

Community Health of Children and Adolescents in Sub-Saharan Africa

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ABSTRACT

Health is central to the development of any country. Despite the efforts and goodwill of the United Nations, the goals established have not been successfully achieved and people in Sub-Saharan Africa (SSA) continue to strive with the same burdens of poverty, employment, malnutrition or hunger, inequality, environmental crisis, access to energy, conflicts and injustice. All these determinants drawback factors may be cause or consequence of a never-ending cycle with enormous impact on individual and community health. In SSA, policy makers, donors, healthcare providers, and academics have paid less attention to chronic diseases than to acute, communicable diseases. Despite severe dysfunctions, Public Health in this region, distinct from immediate medical services, is now engaged in endless struggles, against pathogens, modelling human behaviors, and searching for financing. Parental education, health and welfare, substandard literacy and language communication, access to material assets and other factors may all affect their ability to interpret hazards and risks in key areas of health and nutrition. While some 70% of deaths in Africa result from infectious and parasitic diseases, mortality rates from chronic diseases are higher in SSA than in other parts of the world. Children and adolescents in SSA in their livelihoods experience slow physical growing, inadequate observation and physical development, and a series of biological impairments that amplifies their risk of non-communicable diseases as they mature. Integrated strategies of sound health leadership and community-adapted initiatives are needed and probably engaged constructively with the private sector. Some ambitious new health goals take longer to achieve, but progress can be achieved in stages.

Keywords: Destitution, healthcare decentralization, health systems, malnourishment.

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I. INTRODUCTION

The 2030 Agenda for Sustainable Development adopted by the United Nations in 2015, established 17 Sustainable Development Goals (SDGs) aimed at achieving a recommended and more conceivable prospective for all people, addressing global challenges such as poverty, hunger eradication, inequality, climate and environment crisis, affordable energy, peace and justice [1].

Even prior to the pandemic and the Ukraine conflict it could be seen that accomplishing the SDGs was not going to be easy, and now is failing to produce the radical alterations required to achieve their ambitious objectives due to a shortfall of coordination across separate goals, and other reasons. Indeed, the ill-fated SDGs may compromise the reliability of the global interdependent society and devastating millions to die pointless [2].

The timing to assess headway and update our general plan is probably closed, although never too late to re-examine what failed in understanding the need for transformation.

Over 100 scientists from 37 countries urged the UN to ditch the SDGs but do not provide a credible alternative [3].

The SDG target for non-communicable diseases (NCDs) to decrease a tierce in untimely deaths from various diseases (e.g. diabetes, oncological causes, cardiovascular and respiratory), prevent the onset of a diagnosable mental disorders, and promote welfare, has been partly achieved only in some 14 countries. [4].

Most countries are not on track to reduce the under-5 death rate, but despite low incomes, Eritrea, Ethiopia, Liberia, Madagascar, Malawi, Mozambique, Niger, Rwanda, Tanzania, and Uganda accomplished significant breakthrough and achieved the goal of contracting under 5 mortality [5].

Health is central to the development of any country. The Human Right to Healthcare is meaningless without the engagement and all stakeholders and good financing for endowing and supporting quality health systems with easy access to the people [6].

In SSA, policy makers, donors, healthcare providers, and

academics have paid less attention to chronic diseases than to acute, communicable diseases. The present high levels of misery and poverty, even in affluent developing countries, creates a vicious cycle of poverty, misery and disease (Fig. 1). Indeed, global and absolute healthcare is unachievable, because we live in an inequitable and unfair world [7].



Fig. 1. The impacts from the vicious circle of poverty.

Persistent poverty is both a cause and a consequence of poor health and escape from this endless loop is almost imperceptible. Impoverishment, chronic illnesses, and premature death go hand in hand [8].

If in developed countries parental health and well-being is seen to play a role in the intergenerational transmission of economic and health status [9] in SSA parental non-education and low income or even unemployment seriously have a long term impact on child and adolescent on nutrition, health status and on living standards [10].

The perspective of a combined effect of social determinants, mainly poverty, and chronic conditions has not been researched comprehensively [11]. People's health, well-being and lifestyle are negatively overwhelmed by undetermined number of chronic diseases, overloading health systems. These on-going illnesses demand persistent medical assistance that restricts the potential to execute daily tasks, socialise freely, and reduce independence [12].

