

The Trend of Non-Communicable Diseases in Kenya from 2010 to 2020

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Abstract

Background: Non-communicable diseases (NCDs) are increasingly affecting developing nations such as Kenya. These diseases include cardiovascular diseases (CVDs), chronic respiratory diseases (CRDs), cancers, diabetes, and mental illnesses. The nation has increasingly been affected by NCDs as opposed to the historic prevalence of communicable diseases. This poses a challenge as they can result in a consistent state of disability in affected individuals. A lack of awareness may be impacting the prevalence of NCDs in Kenya and their causes, including modifiable and non-modifiable factors.

Method: This article utilized a systematic review to critically describes the prevalent NCDs in Kenya as well as provide five practical steps that can be taken to encourage a healthier population that is aware and actively fighting against NCDs.

Result: Lifestyle-related diseases such as CVDs, COPD, cancers, diabetes, and mental illnesses are ever-increasing danger in Kenya. Their prevalence has increased over the last 10 years in the nation and has been silently wreaking havoc among a population that is not well educated

Conclusion: With enough dedicated focus on understanding and treating lifestyle-related diseases, there can be positive progress made to reverse the increasing trend of lifestyle-related diseases in the country.

Keywords: Kenya, cardiovascular diseases, chronic respiratory diseases, cancer, diabetes, mental health

Introduction

The Trend of Non-communicable Diseases in Kenya from 2010 to 2020

Non-communicable diseases (NCDs) are a group of health conditions that are not transmissible from one person to another; they include cardiovascular diseases (CVDs), chronic respiratory diseases (CRDs), cancers, diabetes, and mental illnesses (Allen, 2017). They are also interchangeably referred to as chronic diseases as they can result in a long-lasting state of disability with no cure and only management (Richards et al., 2016). Current demographic and epidemiological changes have shown that there has been a shift in prevalence from communicable to NCDs primarily in low- and middle-income countries (LMICS) (Bollyky et al., 2017; World Health Organization [WHO], 2021). Though they

have been historically known to be a burden in the developed world, recent research indicates that this increasing prevalence in the developing world has resulted in countries struggling with communicable conditions such as HIV/AIDs and Tuberculosis (TB) as well as the NCDs (Gowshall & Taylor-Robinson, 2018; Wagner & Brath, 2012).

These diseases cause between 60% - 71% of global deaths with 80% occurring in LMICs, which shows an uneven burden of distribution (WHO, 2021, Reubi et al., 2016). These estimations, unfortunately, are typically inaccurate due to the lack of enough data in these highest affected nations in LMICs with low data collection and health infrastructure. There is a consistent need for better surveillance and screening for these diseases as they are typically harder to diagnose than communicable diseases.

The main underlying risk factors of NCDs can be divided into modifiable (lifestyle changes can be made to stop or reduce these risk factors) and non-modifiable (having to do with physiology and genetics making them nearly impossible to eliminate). The modifiable risk factors include the use of tobacco and alcohol, unhealthy diet, immediate environment, and physical inactivity while the non-modifiable risk factors include high blood pressure, obesity, hyperglycemia, and hyperlipidemia (WHO, 2021; Reubi et al., 2016; Zaman et al., 2016). According to the WHO, each of these diseases (barring mental health) cause

millions of death per year; diabetes (1.5 million), respiratory diseases (4.1 million), cancers (9.3 million), and chronic obstructive pulmonary disease (COPD) (17.9 million) (WHO, 2021). Clear estimates on the deaths caused by mental health disorders are still unavailable and have to be extrapolated from surrounding events such as suicide. Currently, 7 of the top 10 leading causes of death worldwide are caused by NCDs which shows a clear need for the world to focus on these diseases and increase prevention as well as management strategies (WHO, 2020).

