

Vulnerability and everyday health risks of urban informal settlements in Sub-Saharan Africa

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ABSTRACT

More than half of the world population lives in the cities and around one billion in poor urban areas. These numbers are projected to increase, while Sub-Saharan Africa is the region with the highest rate of informal settlements due to its rapid urbanization.

The urban informal settlements of Sub-Saharan Africa house everyday health risks. These risks have considerable cumulative impacts on the wellbeing and health of the urban vulnerable group. Despite the public health consequences of urbanization and the increase of informal settlements number in African cities, there is a paucity in data about the risks at small scale and the vulnerability in poor urban areas.

Through the database search engine of MEDLINE, WHO Library and Information Networks for Knowledge and website of Urban Africa Risk Knowledge; from information of the existing literature, this paper tried to analyse the everyday health risks, and vulnerabilities in urban informal settlement in Sub-Saharan Africa region. A search combining keywords associated with health risks and informal settlement in Sub-Saharan Africa were used to identify the relevant documents, and this search yielded 86 articles, of which 15 met the criteria for inclusion in the analysis. The risks of communicable diseases due to inadequate sanitation have been the most frequent subjects of study.

Informal settlers in Sub-Saharan Africa face everyday health risks arising from lack of clean water, adequate sanitation, and life in overcrowding houses. Consequently, there is a burden of communicable and non-communicable diseases, undernourishment and injuries. The most vulnerable group is children under five with a high rate of mortality.

Everyday health risks in urban informal settlements must be taken into account for a better understanding of the full spectrum of urban risks. This is essential in the establishment of efficient public health policies and intervention in urban areas.

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1. Introduction

More than half of the world's population live in cities, the urbanization is globally in progress, and the urban population is expected to increase reaching 60% by 2030. Of this population living in urban area, nearly 1.2 billion are precarious informal settlement dwellers.¹

Sub-Saharan Africa (SSA) has the highest proportion of urban population living in informal settlements, 56% in 2015 according to the United Nations Human Settlements Programme (UN-Habitat). The continuing urbanization of this region, mostly due to rural-to-urban migration and natural population growth of cities, leads to increase population density and involves the expansion of informal settlements in area vulnerable to hazards.²

In addition to the increasing rate of urban informal settlements, the rapid urbanization brings challenges including inadequate infrastructures and basic service, unplanned urban sprawls, which make urban space more vulnerable to disasters.³

Disaster risks increase with the urban growth in the SSA region and become a hindrance for the development. In this regard, the Sustainable Development Goal 11 "make cities and human settlements inclusive, safe, resilient and sustainable" call for better planning and management to make urban area more safe, inclusive and sustainable.^{4,5}

The condition of housing, provision for water and sanitation are indicators of the UN to define "slum". And "informal settlement" refers to areas non-official land registries, non-respectful of building code and/or planning legislation. But in SSA the population categorize by UN-Habitat as slum dwellers live in informal settlements.⁶ On top of

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this, the term “informal settlement” is indicated as alternative to slum which is seen defamatory.⁷

Hazard and vulnerability interplay to create specific risk conditions which are dynamic, geographically and socially specific.⁸ And extreme poverty, inadequate social service, insecurity, crime, high level of unemployment are characteristics which interact in urban informal settlements.⁹

The understanding of all risks that sicken, injure, kill or impoverish urban residents, is essential to have a complete glimpse about risks in urban areas. This also involves the understanding of the impact for the more vulnerable groups.¹⁰

Urban risks can be considered in intensive, extensive and everyday risk categorization. For the UN Office for Disaster Risk Reduction (UNISDR), the everyday risks endanger in aggregate more people than the catastrophic event. Because the cumulative everyday hazards induce more victims than large disasters.⁴

A wide range of risks from the everyday hazard to health risks are faced by the poor urban population due to living conditions. Indeed, people living in informal settlements face a considerable burden of health.¹¹

Even though urbanization increases everyday risk, the literature on health risk in informal settlements in SSA reminds limited. Data on health risks, health outcomes, health determinants are unavailable for most Sub-Saharan cities or are too aggregated to be useful when there exist.

