IMPROVING NIGERIA'S HEALTH INFRASTRUCTURE IN LINE WITH GLOBAL BEST PRACTICES FOR EFFECTIVE NCDs PREVENTION AND MANAGEMENT: A REVIEW

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Abstract

Introduction / Background: The paradigm and landscape in global health is changing rapidly. The primary factors to this global change are as a result of better prevention approaches, management and treatment of infection/communicable diseases on one hand and an increase in non-communicable disease (NCDs) on the other hand due to social and environmental changes as a result of globalization, modernization and industrialization. This project aimed to examine these changes in one of the developing countries of Africa, Nigeria, with the view of identifying gaps in its infrastructure so that adequate approaches/methods can be used to improve the increasing economical/social burden and mortality of NCDs.

Methods: A systematic literature review was conducted that involved numerous key search terms using the Google Scholar, PubMed, and Google Search Engine databases. Our search strategy aimed to identify published articles to answer the research question on how can Nigeria's health infrastructure be improved in line with global best practices to effectively combat non-communicable diseases by improving methods in prevention and management.

Results: The results show that there are a number of elements of health infrastructure that need to be targeted in Nigeria to combat NCDs effectively. They are service delivery, health workforce, health information systems/surveillance and research, leadership and governance, and, health-promoting environmental programs and education.

Conclusion: Based on the current literature review performed in this project, it is conclusive that specific actions need to be taken in the areas of service delivery, health workforce, health information systems/surveillance and research, leadership and governance, and health-promoting environmental programs and education. These infrastructural areas have shown to be influential factors for improving the gaps in Nigeria for combating NCDs effectively. A list of recommendations was made accordingly.

Introduction

Globally, almost 70% of deaths are due to non-communicable diseases (NCDs). Approximately, three quarters of these deaths occur in low- and middle-income countries (LMICs). NCDs are chronic diseases including heart medical conditions, stroke, cancer, diabetes, and chronic lung disease (World Health Organization, 2018). The remaining causes of deaths are mainly due to communicable/infectious diseases such as tuberculosis, HIV/AIDS, and hepatitis. Whilst communicable diseases are in the decrease, a growing health burden is predominantly being caused by the prevalence of NCDs. An increase in NCDs has not translated with improvement on the prevention and management of such chronic diseases. This is because NCDs require more complex diagnostic tools and medical equipment and are generally more expensive to treat compared to infectious diseases for instance cancer treatment therapies. Therefore, these group of diseases are projected to be the most common cause of death globally by 2030 (World Health Organization, 2013).

Background

In 2013, World Health Organization (WHO) presented a global action plan for preventing and controlling NCDs, emphasizing that the world's biggest killers include cardiovascular diseases, cancers, chronic respiratory diseases and diabetes (World Health Organization, 2013). It was reported that the majority of NCDs cause premature deaths in patients, which can be largely preventable. Importantly, health systems respond to health care needs of patients with NCDs in an effective and equitable manner while legislative and regulatory measures, health promotion interventions, and public policies which are namely guided to tackle shared risk factors in order to prevent tobacco use, physical inactivity, unhealthy diets, obesity, and harmful alcohol use. Key approaches, by the use of multisectoral actions for promoting a healthy lifestyle, include effective use of incentives and disincentives, regulatory and fiscal measures, laws and policy options, and health education. With a vision of "a world free of the avoidable burden of NCDs", the global action plan's main goal is for populations to reach the highest attainable standards of health and productivity at all ages by reducing the burden of morbidity, mortality and disability due to the avoidable burden of NCDs (World Health Organization, 2013). This can be done through multisectoral collaboration, along with national, regional and global cooperation. Table 1 presents

the principles presented in the global action plan along with the 6 main objectives for achieving their goal.

Table 1 - Global action plan for the prevention and control of NCDs: principles and objectives

Source: World Health Organization (2013). Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013-2020. Retrieved from http://africahealthforum.afro.who.int/IMG/pdf/global_action_plan_for_the_prevention_and_control_of_ncds_2013-2020.pdf

Overarching Principles	Life-course approach; empowerment of people and communities; evidence-based strategies; universal health coverage; management of real, perceived or potential conflicts of interest; human rights approach; equity-based approach; national action and international cooperation and solidarity; multisectoral action
Objective 1	To raise the priority accorded to the prevention and control of NCDs diseases in global, regional and national agendas and internationally agreed development goals, through strengthened international cooperation and advocacy.
Objective 2	To strengthen national capacity, leadership, governance, multisectoral action and partnerships to accelerate country response for the prevention and control of NCDs diseases.
Objective 3	To reduce modifiable risk factors for NCDs diseases and underlying social determinants through creation of health-promoting environments.
Objective 4	To strengthen and orient health systems to address the prevention and control of NCDs diseases and the underlying social determinants through people-centered primary health care and universal health coverage.
Objective 5	To promote and support national capacity for high-quality research and development for the prevention and control of NCDs diseases.
Objective 6	To monitor the trends and determinants of NCDs diseases and evaluate progress in their prevention and control.

Why Nigeria?

Nigeria is undergoing epidemiological transition with the prevalence of infectious diseases declining and NCDs as a major cause of death steadily rising. In 2014 Nigeria's population was 169,000,000, with a total mortality rate of 2,083,000. NCDs accounted for 24% of these deaths, with cancer, diabetes mellitus, cardiovascular disease (hypertension, coronary heart disease, stroke), and chronic respiratory disease being the top four NCD types (World Health Organization, 2014). Furthermore, Nigeria also embodies other NCDs such as sickle cell anemia, mental, neurological and substance use disorders, violence and road traffic injuries, and oral health disorders. These non-contagious diseases, can cause long-term debilitation and disability if they are not treated adequately. The major factors contributing to NCDs include tobacco use, physical inactivity, obesity, harmful alcohol use, and unhealthy diets-all of which are modifiable (1, 3). These risk factors are influenced by globalization, urbanization, and industrialization (Federal Ministry of Health, 2015).