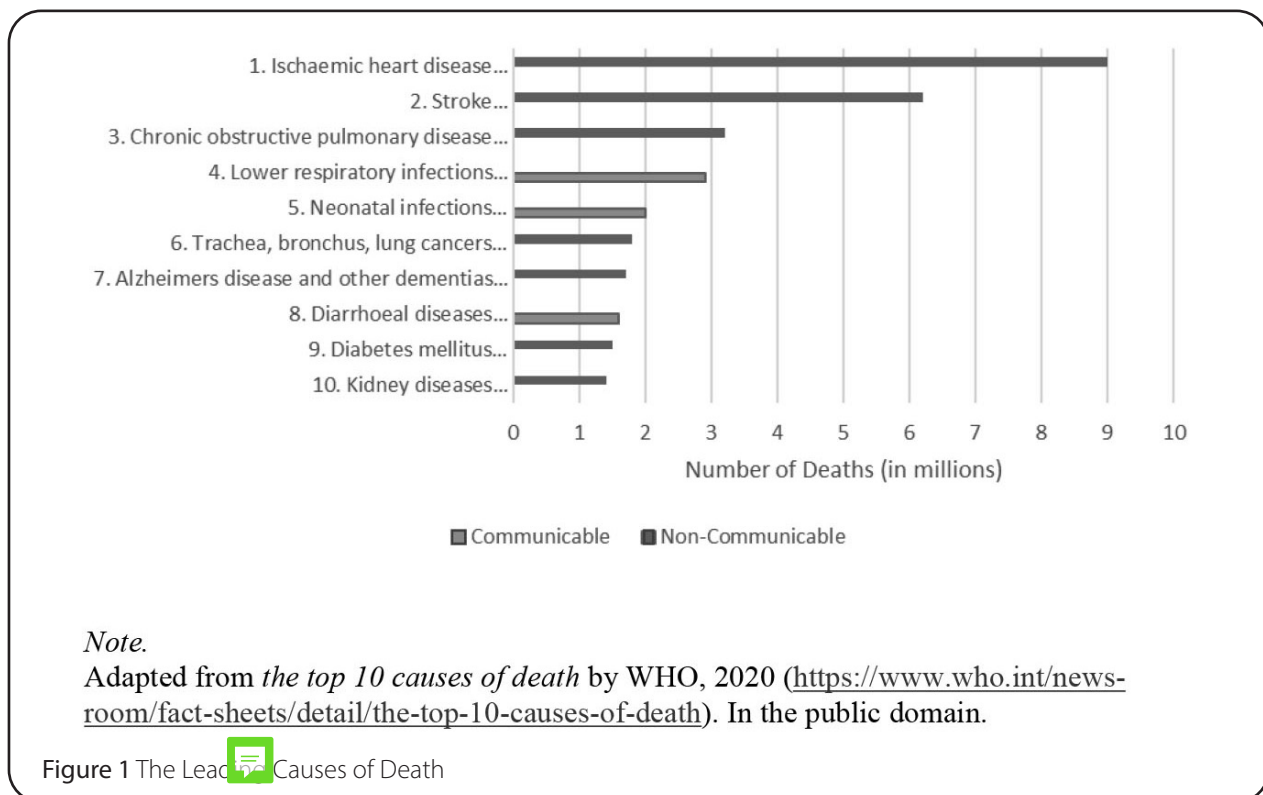


Figure 1 The Leading Causes of Death

Globally, the rising impact of NCDs has been observed over the years as mortality from NCDs has risen by 16.1% (2006 – 2016) which is 41 million deaths worldwide (estimated to reach 52 million by 2030) (Bigna & Noubiap, 2019; Wamai et al., 2018). Over this same period, deaths from all communicable, maternal, neonatal, and nutritional diseases have decreased by 24% (Wamai et al., 2018). This shift requires good data collection to inform evidence-based public health decisions, health interventions and projects that will actively work against the increasing NCD prevalence. Although this practice has already begun in the developed world but is still lacking in LMICs. This research will focus on COPD, CRDs, cancers, and mental health.

Epidemiology and Statistics

Understanding each of these diseases and their effect on the community is challenging in the world of public health but has remained a long-term goal of this particular branch of health science (Pearce N., 2011). With emerging sources of information on the onset as well as progression to complications for each of the diseases, clarity can be gained to understand the increased disability and loss of life. This will add to the growing body of knowledge that can ultimately help inform project managers and public health officials that are actively working to combat the rising prevalence of these diseases primarily in sub-Saharan Africa (SSA) with a focus on Kenya.

Sub-Saharan Africa and Kenya

Sub-Saharan Africa faces the greatest challenge from NCDs while simultaneously suffering from the largest disease burden of communicable diseases such as malaria, HIV/AIDS, TB, and other tropical diseases (Boutayeb, 2010; Gouda et al., 2019). This has made it difficult to deal with NCDs all of which require prolonged healthcare compared to communicable diseases which typically require one-time treatments. Furthermore, effective treatment needs health care professionals that are trained and readily available in the region. Unfortunately, SSA is suffering from a “brain drain” where the trained healthcare workers leave their countries to pursue better-paying jobs elsewhere. This has created a healthcare worker gap in LMICs and the SSA region of 7.2 million which is expected to rise to 12.9 million by 2035 (Siddharthan et al., 2015). The healthcare gap poses great challenges to the ability to provide quality healthcare to enough individuals in the region particularly with challenging NCD management and care.

