Non-communicable Diseases in Tanzania: Current Capacity and Challenges

Paige O'Leary

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Introduction:

Noncommunicable diseases (NCDs) currently contribute more to global mortality than all other causes combined[1]. NCDs disproportionately affect people in LMICs as more than three quarters of deaths by NCDs occur here [2,3]. In sub-Saharan Africa (SSA), the prevalence of NCDs has rapidly increased [4,5]. Specifically in Tanzania, 41% of all deaths are due to NCDs, 37% of total disability adjusted life years in 2017 were from NCDs, and 65% of years lived with disability were due to NCDs (Figure 1)[6,7]. Hypertension and diabetes are the most prevalent NCDs within Tanzania. In this paper I will analyze and describe the current ways in which Tanzania is tackling NCDs, with an emphasis on hypertension and diabetes, and the potential challenges that this country still faces from the burden of these diseases.

Background:

Hypertension is the most common NCD in Tanzania and has the highest prevalence in rural areas[8]. In 2012, the overall prevalence of hypertension was 26%[9]. The prevalence of diabetes in urban areas has increased from 5% in 2007 to 9% in 2012[9]. These rates need to be reduced to achieve the WHO target of reducing premature death from NCDs by 25% by 2025[10]. This will be challenging and depends on addressing risk factors associated with NCDs which has been fueled by socio demographic transition, rapid urbanization and lifestyle changes[9,11]. Some of the largest risk factors for diabetes and hypertension include diet, smoking, physical inactivity, and excess alcohol use (Figure 2)[12].

Capacity for NCD management:

Tanzania has the potential to address the burden of NCDs, however lacks resources, cohesiveness, application and monitoring of available strategies. Specifically, there are infrastructure, political, workforce, education and research considerations that contribute to the country's capacity for NCD treatment, prevention and control.

Tanzania's infrastructure for NCD management is limited, though with a few promising developments. A major limitation is no national multisectoral commission, agency or mechanism for NCDs [13,14]. Hence, there is little cohesive infrastructure in place to oversee NCD engagement, policy coherence, and accountability of sectors beyond health. Tanzania is attempting to address these issues by establishing a unit within the Ministry of Health and Social Welfare (MOHSW) to steer formulation of NCD policies and guidelines[13,15]. Furthermore, prevention and control strategies for NCDs have been identified as objectives for the health sector, and diagnostic and therapeutic capacities for NCDs have been included in the Health Sector Strategic Plan IV of 2015-2020[16][17]. These attempts to increase NCD infrastructure capacity could prove beneficial.

Political plans for NCDs are promising, however, actions are limited. NCDs have been identified as a priority, and legislation has been established, signifying political engagement. In 2017, NCD legislation was incorporated into the national health policies with the aims to reduce the morbidity, disability and mortality due to NCDs. Furthermore, the government made NCD specific promises: 1. Increase community awareness, advocacy and communication; 2. Improve access to cancer management; 3. Enhance prevention, control, detection and treatment; 4. Increase surveillance and research; 5. Enhance capacity building for NCD management; 6. Strengthen home and palliative services; and 7. Increase access to specialized care[20]. The government has also shown interest to implement fiscal policy interventions, such as taxation for sugar sweetened beverages, tobacco products and alcohol [18,19]. The legislation and promises made by the government demonstrate progress, however these political strategies need to be implemented[20,21].

Tanzania's workforce capacity is especially low, as the country is suffering from a severe shortage of healthcare workers. On average there are 5.2 clinical health workers per 10,000 people, which is well below the standard recommended by WHO [22,23]. For both diabetes and hypertension, a major limitation in capacity is the lack of available services in primary and

secondary health facilities due to the limited workforce. Furthermore, the limited workforce is not prepared to address NCDs, as healthcare workers have inadequate knowledge and training for NCDs such as hypertension and diabetes[24,25]. This scarcity of training transpires to a shortage of advocacy, poor outreach and limited focus on prevention and continued care from healthcare providers to patients.

