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Epidemiology, Prevention and Management of Non-Communicable Diseases (NCDS): A Review

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Abstract

There is no doubt that each year, NCDs cause 40 million deaths worldwide and are typically caused by a confluence of genetic, physiological, environmental, and behavioural factors. This review targeted investigating the epidemiology, prevention and management of NCDs. The four major NCDs in the world are heart disease, cancer, chronic respiratory disorders, and diabetes; and the five main risk factors for them are tobacco use, physical inactivity, excessive alcohol use, poor diets, and air pollution. The prevalence of NCDs in contemporary society is a serious threat to world health, necessitating coordinated efforts and creative approaches to management and prevention. Understanding NCD aetiology, prevalence trends, and the complex web of risk factors is essential for creating preventive and

management measures. The management of risk factors is crucial to the control of NCDs. The management of NCDs necessitates various approaches from various angles and at multiple levels, including national and individual. Governments, healthcare providers, researchers, and communities must work together to solve systemic, cultural, and economic obstacles in the fight against NCDs. These approaches include the implementation of thorough policy frameworks, utilizing technology, emphasizing health education, and encouraging interdisciplinary research. In light of the increased prevalence of NCDs, a healthier future will be made possible by embracing innovation, international cooperation, and a dedication to health fairness. Comprehensive prevention methods that address the underlying causes of NCDs and promote a culture of health are required. Building a healthier future for future generations will depend heavily on our ability to collaborate, innovate, and prioritize health equity as we negotiate the complicated terrain of NCD prevention.

Introduction

It is no doubt that for hundreds of years, communicable diseases or infectious diseases were the main cause of death worldwide as uncontrolled epidemics were the main threat to life expectancy. As the world entered a new millennium, with medical achievements in terms of vaccination, antibiotics, and improvement of life conditions, non-communicable diseases (NCDs) started taking place in industrialized countries (Singh & Bharti, 2021). In recent times, NCDs have become a toil in people's lives. Non-Communicable Diseases (NCDs), also known as chronic diseases are characterized by non-contagious nature, multiple risk factors, a long latency period, a prolonged temporal course, functional impairment or disability and incurability (i.e., a complete cure is rarely achieved) (Piovani et al., 2022). They are usually a result of a combination of genetic, physiological, environmental and behavioural factors (World Health Organization [WHO], 2024). However, the term NCDs has been extended to

cover a wide range of health problems such as hepatic, renal, and gastroenterological diseases, endocrine, haematological and neurological disorders, dermatological conditions, genetic disorders, trauma, mental disorders and disabilities (e.g., blindness and deafness) (Budreviciute et al., 2020).

In terms of statistics, NCDs account for over 41 million deaths each year, equivalent to 74% of all deaths globally, whereas many more millions of people are living with NCDs and experience a reduced quality of life (Vos et al., 2019). There are four dominant types of NCDs by classification and they include: Cardiovascular diseases including heart disease and stroke accounting for 17.9 million deaths per year, Cancers accounting for 9.3 million deaths per year, Chronic respiratory diseases including chronic obstructive pulmonary disease and bronchial asthma accounting for 4.1 million deaths per year, and Diabetes mellitus accounting for 2.0 million deaths per year (Piovani *et al.*, 2022; Vos *et al.*, 2019). This is summarized in Figure 1.