The importance of building an adequate health system infrastructure to combat NCDs

Although deaths related to NCDs mainly occur in adulthood, it is important to recognize that the exposure to risk factors during this stage may have lasting health impacts throughout life. Evidence shows that some of the main risk factors of NCDs include tobacco use, physical inactivity, unhealthy diets, obesity, and harmful use of alcohol (World Health Organization, 2013). Reducing these modifiable risk factors, which are the underlying causes of the NCDs, could drastically improve health burden and reduce the overall mortality rate. Other contributory social aspects of health are likely to further protect children from adverse impacts of marketing and thus promoting healthy environments and lifestyles.

Report Overview

In order to prevent, manage and ultimately treat NCDs effectively in Africa, the Engage Africa Foundation is working extensively to gain an understanding of context-specific findings that will support their mission to identify, prevent, fight and advocate treatment against causes of NCDs. The main objective of this research project is to examine the current healthcare situation in Nigeria

and identify how Nigeria's infrastructure can be improved in line with global health practices for effective prevention and management of NCDs.

This systematic literature review is based on the research question of how can Nigeria's health infrastructure be improved in line with global best practices to effectively combat non-communicable diseases by improving methods in prevention and management. Specifically, the project aims to address the following:

- how should a health system be equipped when dealing with NCDs;
- identify health system models that other countries use for preventing and managing NCDs;
- whether Nigeria has the resources to deal with the burden of NCDs;
- the health system gaps in Nigeria; and
- where Nigeria needs to invest for appropriate health infrastructure with the aim of reducing NCDs.

The areas of health infrastructure that this report will be examining will be assessed alongside the objectives set out by WHO in Table 1 aiming to investigate the degree to which the elements of the infrastructure address these objectives.

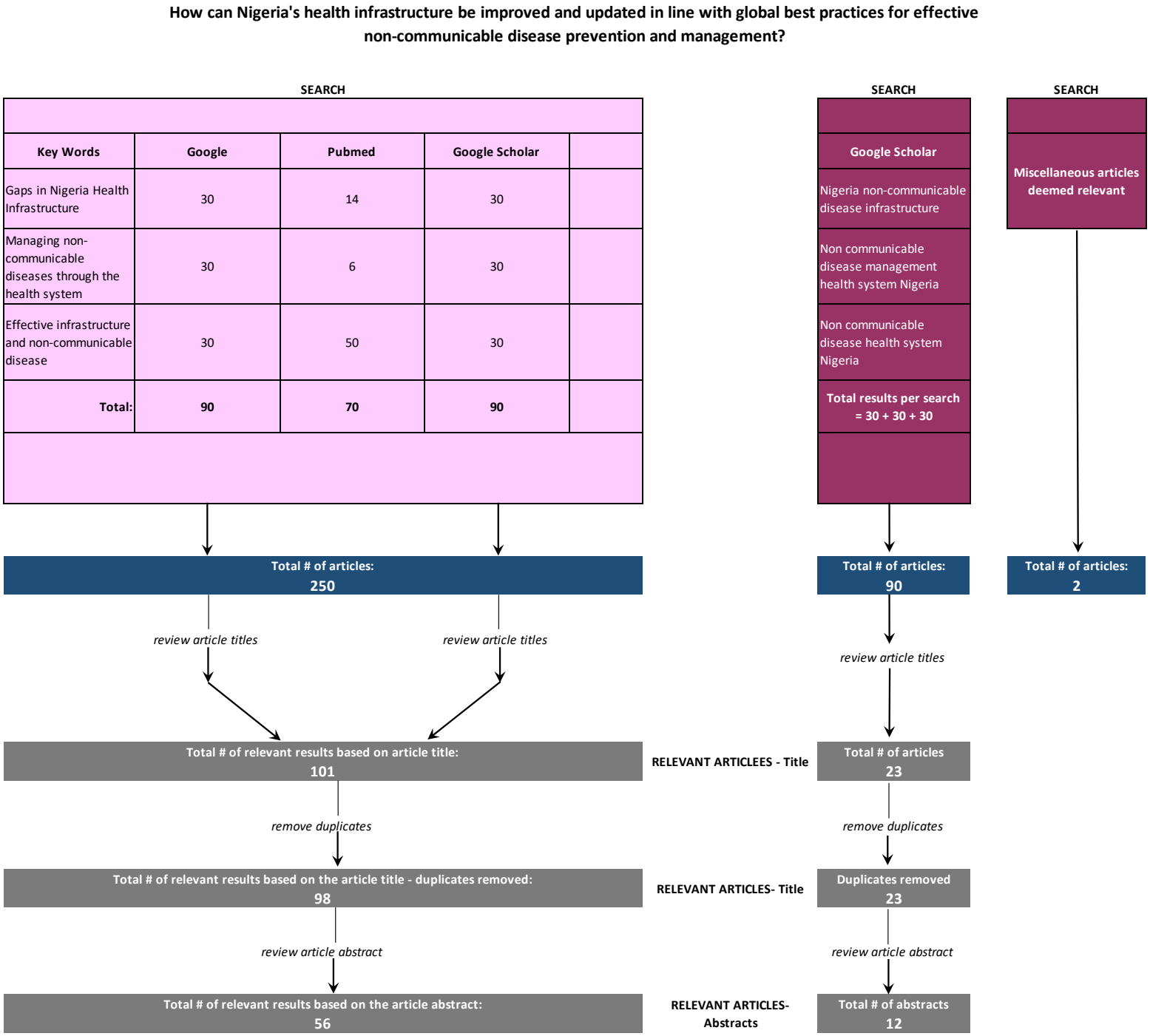
Methods

A systematic literature review was conducted that involved numerous key search terms using the Google Scholar, PubMed, and Google Search Engine databases. Our search strategy aimed to identify published articles to answer our question on how can Nigeria's health infrastructure be improved in line with global best practices to effectively combat non-communicable diseases by improving methods in prevention and management. A combination of "Nigeria", "non-communicable diseases" "gaps in infrastructure", "health system Nigeria", and "disease management" were utilized as keywords during the search. The timeframe the search was conducted was between February 23rd to March 13th, 2018 with ongoing ad-hoc searches as deemed relevant throughout the project. The depicted literature flowchart in Figure 1 provides a specific description of the key search terms that were used.