This lack of data likely hides a large burden of health, which could be prevented in some cases, and this paucity compromises the efficiency of response intervention in urban areas.⁶

The aim of this literature review is to describe and analyse the health-threatening everyday risks from which urban informal settlement residents in SSA are exposed; and to discuss and analyse the underlying vulnerabilities associated with these “everyday risks” conditions.

2. Methods

Publications of MEDLINE, WHO Library and Information Networks for Knowledge (WHO library), and Urban Africa Risk Knowledge (Urban ARK) websites were used as a search engine and databases. These databases were chosen as base of their particularity to capture more health science publication, and Urban ARK is dedicated to urban African research and have substantial publication on African cities.

A literature search was performed, and documents were selected regarding eligibility criteria (publications in scientific literature; from the inception of these three databases to 20th of February 2019; published in English). The terms “slum” and “informal settlement” were used as a synonym to make the search as sensitive as possible.

With MEDLINE, this sentence was used with the Boolean operator AND “health risks AND Sub-Saharan AND urban slum”; with WHO library the term “slum” and with Urban ARK website, the term “urban health”.

A critically read has been performed for each selected publication, in order to get a different aspect of vulnerabilities and health risk. And the structure of this review is articulated around the analysis and discussion of the most common item of this literature search.

3. Results

After a removal of duplicates, 86 articles were found, the titles and the abstracts were examined for their relevance according to the eligibility criteria. Total of 23 articles were obtained after skimming the title and the abstracts. In case of doubt about the relevance of the articles, the complete manuscripts were read according to the same eligibility criteria; this is how 8 articles were excluded from the 23 articles. Finally, 15 articles were included in the analysis. The process of literature searching was shown in Fig. 1 as below.

Studies covering urban informal settlements have been identified for four SSA countries with cross-sectional studies as a methodology. Seven

studies were carried out in Kenya, two in Nigeria, one in Uganda and one in Serra Leone.

Four review articles were identified with a focus on informal urban settlements in Sub-Saharan Africa as a whole.

The majority of articles focused on communicable diseases in informal urban settlements in Sub-Saharan Africa.

4. Discussion

4.1. Lack of literature

There is limited literature about health risks in SSA urban informal settlements, despite that, a great proportion of people are dwelling in this kind of urban areas and this number is still increasing with high rate of premature death.

The impact of a risk factor in public health depends mainly on the proportion of the exposed people and the increasing risks associated with this factor. Urban informal settlements are identifiable physically in African urban areas but are invisible in many data system that drives research and policy in public health.¹²

This low level of literature attention could be explained by the fact that the majority of African lives in rural area. This situation might attract more related researches. Besides, it could be also explained by the illegal status of urban informal settlements.¹³

The inclusion of urban informal settlements as spatial entities in different national survey of SSA cities will encourage more investigations and studies about these poor and “illegal” urban areas. These studies will help to differentiate health indicators for these areas and the other urban areas. But above all, this could optimize local public health intervention.

4.2. Urbanization in Sub-Saharan Africa

SSA is considered as the world's region with the fastest urbanization. Actually, with an urban area which dwells currently 472 million people, the urban population of SSA is projected to double over the next 25 years. The next 30 years African cities inhabitants will outweigh rural areas dwellers.¹⁴

In 2015, there were thousands of cities in SSA region: two megacities of 10 million inhabitants, three cities with 5–10 million and 41 cities with 1–5 million. This region has an annual urban population growth rate of 4.1% while the world's rate is 2.0%.¹⁵ However, the growth rate of these poor urban areas exceeds the capacity of government and municipalities to respond in basic need of informal settlers.

Even the history and the geography of countries are different, there are similarities in SSA region urbanization trajectories and co-evolving risk profile.¹⁶ In addition to that, the urbanization in SSA is associated with the production of interconnectivity and accumulation of risks which compromise the living and working condition of habitant particularly in urban informal settlements.¹⁷

4.3. The sociological dynamic of Sub-Saharan informal settlement

The flows of people from the countryside and another urban area to urban informal settlements and vice versa and the natural growth balance of birth and death create a dynamic process for increasing or decreasing the population density of informal settlements.¹¹

Mainly, poverty is a subjacent reason that forces people to live in dangerous and polluted urban areas: steep-side hills, flood plains, hillside, waste dumps, and hazardous industries. They live there without any legal property title and experience the fear of eviction.¹⁸ Informal settlements mostly dwell in close area where there is work available.