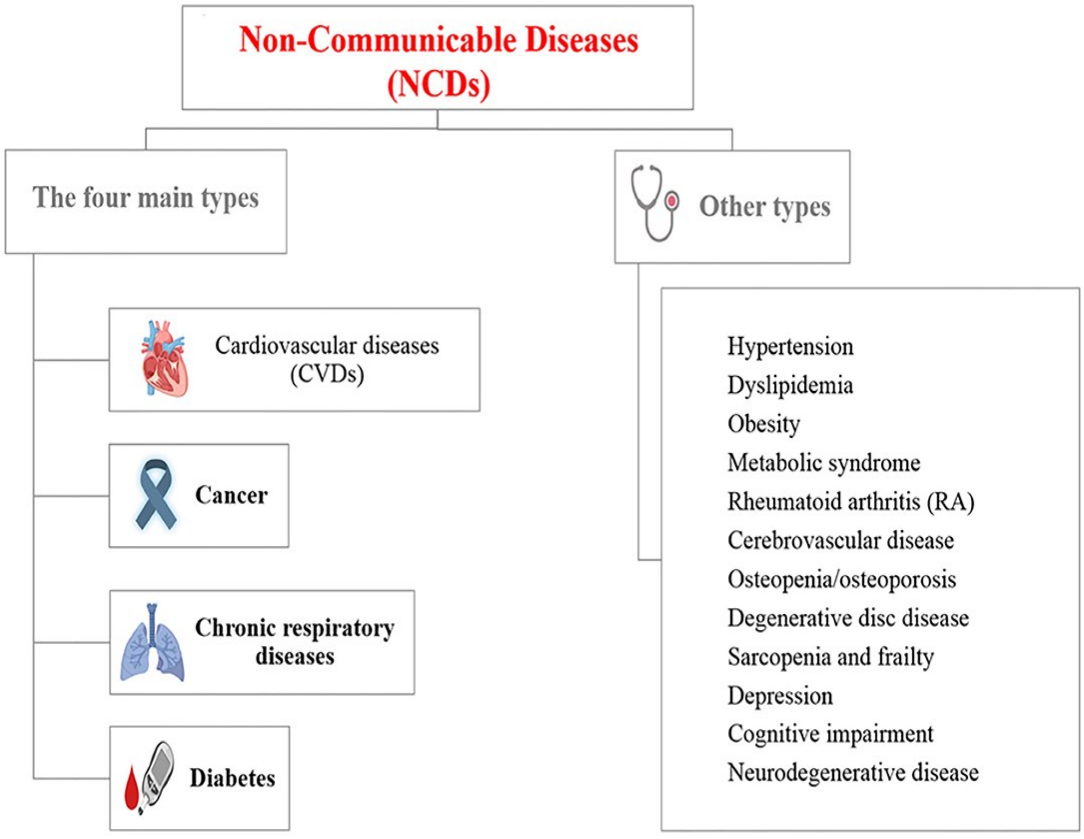

Figure 1: List of non-communicable diseases (NCDs) (Budreviciute *et al.*, 2020).

The lists of NCDs that impose heavy morbidity and mortality toll include neurological and mental health diseases (e.g., Alzheimer's disease, Parkinson's disease, depressive disorders, substance use disorders, and schizophrenia), glaucoma and hearing loss, digestive diseases (e.g., peptic ulcer, liver cirrhosis, and inflammatory bowel diseases), musculoskeletal diseases (e.g., rheumatoid arthritis, osteoarthritis, osteoporosis, gout, back pain, and trauma), chronic kidney disease, autoimmune conditions and others (Babashahi et al., 2021). In most low- and middle-income countries (LMICs), the prevalent of NCDs are coronary heart disease, hypertension, stroke, diabetes, asthma along chronic hepatic and renal disease (Musonda et al., 2024; Ndumwa et al., 2023).

Research linking clinical and lifestyle risk factors to increased risk of non-communicable disease is now well established with examples of confirmed risk factors including smoking, physical inactivity, obesity and hypertension (Peters et al., 2019). The vulnerability of NCDs and risk factors is spread all over age groups including children, adults and the elderly. These diseases were thought to be associated with economic development and so-called diseases of the affluent societies. Then the dawn of the 21st appeared sweeping the entire globe with an increasing trend in developing countries (Singh & Bharti, 2021).

Epidemiology

NCDs are collectively responsible for 74% of all deaths worldwide. People of all age groups, regions and countries are affected by NCDs and these conditions are often associated with older age groups, but evidence shows that 17 million NCD deaths occur before the age of 70 years. More than three-quarters of the deaths (31.4 million) and 86% of the 17 million people who died prematurely, or before reaching 70 years of age occurred in low- and middle-income countries (WHO, 2024). In the past decades, the NCD burden increased rapidly in low- and middle-income countries. According to the Global Burden of Disease (GBD) study, NCDs accounted for 56.8% of total deaths in LMICs in 1990 and it increased to 74.4% in 2019. The disability-adjusted life years (DALYs) attributed to NCDs in LIMCs increased from 37.8% to 66.0% during the same period (Peng et al., 2023)

In the Region of the Americas, 5.5 million deaths are by NCDs and 2.2 million deaths are between the ages of 30-69 years (Pan American Health Organization [PAHO], 2023). In the United Kingdom, an estimated 89% of deaths are due to NCDs (Robbins et al., 2021). In Sub-Saharan Africa, NCDs were responsible for

37% of deaths in 2019, rising from 24% in 2000 largely due to weakness in the implementation of critical control measures including prevention, diagnosis and care. They are also responsible for 50-88% of deaths in seven small island nations (WHO, 2022).