Even if the administration of chronic diseases is well entrenched in affluent countries, most patients in SSA do not have access to customary treatment measures, where one doctor is sometimes available to serve more than 20,000 people [13].

In Mozambique, a low-income economy and among the 6 poorest countries in the world, some 65% of the 33 million population live below the international poverty line, 80% cannot afford an adequate diet, and only few are available mainly located in urban areas. Hence, among SSA countries it is expected a very frail handling of public services, particularly health education and access to clean water, hygiene, safe sewage and waste disposal.

Poverty is the oldest and the most resistant world killer and cannot be compared to any disease from the genesis of mankind. Yet Africa has the richest natural resources but still poor and stagnant in growth and development [14]. Poverty is likely to never end, but further studies are nevertheless needed to increase the evidence of what can be done to fight

poverty based on strong institutions, equitable distribution of resources, and non-corrupt governance, at least to minimize the impact of poverty on the physical and mental well-being of individuals within a community [15].

Despite severe dysfunctions, SSA Public Health, distinct from immediate medical services, is now engaged in some never-ending struggles, against pathogens, modelling human behaviours, and searching for financing. These struggles never end [16].

Under this harsh reality of global incapacities resulting in disrupted lives, and the overwhelming number of people relying on already stretched social services, when existing, there is the need to develop ways to assess, manage and communicate the hazards and risks in key areas of civil rights, health, sanitation, nutrition, education, decent work, freedom from violence, and liberty integrity [17].

A threefold implication of children and adolescents malnourishment (*underweight*: low height for age, and wasting, a measure of acute nutritional deficiency; *hidden hunger*: multiple vitamins and micro minerals deficits; and *overweight*), along with obesity in mothers, are continuing to rise, and increasingly among the poor communities [18].

Actually, globally, there are 151 million children under 5 stunted, almost 50 million with wasting, and 16 million both stunted and wasted, with hunger eradication being at risk [19].

Very recently, UNICEF has announced over half a billion dollars pledged to tackle severe wasting in some 15 countries (Afghanistan, Burkina Faso, Chad, Democratic Republic of the Congo, Ethiopia, Haiti, Kenya, Madagascar, Mali, Niger, Nigeria, Somalia, South Sudan, Sudan, and Yemen) in an unprecedented international response to child malnutrition crisis [20].

There is increased emphasis on chronic diseases in SSA and for platforms connecting the management of infectious and non-communicable chronic diseases. This becomes more urgent with increasing numbers of people living with mixed health conditions [21].

In SSA, childhood and adolescent growth development and health is substandard and a large proportion of children and youngsters are not getting the balanced diets they require, compromising their ability to grow, mature and grasp school knowledge to their maximum capacity [22].

Several factors, mainly those related to poverty, mediate the youngster's ability to learn at school, including parental education, health, calmness, happiness, comfort, well-being, and ability to move freely [23]. In most SSA countries, territory to amidst 2,000 languages spoken at home and community, schooling has been offered on established colonial languages, being one of the main constraints for regional development [24].

While some 70% of deaths in Africa result from infectious diseases, mortality rates from chronic diseases are higher in SSA than in other parts of the world [25]. Non-communicable diseases (NCDs) such as heart and coronary diseases, myocardial infarction, dental/oral healthcare, mental illness, chronic respiratory diseases, type-2 diabetes, muscular-skeletal and neural disorders, and cancers, have been reported as the major causes of death globally and in SSA [26], [27].

Globally, in the past 50 years, a complete shift of paradigm resulted in curtailing the frequency of under-nutrition, avoiding therefore its permanent damage from early life [28]. As a consequence of the nutrition transition, there has been a shift to diets high in ultra-processed products (e.g. canned fish, fruits in syrup, bottled vegetables, preserved meats, and fresh bread) raised the levels of intake of saturated lipids, and high scoring sugars and refined carbohydrates on the glycaemic index [29], [30].

Furthermore and oddly enough, healthy diets are pending to be more costly while unwholesome, non-nourishing foods and diets are becoming more affordable per unit caloric energy [31]-[33].

Aiming at stimulating valid healthy environment and desirable and secure welfare of the next SSA generation, multidisciplinary strategies must emerge and be actively implemented to upgrade education quality, to balance school feeding programmes and improve the school capacity in promoting healthy lifestyles, to optimise diet diversity, to dispose of human wastes, and boost healthy habits of mothers, children and adolescents [34], [35].