Education capacity is also very low in Tanzania. Over 60% of persons with diabetes in Tanzania are not aware of their diagnosis, as there is low health seeking behavior, screening, case detection, and awareness[8,26]. Similarly, there are low levels of awareness among people with hypertension, particularly in rural areas of Tanzania as only 6% of individuals who had hypertension were taking medication[8]. Major efforts are needed to educate the health workforce and individuals regarding the impact of NCDs, and how to modify disease risk factors.

Absence of NCD data is yet another weak aspect of capacity for NCD management in Tanzania, making evidence-based interventions difficult[27]. Epidemiological studies are needed to better estimate the prevalence of NCDs in Tanzania. One such study was conducted by the MOHSW, the national institute for medical research and the WHO in 2013, and assessed risk factors associated with NCDs. This nationwide survey, STEPS[9], found that NCD risk factors were high amongst their study population (Table 1). This was a starting point for research however little has followed, and similar studies are needed.

NCD Prevention and Control Efforts:

Tanzania is taking action against NCDs. Recently from 2012-2018 the Tanzania National NCD Response Program support World Diabetes Foundation (WDF06-221) was established to strengthen the capacity of the healthcare system in line with the WHO 25/25 goal, primarily focusing on type 2 diabetes, and secondly hypertension[27]. The approach undertaken by this international organization, WDF, was one of collaboration, as the Tanzanian Ministry of Health, community development, gender, elderly and children (MoHCDGEC) were the leading implementing partners of the WDF06-221. The MoHCDGEC further collaborated with the

Tanzania Diabetes Association (TDA) as well as pre-existing MOH structures existing for HIV, Tuberculosis, Reproductive and Child health[27]. The WDF06-221 program was integrated by incorporating past experience and results from WDF funded projects that were evaluated by the TDA. The implementation strategy was also guided by the UN Political Declaration on NCDs (2011) and the WHO Global Action Plan on NCDs 2013-2020. The WDF06-221 program targeted district and regional hospitals and had a budget of 4 million USD. The project, completed in 2018, and the results demonstrated a success as 2438 healthcare professionals, 354 community health workers and 245 nutritionists were trained; 223 540 patients were treated throughout established clinics; 148 clinics were established or strengthened; and a mass media campaign was conducted[27]. This project has contributed to the expansion of NCD care for diabetes and hypertension, however many of the outlined goals were hard to measure, and not recorded as results upon completion.

There are projects occurring today, such as the strategic action plan for the prevention and control of NCDs in Tanzania 2016-2020 (The Strategic Plan)[28]. This initiative targets many NCDs including diabetes and cardiovascular diseases (CVD), specifically hypertension. The overall objective of the project was to reduce the burden related to NCDs in Tanzania by 20% by 2020. The implementation of the strategic plan integrated key policy documents such as, but not limited to, the framework convention on tobacco control, WHO strategy on diet and physical activity, and Vision 2025. The timeline for the Strategic plan was in line with the WHO global action plan and Health Sector Strategic Plan IV of 2015-2020. The Strategic plan conducted thorough situational analyses for each major NCD prior to implementation. Specifically, for diabetes and CVD, the analysis indicated that current strengths existed for both which had been established by the MoHCDGEC WDF06-221 program. Furthermore, for CVD other capacity building ventures such as the establishment of a cardiac care center at Muhimbili National Hospital, a secondary and tertiary prevention service at three tertiary care centers, and the provision of outreach consulting services to regional and district hospitals had occurred.

Weaknesses for CVD capacity were also identified as there were limited services in primary and secondary facilities, limited human resources, limited advocacy and focus on prevention and continuum of care. Therefore, one section of the Strategic plan focused specifically on CVDs. The goal by 2020 for CVD, which includes hypertension, was to reduce the prevalence of raised blood pressure from baseline by 25%, to reduce total cholesterol from baseline by 10% and a 20% reduction in overall mortality from CVD. The identified priority areas of action to achieve these goals were; community sensitization diet and physical activity, proactive detection and appropriate management of CVD, preventative treatment for stroke such as aspirin use, and preventative treatment for Rheumatic fever. The stakeholders involved included MoHCDGEC, PMORALG, Heart Foundation, Health facilities, Training institutions, Professional associations, community support groups and other NGOs, Media, TANCDA and DANCDA. To assess the impact of the CVD portion of the Strategic plan the following outcomes were defined; to have 50% of diagnosed stroke or heart disease patients use aspirin for prevention, 50% of patients with hypertension to receive urine tests annually, and lastly 50% increase from baseline access to essential medicines for those diagnosed with NCDs. The budget was 32 million dollars over 4 years[28,29]. Progress of the Strategic plan has not been released; however, this program will serve as a platform to launch future initiatives for NCD capacity building as many weaknesses in current capacity were identified yet not addressed by this plan. Hence there is ample opportunity for future intervention to transpire with the long-term goals of reducing modifiable risk factors, increasing screening, management and prevention of NCDs in Tanzania.

