Diabetes and related diseases in Nigeria: *Need for improved primary care in rural communities*

*Chinenye S[1], Oputa RN[2], Oko-Jaja RI[3]

Review Article

Abstract

Background: The political commitments necessary to tackle the growing burden of diabetes mellitus (DM) and related NCDs have increased in recent years in Nigeria. This has resulted in the development of national policy and strategic objectives by the Federal Ministry of Health for the prevention and control of NCDs in Nigeria. This paper aims at highlighting a framework for integrating Diabetes and other related NCDs into primary health care.

Materials and Methods: Data identification methods included internet search (using search engines and online databases) and in the libraries.
Sources of information include international, regional, national and local healthcare policies and regulations. Peer-reviewed academic and research papers were identified.

Results and Discussion: Prevention and care are both essential components in the control of diseases such as DM and hypertension, and a large evidence base is available on cost-effective interventions for prevention and control. However, ways of implementing these interventions and incorporating them into policies and practice in Nigeria remains a challenge. The delivery of care in such scenario will require the development of case management model(s), containing a core set of evidence-based diagnostics, essential medicines, behaviour change interventions and supporting tools for service performance monitoring.

Conclusion: DM, including related NCDs are increasing in prevalence in Nigeria, and their complications pose an immense public health burden. There is a need for our health decision-makers at all levels to develop strategies and interventions to halt the growing trend and burden of diabetes through effective primary care, especially in rural communities of Nigeria.

Keywords: Diabetes, Non-Communicable Diseases (NCDs), Primary Care, Rural

*Corresponding Author: Dr Chinenye S (sunnychinenye@gmail.com)
[1&3]Department of Medicine, University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria.
[2]Department of Medicine, Federal Medical Centre, Owerri, Imo State, Nigeria.

Le diabète et les maladies connexes au Nigéria: *Nécessité de l'amélioration des soins de santé primaires dans les communautés rurales*

*Chinenye S[1], Oputa RN[2], Oko-Jaja RI[3]

Révision Article

Résumé

Arrière-plan: Les engagements politiques nécessaires pour s'attaquer au fardeau croissant du diabète sucré (DM) et les maladies non transmissibles ont augmenté au cours des dernières années au Nigéria. Cela a entraîné le développement de la politique nationale et les objectifs stratégiques du Ministère fédéral de la santé pour la prévention et le contrôle des maladies non transmissibles au Nigéria. Ce document vise à highlightinga cadre pour intégrer le diabète et d'autres maladies non transmissibles liées aux soins de santé primaires.

Matériels et méthodes: identification des données méthodes incluses recherche sur internet (en utilisant des moteurs de recherche et les bases de données en ligne) et dans les bibliothèques. Sources d'information, notamment internationales, régionales, nationales et locales en matière de santé politiques et règlements. L'objet d'un examen par les pairs des universitaires et des documents de recherche ont été identifiés.

Résultats et discussion: la prévention et les soins sont deux éléments essentiels dans la lutte contre des maladies telles que DM et de l'hypertension, et une grande base de données probantes est disponible sur le rapport coût-efficacité des interventions de prévention et de contrôle. Toutefois, les moyens de mise en oeuvre de ces interventions et de les incorporer dans les politiques et la pratique en Nigeriaremains un défi. La prestation des soins dans un tel scénario exigera la mise au point du modèle de gestion des cas(s), contenant un ensemble de preuves de diagnostics, de médicaments essentiels, le changement de comportement des interventions et des outils pour surveiller les performances des services.

Conclusion: DM, y compris les maladies non transmissibles sont l'augmentation de la prévalence au Nigéria, et leurs complications constituent un énorme fardeau pour la santé publique. Il y a une nécessité pour notre santé des décideurs à tous les niveaux pour élaborer des stratégies et des interventions de freiner la tendance croissante et le fardeau du diabète grâce à des soins de santé primaires, en particulier dans les communautés rurales du Nigéria.

Mots-clés : diabète, maladies non transmissibles (MNT), les soins primaires rurales

*Corresponding Author: Dr Chinenye S **(**sunnychinenye@gmail.com)
[1&3]Department of Medicine, University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria.
[2]Department of Medicine, Federal Medical Centre, Owerri, Imo State, Nigeria.

Introduction

Nigeria is the most populous country in Africa with about 400 ethnic groups and languages (1) about 51.6% of its populace living in rural areas *(World Bank report published in 2012)*.

Nigeria bears a double burden of disease, although still battling with the scourge of communicable diseases, is now saddled with life-style related non-communicable diseases (NCDs) that accompany industrialization and urbanization.

NCDs are chronic diseases that are typically non-contagious or non-infectious in nature, causing long term debilitation and disability if not prevented or controlled (2). Major NCDs in Nigeria include diabetes mellitus, cancers, sickle cell disease, asthma, mental health disorders, road traffic injuries/violence, and oral health disorders. Others include cardiovascular diseases such as hypertension, coronary heart disease, stroke and attendant chronic renal diseases.

Of the 57 million deaths that occurred globally in 2008, 36 million – almost two thirds – were due to NCDs, comprising mainly cardiovascular diseases, cancers, diabetes and chronic lung diseases.(3) The combined burden of these diseases is rising fastest among lower-income countries, populations and communities, where they impose large, avoidable costs in human, social and economic terms. About one fourth of global NCD-related deaths take place before the age of 60. This figure represented 60% of all deaths globally with 80% due to NCDs occurring in low and middle income countries (Nigeria inclusive) and approximately 16 million deaths involving people under 60 years of age (4) and are regarded as premature deaths that could be prevented.