Searches conducted through the Google search engine were based on the filters that were applied such as "publication date specified as "since 2004", and results sorted by relevance" and the search yielded large number of articles from "any country, any time, and any results". For searches conducted through Google Scholar, the filters applied were "publication date specified as "since 2004", and results sorted by relevance". For both Google Scholar and the Google search engine, only the first three pages of results were reviewed as being most relevant, with 10 results displayed per page. For searches conducted through the PubMed database, the filters used included "publication date from 2000/01/01, abstracts, and titles". The references of some of the included papers were evaluated for additional relevant papers, and only English language literature results were analyzed.

Excel spreadsheets were used to capture the literature search result and creating the literature flowchart. The titles of those articles that seemed relevant were organized in accordance to the database they were originated from. After literature search was completed, duplicate articles were removed as well as independently screened for confirmation. After consolidating all the article titles, abstracts or executive summaries were reviewed for each remaining search result. Subsequently, a short list of the most relevant articles was then populated in a separate spreadsheet with the title and a summary of the research and findings. Finally, any additional articles that were relevant, which were explored individually throughout the study, were added to a miscellaneous category.

Figure 1 - Literature Review Process Flowchart



Results

Current Situation in Nigeria: Nigeria Health Care System

Nigeria's health care system is a three-tiered governmental provision involving the federal government, state government, and local government. Starting with the primary health care system which is managed by over 750 local government areas (LGA), and also supported from respective state ministries of health and private medical practitioners at village, district and LGA (Osain, 2011). At the state level, the ministry of health manages the secondary health care system where patients are often referred to by the primary health care for specialized services which are offered at different divisions of the state. Finally, the tertiary health care system is the level at which the federal government works with volunteers, non-governmental organization, and private practitioners, as well as teaching hospitals and specialist hospitals (Osain, 2011).

Osain and colleagues (2011) introduced the 1987 health care reform that the federal government launched in Nigeria, whereby they had major health care objectives some of which included improved collection and monitoring of health data; promoting treatment of epidemic diseases; improving food supply and nutrition; educating people of prevailing health problems and methods of preventing and controlling them. These, and other objectives, evidently did not make an impact on Nigeria since it continued to suffer through infrastructural and personal deficit, as well as poor public health management. Furthermore, in 2005, the federal government implemented the Nigerian health insurance scheme (NHIS) which was established as a way to a) ensure Nigerians have access to good health care services, b) limit the rise in the cost of health care services, c) protect Nigerians from the financial burden of medical bills, and d) ensure efficiency in health care services (Osain, 2011). The NHIS made little impact on health care in Nigeria. As such, health care delivery continues to be limited, inequitable and does not meet the needs of the Nigerian population. Moreover, because of these inadequate governmental policies, the economic burden of Nigeria is in the rise and warrants the need to be addressed.

Economic Burden

Obansa and Orimisan (2013) explain that the primary engine for growth and development in a country is its health sector. In Nigeria, despite the financial contributions to the health sector, there is continuous instability in the country with no signs of progress. The widespread poverty rates remain high, with most recent statistics showing minor decreases from 48.4% in 2003 to 46% in 2009 in accordance to the national poverty rates (World Data Atlas, 2018). In urban regions, this accounts for 34.1% of the population living in poverty in 2009 while in rurally the rate is much higher at 52.8%. The main underlying cause of mortalities is poverty, which can cause many negative effects and implications for individuals and the society in general. Research shows that 52% of deaths of children under the age of 5 are due to malnutrition, and nearly 15% of these children do not survive their fifth birthday (Osain, 2011). The total expenditure of health in Nigeria amounts to 4.6% GDP, an amount that remains a major problem for the country. Literature shows that there are 33,303 general hospitals, 20,278 primary health centers and posts, and 59 teaching hospitals and federal medical centers. Despite the overall improvement compared to ten years ago, Nigeria's standard of living remains low (Osain, 2011).

Many different elements of health infrastructure were found as key to the recommended best practices for healthcare infrastructure gaps in Nigeria that need to be addressed. These elements include service delivery; health workforce; health information systems, surveillance and research; leadership and governance; and, health-promoting environmental programs and education. To follow, the report will address these elements in conjunction with the WHO global action plan objectives that were revealed in table 1.

Table 2 - A summary of results in a cross-sectional study conducted in 2009 to collect insight on the financial burden of NCDs in rural Nigeria.

Source: Janssens, W., Goedecke, J., de Bree, G.J., Aderbigbe, S.A., Akande, T.M., Mesnard, A. (2016). The Financial Burden of Non-Communicable Chronic Diseases in Rural Nigeria: Wealth and Gender Heterogeneity in Health Care Utilization and Health Expenditures. *PLOS One*. Retrieved from http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0166121