Challenges to successful NCD prevention and control:

Although efforts are being made in Tanzania to address NCDs, challenges remain. Specifically, healthcare workers lack tools and expertise, there has been a failure to empower patients, failure to organize care for chronic conditions, legislative framework is lacking, and the government is not investing wisely.

1. Health Care Workers Lack Tools and Expertise:

There is a lack of adequately trained health providers in Tanzania for NCDs leading to low quality interactions with healthcare personal for patients facing these chronic illnesses, this is a meso level challenge [40]. The current health workers are trained in acute care models, not for NCDs which require prolonged care, different from that of acute episodes of poor health. There is specialized knowledge for NCD care, unique to managing chronic problems for changing patient behavior, and for guiding patients to learn self-management [40]. However, these skills must be learned, and currently are not part of clinical officer or assistant medical officer training programs [30]. These two positions are recognized in Tanzania as health care providers to try to address the issue regarding a low medical workforce, yet their training does not include NCDs. One approach that Tanzania has taken to increase NCD training is by offering education within disease-interest groups such as the TDA, and to introduce NCD prevention and control modules in local training institutions[31,32]. In the Association of Private Health Facilities in Tanzania there has been training for diabetes and hypertension, and similar guidelines have been developed to be implemented within the public health system. However, evidence of training and utilization of these programs is limited[33]. Furthermore, the health workers lack the tools; in 2010 the public health system had only two out of eight NCD-related screening and diagnostic tests at primary level facilities[13]. Medication as a tool to treat patients is also not available as there have previously been low availability of all drugs including those for NCDs, especially at public healthcare facilities [15]. Therefore, the challenge will be to increase the availability of tools and training to face NCDs which require sustained care.

2. Failure to Empower Patients:

Efforts are needed to increase detection and health education for NCDs within the general population, a micro challenge, which when addressed will lead to patient empowerment. Utilizing community involvement has been an effective way to educate and empower patients for infectious diseases and hence should be used for the new burden of disease Tanzanian's

are facing, NCDs[34]. Community interventions and empowerment for communicable diseases (CD) have been associated with increased access and acceptance of palliative care, efficiency of disease control interventions and was deemed equitable, sustainable and taught community's self-reliance [15]. All of these findings associated with CD empowerment need to be harnessed for NCDs. Furthermore, education can be used to empower patients, as understanding what risk factors are and how they contribute to NCDs is critical (Figure 2) [7]. However, this is not occurring as eating habits and physical inactivity, especially within at-risk communities, are worsening. Furthermore, social determinants which are linked to complex sociocultural practices make lifestyle risk factors very hard to change [15]. Different cultures and societies value different characteristics, such as obesity which is a risk factor for NCDs. Historically malnutrition contributed to diseases therefore obesity is regarded as a sign of health and wealth and thought to protect against diseases[35,36]. Furthermore, excessive alcohol intake has been fueled by cheap availability of local brews and the need for entertainment and relaxation by the users[37]. The legislation that is in place to advocate for nutrition, titled the Tanzania National Nutrition Strategy, seeks to ensure the nutritional status of all citizens of Tanzania throughout their life, however the main focus of their strategies has been on women of reproductive age and children under 5. Furthermore, many of the NCD-related activities that are currently being provided to empower patients occur at private health facilities, leaving those using the public systems disadvantaged [15].