Therefore, disease problems are especially common among the socially disadvantaged people and poverty is major determinant of the global burden of disease. The increasing poverty creates health inequalities which lead to deeper deprivation and generates a vicious circle of poverty trap.¹⁹

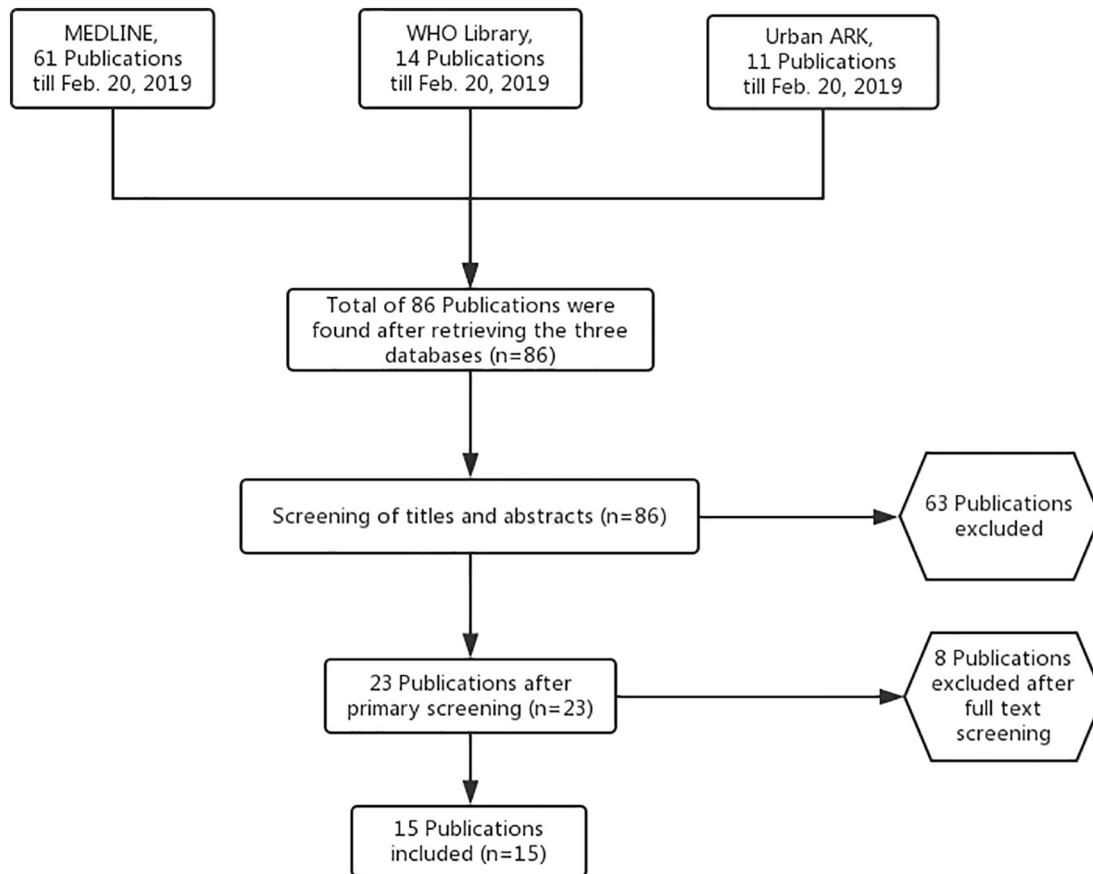


Fig. 1. Flowchart of the selection of publication. WHO library: WHO Library and Information Networks for Knowledge; Urban ARK: Urban Africa Risk Knowledge.

4.4. Urban vulnerabilities and risks in Sub-Saharan Africa

A database called DesInventar was used to show that the financial loss of all great disasters were less than the sum of small and moderate events.²⁰ From this study, UNISDR advises countries to catalogue all scale of hazard.

In the *Global Assessment Report on Disaster Reduction 2009*,²¹ the UNISDR introduced the terms “intensive risk” and “extensive risk” to have a broader vision about small disasters. Intensive risk refers to the probability of being affected by a large-scale energy-intense disaster: more than 10 people being killed and more than one million economic losses. And the extensive one refers to the change of being damaged or injured from small event, which is not recorded by international and sometimes national system.