A framework for change can be seen in the treatment of HIV/AIDS which requires antiretroviral therapy administered over a long period. This type of long-term treatment and care is similar to how NCDs are managed. Unfortunately, medication for NCDs is not easily available and this increases the costs of treatment in a region already suffering from high rates of poverty and expensive medical care (Siddharthan et al., 2015). Methods to combat this need to be

assessed and implemented to reduce the economic burden on the population living in the region and their governments.

Kenya is a rapidly developing country found in SSA which is increasingly affected by NCDs. It is estimated that 51% of Kenyan adults currently suffer from NCDs, this is projected to increase to 56% by 2035 (Smit et al., 2019). This increase has come as a result of the rapid urbanization which brings with it changes in diet, lifestyle, transport, and environmental modifiable risk factors (Demmler et al., 2017; Onyango & Onyango, 2018). Efforts to curb the prevalence of NCDs need to be aimed at these multiple sectors of life to reduce the economic impacts that NCDs have increasingly had on the health and economy of the nation.

Unfortunately, health conditions that do not include typical communicable diseases are not taken completely seriously, as a result, most health centers and community dispensaries only provide the most basic level of service (Jones, 2013). This leaves few and expensive options available for screening of NCDs which are mostly discovered after the onset of their complications (Achoki et al., 2019; Jones, 2013). These complications make treatment even more expensive as managing them can be very costly. The expenses for treating the diseases and their complications are difficult to bear in a nation that annually increases health expenditure per capita while the cost of insurance remains high and government expenditure on health remains low.