Financial Burden of NCDs	Results of Cross-Sectional Study	Concerning Gaps in Healthcare
Prevalence of chronic diseases	• Women were more likely than men to report an NCD (6.9% and 5.4%, respectively), although the difference is not statistically significant. • Prevalence increased with age, with 27.0% of individuals aged 70 or above reporting a chronic disease. • Individuals without any education reported an NCD more often than educated individuals, but no clear pattern in prevalence arose between more disaggregated levels of education. • The prevalence of NCD was highest in the poorest wealth quintile (8.3%) and lowest in the richest quintile (4.4%).	The focus of infrastructure needs to be on: • Women's health • Elderly Care • Uneducated individuals • Lower socioeconomic lifestyles
Out-of-pocket expenditures, transportation costs and catastrophic health care spending (CHS)	• Individuals who suffered from an NCD spent on average 9,889 Naira on treatment, or 4.04% of annual household consumption (AHC). This amount can be broken down into 9,117 Naira (3.75% of AHC) spent on medical out-of-pocket expenditures (OOPs) and 819 Naira (0.31% of AHC) spent on transportation. • The poorest quintile paid more out of pocket than the second and fourth quintile, but less than the third quintile, while the richest paid most in absolute terms, reflecting its higher capacity to pay for it. The lowest quintile incurs 5.86% of total household annual consumption, which is more than any other quintile. • Households in the lower two wealth quintiles were more likely to incur CHS (at 10.8% and 13.5%, respectively) than richer households.	The focus of infrastructure needs to be on: • Transportation • Health care spending
Travel distance to	• Distances monotonically declined with increasing wealth quintiles, with the poorest quintile living furthest away (2.6 kilometers,	The focus of infrastructure needs to be on:

health care facilities / Available transportation	column 1) and the richest quintile living closest to a facility (1.0 kilometers). • The possession of a motorized vehicle has been shown to increase the likelihood of seeking health care. This emphasizes the link between access to care and mobility mediated by income.	• Transportation
Low disease awareness	• Low disease awareness associated with low education and income can lead to substantial underreporting of prevalence. Individuals without any education reported an NCCD more often than educated individuals, but no clear pattern in prevalence arose between more disaggregated levels of education.	The focus of infrastructure needs to be on: • Education
Gender differences	• Women were 1.6-fold more likely to forego formal care than men when suffering from an NCCD. Women also incurred higher absolute and relative OOP expenditures, although differences across sexes were not statistically significant. These findings suggest that Nigerian women face a substantial gender bias in health care utilization. Nigerian women may suffer disproportionately from a lack of access to affordable and good quality health care. • Elderly households, which are typically more exposed to chronic illness, are particularly at risk to incur catastrophic health expenditures.	The focus of infrastructure needs to be on: • Female facilities / programs • Elderly programs • Women's health
Public vs. Private Facilities	• The poorest were most likely to go to a private provider. A potential explanation suggested by anecdotal evidence from Kwara and other Nigerian regions is the possibility of paying in-kind or in installments at private providers but not in public hospitals. • More respectful staff attitudes towards patients in private compared to public facilities may be another explanation. • The choice for private providers may be partly explained by travel distance, since poor households lived on average slightly closer to a private than a public facility.	The focus of infrastructure needs to be on: • Easier access to public sector

Service delivery global recommendations

Nigeria needs adequate mechanisms to access health care through unique methods of service delivery which will be key to reaching world current standards. In their article about models of integrated service delivery, Duffy and colleagues (2017) confer that leveraging experiences from other care models, by adapting systems and tools previously demonstrated to be effective, is a feasible method to provide care and treatment for NCD patients. They specifically identified three models of integration when leveraging from HIV care models for example. These three models include: 1) NCD services integrated into centres originally providing HIV care, 2) HIV care integrated into primary health care already offering NCD services, and 3) simultaneous introduction of integrated HIV and NCD services (Duffy et al., 2017). These methods could be efficient in addressing the rise of NCDs in Nigeria. Similar to Nigeria, the Asia-Pacific region is struggling to support NCDs in its population, which are the leading causes of death morbidity and mortality. One of the models that was recommended in the Asia-Pacific region addressed service delivery in an integrated fashion where prevention, care and treatment services were all presented at the same point of service delivery. Another integrated model suggested that services are provided along with other health services (Mannava, Abdullah, James, Dodd & Annear, 2013). Evidence shows that cure rates along with patient satisfaction rates have increased in states where such integrated systems were practiced.

Heath workforce global recommendations

Omoluabi (2014) found some key constraints/requisites related to Nigeria's lack of doctors as well as human resources for health (HRH). These are factors that contribute to supporting a health system. One of the gaps that was recognized in the health workforce was the difficult working conditions of Nigerian medical professionals. This includes the decaying and inadequate infrastructure in Nigeria, especially the lack of basic amenities like water and electricity at the health facility, and lack of professional advancement for southern medical professionals working in Northern Nigeria, among others (Omoluabi, 2014). A second gap that was recognized was the inflated numbers of health workforce available in the country, i.e., Nigeria has less than one-tenth of its required number of doctors (Omoluabi, 2014). In order to legally practice medicine in Nigeria, all medical doctors must register and obtain a license from the Medical and Dental Council, which must be renewed annually. In 2009, only 20,531 (35%) out of 58,325 doctors were

considered to be legally practicing the medical profession, meaning only 0.14 per 1000 population (close to half of the overall African average of 0.22 per 1000) were practicing with a legal license. The WHO recommends 2.3 doctors, nurses and midwives per 1000 population as a minimum threshold for health worker density (Omoluabi, 2014). Lastly, Omoluabi (2014) discussed Nigeria's human resources for health (HRH) crisis whereby the quality, quantity and mix of health care workers is in a dearth and there is a skewed distribution of HRH towards the urban and southern population. There is an absence of a human resource plan, as well as lack of coordination, alignment, and harmonization that poses a major challenge to health development at all levels of government. Additionally, the lack of skills, high attrition rates, problems with the HRH mix, poor motivation, differential conditions of service, remuneration, work environment, negative attitude to work, and poor supervision are all contributing to inequitable access to health care services (Omoluabi, 2014).

A publication by Siddharthan and colleagues (2015) emphasizes that one method of providing community-based and patient-centered NCD management is through geographic decentralization (from central to regional health facilities) and professional decentralization (task-shifting from doctors to nurses). Task-shifting has proven to be feasible and cost-effective for the prevention and control of NCDs in LMICs. Other successful examples of task-shifting are evident in the management of HIV/AIDS in sub-Saharan Africa and as discussed above, strategies taken in the delivery and approach towards diseases such as HIV/AIDS can be considered for NCDs as well (16, 17).