Moreover, the extensive risk is “the risk layer of high frequency, low severity loss that manifests as large number of recurrent, small-scale, low severity disaster”,⁴ and have more cumulative and direct effects on poor people. While, the exposure and sensitivity to cost associated with this kind of risks are concentrated in informal settlement.¹⁰

However, there are some risks which lead to too small events that could not be considered like intensive risks. These risks are those from everyday hazards that cause premature death and injury, or economic loss; and the everyday risks, which are especially relevant to urban areas.

Everyday risks are the type of risks that vulnerable peoples are permanently exposed to, in their workplace, home, and neighborhood, including for disease-causing agent or vectors, chemical pollutant and physical hazard.¹⁰ Even though, people living in the rural area are exposed to the risk of such hazard, but the densely and crowded populated areas of poor urban area like informal settlements are particularly much threatening and risky.¹⁸

The neighborhood effects are factors affecting community health regardless individual household factors, they include pervasive effects

existing across the living area of a community.^{11,22} Moreover, informal settlements are space where the neighborhood effects related to poor sanitation, overcrowding, poor housing, physical hazard, pollution, and poverty exposed the dwellers to everyday health risks and keep them in a “risk trap”. The neighborhood effects occurring in informal settlement intensify health risks and generate specific health determinant.

Informal settlements are built up with an improvised dwelling from scrap materials, such as polythene and plywood sheet or corrugated metal sheets. House is made with materials that can burn easily, such as wood, thatch, cardboard, all these can generate risks of domestic fires especially when homes are packed tightly together.¹⁸

Also, the unsafe water, unsanitary condition, poor housing, overcrowding, and hazardous location are living and working conditions of these poor urban areas. This can also create health vulnerabilities particularly among women, elderly, disabled and children.⁶

SSA is such a region with the highest proportion of urban households lacking water piped to premises and toilet connecting.¹⁰ By 2015, only 40% of urban population of this region had improved sanitation and 33% had piped water in their houses.²³ Informal settlements in the Sub-Saharan urban area mostly have not lavatories or piped water. The environment is contaminated by pit-latrines and water supplies inclined also to contamination.

Moreover, houses are crowded with little intimacy and privacy, there could be air pollution due to toxic smokes and particulate matters of cooking and heating in close space. And also there is no good system of drainage in street and lanes, which are often muddy with the stagnant pool after rains and this environment is favourable to feed disease vectors. Besides, there are no many safe playing spaces for children and relaxing space for adults.¹¹

Furthermore, informal settlers are not on the urban household list or in official municipality census because they are considered as illegals. Add to that, they are constantly exposed to crime and violence and live in constant fear of eviction and insecurity which create stress.²⁴

4.5. Typology of everyday health threats in Sub-Saharan urban informal settlements

4.5.1. Communicable diseases

The inadequate sanitation and lack of potable water create an environment with risks of infectious diseases like water-borne disease, and vector-borne diseases.²⁵ Moreover, because of the lack of good sanitation, these risks may be higher in urban settlements. Indeed, infectious diseases related to poor sanitation and hygiene practices are the main causes of mortality and morbidity in an urban informal settlement.¹¹

Diarrhoeal diseases, worm infections, and other infectious diseases spread via contaminated water and water scarcity and put families in difficulties to have basic hygiene around their homes.²⁴ Indeed, the neighborhood sometime generates conditions propitious for cholera outbreak.²⁶

The urban pile of rubbish is privileged place for feeding of parasites and vector of diseases.²⁷ *Aedes* mosquito is adapted in informal settlements area; and exposed the resident to dengue fever, and emerging infectious disease worldwide.²⁸ In addition, overcrowding condition of informal settlement is favourable for transmission of tuberculosis and spread of Ebola when Ebola outbreak strikes.²⁹

The informal settlement dwellers are mostly young and mobile and this increase the incidence of HIV.³⁰ The lack of financial resources leads to informal settlers particularly young women to adopt risky sexual behaviour and exposed to HIV. For instance, a study on HIV risks in urban poor SSA concludes that HIV prevalence is higher among urban poor areas than urban non-poor areas.³¹