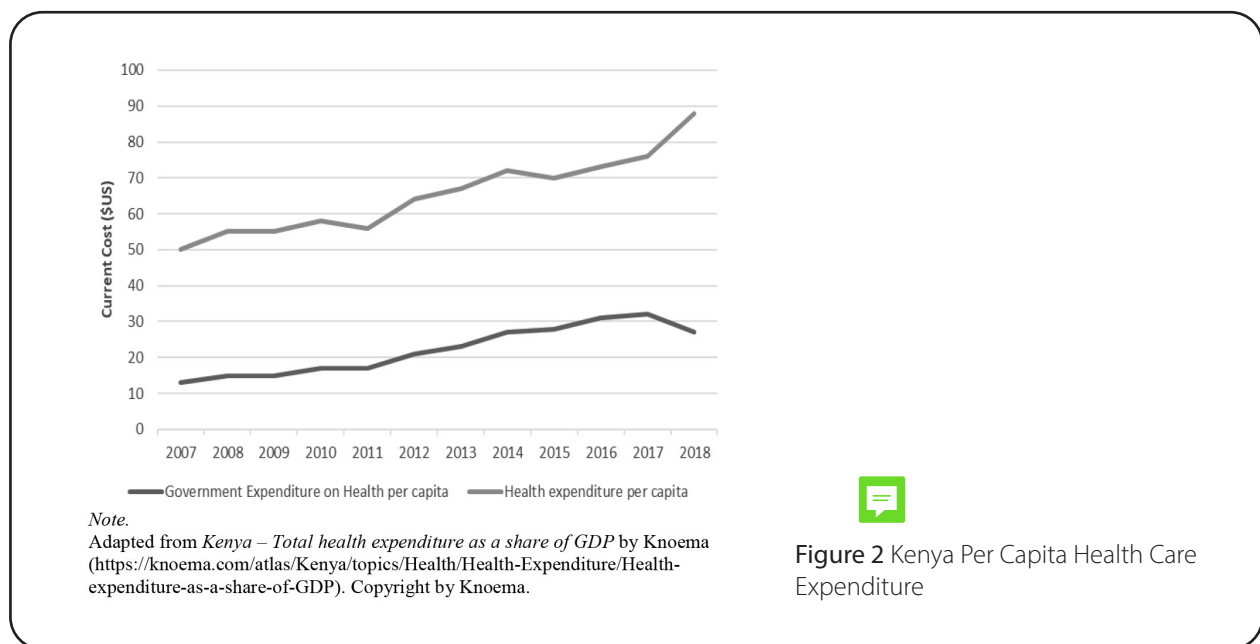


Figure 2 Kenya Per Capita Health Care Expenditure

Onset to Complication of Non-communicable Diseases

Non-communicable diseases often go unnoticed until complications arise. This is because many of them do not have easily identifiable signs and symptoms. Once these diseases progress from onset to complications, they increase the disability-adjusted life years (DALYs), otherwise defined as, the number of years lost to sickness, disability, or premature death (Achoki et al., 2019). The DALYs adversely impact the nation's economy as productive time is lost due to time spent in ill health and the lack of the ability to work (Bollyky et al., 2017). The increase in DALYs leads to a lower overall life expectancy in the nation. Unfortunately, the rising prevalence of NCDs can negatively affect the life expectancy in Kenya. To curb this rising prevalence, public health officials and policymakers should work to increase the level of knowledge and risk assessment of NCDs in Kenya with each disease being looked at individually (Fernstrom et al., 2012).

Cardiovascular Disease

Cardiovascular disease is a common term for diseases that affect the heart. These diseases include coronary heart disease, cerebrovascular disease, peripheral artery disease, and other heart diseases. Their onset is hard to notice as they typically require specialized medical screening for blood pressure and other heart problems that are indicators of CVD (Barasa et al., 2017; Bergh et al., 2017; Cosselman et al., 2015). Kenya typically has low screening rates for cardiovascular problems and diseases, which typically only occur after one or more major signs have been noticed such as chest pain, shortness of breath, and fainting (Barasa et al., 2017). If they progress to critical levels, complications such as the onset of stroke, cardiac arrest, and cardiac arrhythmia, among others, may develop. These complications make it difficult to function as a normal productive member of society.

The modifiable risk factors that cause CVD include consuming a fat-rich diet, lack of physical activity, smoking, exposure to unhealthy environments, and living/working in high-stress environments (Barasa et al., 2017; Cosselman et al., 2015; Wekesah et al., 2020). Non-modifiable

risk factors include diabetes, hypertension, obesity, age, and family history (Bergh et al., 2017; Chaudhary et al., 2016). The largest cause of death in Kenya is HIV/AIDS whose treatment consumes over 60% of all health spending costs; this has resulted in only 27% of public health centers in Kenya being equipped with supplies that can be used to treat CVD.

A survey carried out over 10 years, from 2008 to 2018 showed that CVD affected low-income households as well with 26% of all the deaths recorded in that timeframe in a local Nairobi city slum (in Kenya) being caused by CVD (Wekesah et al., 2020). Cardiovascular disease has also been reported to cause 6.1% - 7% of all mortality in the country with autopsy studies indicating that greater than 13% of deaths among adults could be due to CVD (WHO, 2018).

Fortunately, the treatment of CVD is promising in the nation as a study carried out in Western Kenya has made major milestones in clinical training, infrastructure development, leadership training, and business model development in the fight against CVD; A test cardiovascular care unit was created and monitored to assess the benefit of specialized care and results indicated an increase in the number of admissions as well as an increase in discharges after receiving care (Binanay et al., 2015).

Although this was a successful creation of a care unit, it will have to be scaled up to serve the whole nation of Kenya. There is still much work to be done in terms of screening for and the treatment of CVD if the overall mortality is to be decreased; Furthermore, capacity building for healthcare centers is also important to provide quality care to those needing treatment and management of their CVD complications (Rajesh et al., 2015).

Chronic Respiratory Diseases

Chronic respiratory diseases are a group of diseases that affect the lungs and restrict airflow which makes breathing difficult. The most common CRDs are COPD, asthma, occupational lung disease, and pulmonary hypertension. These diseases cause slightly more than 6% of all deaths worldwide with more than 90% happening in LMICs ("WHO Fact Sheet: Chronic

Respiratory Diseases,” 2021). One of the highest risk factors for developing CRD is the ageing global population; as such, they are becoming more prevalent and causing more deaths as well as disability (Burney et al., 2015).

Some CRDs cause a higher mortality rate in LMICs, such as COPD, while others like asthma are more common in developed countries; this comes as a result of there being greater exposure to polluted air from smoking, second-hand smoking, and the use of household solid fuels, which is a predominant risk factor in South Asia and SSA (Soriano et al., 2020; Jeuland et al., 2015). Socioeconomic status also impacts the prevalence, severity, and hospitalizations of CRDs and COPDs among the SSA population leading to a steadily growing epidemic in the region (Sahni et al., 2017; van Gemert et al., 2018). This is a clear indicator that the level of education, occupation, and income all play a role in the overall impact of CRDs.

