Chapter

Poverty and Cardiovascular Diseases in Sub-Saharan Africa

Julius Chacha Mwita and Brian Godman

Abstract

There is a rise in cardiovascular diseases (CVDs) in sub-Saharan Africa (SSA). Even though SSA is home to 14% world's inhabitants, it is home to more than half of the global poor. The objective of this chapter is to evaluate the interconnection between CVD and poverty in SSA. We found that the relationship between poverty and CVD is bidirectional. The intersection between poverty and CVD cuts through primordial, primary prevention and secondary prevention interventions. In the context of poverty in SSA, CVD prevention is a challenge due to competing demands to address the never conquered infectious diseases exacerbated by the current COVID-19 pandemic. With a weak healthcare system and out of pocket payment for the costs of CVD care, a significant proportion of individuals with CVD and their households are consequently impoverished. Besides, CVD affects a younger and productive population in SSA than in the rest of the world. Thus, CVD-related loss of productivity progressively pushes an additional number of individuals into poverty, requiring urgent attention.

Keywords: cardiovascular diseases, medicines, poverty, sub-Saharan Africa

1. Introduction

Cardiovascular diseases (CVDs) include coronary heart disease, cerebrovascular diseases, peripheral arterial disease, rheumatic and congenital heart disease, and deep vein thrombosis [1]. Except for coronary heart disease on the rise in urban areas, hypertension, stroke, cardiomyopathies, and rheumatic heart disease are the most common CVDs across sub-Saharan Africa (SSA) [2, 3]. CVDs account for 30% of global deaths, and about 80% of them occurring in low- and middle-income countries (LMICs), including SSA [2, 4]. By 2030, projections show that CVD alone will cause more SSA deaths than infectious diseases, maternal and perinatal conditions, and nutritional disorders combined [5]. Consequently, an increasing priority area for future activities. The rising burden of CVD in SSA is due to increasing population exposure to various modifiable risk factors that account for at least three-quarters of all the CVDs [3]. The risk factors include unhealthy diets, physical inactivity, hypertension, obesity, diabetes, dyslipidaemia, and tobacco use [4]. Given the poverty and multiple competing health priorities across SSA, similar to several other LMICs, both prevention and treatment of CVDs get less attention [3]. With the high patient co-payments in many SSA countries, CVDs impose a significant health and economic burden on individuals and families in the region than in higher-income countries [6]. Above and beyond, poverty may contribute to an increased burden of CVD by its effect on several social and cultural factors

responsible for the increasing burden of CVD [7]. Consequently, this report looked at CVD and poverty interconnection in SSA and the implications for the future.

2. Poverty in sub-Saharan Africa

SSA is home to 14% of the 7.8 billion world's inhabitants but contributes to more than half of the global poor [8, 9]. Using the 1-dimensional measurement of poverty that focuses on income or wealth, over 40% of SSA residents live below the poverty line of $1.90 per person per day [9]. This poverty level is far above the average poverty rate of 13% in other regions of the world [10]. While the rest of the world has observed a significant decline in extreme poverty, SSA observed a rise in the number of people living in extreme poverty from 278 million in 1990 to 413 million in 2015 [9, 11]. Even those who live above the $1.90 poverty, a significant proportion of them are still very poor due to deprivations in various aspects of well-being [9, 11]. Using deprivation from education, health, and assets as multi-dimensional measures of poverty, about half (51%) of the poor population in the world lives in SSA [12]. Therefore, most sub-Saharan inhabitants lack sufficient income and basic needs, including quality health and education [12]. Most of the causes of poverty in SSA are not different from the rest of the world. They include colonialism, war and political instability, national debts, discrimination and social inequality, and vulnerability to natural disasters [13]. The impact of colonialism, the slave trade and resource extraction from SSA likely contributed in some ways to the persistent poverty in the region [14]. The existence of a significant inequality in income distribution and access to productive resources, essential social services, opportunities, markets exacerbate the already existing poverty despite the autonomy of African countries following their independence [15]. Women and children are the most affected groups with inequalities and natural catastrophic events such as drought, flooding, and frequent disease epidemics in the region [14, 15]. In these events, the already impoverished people are often displaced, lose their belongings, and remain in the vicious cycle of poverty [15].

Similarly, violent regional conflicts, forced displacement and political instability in a significant number of SSA countries interfere with safety, stability and security needed for investment and economic growth [13]. The situation is made worse by weak national institutions permissive to corruption and resource misallocation in many SSA countries [9]. As a result, these countries carry significant debts that have high-interest rates and are linked to conditions that may be unfavourable to the development of local economies [13]. The impact of HIV and AIDS is also significant as the disease affected the working-age population leading to a reduction in economic productivity [16]. In the context of all these factors, it remains unclear if the region will end poverty in all its forms by 2030 as per the Sustainable Development Goal 1 (SDG 1) [17].