Nonetheless, there is an absence of investigation on the onset, evolution, management and assessment of rural and urban health interventions related to childhood and adolescent for the full spectrum of chronic health conditions [36], [37].

The most used anthropometric assessment procedure in SSA, like skinfold and muscle area measurements, is not an extremely accurate method predicting nutritional status. The best way of assessing nutritional status, must include patients history, physical examination, other anthropometric measurements, laboratory analysis and changes on the ability of the body to produce a normal immune response [38].

However, there is presently no widely recognised benchmark for the all-inclusive determination of nutritional status [39], nutritional risk screening [40], dietary care plans [41], and systematic nutritional management [42], [43].

II. A CHANGING WORLD BARELY IN SSA HEALTH

Many millions of people in SSA live in the lowest levels of contentment, welfare, and prosperity, enduring unemployment, erratic or low-paid jobs, poverty, misery, bodily disabilities, and mental disorders.

In SSA, today's youth face tremendous challenges and face many special vulnerabilities, but they are the future generation, needing to be physically robust, mentally developed, and sentimentally resilient [44]. Yet, most of the population cannot escape extreme poverty because of structural inequalities, agricultural and climate risks, vulnerabilities from constant environmental degeneration, progressive desertification, systematic pest invasions and insufficient reaction to recurrent drought cycles [45].

In SSA, despite more children and young people having higher rates of surviving, their livelihoods experience chronic poor nutrition, repeated infection, and inadequate psychosocial stimulation, resulting in stunted physical growth, suboptimal memory and motor skills development, and a series of other biological disabilities that intensify their

risk of non-communicable diseases as they mature [46].

Extreme poverty from birth, early nutritional deprivation, trauma, stress, exposure to mycotoxins and psychosocial stressors can significantly influence short-and long-term brain function, cognitive development, behaviour and health outcomes for children that may extend during adulthood [47].

Social factors, especially social determinants such as housing, household socioeconomic status and maternal education, are associated with early childhood growth and development [48]. The infancy and youth, up to 3-year old, is a specifically sensitive and vulnerable period for child survival, growth and development, affecting all future learning, behaviour, and health [49].

The majority of complex chronic diseases pathogenesis are determined by gene-environment interactions affecting health outcomes [50]. Children and adolescents in SSA experience severe, frequent, and/or prolonged adversity and environmental influences, usually considered more significant than genetic predispositions in their impact on the likelihood of developing chronic health conditions which can persist into subsequent generations [51].

Despite significant global progress over the past two decades in estimate levels on under five years old child mortality, most from preventable causes, SSA still displays the unreasonable fatality ratio of 1 child in 13 dying within that period [52]. Main preventable aetiology include preterm delivery problems, premature labour, obstetric-related complications, sepsis, structural or functional anomalies, lung infections/pneumonia, malaria, and diarrhoea [53]-[55].

Global estimates, shows that some 6 million under-5 child deaths occur annually by virtue of malnutrition or exposure to extreme poverty [56]. It is essential that public health staff strengthen or build more resilient health systems, adapting adequate strategies for effective chronic diseases' control [57].

The main drawback with most national health systems in SSA is the centralisation of decisions, weakened at the village and even provincial levels, and rural areas are unquestionably not well provided. Particularly the poor, the sick and the disabled may experience stigma and discrimination and may be kept apart from the focus on prevention.

However, identifying social determinants and formulating appropriate strategic responses are complex tasks and very few suggestions have been made on possible holistic master plans for improving their nutritional composition and potential well-being and general health benefits [58].

III. LINKING AID, EDUCATION, AGRICULTURE, NUTRITION, AND HEALTH

Across the seven decades of the United Nations engaged actively in population issues, many Programmes were launched aiming at opposing hunger. Most of the financial investments on SDG alignment agenda do not achieve the two main objectives: 1. Equality: resources should be mobilized to leave no one behind, and 2. Sustainability: resources should accelerate progress across the SDGs [59].

The panorama of food insecurity and malnutrition is

aggravated by struggles, political, social and climatic disturbances, affecting agriculture production and acquirement of crucial resources.

Many SSA countries have developed a (Home Grown) School Feeding Programme where data on malnutrition is being collected. This approach of collecting data at school is commendable since all children are involved [59].