In Kenya, COPD is extremely underdiagnosed and largely goes untreated, this results in COPD causing roughly the same amount of DALYs as ischemic heart disease, stroke, and epilepsy (Kariuki & Gathecha, 2018). A 5-year study between 2012 and 2016 analyzed the hospital records in 47 counties of Kenya, looking at 102,110 deceased patients from county referral hospitals, three national referral hospitals, and selected sub-county hospitals. The results showed that 323 (0.3%) deaths were due to COPD, less than the global average nearing 5% (Kariuki & Gathecha, 2018). This low percentage of deaths caused by COPD in Kenya can be seen as a result of under-diagnosis due to its contrast to the global average of 5%. Some patients may be suffering and dying from COPD without being accounted for which creates a gap in the medical reality.

Another study was done to evaluate the prevalence of acute and chronic respiratory conditions among the Maasai (an ethnic group that is primarily known for cattle herding) and two neighboring villages. Results indicate that approximately 26% of the population surveyed had complaints about their respiratory health, with conditions such as cough with fever, recurrent chest infections, upper respiratory tract infection, and likely asthma being found (Spencer, 2018). This is an indicator that even the rural regions

that historically were not reported to have any prevalent COPD conditions among them could have such cases there as well.

Intervention programs and projects should not only focus on urbanized areas but also rural regions. Although these diseases are highly associated with polluted air and lack of open spaces, those that live in rural lands are also at risk of developing COPD due to cold weather, use of household solid fuels in badly ventilated homes, and other factors (Soriano et al., 2020). It is important to train more health professionals and increase the reach of COPD care in the nation.

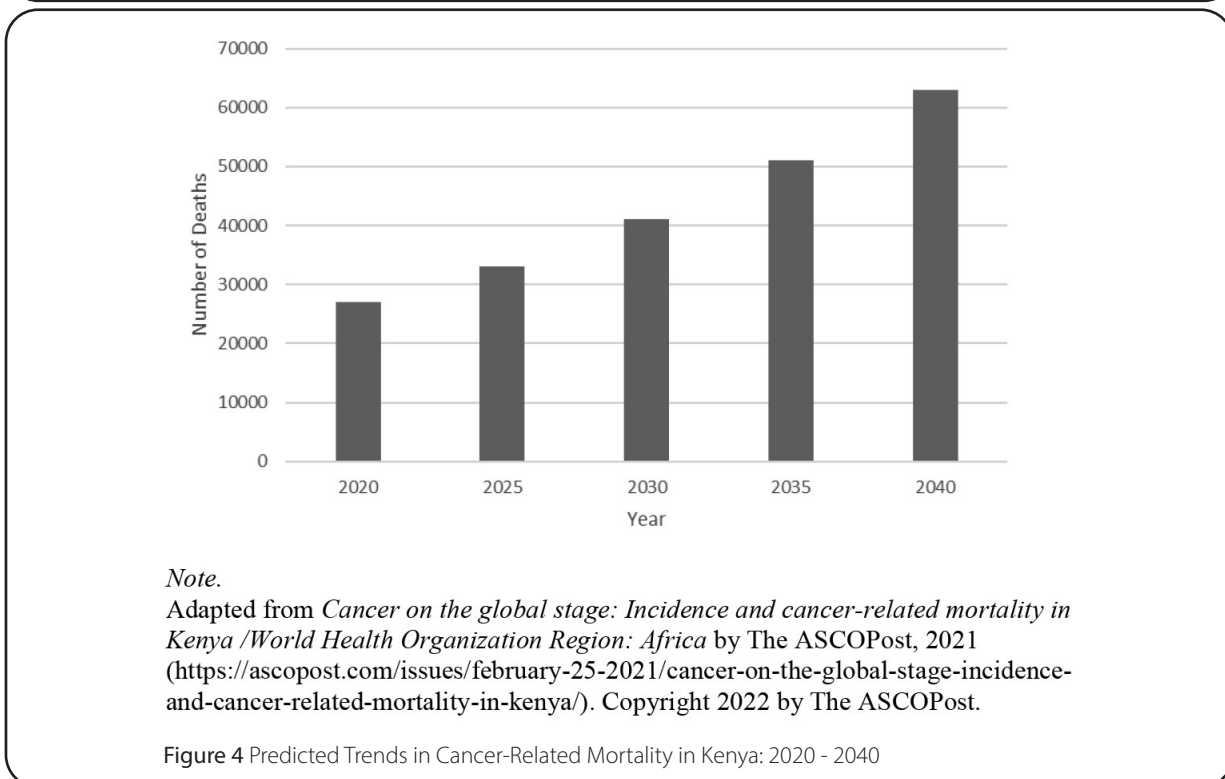
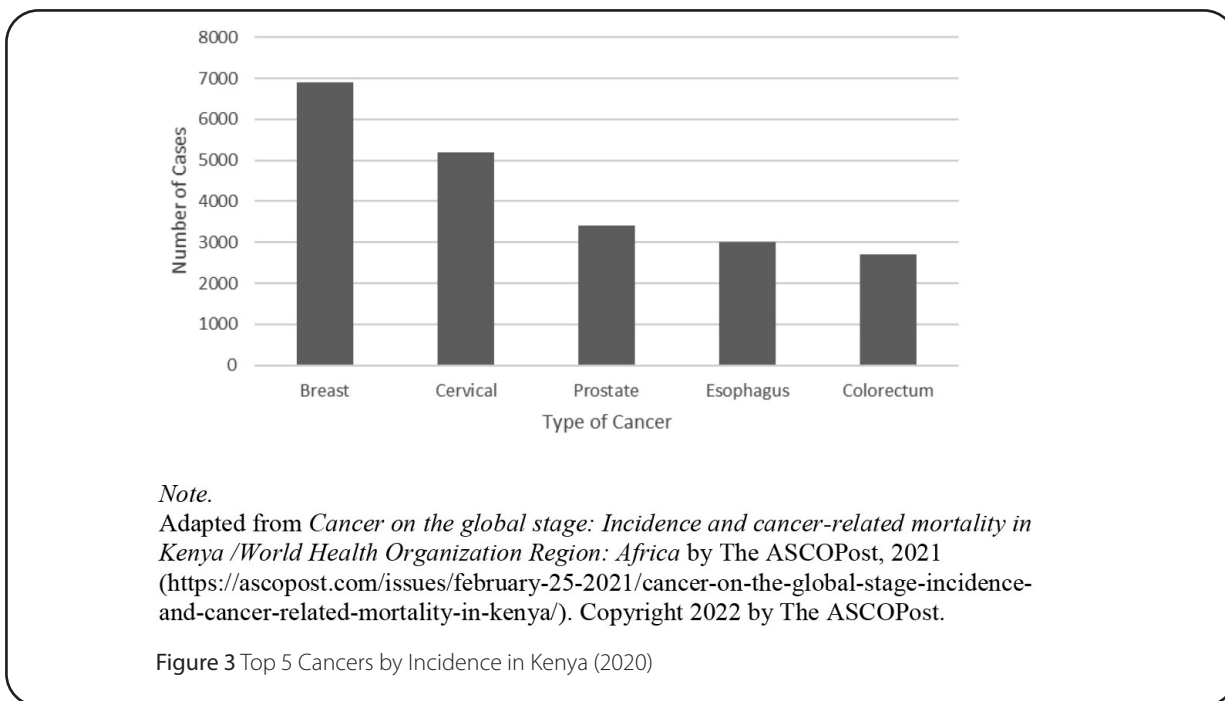
Cancer