As the population increases, it comes as no surprise that the need for the healthcare workforce, health facilities, and hospital beds reflect a similar trend. Incentives to encourage, motivate and maintain human resource personnel is a key method to making rural areas and less attractive regions more acceptable to medical personnel (11, 14). In Saudi Arabia for instance, Hazazi and Chandramohan (2017) explain that the nation relies heavily on expatriates to provide healthcare, which evidently results in large turnover and instability for the health system. They suggested that the ministry of health should collaborate with different governments and private sectors to strengthen strategies for more long-term support and realistic plans, such as providing training programmes, educating expatriates about the cultural heritage in the region they are working in for cultural harmony, and facilitating more medical colleges (Hazazi & Chandramohan, 2017). With the establishment of additional medical colleges, expatriates can be substituted by qualified Saudi

citizens and the rate or turnover among healthcare professionals will decrease. Saudi Arabia also advises that the ministry of health increases the budget for scholarships and training to offer opportunities for employees to continue their studies abroad (Hazazi & Chandramohan, 2017).

Health information systems / health surveillance / health research global recommendations

Medical intelligence and surveillance (MIS) involves collecting, evaluating, analyzing, and interpreting information of interest in order to strategically plan and strengthen, health care. In the United States and Europe, literature reports huge developments related to MIS, with MedISys adapted in 11 national public health of Europe and 4 organizations, two of which include the World Health Organization, and the Euro-Surveillance (Osain, 2011). MIS systems in these countries have been effectively used to monitor the outbreak of diseases. In 2003 for example, MIS was crucial to controlling SARS, and in the 1970's MIS was used to control and eradicate small pox (Osain, 2011). Another important element for controlling NCDs is community partnerships for administering research in healthcare. This is method to monitor and evaluate activities and outcomes of healthcare (Omoluabi, 2014). Hazazi and Chandramohan (2017) promote research in the medical and healthcare sciences for improving health and well being of a nation. They propose that in Saudi Arabia health research would provide professionals to study-analyze and reduce the epidemic of NCDs. Limited research centres and absence of inter-sectoral collaboration can affect a population's health.

Health-promoting environments / education

Zafar and Malik (2014) advise that in Pakistan, the importance of intersectoral collaborations is imperative for overcoming disease challenges. It is suggested that modern healthcare has less of an impact on population health than the following: economic status, education, housing, nutrition, sanitation, population dynamics, human development, and improvements at a governance level (Zafar & Malik, 2014). Zafar and Malik (2014) continue to state that district officers need to control the different sectors (such as sanitation, water, etc.) and systematize them where needed for the sake of controlling the challenges that NCDs demand.

In Uganda, the country continues to struggle with meeting basic health needs, and as the country grows and urbanizes, the prevalence of high-risk behaviors such as smoking, alcohol consumption, poor diet, and physical inactivity continues to increase (Bass, Heiberg & Lander, 2014). Civil society organizations have emerged in Uganda to raise funds and awareness for the rise of NCDs. These organizations have had an impact, yet even with their emergence Uganda needs to adopt better preventive, control, and surveillance measures. The Global Health Service Partnership chose Uganda as one of three pilot countries in a public-private partnership between the Peace Corps, the US President's Emergency Plan for AIDS Relief (PEPFAR), and SEED Global Health. This collaboration creates an opportunity for American physicians and nurses to volunteer through the Peace Corps in foreign countries to help strengthen the health system by building up the national health system, control disease, and encourage country ownership efforts (Bass, Heiberg & Lander, 2014).

In Saudi Arabia, community education is highly recommended. Hazazi and Chandramohan (2017) state that community education can be efficient and effective measures used for advocating strong anti-smoking campaigns, influencing the adoption of healthy lifestyles and increasing physical activity, as well as provide support to those individuals and families that need it. Additionally, in the Arab world, policies for promotion smoke-free environments, labeling of products, and taxation are advised (Rahim et al., 2014). In fact, in an article by Rahim and colleagues (2014), they state that interventions with action on tobacco control as well as salt reduction are key to addressing the rise of major risk factors. They continue to advise that even small reductions in salt intake can results in substantial reductions in medical costs and cardiovascular events; hence, it is paramount to educate consumers on such dietary intake.

Table 3 - Elements of health infrastructure in conjunction with the objectives of the global action plan

Element of Health Infrastructure	Countries / Regions Examined	Recommended Best Practices for Nigeria	Objectives of WHO Global Action Plan that this focus will address
Service Delivery	Asia-Pacific Cambodia Rwanda Nepal Pakistan	• Universal health coverage • Free essential medicines • Decentralization of health services & Task-shifting • Integrated health services	**Objective 4:** To strengthen and orient health systems to address the prevention and control of NCDs diseases and the underlying social determinants through people-centered primary health care and universal health coverage.
Health Workforce	Saudi Arabia East Africa	• Task-shifting (mal-distribution of HRH) • Geographic decentralization • Professional decentralization • Use of incentives	**Objective 1:** To raise the priority accorded to the prevention and control of NCDs diseases in global, regional and national agendas and internationally agreed development goals, through strengthened international cooperation and advocacy.
Health Information Systems / Surveillance / Research	United States Europe Saudi Arabia	• Medical intelligence and surveillance (MIS) databases • Health research	**Objective 2:** To strengthen national capacity, leadership, governance, multisectoral action and partnerships to accelerate country response for the prevention and control of NCDs diseases. **Objective 5:** To promote and support national capacity for high-quality research and development for the prevention and control of NCDs diseases. **Objective 6:** To monitor the trends and determinants of NCDs diseases and evaluate progress in their prevention and control.
Leadership / governance	Saudi Arabie	• Restructure / improve leadership & governance Implementation of programs to address risk factors of NCDs	

Health-promoting Environments / Education	Pakistan Uganda Saudi Arabia Arab world	• Intersectoral collaborations / action • Civil society organizations • Seek partnership opportunities • Community education / programs • Promotion (advertising, social media, etc.)	**Objective 3:** To reduce modifiable risk factors for NCDs diseases and underlying social determinants through creation of health-promoting environments.