A profound change of the global food and agricultural systems is needed now even more with the war in Europe with disrupted global supply chains and deep impact on foods and fertilizers in SSA low-income countries [60].

Smallholder farmers have deep spiritual, cultural, social and economic ties with the land. However, in many SSA countries, land is State owned, and indigenous peoples and local communities do not develop the necessary stronghold proprietary links to land parcels [61].

IV. NUTRITIONAL STRATEGIES AND HEALTH

Good nutrition paves the way for a smooth and balanced expectation in life. Healthy diets counterbalance several chronic non-communicable diseases, and diversifying food sources, reducing salt, sugars and industrially saturated trans-fats, are essential measures for offering nourishing diets. However, the world is retroceding in its endeavours to terminate hunger, food insecurity and malnutrition in all its expressions [62].

Thus far there is no single functional procedure to handle and control malnutrition while a unique handling system will not fit all scenarios [63]. It is also unknown the most persuasive type and period of intervention while concerning chronic health conditions, the outlook is similar [64].

Despite the hundreds of NGOs, United Nations institutions, foundations, personalities, alliances, corporations, funds, societies, movements, actions, trusts, consultancy institutes, research and training centres, coalitions, religion and cult organizations, national and international projects and programmes, attempting to make SSA a better place to live, there has been, unfortunately, more failures than successes [59].

Indeed, the type of aid with large donations is only efficient in lessening immediate suffering; however, it is not the solution in the long-run and does not help provide a stable platform for sustainable development, ending up doing more harm than good. Indeed, foreign aid almost never fully reaches the most vulnerable people in all levels of societies. Instead of charity, SSA needs effective, competent and not corrupted leadership [65].

V. THE THRIVING CHALLENGES OF NON-COMMUNICABLE DISEASES

The increasing implication of the epidemic of non-communicable diseases (NCD) in low-and middle-income SSA countries, where communicable diseases were virtually the sole priority, is changing the aetiology of present disability and mortality in the region. This new vision jeopardizes the global targets for health and well-being,

increasing the strain on health systems, and a country's wealth and standard of living [66].

In the majority of SSA countries the preponderance of NCDs, their risk factors and real danger is high while research and management remain largely underfunded. [67].

The major NCDs are cardiovascular diseases, diabetes mellitus, obesity, cancers and chronic respiratory disease. In SSA, communicable diseases, including silent parasitic infections, assumed a predominant implication on NCD compared to a cluster of prevailing risk factors associated with smoking (not a common phenomenon in SSA women, particularly if they still live according to their traditional lifestyles), alcohol consumption, high cholesterol, malnutrition, sedentary life, hypertension, obesity and environmental factors [68].

In SSA robust data are unavailable but there is strong evidence of the links between certain social determinants and premature mortality from NCDs (Fig. 2).

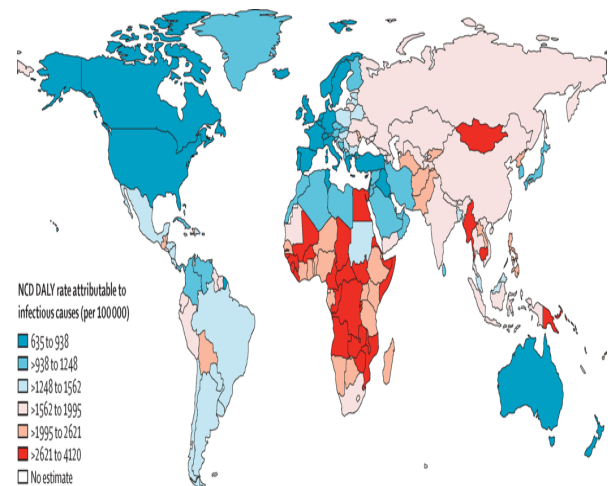


Fig. 2. Age-standardized DALY (Disability-Adjusted Life Year) rates per 100000 individuals [69].

The limited or total lack of access to essential health services and the predominant use of traditional healing practices and folk medicines, still preferred by the people of SSA communities in this modern era, weakens data collection [70].

Some 80% of the SSA population uses traditional medicine, and although not backed up by scientific published knowledge, it is a fascinating field for health research [71]. The practice of folk/traditional, complementary and alternative medicines for NCDs and mental disorders in health care of SSA patients is a factuality but still not researched in depth [72], [73], [81].