Cancer is one of the most well-documented diseases in our world (McGuire S. 2016). From ancient times to modern times, it has been a mainstay in our world and it has affected millions of people throughout history. It is characterized by rapid and uncontrollable cell growth, which typically results from mutations, or damaged body tissue. When the cancerous cells grow, they can become malignant and spread to other areas of the body, which will then begin to grow uncontrollable cells as well (WHO, 2022). This disease can manifest in several regions around the body and is a leading cause of morbidity and mortality among women around the world, who accounted for 17.5 million cancer cases and 9 million deaths in 2015 alone (Adeloye et al., 2018).

In Kenya, cancer is the 3rd highest cause of mortality (7% annually) with the majority of victims being less than 70 years of age (Weru et al., 2020). The nation has witnessed an increased incidence of cancers from 37,000 to 47,887 new cases annually between 2012 – 2018 and a 16% increase in mortality over the same period (Jani et al., 2021). A randomized control trial was carried out at a private hospital in Kenya, including 144 cancer patients, in an attempt to improve their overall quality of life by providing affordable ‘dignity therapy. The results showed that barring a change in appetite, mild anxiety, and wellbeing, there was no statistical improvement in overall quality of life for late-stage cancer patients (Weru et al., 2020). This is a worrying sign as most people are unable to present themselves for treatment due to economical and psychosocial

factors, and without being able to provide affordable patient therapy, the death rate will most likely increase.