NCDs caused nearly two-thirds of all deaths in WHO-recognized countries in the Southeast Asia Region in 2021, with half of the deaths in the age group 30-69 years (de Silva et al., 2023). They are the pivotal cause of disease burden and mortality in the Asia Pacific Region claiming 75% of total life in the region. The region is experiencing a rapid in NCD-related deaths (Low et al., 2015).

Possible Risk Factors

Several factors can increase the risk of developing NCDs, they are classified as: Non-modifiable factors such as age, gender, genetic factors, race and ethnicity; and Modifiable factors which are classified into; Metabolic or biological e.g. excess weight/obesity, hyperglycemia, hypertension and hyperlipidemia; Behavioural factors e.g. unhealthy diet, tobacco use, physical inactivity, and harmful use of alcohol and other substances; and Social factors which involve complex combinations of interacting socioeconomic (e.g. poverty, low public spending on health, limited access to health services) and environmental parameters (e.g. climate change, sunlight and air pollution) (Piovani et al., 2022).

According to WHO (2024), NCDs share five major risk factors as tobacco use, physical inactivity, the harmful use of alcohol, unhealthy diets and air pollution. These diseases are driven by forces that include rapid unplanned urbanization, globalization of unhealthy lifestyles and population ageing. Unhealthy diets and lack of physical activity may show up in people as raised blood pressure (hypertension), increased blood glucose (hyperglycemia), elevated blood lipids (hyperlipidemia), and obesity or overweight and can lead to cardiovascular diseases. In terms of attributable deaths, the leading metabolic risk factor globally is hypertension (to which 19% of global deaths are attributed), followed by hyperglycemia and overweight and obesity (WHO, 2024). Tobacco accounts for 8 million deaths every year (including from the effects of exposure to second-hand smoke), 1.8 million annual deaths have been attributed to excess salt/sodium intake, more than half of the 3 million annual deaths attributable to alcohol use are from NCDs, including cancer and 830,000 deaths annually can be attributed to insufficient physical activity (WHO, 2024).

Several environmental risk factors contribute to NCDs, air pollution is the largest of these accounting for 6.7 million deaths globally, of which about 5.7 are due to NCDs. Including stroke, ischaemic heart diseases, chronic obstructive pulmonary diseases and lung cancer (WHO, 2024). Socio-economic impact: Poverty is closely linked with NCDs. Vulnerable and socially disadvantaged people get sicker and die sooner than people of higher social positions especially because they are at greater risk of being exposed to harmful products, such as tobacco, or unhealthy dietary practices and have limited access to health services. In low-resource settings, health-care services for NCDs quickly drain household resources. The exorbitant costs of NCDs, including treatment, which is often lengthy and expensive, combined with the loss of income, force millions of people into poverty annually and stifle development (WHO, 2024; Singh & Bharti, 2021).

In developing countries NCDs are also emerging as a major public health concern, and this is believed to be an attribute of the effects of industrialization e.g. adoption of a sedentary lifestyle, poor nutrition, cigarette smoking and risky alcohol intake, coupled with improved healthcare in infection control general mean life expectancy (Singh & Bharti, 2021; Baye & Hirvonen, 2020). This is summarized in figure 2.