WHO on its latest 2022 NCD Progress Monitor Report reveals progress and missed opportunities in the control of NCDs [74]. Findings of responses to NCDs must be contextualized to a specific country's population, health system and policy response. Outcomes from elsewhere, under total different background and environment, may not be widely relevant since without national accurate data, it is impossible to conceive functional, long-term precautionary master plans to tackle NCDs incidence [75].

VI. CHRONIC CONDITIONS AFFECTING HEALTH AND WELFARE

In SSA communities, infectious diseases, malnourishment, and mothers and children wellness problems prevail. The effort to accomplish well-being and positive health, to safeguard longevity, to attain stress-free lifestyle, to counteract professional fatigue, and to reduce psychological disorders continues persistent, with hardly an end in sight [76].

When these communities develop, increased prevalence of key modifiable behavioural risks and NCDs become more prevalent. SSA faces a crucial but ignored epidemic of NCDs including stroke, hypertension, dyslipidaemia, diabetes and cancers, acting independently or synergistically [77], [78].

The unparalleled and disastrous COVID-19 pandemic persists on claiming lives, unsettle and deviate means and funds from routine health systems, having a detrimental consequence on general health of SSA people, mainly those suffering from chronic conditions [79].

The weak or non-existent free for all health systems and negligible investments in health facilities/equipment, healthcare education/training and service delivery, increases the disabilities in rural SSA communities [80], [81].

The increasing urbanization and changing lifestyle factors are probably responsible for the increase of chronic conditions, occurring in younger group ages in SSA (Fig. 3), influenced by conditions even before a child is born, contrary to what happens in developed countries [82], [83].

South Africans are among the world top consumers of soft fizzy drinks, and amid a public health emergency mainly due to an obesity crisis, mainly in women. Chronic obesity-related diseases, such as acute myocardial infarction and cerebral thrombosis, account for the great majority of deaths in the country [84].



Fig. 3. Most common African chronic health conditions.

VII. MAIN HEALTH CONDITIONS IN UNDER-5 CHILDREN

Although in SSA mortality rates, mainly due to infectious diseases, including pneumonia, diarrhoea and malaria, among children under age 5 actually have been decreasing annually, some 30% of all infancy and adolescent deaths are related to

malnutrition followed by ailments such as prenatal complications, diarrhoea, and birth asphyxia. Sub-Saharan Africa has the highest neonatal mortality rate in the world (27 deaths per 1000 live births) with 43% of global new-born deaths (Fig. 4) [85], [86].

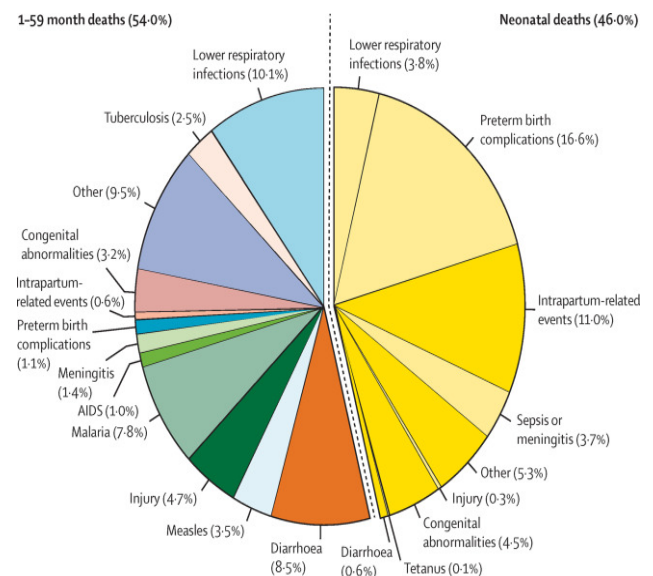


Fig. 4. Global causes of under-5 deaths in 2019 [86].

Although many treatable and preventable disorders could have been attended during COVID 19, and despite the fact that the pandemic has been more serious in urban areas, children and adolescents in the hinterland were not so affected by coronavirus and continued to encounter a massive hardship of severe chronic illnesses [87], [88].

There are universal, recent and renovated WHO guidelines [89] for the post pandemic years, however, in SSA there is a lack of trained epidemiologists, healthcare staff at all levels, national health governance, holistic services, community consultation, improved data collection, in addition to higher investment in innovation, research and development.