The five most common types of cancers in Kenya are breast, cervical, prostate, oesophagal, and colorectal cancer (see Figure 3). Although there are fully established chemotherapy centers and cancer treatment facilities in Kenya, there is still a projected increase (see Figure 4) in cancer incidences and mortality over the next four decades primarily affecting women and those who cannot afford treatment (Jani et al., 2021). This increase goes hand in hand with the rapid urbanization in the country which increases the likelihood of developing lifestyle-related diseases such as cancer (Hui, 2018; Momenyan et al., 2016; Wen et al., 2018). The concerning trend of cancer prevalence in the country has led to an increased need for studies that look at the changing Kenyan environment and how it is affecting the proliferation of the disease.



Diabetes

Diabetes is a lifestyle-related disease that has two types, Type 1 (T1D) and Type 2 Diabetes Mellitus (T2D). Type 1 Diabetes is a chronic disease that is characterized by the insufficient production of insulin by the pancreas. It is caused by the immune system attacking and destroying insulin-producing beta cells in the pancreas and often appears during the adolescent years (Katsarou et al., 2017). Due to its status as an autoimmune disease, this research focuses on T2D which is more common.

Approximately 415 million people worldwide are suffering from diabetes (global prevalence of 9.3%) with an estimated 193 million living with undiagnosed cases; of the total known cases, 90% are suffering from T2D (Chatterjee et al., 2017; Saeedi et al., 2019). The global prevalence of the disease has been rising due to lifestyle habits and changes to the diet, level of physical activity, and environment. This global prevalence has also been noticed in SSA with local nations being estimated to have the highest number of undiagnosed cases; Kenya, in particular, has reported that only 41% of those living with diagnosed T2D receive treatment with a meagre 7% being able to control the disease (Shiroya et al., 2019).

A cross-sectional study was done in Kenya to establish the knowledge of diabetes and the attitudes of the people towards the disease in rural areas. It was discovered that only 27.2% of all respondents (1982 total) had sufficient knowledge of the disease with only 49% having positive attitudes towards it (Maina et al., 2010). These knowledge and attitude levels have not changed much over the last 10 years, primarily in rural areas which result in the disease being discovered only after complications appear (Jones, 2013; Mohamed et al., 2018; Shiroya et al., 2019).

The cases of T2D that are diagnosed in Kenya typically result from patients visiting hospitals to treat irreversible complications that were thought to be isolated. Some common complications of the disease include hypertension, cataracts, diabetic retinopathy, and nephropathy (Ekoru et al., 2019). Left unchecked, these complications can lead to loss of vision, CVD, end-stage renal

disease, and lower-limb amputations (Shannon et al., 2019). These complications can increase the overall DALYs as well as lower the economic output of the nation as people are unable to work and contribute to the Gross Domestic Product; They are chronic and can only be managed throughout the remainder of a patient's life (Ekoru et al., 2019).

Mental Health

The WHO defines mental health as “a state of well-being in which the individual realizes his or her abilities, can cope with the normal stresses of life, can work productively and fruitfully, and can contribute to his or her community” (WHO, 2004). Although this has been a longstanding definition of mental health, there is little consensus over whether it is adequate to define the complex nature of an individual's mental health (Manwell et al., 2015). However, mental health illness is considered to be a major noncommunicable disease that is increasing in prevalence globally with depression being one of the leading causes of disability globally (WHO, 2022b).

Kenya has seen a rise in mental health disorders, this has resulted in the Taskforce on Mental Health recommending that mental illness should be declared a National emergency of epidemic proportions in the nation (Kenya Ministry of Health, 2020). Increased prevalence of mental illnesses (the largest increase among depression cases) has also led to a comorbid rise in substance abuse such as tobacco usage which can further increase the risk of developing respiratory illnesses (Olando et al., 2019). There is a large gap in treatment for mental health illnesses in the nation which can only be addressed if people in the nation see it as a pressing issue and legitimate threat to their overall health.

A 2015 study was done involving 684 general hospital staff; including nurses, doctors, registered clinical officers, students, and support staff as it aimed to determine what the level of knowledge was among them on mental health issues as well as their attitudes and beliefs about mental health among general hospital staff. It was concluded that the attitudes toward mental health by the staff were greatly influenced by a lack of knowledge of mental illnesses (Ndeti et al., 2011). Unfortunately, the lack of knowledge

is a common hindrance to the provision of quality mental healthcare in the country as many people still turn to traditional healers who can recognize some mental illnesses but treat them inadequately (Mbwayo et al., 2013; Musyimi et al., 2017).