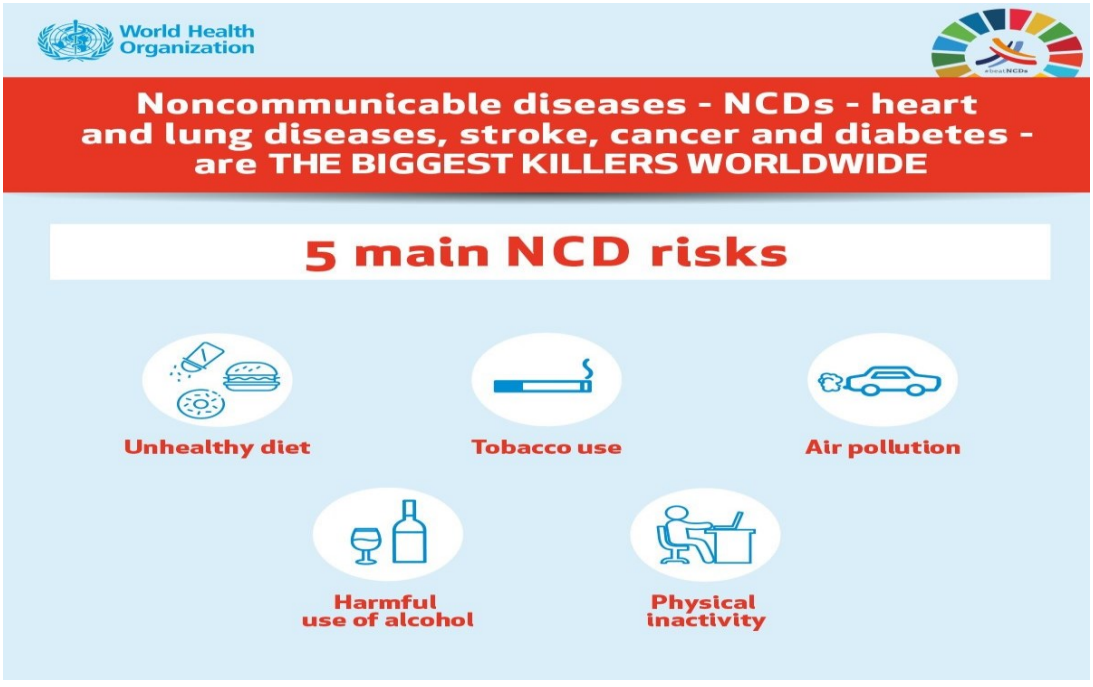

Figure 2: The major risk factors of NCDs (WHOb, 2024)

The Four Key Diseases of NCDs

Cardiovascular Diseases (CVDs): CVDs are the leading contributors to the global burden of diseases among NCDs and account for the most deaths worldwide each year (Blundell & Hine, 2019). CVDs are a group of disorders that are not only related to heart conditions such as ischemic heart disease (IHD), stroke, congenital heart disease, coronary heart disease, cerebrovascular disease, peripheral arterial disease, and rheumatic heart disease, but also blood vessel that involve hypertension, and conditions that associated with cerebral, carotid, and peripheral circulation (Benjamin et al., 2018). CVDs affect both sexes, men suffer from higher incidences than women, but it is the leading cause of death in women in developed countries. According to the American Heart Association, seven key health factors contribute to the increasing risks of heart diseases and stroke: nutrition, smoking, overweight/obesity, physical inactivity, uncontrolled blood pressure, elevated levels of cholesterol, and blood sugar (Budreviciute et al., 2020).

Cancers: Cancer is the main public health problem and the second main cause of death globally, the causes of cancer can be classified into three categories; Biological carcinogens such as viral, bacterial, or parasitic infections, hormonal and genetic factors; Chemical carcinogens such as food and water contamination, and tobacco smoking; and Physical carcinogens such as ultraviolet and ionizing radiation (Budreviciute et al., 2020). According to a WHO report in 2018, the most common cancers are lung, breast, colorectal, prostate, skin and stomach, while most cancer deaths are from cancer of the lung, colorectal, stomach, liver and breast (Budreviciute et al., 2020). Lung cancer is the most common cancer in the world mainly as a result of smoking and the risk increases in heavy smokers. Physical inactivity and dietary habits contribute to breast cancer, which is the second most common cancer in the world and the most common cancer in women, also colorectal cancer is strongly associated with diet as high intakes of meat and fat, and low intakes of fruits and vegetables, dietary fibre, vitamins and minerals are related to an increased risk (Budreviciute et al., 2020).

Chronic Respiratory Diseases (CRDs): CRDs cover a wide range of diseases in the airways and other structures of the lung, most of the morbidity and mortality of CRDs is increased with age. CRDs include chronic obstructive pulmonary disease (COPD), occupational lung diseases, asthma and respiratory allergies, sleep apnoea syndrome, and pulmonary hypertension. Asthma and

COPD account for the most deaths in low- and middle-income countries (Wang et al., 2016). Genetic and environmental factors are the risk factors for CRDs. Environmental factors are more dominant, these factors include air pollution exposure, including tobacco smoke and second-hand tobacco smoke, indoor and outdoor air pollution, occupational exposure and socioeconomic factors (Budreviciute et al., 2020).