3. Failure to Organize Care for Chronic Conditions:

NCD prevention and control is a global challenge, and even more challenging in an LMIC that faces the double burden of disease from both CD and NCDs. Due to the historical burden of disease in Tanzania the healthcare system is designed to address acute problems, using face-to-face visits with the purpose of diagnosing and treating the acute illness with one visit[8].One large issue with this is the fragmented interaction that the patient has with the healthcare system when seeking care for chronic illnesses. This is a meso level challenge that cannot continue as

the risks of undiagnosed NCDs, such as diabetes can result in catastrophic events such as neuropathy or amputation leading to disability [40]. These outcomes can generally be avoided with adequate screening, detection and monitoring of NCDs, by transitioning the healthcare system to become proactive and organized around long-term healthcare plans. Hence a large priority within Tanzania is to integrate NCD care into current health programs[32]. The benefits of integrated approaches are that human resources can be shared and attention can be brought to NCDs. The infrastructure is already available that is currently being used to address CDs, and hence could be utilized to also treat NCDs on different days of rotation. Laboratory equipment in place for CDs could also be used for NCD screening. Furthermore, patients are experiencing co-morbidities of CDs and NCDs, therefore by giving the patients one place to receive care a more efficient healthcare system with increased accessibility will result [15]. To make this transition challenges persist such as early detection efforts through regular medical examinations which have started but have been limited. Moreover, independent NCD clinics have not been well integrated into the health care system to enhance accessibility. Lastly, treatment of NCDs mainly takes place in hospitals since the services are limited in primary health care facilities where the majority of Tanzanians' are seeking care. It is evident that patients who require NCD services in Tanzania are increasing and the services of the healthcare system need to be adjusted to address current needs[20].

4. A Legislative Framework is Lacking:

A macro level challenge faced by the Tanzanian health system is a disjointed focus of care, as the legislation for NCDs is relatively new, and roll out of the governmental promises has yet to occur [20,40]. In Tanzania there is a low level of stakeholder awareness and knowledge, no multi-sectoral responses to the diseases, lack of human and structural resources and poor enforcement of current mechanisms addressing NCDs [27]. In rural areas with a higher prevalence of NCDs, healthcare facilities are not equipped with the correct tools for NCD care. Over two-thirds of Tanzanians reside in rural areas and rely on the local health facilities, which

for most are dispensaries [15]. The structure of the public health sector is decentralized and lacks standardization across primary health centers leading to limited resources for NCDs in these rural settings. The public sector is divided into two government levels; the central and the local level. The central level is composed of the Ministry of health and social welfare (MOHSW), and several other agencies for specific health needs such as the Tanzania commission on AIDS, TACAIDS. The central government is then subdivided into regions; there are 25 administrative regions, and each has a Regional Medical Officer that is accountable to the MOHSW. Currently NCDs have not been made a priority by the central government level[38]. The local government level is divided into 158 districts, categorized as local government authorities (LGA)[38]. Each LGA is led by a local government council which is responsible for the delivery of care, and the most senior local official is the District Medical Officer (DMO). The last level is the village, where a local is elected, however this level does not have any substantive service delivery planning or budgeting software. According to the act of 1982 the authorities and responsibilities to promote the social welfare and economic wellbeing of all persons within its area of jurisdiction are required of the LGA[38]. This lends to the decentralization and lack of standard care due to 158 districts each having different leaders guiding the healthcare systems and identifying priorities. Transitioning the healthcare system from a CD focus to NCD focus will be extremely challenging because the governmental role is so dispersed.

5. Governments are not Investing Wisely:

There is an issue of unfair distribution of financial resources to rural communities (158 districts), which are the primary point of care for many Tanzanians; a macro level challenge due to a fragmented health system [38,40]. Challenges to achieve sustainable improvements to these healthcare facilities remains as LGAs have limited resources [37]. The government of Tanzania spends close to 10% of their budget on their health sector. About one-third of these resources are given to LGAs in the form of sectoral block grants. These grants are intended to fund the salaries of the local health workers, the operation and the maintenance cost of the health

centers [38]. The first limit to these grants is the amount, which on average is about 6 USD per person each year, so improving the healthcare system on these funds alone cannot be done. LGAs do receive support from the MOHSW, the international development partners' user fees and Tanzania's National Health insurance fund; however, the support varies per district. Secondly, there is a concern around the 'horizontal' distribution of these grants [38,39]. Despite the establishment of a formula-based grant allocation system created in 2004, the application of this formula is low, leading to certain LGAs receiving considerably higher funds than others [38]. Hence, there is an issue with the allocation of funds from the government level to the district level that needs to be addressed. Furthermore, even less is known about how the funds then go from the district level to the public health facilities. This is concerning, as these primary health centers cannot improve without financial resources.

