and influence certain desirable health behaviors, among low-income communities, like good WASH practices through health education. Since CBHI strengthens demand side, it could also be used to influence the supply of health care at lower level health care provision points (HC II, III and IV).

The fact that CBHI is a community-owned model (Mathauer, Mathivet, & Kutzin, 2017) and low-income settlements are breeding grounds for diseases related to poor environmental health (Hogrewe, Joyce, & Perez, 1993), implies that CBHI could be a high impact, cost-effective and sustainable solution for improving environmental health in such communities. Low-income community members would be involved in the setup, governance and management of the CBHI scheme, which would improve the transparency and accountability of the scheme as well as foster empowerment and encouragement for environmental health among community members.

Consequently, premature death and disease in low-income communities of Uganda could significantly be prevented through healthier environments created (WHO, 2006). Available evidence shows that improving water, sanitation, and hygiene has the potential to prevent at least 9.1% of the disease burden (in disability-adjusted life years or DALYs), or 6.3% of all deaths

(Prüss-Üstün, Bos, Gore, & Bartram, 2008). A report by the WHO suggests that higher levels of WASH services can significantly reduce diarrheal illness (WHO , 2014).

Ultimately, if sanitation were to improve in Uganda, various health, social and economic benefits would accrue. Many deaths would be avoided and the under 5 mortality rates would be reduced. Sanitation related diseases would significantly decrease and government health expenditure would be saved on treatment of sanitation related diseases. Millions of work days each year would be saved from reductions in sanitation related morbidity. Millions of hours each year would be saved for women and girls in the reduced collection time for water. Nutritional stunting rates for the under 5-year age group would improve. Government and households would make savings of billions of Uganda Shillings each year from savings on curative health expenditure, making more money available for other things and freeing up health resources to concentrate on more complex health disorders. Increased numbers and standards of school latrine facilities would decrease the dropout rates from and standards achieved in schools (especially for girls after the age of puberty). Linkages between improved sanitation and reduced environmental degradation would foster potential improvements to fisheries production, agriculture and tourism; and reduce the need for expenditure on various environmental clean-up campaigns. Together, these improvements would also result in increased personal dignity and a greater sense of national pride. No other single intervention could do so much to improve health and socio-economic development (Morgan, 1997).

Conclusion

CBHI could be a high impact, cost-effective and sustainable solution for improving environmental health, an important aspect of preventive healthcare, in low-income communities in Uganda. This is especially important at this time when the country is faced with a high burden of preventable diseases, shrinking budgetary support to the public health services, and an unacceptably low quality of these services. Investing in essential environmental health services through dedicated resources would create an effective environmental health system in Uganda that proactively protects communities, helps everyone attain good health, and significantly contributes to achievement of universal healthcare.

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