3. The effect of poverty of CVD in Africa

With poverty, SSA has the lowest healthcare expenditure, the lowest life expectancy, and inadequate access to health care services, safe water, education, and sanitation facilities [18, 19]. Although poverty is among the reasons behind the region's high burden of infectious diseases such as malaria, tuberculosis and human immunodeficiency virus (HIV), it is also a reason behind the rising burden of CVDs [4]. Economic development in SSA leads to urbanisation and increased tobacco consumption, harmful alcohol use, unhealthy diets, and physical inactivity [2]. While

the wealthy population can revise their lifestyle, lack of access to both preventative and remedial health care among the poor partly explains the high burden of CVD risk factors [20, 21]. Besides poor access to healthcare services for CVD prevention and control, low education significantly affects a good understanding of the disease process and promoting a healthy lifestyle among the poor [22]. With poverty encompassing low income and consumption, poor education, health, nutrition, and other human development parameters, its effect on CVD is complex [23]. It affects different stages, ranging from primordial prevention that targets the emergence of CVD risk factors, primary prevention in the presence of CVD risk factors, and educational programmes on modifiable CVD risk factors.

Unfortunately, data on the overall burden of CVD and its association with poverty are scarce in SSA [24]. With the weak state of the health systems in many SSA countries, typical patient record systems are not sufficiently functional to support accurate morbidity and mortality data documentation [25]. Given the high burden of environmentally induced risk behaviours and limited access to good-quality and affordable health care, the CVD burden, morbidity, and mortality are disproportionately higher among the poor than the affluent population in the region [20–22, 26–28]. Only a few countries (e.g., Botswana) have a universal healthcare system that extends coverage to poor communities [28]. Besides, CVD modifiable risk factors such as hypertension, diabetes, and cholesterol disorders remain undiagnosed or untreated in a significant proportion of the poor communities in SSA [28–33]. The situation is concerning because early detection and effective management of risk factors can substantially reduce most CVD [34]. Over and above the behavioural and physiological risk factors, anger, anxiety and depression are important risk factors for CVD [35]. Poor housing, sanitation and limited access to healthcare are psychosocial stressors that may lead to anger, anxiety and depression in the poor urban sub-Saharan populations [35]. Psychosocial stressors lead to an increased behavioural risk factors for CVD such as tobacco consumption, harmful alcohol use, unhealthy diets, and physical inactivity [2]. Also, most of these populations live in overpopulated unplanned urban settlements, which are often not conducive for establishing healthy behaviours [2, 18, 19]. These communities can hardly afford healthy food and have high illiteracy levels [20, 21].

Hence, poverty leads to CVD through multiple ways that lie within and outside the health sector. Consequently, broad partnerships across various sectors are needed to achieve the 25% reduction in premature NCD mortality by 2025 (the 25 by 25 goal) in SSA [36].

Although not related to the epidemiological transition, rheumatic heart disease (RHD) is another poverty-related CVD that has remained unconquered in SSA [30, 37]. The disease is responsible for over 95% of the 492 042 global deaths per year among the young population in SSA and other impoverished communities in Oceania, South Asia, Central Asia, and the Middle East [38]. SSA (5·7 cases per 1000), the Pacific and indigenous Australia and New Zealand (3·5 cases per 1000), and south-central Asia (2·2 cases per 1000) are the regions with the highest prevalence of RHD [38]. The disease results from acute rheumatic fever (ARF) - an abnormal immunological response to Group A Streptococcal (GAS) infection of the throat [39]. Risk factors of ARF include poverty, overcrowding and reduced access to medical care, all prevalent in SSA [38, 40]. Primary prevention of ARF involves early detection and antibiotic treatment of streptococcal pharyngitis [38, 41]. Early detection and treatment of streptococcal pharyngitis require functional health care services and a community with enough health literacy and appropriate health-seeking behaviour. With rampant poverty and the absence of universal healthcare, the treatment of streptococcus pharyngitis is poorly practised in many SSA countries [42]. Consequently, RHD remains prevalent in SSA versus other countries

and an appreciable cause of premature mortality with a mean age of death as low as 25 years [43]. While medical and surgical management can reduce morbidity and mortality, poverty reduction and improvement of overall living standards are crucial in reducing the overall burden and complications of RHD [44].

4. The effect of CVD on poverty in Africa

CVDs occur approximately two decades earlier in SSA than in the rest of the world [5]. In the context of poverty and weak healthcare systems, patients with CVD in SSA have higher all-cause mortality and shorter lifespans than in the other parts of the world due to often limited access to healthcare. Over 50% of these patients die between 30 and 69 years of age, approximately ten years or more below the equivalent group in higher-income countries [45]. Consequently, death and disability attributable to CVD occur in the middle and economically productive age, affecting young families and the much-needed workforce in the region [45, 46]. Available evidence implicates stroke as the cause of the majority of CVD-related mortality in SSA [46]. With the absence of universal health coverage and robust health insurance systems among most SSA countries, patients and their families bear the costs of CVD care costs [47]. In some instances, patients forego treatment due to costs [47]. The impoverishing effect of out-of-pocket payments is increasingly pushing many individuals and families into poverty with family members affected by CVD [6].