Diabetes Mellitus: Diabetes has attracted global attention due to its elevating prevalence and incidence. It is not only a chronic disease, but also an acutely life-threatening condition, it may cause other serious diseases such as heart diseases, kidney failure, and eye damage, which may subsequently lead to blindness and foot ulcers which may require limp amputation. The main two types of diabetes both lead to hyperglycemia. In type 1, the pancreatic β-cells cannot produce a sufficient amount of insulin, while in type 2, the body cells cannot respond properly to insulin (Bellou et al., 2018). Other types of diabetes involve gestational diabetes mellitus, which occurs in pregnant women with glucose intolerance and type 3 diabetes which is associated with Alzheimer's disease, where neurons in the brain cannot respond to insulin. While diabetes can be partially inherited, several lifestyle factors, such as obesity, high sugar consumption, and lack of physical activity can significantly contribute to the progress of diabetes (Budreviciute et al., 2020).

Challenges Pose by NCDs

NCDs have emerged as a formidable global health challenge, presenting a complex web of hurdles that impact individuals, communities, and entire healthcare systems. One of the primary challenges posed by NCDs is the significant economic burden they impose on both individuals and societies (Maduka et al., 2023). The direct healthcare costs associated with managing NCDs, including diagnosis, treatment, and long-term care, contribute to skyrocketing healthcare expenditures. Indirect costs, such as loss of productivity due to disability and premature mortality, further compound the economic impact (Omotayo et al., 2024).

The rising prevalence of NCDs places an immense strain on healthcare resources globally. Chronic conditions often require long-term management and specialized care, necessitating sustained investments in healthcare infrastructure, workforce training, and medical technologies. Limited resources, particularly in low- and middle-income countries, exacerbate the challenge,

leading to difficulties in providing timely and comprehensive care. Disparities in access to quality healthcare services represent a critical challenge in the global fight against NCDs (Achwoka et al., 2020). Vulnerable populations, including those in low socio-economic brackets, rural areas, and marginalized communities, often face barriers to accessing timely diagnosis, treatment, and preventive interventions. These disparities contribute to unequal health outcomes, perpetuating cycles of illness and hindering progress in NCD management (Omotayo et al., 2024).

The complex interplay of genetic and environmental factors adds another layer of challenge to understanding and managing NCDs (Budreviciute et al., 2020). While genetic predispositions may increase susceptibility to certain conditions, environmental factors such as air pollution, unhealthy diets, and sedentary lifestyles significantly contribute to disease development. Unravelling the intricate connections between genetics and the environment is crucial for developing targeted interventions and precision medicine approaches (Omotayo et al., 2024).

Limited access to preventive measures, insufficient healthcare infrastructure, and competing health priorities, including the persistence of infectious diseases, contribute to the complexity of NCD management in these settings. (Alkhatib et al., 2021). Policymakers, healthcare professionals, researchers, and communities must collaborate to implement effective strategies. This includes investing in preventive measures, optimizing healthcare systems, promoting health equity, and fostering international collaborations. By adopting a holistic perspective, it becomes possible to navigate the intricate challenges posed by NCDs and work towards a healthier global population. In conclusion, the challenges posed by Non-Communicable Diseases are complex and multifaceted, demanding thoughtful and strategic interventions (Chaisson, 2020). From economic implications to disparities in access to quality care and the intricate interplay of genetic and environmental factors, each challenge requires targeted efforts for mitigation. As the global community grapples with these hurdles, a commitment to innovative solutions, health equity, and collaborative action is essential to pave the way for a healthier future in the face of the rising tide of NCDs (Omotayo et al., 2024).

Preventive Measures for NCDs

Although the burden of NCDs is increasing at an unprecedented rate globally and the surge in recent years strains the already weakened health system in low- and middle-income countries, such countries are making various efforts to contain the unprecedented burden, drawing several lessons from one another

in reaching epidemiological control (Ngowi et al., 2023). To combat the rising tide of NCDs, preventive strategies have taken centre stage in global health agendas (Owusu et al., 2023). These preventive strategies of NCDs can include small and large-scale human cooperation. The importance of preventing NCDs arises from the direct impact of NCDs on the decreasing rate of national income. Loss of productivity on a large scale is the result of the inability to work and the frequent absence of threats to the national economy (Budreviciute et al., 2020). The management strategy to prevent NCDs is based on risk factor management that addresses individual, society, country, and global levels, with actions, such as resource allocation, multi-sectoral partnership, knowledge and information management and innovations. The most critical dimension of the prevention strategy is lifestyle management at the individual level and with a focus on actions, such as innovations, which can help the society to increase the awareness of risk factors management, to take health policy decisions at a country level and to develop a health strategy at the global level. The importance of leadership for the change management process is underscored and requires the creation of new approaches to the prevention of NCDs (WHO, 2013).