It is difficult to implement all these features in most SSA settings and service delivery is hindered since critical multi-sectorial approach drawing close policies and practices is hardly achieved [90].

A. Overweight and Obesity

Overweight and obesity conditions are linked to many severe nutritional and public health problems, with multi-faceted aetiology, and may occur simultaneously with opposite cases of under nutrition, and even hunger. An impressive increase burden in obesity in childhood, mothers and adolescents is materialising in some SSA countries undergoing chronic disease changeovers [91].

One in 5 adults and one in 10 children and adolescents are considered obese in 10 high-burden African countries while no robust measures are taken to reverse the trends [92].

Worldwide, over 45 million under the age of 5 juveniles were considered chubby or adipose, some 12 million living in Africa, while among 5-19 years old some 340 million were overweight or obese [93].

The introduction of western diets and fast food, with higher levels of animal fats, processed, convenience and sugary

foods and soda beverages, even if levels of physical activity are higher in SSA, and increased urbanization, escalated significantly the risk factors for overweight and obesity in the region (Fig. 5).

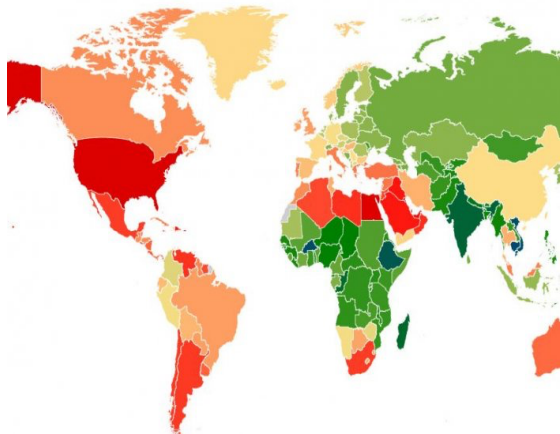


Fig. 5. The number of obese children and adolescents (aged 5 to 19 years) worldwide has risen tenfold in the past four decades, but in SSA only South Africa reveals dramatic increases [94].

Obesity and overweight create significant liabilities such as cardiovascular diseases, diabetes, and chronic kidney disease, and the consequences include the onset of chronic morbidities, reduced welfare, and increased risk of early death [95].

Low- and middle-income SSA countries, particularly in urban environments, reveal increased challenge of obesity and overweight, previously a typical problem just from high-income countries [96].

The leading SSA countries with the highest prevalence of overweight are Seychelles (64 %) followed by Mauritius (44.8 %), Cameroon (43.9 %), Botswana (41.6 %), and South Africa (41 %) moving closer to the U.S. adult obesity rate stands at rate of 43 % and BMI of 30 or higher [97]. An extensive systematic review has been conducted on the prevalence, occurrence, and tendencies of childhood overweight/obesity in SSA [91].

Culinary or diet nutrition education is also rarely implemented in SSA countries while new legislation has been formulated for food fortification with micronutrients [98], [99].

In SSA, through School Feeding Programmes, the concept of interventions focusing on teachers' personal health behaviours and nutrition knowledge have been introduced, trying to develop their nutrition healthy nutrition knowledge [100].

Overweight and obesity in African female adolescents has not reached yet epidemic dimensions in SSA, contrary to other world developed regions, but varies across countries ranging from 2% to as high as 54% and is increasing at an alarming rate [101]-[103].

B. Diabetes

SSA is expected to experience the highest increase in diabetes globally and the series of cascading challenges include impaired diagnosis, lack of testing facilities, specific training of health workers, the cost and access to test strips

and medication. [104].

The adult-onset type 2 diabetes mellitus, formerly thought to be infrequent in SSA, is now soundly entrenched in this region but its prevalence still lessen in some rural communities, although increasing rates have been reported in many countries.

In 2021, globally 537 million people were living with diabetes, 24 million people in the whole African continent, while 6.7 million worldwide and 416,000 in SSA died because of this disease or akin conditions, with over 1 in 2 (54%) people living with undiagnosed diabetes [105].

A handful of countries have established pilot integrated descriptive study models of chronic disease healthcare [106]. Populations under food insecurity have been associated with higher incidence of diabetes type 2 [107].

Food insecurity has not been evaluated in multi-pronged approach in clinical trials, and instruments for detecting a straightforward or an ambiguous relationship between food insecurity and glycaemic control is still uncertain [108].