5. Poverty, illiteracy, and indigenous knowledge system effect on CVD

Given the high cost and inaccessibility of biomedical care and medications for CVD, traditional healers are central to CVD treatment among patients in SSA [48, 49]. The spiritual underpinning of chronic diseases such as CVD, cultural beliefs, and taboos are reasons behind the preference of traditional healers over biomedicine as the first choice in some parts of SSA [50]. Consequently, it is not uncommon for individuals in the region to seek help from traditional healers to treat diabetes, hypertension, and stroke [51–53]. The belief that traditional healers are experts in treating and curing CVDs and their risk factors delays the transfer to biomedical care despite the clinical deterioration in some patients [50]. Those who transfer to biomedical care are less likely to maintain treatment compliance equivalent to traditional medicines. These culturally driven practices present the greatest threat to the treatment and control of CVDs and their risk factors [50]. Some cultural ideas partly explain the persistently low knowledge of CVDs, risk factors, and clinical symptoms in the SSA population [54]. Therefore, governments and other key stakeholder groups understanding these cultural-driven beliefs and practices are essential in devising strategies to improve health literacy in managing and controlling CVDs [55].

6. Effect of poverty on diagnosis treatment and control/eradication of CVD

With the growing burden of NCDs worldwide, the 2011 United Nation (UN) high-level meeting adopted a political declaration on NCDs that aimed at a 25% reduction in premature mortality from the four main NCDs (cardiovascular diseases, chronic respiratory diseases, cancers, and diabetes) by 25% relative to their 2010 levels by 2025 (the 25 × 25 target) [36]. In 2015, the UN SGD-3 was adopted to reduce by one-third premature mortality from NCDs by 2030 [17]. To realise

the SGD-3 target on health, a reduction in tobacco use, harmful alcohol use, salt intake, obesity, raised blood pressure, increased blood glucose and diabetes, and physical inactivity is essential [56]. Besides, treating people at high risk of CVD and ensuring a sustainable availability of medicines to treat NCDs and avoid potential complications is also critical [56]. The above measures are challenging to implement because of the regional poverty, underfunded healthcare systems and the absence of clear policies and strategies [57]. To overcome these challenges, governments and other key stakeholder groups need to instigate several measures that may reduce CVD morbidity and mortality, especially among the poor. These include researching to assess the optimal way to help diagnose CVD early and educate patients of the benefits of biomedical versus traditional medical approaches alongside lifestyle changes. In cognisance of the high levels of illiteracy among many of these patients, approaches such as pictograms are helpful in enhancing understanding [36, 58]. In addition, for governments to produce up-to-date guidelines that are robust and easy to use in electronic formats, with regular monitoring of prescribing patterns to improve the future quality of prescribing [59, 60]. This recognises that adherence to prescribing guidelines is seen as a better marker of the quality of prescribing than current WHO/INRUD criteria [61]. Alongside this, seek to instigate policies to enhance access to low-cost medicines, thereby reducing costly co-payments. This can potentially be achieved with the help of donors and pharmaceutical companies and exploring the potential for local manufacturing of multiple sourced medicines building on concerns during the COVID-19 pandemic [61]. In the meantime, exploration of the potential for aggressive procurement programmes since we have seen in Europe that such programmes have resulted in the prices of generic medicines used to manage CVD as low as 2% of pre-patent prices [62]. Issues of transport costs to clinics to effectively treat patients with CVD also needs to be researched further as lack of contact can be a significant barrier to adherence to medicines for NCDs [63]. In addition, exploring different methods to improve the convenience of medicine dispensing that reduces time off work building on current initiatives in South Africa and wider [27].

7. Conclusions

There are concerns about the rising burden of CVD in SSA, adding to the prevalent infectious diseases in the region. The increase in CVD is due to behavioural and metabolic risk factors resulting from the epidemiologic transition in the region. The intersection between poverty and CVD cuts through primordial, primary prevention and secondary prevention interventions. In the context of poverty in SSA, CVD prevention is a challenge due to competing demands to address the never conquered infectious diseases. With a weak healthcare system and out of pocket payment for the costs of CVD care, a significant proportion of individuals with CVD and their households are pushed into poverty. Besides, CVD affects a younger and productive population in SSA than in the rest of the world.

Consequently, CVD-related loss of productivity will push an additional number of individuals into poverty. Because of this, appropriate strategies are needed to address the rising burden of CVD across SSA, and these should include activities to address poverty issues. Activities include providing available funding and resources for effective screening for NCDs, especially CVD and diabetes, given high rates of patients not being diagnosed. Alongside this, improving the access and availability of medicines, especially where co-payments are an appreciable issue among patients. Multiple channels exist, including activities of donors as well as increasing local production. Alongside this, enhance educational input, especially

for patients with low educational levels, to improve adherence rates to suggested lifestyle changes and prescribed medicines, which can be appreciable concerns. This includes a more significant role for pharmacists and nurse practitioners in SSA ambulatory care clinics to help diagnose and manage CVDs. Access and other schemes can also help to enhance the affordability of chronic medications to prevent and manage CVDs, building on current schemes. Should there continue to be high poverty levels and lack of healthcare, including medicines, CVDs will continue to be a growing issue. This is not in the best interest of any key stakeholder group or higher income countries seeking to benefit from growing African populations. We will continue to monitor the situation.

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Conflict of interest

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