4.5.2. Malnutrition

The inhabitants of poor urban areas in Africa particularly children face a lack of sufficient food and poor nutrition.²⁴ Indeed, studies on food insecurity reveal a high rate in informal settlements, with example a rate of 85% household in Nairobi informal settlement and 74% for Addis-Ababa.³²

Usually, informal settlements dwellers afford pre-cooked food from a street vendor and this type of food cover only 20% of their calories needs. Consequently, there is malnutrition.³³ Under-nutrition is a leading cause of child mortality in SSA.³⁴ Besides, unhealthy living conditions have drawbacks on the growth of children, that affect their psychomotor and cognitive abilities and their nutritional status.²⁴ Meantime, malnutrition leads to stunted growth and is associated with recurrent diarrhoea.³²

Children residing in the informal settlement have a high rate of stunting, comparatively to other children from other urban areas and rural area.³⁵ The breastfeeding rate is low in informal settlement setting.³⁶ Exclusive breastfeeding up to the sixth month, while partial breastfeeding from the sixth to the 23rd month, has been shown to reduce mortality from diarrhoea and pneumonia in children.¹¹

4.5.3. Child mortality

The African continent is the one with the highest proportion of children and young people, 41% of the population have under fifteen age in 2015.³⁷ This great proportion of children has implication in exposure to urban risk. Indeed, children have vulnerabilities due to their physiology and psychology.

Diarrhoea and pneumonia are the main cause worldwide of under-five child mortality.^{38,39} And children of informal settlement are at high risk.¹¹ Moreover, children are more vulnerable when they immigrate from rural areas to urban informal settlements, maybe because of lack of immunity for their new environment in this poor urban setting.³⁵

4.5.4. Non-communicable diseases (NCDs)

The epidemiology transition of disease creates a change in the pattern of health and disease in the SSA region. The more people become urbanized

the more they change their lifestyle. There is a nutrition transition from a traditional rural diet which is more vegetable component to fast and processed food and harmful use alcohol and smoking, and also sedentary lifestyle.⁴⁰ Indeed, the urbanization and industrialization may be the cause of this transition from infectious disease mortality to Non-communicable disease like cardiovascular diseases.⁴¹

Despite the fact that NCDs are poorly documented in SSA informal settlements, the lack of access to health care, and the management (treatment and control) of NCDs remind problem.⁴² The poor purchasing ability of urban informal settlement dwellers limit their access to health care and put them at high risk for complications from non-communicable disease and put them in downward spiral of ill-health and financial distress leading to poverty trap.⁴³

4.5.5. Mental health

In many low-income countries urban area, psychosocial health problems are major cause of morbidity and mortality among adolescent and young adults. It has been also noticed lots of behavioural and emotional problem among children living in informal settlements.^{11,44}

As the life and condition of work are very stressful in informal settlements, the propensity to have stress and then psychological disorders are high.⁴⁴ Depression, alcohol abuse, drug, suicide, and interpersonal violence are mainly psychosocial health problems occur in many cities.⁴⁵

The poor quality of housing (overcrowded), living environment (noise, lack of sanitation, garbage collection) and non-environmental factors (inadequate income, insecurity, the constant threat of eviction) create stress which is the underlying cause of many psychosocial disorders.⁴⁴

4.5.6. Injury and accidents

Many accidental injuries are attributed to poor quality and overcrowded housing; accidental fire, burns, and scalds occur in overcrowded shelters. Because, the use of flammable materials of informal settlers increases the risk of accidental fires, and there is also high rate of road traffic accidents.⁴⁶ Furthermore, there is a high rate of paediatric burn due to cooking method in informal settlements comparatively to non-informal settlement.³⁵ Besides, more than half of hall injury-related deaths are caused by assault.^{47,48}

There is an increasing incidence of road traffic accidents due to the increase number of motorcycles. The users of these vehicles are injury-prone than car drivers, and it is much more of a threat to the poor as a pedestrian than to the wealthy as a car passenger.^{24,41}

5. Conclusion

Urbanization is one of the most important challenges that SSA countries face. It should be more a process of development than a process of generating risks like health risks.

The everyday health risk and its socio-spatial distribution through the population in the contextual setting of urban informal settlements result from complex interaction between multi-level causative factors.

Informal settlements should be considered as a social health determinant in order to capture risk and vulnerabilities in these poor urban areas and bring better public health intervention responses.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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