Discussion

The Nigerian health sector contains multiple competency gaps which need to be addressed for effective prevention and management of NCDs. It is imperative that these identified gaps in infrastructure, are supported and closed by Nigerians and members of the diaspora who will contribute through their knowledge, experiences, skills and competencies towards national development in health care. Literature reviews have highlighted one common theme regarding NCDs – they are the leading cause of death globally with a rise seen explicitly in LMIC. This high-level report is based on a thorough literature review on the requirements for a health system capacity that manages chronic diseases in Nigeria. After carefully reviewing many different publications, a number of actions and recommended approaches may be used to address the different elements for a health system designed to combat NCDs suitable to Nigeria as summarized in table 3.

The rise of NCDs in low- and middle-income countries is a serious concern. A body of knowledge on this topic explains that high-burden countries do not have the capacity to deal with the existing and projected burden of NCDs. The situation is evident in Nigeria, where the health care system is still in early stages of development. It is important to look at the current situation in Nigeria because there is a lack in: adequate surveillance systems, strong leadership principles, and medical intelligence which acts as the backbone of the health sector. Barriers in Nigeria lie in the pattern of leadership, infrastructures, man power challenges, and clinical training, among others (Osain, 2011). Both financial and geographic elements can affect accessibility to health care, an issue relevant to Nigeria. Although the majority of the population in LMICs lacks access to quality health services at an affordable price, rural populations spend less on treatment while also having access to lower quality care, and their expenditures represent a higher expenditure of their annual household consumption (Janssens et al., 2016). Table 2 (in the results section above) describes a list of results that were discovered by Janssens et al., (2016) in their study about the financial burden of NCDs in rural Nigeria. This table also includes a third section, which highlights the key gap in Nigeria's healthcare system, that demonstrate the greatest needs. Janssens et al., (2016) affirmed that long travel distances to a health provider was a major cause that prevented individuals to seek care, keeping in mind that travelling a long distance would incur costs. Long distance trips impede those poorer households, particularly among the rural populations, due to the weak health care system in Nigeria, along with long travel distances to a health facility. Further to this, it is

important to note that the lack of health services can be associated with low levels of awareness that one may be suffering from a chronic disease. When an individual is not aware that they may be facing a potential NCD, this means that their exposure to risk factors continues to impede on their health since there is no preventative measures implemented in their lives.

Actions to address service delivery

Integrating NCDs in primary health care services is crucial Since there are common risk factors associated with most NCDs, collaboration of these diseases with infectious diseases such as HIV would be more cost-effective than tackling diseases individually. Jacobs, Hill, Bigdeli, and Men (2016) emphasize this in their work too, stating that NCDs are on a rise and hence a fast-needed approach that addresses the issue of NCDs needs to be integrated in a health system. This was the case in Cambodia, where Jacobs and colleagues (2016) advised that integrating NCD management with HIV/AIDS control programs in LMIC suggests that care and treatment of disease will occur through primary health care, which lowers the projected workload and financial burden on a health system while simultaneously allowing NCD patients to access continuous care at a more affordable cost (Jacobs, Hill, Bigdeli & Men, 2016). Nigeria can benefit from the Asia-specific region that uses a model where multiple services are accessible at the same point of care. This would be a cost-effective model that can be made culturally appropriate and resource-sensitive to suit Nigeria's population (Maiyaki & Garbati, 2014).

In Rwanda although the health system continues to have challenges in several areas, in the last decade it has greatly expanded access to health care which has ultimately led to declined rates in morbidity and mortality (Bass, Heiberg & Lander, 2014). One method that was implemented into Rwanda's health reform included decentralization of health services to bring services closer to the population. For Nigeria this would mean that care for NCDs would come from primary level health facilities rather than secondary or tertiary health facilities. This also means that services are made available from more than just the physicians; they would be provided by trained nurses, peer educators, patients, and community-based caregivers. This further introduces a task shifting approach which will be touched upon in further sections. In addition, Rwanda has also implemented a system known as the *Integrated Health Systems Strengthening Project* (IHSSP) whereby the program seeks to improve quality and accessibility to health services for all Rwandans (Bass, Heiberg & Lander, 2014). It is centered on key health systems strengthening building

blocks: health information, health financing, quality assurance, human resources for health, and health service governance and decentralization. This would be a beneficial way to facilitate these important building blocks in the Nigerian health system similarly to what Rwanda has done.

Access to essential medicines for NCDs in Nigeria has been an underlying issue. This is a major concern since NCD prevalence is steadily increasing. In Nepal, the government implemented the *free essential healthcare services program* with a priority to provide free essential medicines (Hazazi & Chandramohan, 2017). Their decision allowed for 70 medicines to be available rather than the original 40 which did not include enough NCD related medicines. Nigeria can benefit from such a system where NCD-related medications are available with no cost, for those in need and for those who cannot afford it. The Nigerian government needs to allocate resources and work with the ministry of health to initiate a program like the free essential medicines program in Nepal in order to improve people's access to and use of quality medicines.