At the global level, WHO and UN agencies can work together to design policies and strategies to reduce the risk of NCDs (Lim et al., 2014). It is important to monitor NCDs and to assess their progress at the national, regional and global levels. These organizations can support research and encourage collaborations among national and international health agencies and academic institutions. Further, tobacco smoke, as a common factor of the four main types of NCDs, must be put under control (Phillips et al., 2019; Budreviciute et al., 2020).

The WHO offers help to smokers who have the desire to stop using tobacco products and to implement rules to propose a smoke-free environment. Further, WHO can, by law, protect tobacco control policies from the commercial interests of the tobacco industry (Omotayo et al., 2024). At the country level, each government needs to design its plan based on its economy. Several low-cost and highly effective strategies are available to prevent and manage NCDs (Rogge, 2018). For example, encouraging people to play sports for physical activity is the most effective factor that can easily influence the prevention of NCDs, and at the same, it is time and cost-effective. Moreover, improved budgetary allocations to support primary healthcare systems should be put in place to provide health services to all community members. To achieve large-

scale progress, collaboration between governments and various non-governmental organizations, schools, and universities, to provide advice on lifestyle modifications and to warn people about the risks of NCDs, is in high demand (Budreviciute et al., 2020). At the societal level, research centres and institutes can significantly contribute to the prevention of NCDs by conducting research projects and programs. Focusing research on food biotechnology and agriculture has a direct influence on NCD risk (Francesco et al., 2019).

The development of diagnostic tools allows for the rapid detection of NCD biomarkers with high sensitivity to help detect diseases at their early stages, which subsequently contributes to easier treatment and faster cures (Damiati et al., 2019). Screening programs for conditions such as breast cancer, cervical cancer, and diabetes enable the identification of risk factors and early-stage diseases (Omotayo et al., 2024). Unhealthy dietary patterns and sedentary lifestyles are key contributors to NCDs particularly obesity, diabetes and cardiovascular diseases. A global shift towards promoting healthy diets and physical activity has gained momentum (Omotayo et al., 2024). However, to reach the highest attainable standard of health, it is important to encourage individuals and families to follow a healthy lifestyle to get an effective response for prevention and the control of NCDs and to improve health outcomes (Rogge, 2018).

The integration of technology has revolutionized NCD prevention, offering novel avenues for awareness, monitoring, and intervention. From mobile health applications to wearable devices, technology plays a pivotal role in fostering behavioural change and facilitating remote healthcare (Omotayo et al., 2024). While prevention strategies have made significant strides, challenges persist in their effective implementation. Limited resources, cultural barriers, and the need for cross-sectoral collaboration pose hurdles to achieving widespread success (Obeagu et al., 2023). Addressing NCDs necessitates international collaboration, with countries sharing best practices, research findings, and successful interventions (Malekzadeh et al., 2020). Precision medicine, personalized health interventions, and the incorporation of artificial intelligence offer new possibilities. (Akseer et al., 2020). This section delves into the importance of policy development and implementation, showcasing successful models and advocating for policies that foster long-term global health resilience in the face of NCDs. In conclusion, the global fight against

NCDs demands a unified front that spans nations, communities, and disciplines (Dai & Menhas, 2020).

Management of NCDs and their Risk Factors

Management of the Risk Factors

The most common causes of NCDs are metabolic and behavioural risk factors and can be largely preventable by several available means. Most global discussions concern the risk factors of self-management (such as tobacco and alcohol consumption, physical activity, weight, food and dental health care), and focus on the role of individual responsibility to manage the risk factors of NCDs (Budreviciute et al., 2020). Healthcare specialists should educate patients about their nutritional value and raise the profile of didactics, practicums, and workshops in daily practice (Johnsons et al., 2019).

Furthermore, the management of NCDs is the priority of the public health sector in most countries, because management in society is the main direction of NCD prevention strategies. Interventions are used in public health management to promote good health behaviour (Budreviciute et al., 2020). For example, in responding to the increasing NCD burden, the government of Tanzania has strived to strengthen access to quality health services, policies, and strategies informed by local evidence on NCDs. In collaboration with other stakeholders, the government has established and implemented initiatives to curb this unprecedented threat to national development. The Ministry of Health (MoH) in Tanzania, in collaboration with the Tanzania Non-Communicable Diseases Alliance (TANCDA), Tanzania Diabetes Association (TDA), and other stakeholders, pioneered the development of a National Strategic Plan for NCDs and the development of the National NCD Control and Prevention Program (Ndumwa et al., 2023). From another approach, researchers also highlight the environmental factors and their impact on NCD development. Air pollution will be an important challenge in the future and new technologies, such as microchips will have more of an impact on air monitoring (Schultze et al., 2017).