Surveys in SSA children and adolescents are occasional and there are many elements of poverty such as lack of shelter, water access, unemployment, gender discrimination, monotonous diets, which predispose them as adults to diabetes. [109].

Regarding diabetes management, poor and food insecure people have difficulty to follow a healthy diabetes diet and eat anything they can find and afford. Therefore disease control associated with increased misery and emotional distress, is not efficacious or regular [110], [111].

Nigeria, South Africa, Democratic Republic of Congo, Ethiopia, and Tanzania are the SSA countries with higher numbers of diagnosed type-1 diabetic adult patients, with high mortality attributed mainly to poor insulin access. Despite diabetes care free insulin provision, mortality remained high in children and adolescents with type-1 diabetes in Cameroon [112], [113].

The Covid-19 pandemic, with anxiety, sedentary life and stress, also made an impact and some 75 % of mortality was attributable to diabetes in SSA occurring in persons under 60 years old, reflecting that a lot remains to be done in order to maximize life expectancy [114].

Type-1 diabetes among children and adolescents in SSA is still overwhelming [115]. Type-2 diabetes among children and adolescents, usually more frequent at older stages, is less studied but found as an emerging health problem in Sudan mostly as a result of obesity and increasing particularly among certain ethnic groups [116], [117].

The few diabetes education programmes for healthcare professionals in SSA achieved limited impact, sustainability and reproducibility beyond their original setting [118]. Key stakeholders and decision makers (e.g., Ministry of Health, Regulatory Bodies, and Professional Orders) did not support the necessary continuous development of education programmes, therefore the effectiveness of training did not have further impact [119].

C. Tuberculosis

Tuberculosis (TB) is a dangerous acute or chronic bacterial (*Mycobacterium tuberculosis*) lung infection.

Immunocompromised people or with other comorbidities, such as those living with high blood pressure, asthma, HIV, obesity, malnutrition or diabetes, or people who use tobacco, have a much higher risk of falling ill with TB [120].

For the first time in over a decade, TB deaths increased in 2020. Indeed, it is estimated that 63 % of youngsters below 15 years with TB did not have access to life-saving TB detection and therapeutics. Children under 5 showed even higher (72%) rates. Almost 67% of eligible children under 5 did not receive the BCG preventive vaccine remaining exposed to illness [121].

Children having TB disease, harbouring a latent form of the infection or drug-resistant forms, have been substantially neglected across the globe, not just SSA, representing a serious public health hazard. Accurate burden of childhood multidrug-resistant TB is undetermined, while the worldwide appraisals indicate 25,000 - 32,000 cases, of whom 21% will probably die [122], while it is estimated that 20% of children multi-drug resistant tuberculosis could be averted by household testing and treatment [123].

Only recently WHO has updated guidelines for the management of TB in children and adolescents highlighting new patient-centred recommendations for diagnosis, treatment and prevention [90].

VIII. CONCLUDING REMARKS

The notable low likelihood of immediate success in SSA to assess and manage children and adolescents diagnosed with chronic conditions, mainly due to the incapacity of various descriptions, is no reason for abandoning all action.

Some ambitious new health goals take longer to achieve, but progress can be achieved in stages. Flagging the situation followed by monitoring are the first two steps to signal the healthcare policymakers in order that adequate actions are undertaken and with urgency.

Basic effective healthcare packages at frontline and referral level in the healthcare systems, valued and trusted by patients and communities, should all contribute to formulate potential actions under defined guidelines designed by health authorities. Monoculture crops is not sustainable and are much more susceptible to climate shocks, diseases and drought. Having a more diversified agriculture is the way forward.

Integrated strategies of sound health leadership and community-adapted initiatives are needed and probably engaged constructively with the private sector. Despite significant advancements, governmental agencies have mirrored international strategies, influenced by donors and NGOs, and the advantage and efficacy of healthcare decentralization is still under debate.

Nutritional deficiencies, infection and inflammation are major contributors to impaired neurodevelopment in children. There is the need to overcome poverty with resilience as the foremost reason for deprivation at all levels of society and improve livelihoods through multifactorial initiatives.

AUTHORS' CONTRIBUTIONS

TF and VB conceived and wrote the article, based on previous research work; CS conducted part of literature review and figures; JG supplied African data and critical feedback.

CONFLICT OF INTEREST

Authors declare that they do not have any conflict of interest.

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