Summary & conclusion:

It is evident that patients who require NCD care in Tanzania are increasing and that services need to be scaled up to meet the needs of these patients. Much progress is being made in Tanzania as there is promising vision and plans; however, challenges persist as there is insufficient capacity within the workforce, education of the general public regarding risk factors and in epidemiological NCD research. Some of the prevention and control efforts, such as the Strategic Plan, though limited by unknown outcomes and the micro, meso and macro challenges, hold potential to make real changes to the landscape of NCD care in Tanzania and will need to be sustained over time.

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Risk Factor	Prevalence (%)
Tobacco	15.9%
Alcohol	29.3%
Less than 5 servings of fruits and vegetables per day	97.2%
Obesity	26%
Raised cholesterol	26%
Raised triglycerides	33.8%

Table 1. NCD risk factor results from Tanzania Steps Survey report 2013, and the corresponding prevalence in the sample population [9].

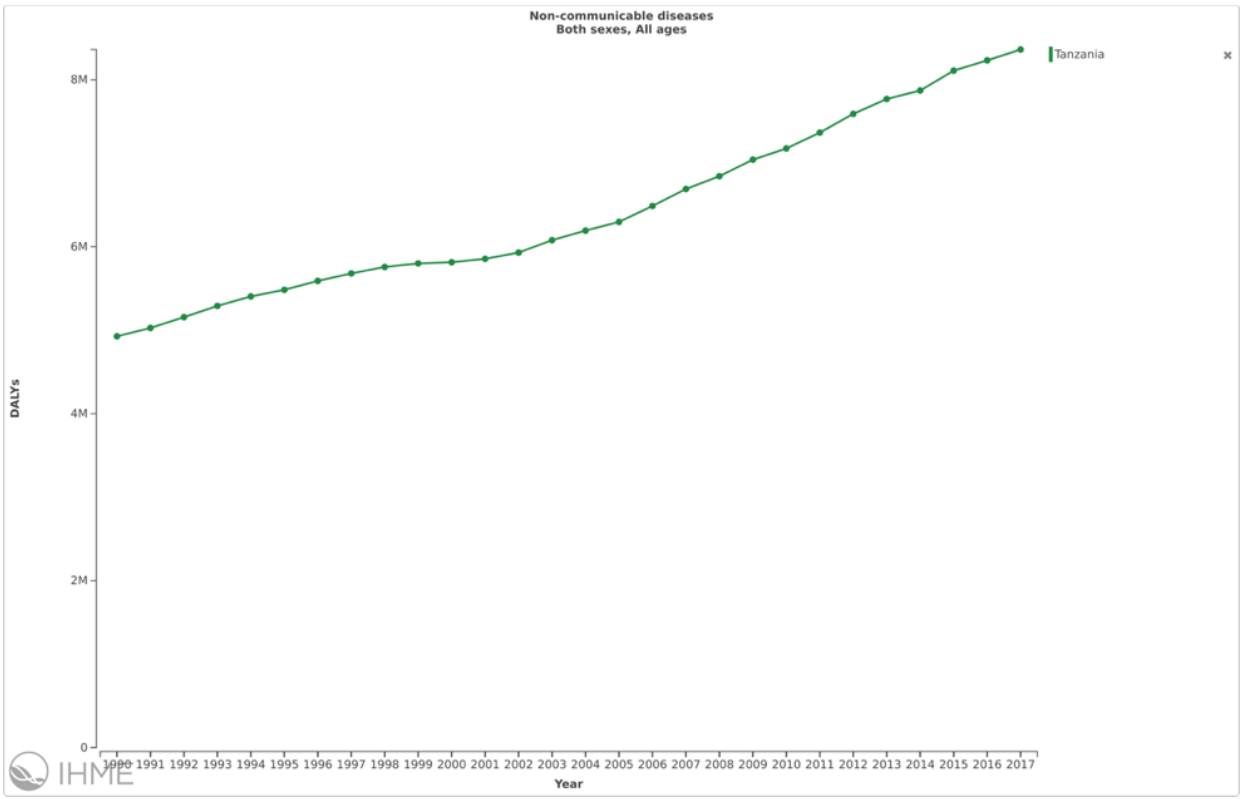

Figure 1. The number of disability adjusted life years (DALYS) from non-communicable diseases in Tanzania, 1990 – 2017[7].

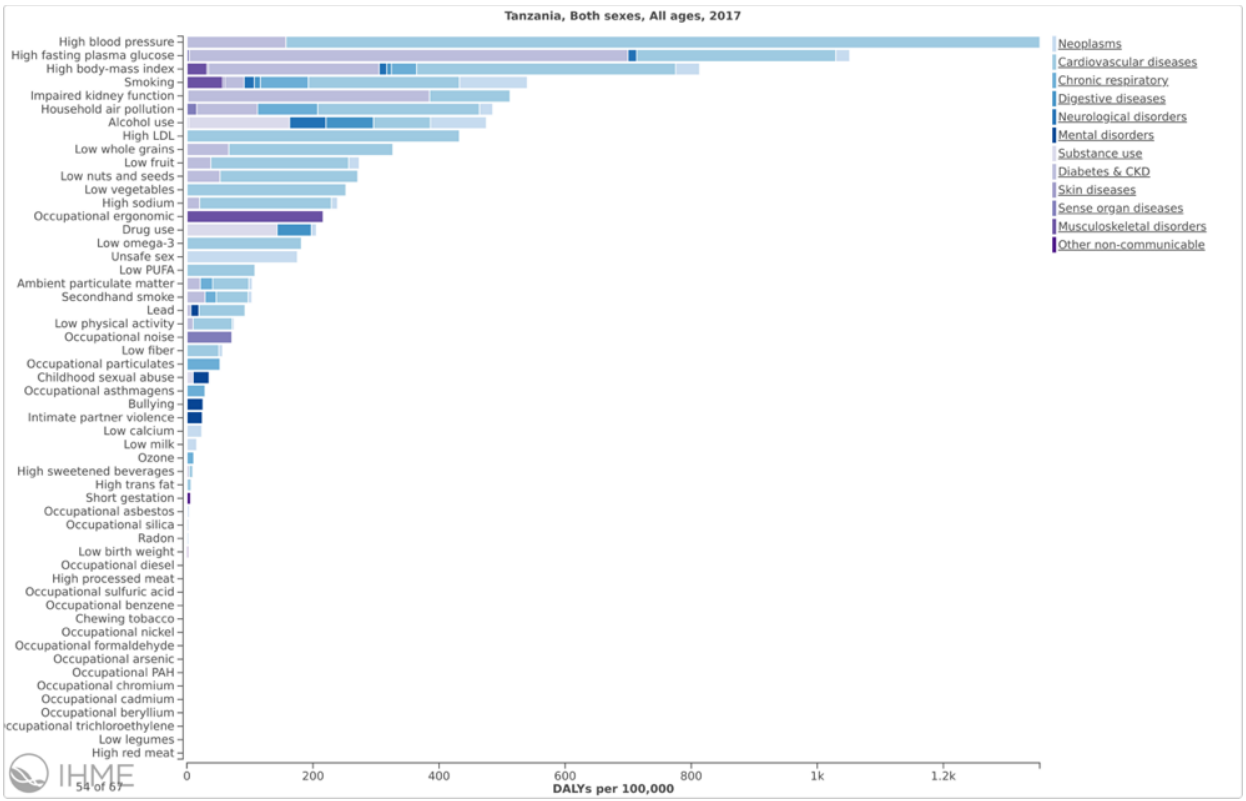

Figure 2. Disability adjusted life years per 100,000 people, due to risk factors for non-communicable diseases within Tanzania, 2017[7].