To reorient and strengthen a health care system, evidence shows that an integral part of this is to integrate access to universal health coverage (UHC). UHC guarantees health care access to all individuals; thus, improving health outcomes. The Arab world advises that the implementation of UHC is essential to minimizing out-of-pocket expenditures which can further strain finances of a household (Rahim et al., 2014). In their work, Zafar and Malik (2014) advise that in Pakistan UHC can address the financial barriers that are preventing access to health care. Therefore, they advise on prepayment /insurance mechanisms in order to promote productivity and quality care. Similar to Pakistan, in Rwanda UHC coverage is used to address health needs according to national and local epidemiology and priorities. UHC would build health plans and financing structures what would ultimately provide access to diagnostics, prevention, and treatment for all (Bass, Heiberg & Lander, 2014). Efforts to develop and renovate the infrastructure of health facilities, decentralize health services, and implement health insurance plans have all had a positive impact on the decline in morbidity and mortality rates in Rwanda (Bass, Heiberg & Lander, 2014). Nigeria needs to develop a health policy so that it can meet the population health needs. To achieve this, all stakeholders need to be engaged, to evaluate and make appropriate changes according to the nation’s requirements. Resources will need to be allocated for effective implementation of UHC.

Actions to address health workforce

Another factor that contributes to Nigeria's poor health outcomes is health workforce, which refers to anyone who is engaging in actions that will support the health system. Literature findings have proven that the workforce of Nigeria's healthcare system is situated in challenges that can negatively impact the care being provided to patients. These challenges are due to difficult working conditions, insufficient physician workforce, HRH crisis, and the ruined state of the nation's healthcare sector. Health system restructuring in an effective and affordable way will support the nation's current state and allow for growth in health care.

Within the context of Nigeria, task-shifting alone will not address the issue of health workforce, but retraining of existing staff or adding new tasks to existing work practices will certainly support redistribution of tasks within a health workforce necessary to address workforce shortages in Nigeria. Joshi et al., (2014) advise that task-shifting has shown improved health outcomes in healthcare, including reductions in blood pressure, increased uptake of medications, and lower depression scores. Although task-shifting can encompass barriers, the approach is deemed viable, successful and clinically effective for the management of NCDs (Joshi et al., 2014). Further to this, in Nigeria the HRH seem to be mal-distributed in favour of urban areas, rather than the rural areas since the problems of providing infrastructure and creating conducive work environments in the poorly serviced states is lacking. This requires government attention to tackle the issues behind mal-distribution since there is a great need for overall development, including: quality of health infrastructure; number and workload of health workers; salaries and intangibles; and security (Omoluabi, 2014). Responsible governments need to ensure that health workers are adequately deployed to all health facilities in both urban and rural Nigeria. This can only be achieved by adopting deployment policies that will enhance retention of health workforce in all locations. Similar to Saudi Arabia, Nigeria's ministry of health should collaborate with different governments and private sectors in order to integrate plans in their reform for a positive long-term revolution. Nigeria needs to establish training programs and facilitate more medical colleges by increasing the budget for scholarships and training to offer opportunities for careers in health as well as studying abroad to further their knowledge on issues such as NCDs. This will ultimately help improve the expertise of healthcare workforce and increase the quality of healthcare services. These are

methods that Nigeria would benefit from in the face of lacking skillset and shortage of healthcare providers (Omoluabi, 2014).

Actions to address health information systems / health surveillance / health research

Osain (2011) states that for health care to be successful in this modern era, well grounded routine medical intelligence and surveillance (MIS) is necessary, along with adequate management and strong leadership principles, something which Nigeria, as well as many other African and LMIC lack in (Osain, 2011). MIS is necessary in Nigeria as a tool for supporting health care leadership and health care delivery. A model that that suits the interest of Nigerians, which addresses the present problems but also considers modern MIS techniques, would be a way forward for the Nigerian health care system. Integrated service delivery models (as discussed in previous section) in combination with surveillance have been shown to improve NCD control (Mannava, Abdullah, James, Dodd & Annear, 2013). The ministry of health along with the government health care sector and private sectors need to work together to implement a surveillance program that will provide scientific data which authorities should use to create a national plan for improving health care systems. Saudi Arabia example suggested such an approach while also emphasizing that surveillance is crucial for monitoring evidence-based decision making and the success of interventions for containing the NCD epidemic (Hazazi & Chandramohan, 2017). Availability of information is essential to preventing, improving and managing NCDs; hence, Nigeria's federal ministry of health must integrate a disease surveillance database.

Another technique which enhances the availability of information and is highly recommended by Saudi Arabia is administering research. Creating partnerships at national and sub-national levels in order to facilitate collaboration with other researchers and facilities would encourage professionals to study, evaluate, and analyze ways to reduce NCDs and improve health care. The federal government needs to promote and facilitate research on prevention and control of NCDs which will further strengthen the health care system at all levels of health care. Professional bodies need to advocate and participate in research in order to explore and develop quality results for NCDs. This way, any findings in NCD research results can be disseminated and implemented according to the countries' needs (Federal Ministry of Health, 2015). It is crucial that Nigeria promotes and supports high-quality research for prevention and control of NCDs.

Actions to address health-promoting environments / education

Through the creation of health-promoting environments which impact social determinants of health, Nigeria needs to reduce modifiable risk factors for NCDs. Similar to Pakistan (see results), Nigeria needs to similarly adjust intersectoral actions in order to integrate and monitor the nation's needs and promote healthy environments. Intersectoral collaboration in Nigeria will allow for focus to be placed on the social and economic factors that influence the health of the population at the local, regional, and national level. Collaborators (involving service providers (both public and private), all levels of government) must coordinate policies that will enable health equity among all individuals (whether they are the community members, governments, service providers, private sector, etc.).

The methods that were acknowledged in Uganda example where civil society organizations and the global health service partnership would be beneficial to Nigeria. Nigeria should employ civil society organizations that could support the health care system by raising funds and could also promote community education by increasing awareness of NCDs. Nigeria can also collaborate with others and seek out partnership opportunities, like the Global Health Service Partnership, in order to adopt methods for prevention, control and surveillance of NCDs in the country, similarly to Uganda.