Diet is a common risk factor among NCDs, it attracts more attention to finding effective strategies to provide healthy food to the community and at all stages of life. Evidence-based nutrition interventions should be a global health priority (Billingsley et al., 2018). Many interventions addressing poverty and development have an impact on NCD prevalence and risk, the current evidence

is limited to diets, and the positive of agricultural-based food security programs on diet indicators has been suggested (Pullar et al., 2018). Strategic health communication in the population-wide intervention includes engaging the food industry to reduce the salt content in foods (Micha *et al*., 2018). Recently, researchers have been looking for new solutions to implement an efficient food production process and to discover the benefit of starch waste on human health (Budreviciute et al., 2020).

Management of NCDs

NCDs are silent killers threatening health without showing any symptoms until the problem progresses to an advanced stage. Patients with NCDs or people with a susceptibility to develop one, need long-term care that is personalized, proactive, and sustainable. Primary healthcare can organize and deliver healthcare strategies to manage NCDs in each community and to detect diseases at early stages. Thus, they can significantly overcome the challenges linked to a high cost in the health sector (Budreviciute et al., 2020). Investing in better management is a key component of NCD response. The management of NCDs includes detecting, screening and treating these diseases and providing access to palliative care for people in need. High-impact essential NCD interventions can be delivered through a primary health care approach to strengthen early detection and timely treatment. Evidence shows that such interventions are excellent economic investments because if provided to patients, they can reduce the need for more expensive treatment (WHOc, 2024).

A dramatic decrease in all cardiovascular disease-related deaths has been recorded in high-income countries, whereas a significant increase was registered in low and middle-income countries (Rarau et al., 2019). Checkley et al. (2014) reported on NCDs' management in low and middle-income countries. WHO works with governments to prevent, manage, and monitor cardiovascular diseases by creating strategies to decrease the occurrence, severity and mortality of these diseases. These strategies involve reducing risk factors, establishing a standard of care, increasing healthcare system capacity and monitoring disease patterns and trends to guide national and global action (WHO Eastern Mediterranean Region, 2020). For example, a cost-effective strategy has been developed in Kenya to diagnose diabetes and hypertension in the early stages of life. While health workers are visiting homes to examine human immunodeficiency virus (HIV) infection, they also measure blood glucose levels

and blood pressure. Further, type 2 diabetes is a global pandemic that highly affects human health and global economic development (Budreviciute et al., 2020).

Global Collaborations and Future Directions

In the battle against Non-Communicable Diseases (NCDs), global collaborations stand as a linchpin for success. NCDs transcend national borders, requiring a collective and coordinated response. Global collaborations bring together diverse expertise, resources, and perspectives, creating a synergistic force to tackle the multifaceted challenges posed by NCDs (Omotayo et al., 2024). Several collaborative models have demonstrated notable success in NCD prevention. International organizations, such as the World Health Organization (WHO), engage in extensive partnerships, fostering coordination among countries and stakeholders. Additionally, collaborative initiatives like the Global Alliance for Chronic Diseases (GACD) and the NCD Alliance play pivotal roles in shaping policies, sharing best practices, and advocating for NCD prevention on a global scale (Omotayo et al., 2024). The implementation of tobacco control measures in various countries, driven by international frameworks like the WHO Framework Convention on Tobacco Control, showcases the power of collaborative efforts in reducing smoking prevalence (Tso, 2022).

The WHO's Global Action Plan for the Prevention and Control of NCDs 2013-2020, Sustainable Development Goals (SDGs), and initiatives like the United Nations High-Level Meeting on NCDs serve as platforms for fostering collaboration and advancing a shared agenda. While global collaborations are indispensable, they are not without challenges. Disparities in resources, varying political priorities, and competing health agendas pose hurdles to seamless collaboration. To fortify global collaborations in NCD prevention, certain key directions must be pursued. Strengthening health systems, enhancing research capacities, and fostering partnerships between governments, academia, and the private sector are essential. Furthermore, prioritizing NCDs on the global health agenda, integrating prevention into broader health policies, and leveraging digital technologies are crucial future directions (Omotayo et al., 2024).