To address this treatment gap and lack of adequate knowledge, education practices must begin to include information on mental health illnesses and their impact on society at an early age. Cross-sectional survey data shows that stigmatizing attitudes towards those that are mentally ill are prevalent among elementary school children in Kenya which gives rise to lower treatment uptake and an increased treatment gap in the nation (Ndetei et al., 2015).

Critical Analysis

Non-communicable diseases are increasingly becoming more prevalent in Kenya and this is a major concern in the public health sector. This increase is closely associated with the rapid urbanization happening in the country and the presence of major lifestyle changes that lead to the consumption of more processed and refined foods, less physical activity, higher exposure to polluted air, and a high-stress environment (Jeuland et al., 2015; WHO, 2022a).

Although these lifestyle-related diseases have also been present in high-income countries, their robust medical systems have been able to tackle them by providing more screening centers, high-end interventions, as well as affordable healthcare (Ezzati M. et al., 2018). In Kenya, this is difficult to do as the medical infrastructure lacks sufficient resources and capabilities to provide efficient and sufficient screening services. Those that are available are expensive or out of reach for those living in rural areas. All of this is increased by the lack of knowledge of lifestyle-related diseases and their complications as well as stigma and ignorance of emerging and less marked medical conditions (Demmler et al., 2017; Onyango & Onyango, 2018; Smit et al., 2019).

There also needs to be a larger number of trained professionals that are encouraged to stay in the country. An initiative to increase the number of trained professionals that stay in the country as well as those who receive continued medical education should be carried out. Their

compensation should also rise along with their speciality levels and years of training. This will help to make the jobs in Kenya more attractive and slow down the “brain drain” that is occurring in the nation while simultaneously increasing the quality of healthcare provided by medical centers.

The lack of sufficient education on lifestyle-related diseases, particularly T2D and mental health, should be addressed. Lessons can be learned from the efforts put into teaching people about HIV/AIDS and applied to lifestyle-related diseases. Mass media as well as small classroom lessons and discussions should be used to teach adults at work as well as children in schools about the dangers of lifestyle-related diseases (Su et al., 2021; Thornicroft et al., 2016). Without this, there is little change that can happen right now or in the future. To safeguard against the current trends and get positive results, the importance of education and spreading knowledge of the diseases cannot be overestimated.

With the current trend of these diseases, there may soon be a crisis that the health system in the country cannot handle. These conditions are prime for a devastating blow to the life expectancy as well as the economic output of the nation which may impact more than those living in wealthier urban areas. The gap between the wealthy and the poor is also a worrying statistic as the majority of Kenyans find it difficult to afford healthcare or insurance. This leaves the poor vulnerable to lifestyle-related diseases and their complications.

Recommendation

Lifestyle-related diseases are on the rise in SSA. They will continue to do so and cause problems in LMICs such as Kenya. It is recommended that the nation of Kenya should work efficiently to reduce the increasing prevalence of these conditions. Listed below are several goals that can be used when beginning to address the diseases.

- Restructure the government health budget to include increased allocations for addressing lifestyle-related diseases.
- Implement policies that protect individuals from risk factors such as physical inactivity and an unhealthy diet at work.

- Increase the present screening and treatment options in the country and invest in training locals.
- Educate the citizens on lifestyle-related diseases, their epidemiology, and ways to manage them.
- Evaluating the current environment and running public health programs to help create a healthier environment conducive to mental and physical health.

By focusing on these five components, the nation can begin working towards a healthier population and reduce the prevalence of lifestyle-related diseases.

Conclusion

Lifestyle-related diseases present an ever-increasing danger in Kenya. Some of the nation's prevalent lifestyle-related diseases include CVDs, COPD, cancers, diabetes, and mental illnesses. Their prevalence has increased over the last 10 years in the nation and has been silently wreaking havoc among a population that is not well educated on the topic. It is difficult to diagnose these conditions as they show no symptoms until they are advanced enough to cause complications that lead to major disability. Intervention plans need to focus on

the holistic aspects of health and include plans for the environment, increasing physical activity, improving the available diet, working on public health policy, and increasing education about lifestyle-related diseases. Unfortunately, these interventions also face a resistant population that has an underlying negative stigma against mental illnesses. This stigma can be found among primary school children as well as adults in the nation. Many people will turn to traditional healers who can identify some mental illnesses that are presented to them but they fail to properly treat them. This allows the treatment gap to stay large in the country as there are not enough trained professionals and high-quality screening and treatment services for these diseases. With enough dedicated focus on understanding and treating lifestyle-related diseases, there can be positive progress made to reverse the increasing trend of lifestyle-related diseases in the country.

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