The risk factors associated with NCDs can be divided in two categories. There are those risk factors that are modifiable meaning they are more individualistic, and those that are non-modifiable on an individualistic level such as environmental factors. Examples of modifiable risk factors can include unhealthy diets, physical inactivity and smoking (Zafar & Malik, 2014). In Saudi Arabia, community education is recommended to promote health awareness and foster healthier lifestyles for communities (Hazazi & Chandramohan, 2017). Raising community awareness and encouraging health lifestyle changes are a valuable tool to the reduction of NCDs. Nigeria needs to implement strategies like this in order to improve primary prevention and increase awareness. Programs that promote healthy behaviours (physical activity and healthy diets) and advocate for chronic diseases are necessary to clearly communicate with the general population. Additionally, promotion in school settings, through campaigns, and different social media would also contribute significantly in increasing the awareness of risk factors for NCDs. Furthermore, Nigeria needs to enforce legislative guidelines and laws that strengthen advocacy efforts, and that also tackle

tobacco control where the whole-of-government and whole-of-society are impacted. Like the Arab world, Nigeria needs to reduce trans-fat consumption and apply mandatory labeling of trans-fat content in foods. This needs to be conducted by advertising, education campaigns, and applying agreements with the food industry for reformulation of food products (Rahim et al., 2014). All these actions are key to the reduction of NCDs in Nigeria through health-promoting environments and education.

Actions to address leadership/governance

To accelerate the response for prevention and control of NCDs, Nigeria needs to strengthen its leadership and governance by strengthening the capacity of all stakeholders, and most specifically the ministry of health. Hazazi and Chandramohan (2017) state that improving leadership in nation and sub-national levels will assist in effective engagement of the ministry of health and other stakeholders to guarantee appropriate structuring and organizing of the healthcare system. In Saudi Arabia, separating multiple roles of the ministry of health is a way of being able to meet the overwhelming needs of the healthcare sector, and therefore it is recommended that authority also be granted to regional directorates in order to deliver government commitments in a regional/local degree. Nigeria should restructure its leadership and governance in such a way, while making sure to use a population-wide approach in the prevention, control, and management of NCDs. Nigeria needs to implement programs that promotes healthy lifestyles, and programs that exclusively serve to address the risk factors associated with NCDs which include physical inactivity, unhealthy diets, obesity, tobacco use, and harmful use of alcohol. The ministry of health, service providers, community members, and government officials need to work together on a local, regional and national level to implement policies and guidelines that encourage healthy lifestyles that will enhance the social determinants effecting health (Federal Ministry of Health, 2015). Promoting healthy environments invokes promoting human rights and equity which recognizes the fundamental rights to health. Improving leadership and coordination will help address the varied actions that are necessary for preventing and controlling NCDs, including service delivery, health workforce, health information systems, health surveillance and health research, among others.

Limitations

A limitation of this project was the exclusion of studies published in a language other than English,

or searchable in non-English databases. The restricted use of the search databases is another limitation of the study, which may have excluded relevant articles found on other search engines. Furthermore, a limiting factor is that the articles that were used predominantly made recommendations specific to other countries, and hence whether these approaches will have an impact on the Nigerian health care system may or may not be relevant.

Conclusion

This projects objective was to identify health infrastructure in line with global best practices for effective NCDs prevention and management in Nigeria. Based on the literature review performed in this project, the conclusion is that service delivery, health workforce, health information systems, surveillance and research, leadership and governance, and health-promoting environments and education, have shown to be influential factors for improving the infrastructure gaps in Nigeria for combating NCDs. The project investigated the following: how should a health system be equipped when dealing with NCDs; the health system models that other countries propose for preventing and managing NCDs; whether Nigeria has the resources to deal with the burden of NCDs; the health system gaps in Nigeria; and where Nigeria needs to invest for appropriate health infrastructure with the aim of reducing NCDs. The conclusions have led to multiple recommendations which may positively impact the health care system in Nigeria and reduce economic burden in the long-term, as well as improve social determinants of health.

Recommendations

Programme planners and policymakers should leverage/share lessons and resources from other programs as a response to inform their NCD response.

- Integrate models where multiple services are accessible at the same point of care.
- Decentralization of health services to bring services closer to the population.
- Integrate task-shifting as a method of retraining existing staff or adding new tasks to existing work practices to redistribute tasks within a health workforce so to address workforce shortages
- Implement a program that seeks to improve quality and accessibility to health services, centered on key health systems strengthening building blocks: health information, health

financing, quality assurance, human resources for health, and health service governance and decentralization, to facilitate building blocks in the healthcare system

- Allocate resources and to execute the free essential healthcare services program for improved access to and use of quality medicines / health care
- Improve geographical access as an essential strategy for improvement of necessary recurrent provider consultations that can drive up transportation costs substantially.
- Implement deployment policies to enhance retention of health workforce in all locations, and to tackle the issues behind mal-distribution of health workforce.
- Allocate resources for scholarships and training so to establish training programs and facilitate more medical colleges.
- Access to health insurance to increase health care utilization and decreases health-related financial burdens. The government needs to allocate resources for universal health coverage for all Nigerians
- Implement a surveillance program by the ministry of health, the government health care sector and private sectors that will provide scientific data for improving health care systems
- The federal government to promote and facilitate research on prevention and control of NCDs in Nigeria
- Develop and implement policy, programs and plan for the prevention and control of major NCDs, and for the reduction of modifiable risk factors (tobacco use, sedentary lifestyle, alcohol consumption and harmful diet)
- Increase awareness of risk factors for NCDs by employ civil society organizations to raise funds, promote community education, promotion in school settings, promote through campaigns, and to promote through different social media.
- Reduce trans-fat consumption and apply mandatory labeling of trans-fat content in foods.
- Restructure leadership and governance in order to split roles between different authoritative bodies
- Develop a NCDs treatment policy with appropriate treatment guidelines for various NCDs and clear demarcation of roles of each level of health workforce for NCDs prevention, treatment and control.

- Establish a high-level national multi-sectoral mechanism for planning, guiding, monitoring and evaluating enactment of the national policy with the effective involvement of sectors outside health

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