The role of digital technologies in strengthening global collaborations cannot be overstated. Telehealth, health informatics, and digital platforms offer avenues for real-time data exchange, remote consultations, and collaborative

research. Embracing innovation in healthcare delivery and information-sharing will be pivotal in overcoming the challenges posed by NCDs. By learning from successful models, addressing ongoing challenges, and embracing future directions, the global community can forge a path toward a healthier future. NCDs may be complex, but the collaborative efforts of nations, organizations, and individuals can unravel their impact and pave the way for a world where NCDs are not only prevented but are effectively managed and mitigated on a global scale (Omotayo et al., 2024). This is summarized in Figure 3.

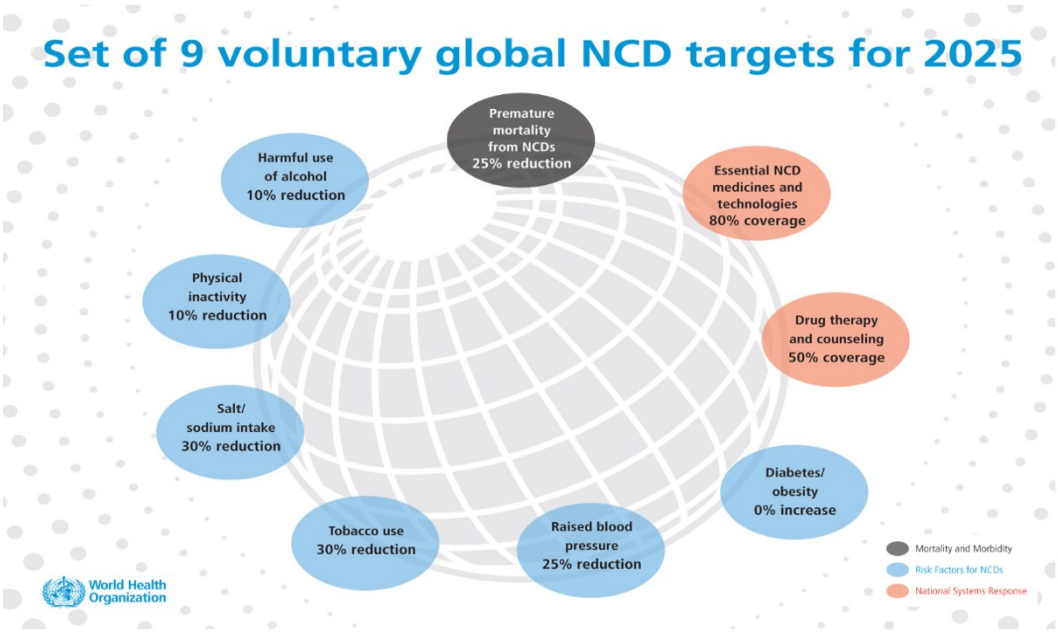

Figure 3: WHO voluntary global NCD targets for 2025 (WHOb, 2024).

Conclusion

It is no doubt that each year, NCDs cause 40 million deaths worldwide and are typically caused by a confluence of genetic, physiological, environmental, and behavioural factors. The four major NCDs in the world are heart disease, cancer, chronic respiratory disorders, and diabetes; and the five main risk factors for them are tobacco use, physical inactivity, excessive alcohol use, poor diets, and air pollution. The prevalence of NCDs in contemporary society is a serious threat to world health, necessitating coordinated efforts and creative approaches to management and prevention. Understanding NCD aetiology, prevalence trends, and the complex web of risk factors is essential for creating preventive and management measures. The management of risk factors is

crucial to the control of NCDs. The management of NCDs necessitates a variety of approaches from various angles and at various levels, including national and individual. Governments, healthcare providers, researchers, and communities must work together to solve systemic, cultural, and economic obstacles in the fight against NCDs. These approaches include the implementation of thorough policy frameworks, utilising technology, emphasising health education, and encouraging interdisciplinary research. In light of the increased prevalence of NCDs, a healthier future will be made possible by embracing innovation, international cooperation, and a dedication to health fairness. Comprehensive prevention methods that address the underlying causes of NCDs and promote a culture of health are required. Building a healthier future for future generations will depend heavily on our ability to collaborate, innovate, and prioritise health equity as we negotiate the complicated terrain of NCD prevention.

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