Total deaths from NCDs are projected to increase by a further 17% over the next ten years (3). The rapidly increasing burden of these diseases is affecting poor and disadvantaged populations disproportionately, contributing to widening health gaps between and within countries. Without action on NCDs, countries within the WHO Africa region will witness the largest rise in NCDs death (27%) from 2004-2015, followed by the Eastern Mediterranean (25%), South –East Asia and Western Pacific Regions (4).

As NCDs are largely preventable, the number of premature deaths can be greatly reduced by appropriate interventions. Failure to reduce the impact of NCDs on developing countries will make it difficult to attain the health-related Millennium Development Goals (MDGs) (5) which the United Nations set out in 2000 with outlined targets to combat infectious diseases such as HIV/AIDS, malaria and TB but did not include any reference to NCDs.

Burden of Major NCDs in Nigeria

The economic burden of NCDs in the country has been estimated to be an annual loss of $800 million which will reach an accumulated loss of $7.6 billion by 2015 from heart diseases, stroke and diabetes alone (6).

In spite of the higher burden posed to national economies by NCDs e.g. hypertension (20% estimated national prevalence in 2010) (2) compared to communicable diseases e.g. HIV/AIDS (4.1% national prevalence in 2010) (7); the funding (mainly donor) on HIV/AIDS alone was 5 billion naira ($33.3M) compared to a paltry sum of 60 million naira ($375,000) on NCDs in 2010 appropriation (8).

It is in recognition of the nature, magnitude and severity of these problems and challenges posed by NCDs that the Federal Ministry of Health (FMOH) established the NCD Control Programme in 1988 to serve as the arrowhead of the response to NCDs in Nigeria (2). The strategic thrust of the NCD control programme is to generate reliable data and information base for the establishment of a national NCD Policy and Strategic Plan of Action to guide prevention,

control and management of NCDs in Nigeria.

Diabetes Mellitus

National DM survey: The national survey of Non-communicable diseases in Nigeria documented the national prevalence of diabetes (age-adjusted) to be 2.2%, with a male: female ratio of 1:1.1 and a significant increase in prevalence with age (9). Below the age of 45 years, the crude prevalence in males was 1.6% and 1.9% in females respectively. After the age of 45 years, it rose to 5.4% in males and 5.6% in females - a threefold increase in each gender. The same survey estimated that not less than 1.05 million Nigerians were diabetic with only about 225,000 being aware of the condition and about 198,000 were on treatment. Diabetes was found to significantly co-exist with smoking and hypertension.

These figures were most probably higher because Nigerians below the age of 15 years were not included in the survey and results were not available for some states due to technical and logistic reasons.

Prognostic Indices of diabetes mortality: Over a 12month period**,** in-patients with diabetes mellitus attending a tertiary hospital in Nigeria were prospectively studied to determine their short-term outcome (10). This includes total mortality, causes of death, associated complications and duration of hospital stay.

A total of 1,327 subjects were admitted to the Medical wards for the duration of the study and the crude death rate was 11%. DM related admissions were 206 (15%) of all the medical admissions and the case fatality rate was 16% (33). The most common reasons for DM admission were hyperglycaemic emergencies (HE), 88 (40%) and hypertension, 44 (21%). The most common causes of deaths were HE, 15 (46%) and DM Foot Ulcers (DFU), 10 (30%) while DFU and cerebrovascular disease (CVD) had the highest case fatality rates of 28% and 25% respectively. DFU had the most prolonged duration of admission ranging from 15–122 days. DFU, CVD and having type 2 DM were highly predictive of fatal outcomes (10).

Diabetes Mellitus constitutes a substantial health problem in the delta region of Nigeria (11). At diagnosis, type 2 diabetic subjects had developed complications including neuropathy 439(56.3%), erectile dysfunction 283(36.3%), nephropathy 72(9.3%) and retinopathy 57(7.3%). This obviously indicates that type 2 diabetes has an asymptomatic pre-clinical phase which is not benign; thus underscoring the need for prevention and control measures to detect the disease early and institute therapy (11).

There is a need for improved management of diabetes in Nigeria especially in rural areas where the bulk of our people live.

Hypertension

Available data from the National Survey on NCDs 1990 – 1992 (published in 1997) (9) involving ages 15 years and above showed that 4.3 million (11.2%) Nigerians had hypertension with higher prevalence in urban than in rural areas. The prevalence was found higher at both extremes of the socio-economic spectra.

Sickle cell disease: Nigeria has the highest burden of sickle cell disease globally. According to the national NCDs survey, 23.04% have Sickle cell trait (Haemoglobin AS) (9) resulting in an estimated 150,000 babies being born annually with the disorder (20 per 100,000 births) (13). However, the survey shows that about 0.5% of adult Nigerians have sickle cell disease (SCD) due to loss of affected children early in life (9).

Cancer: Cancer prevalence is on the increase. One hundred thousand incident cases of cancers are currently diagnosed annually and it is estimated that by the year 2015 (14) the burden would have increased five-fold if nothing is done. The problem is further compounded by the lack of integration of routine screening into primary health care. Majority of cancers in Nigeria are diagnosed at a very late stage and there are very few centres offering radiotherapy

and other oncology services. There is currently no population-based national cancer data; however, using available data from some cancer registries in Nigeria, WHO obtained estimated incidence and mortality of most frequent cancers in Nigerians (14).

Road traffic injuries: As at 2001, Nigeria ranked second on the weighted scale of countries with very high road traffic crashes (15). In the year 2006 alone; 9,972 person died and 38,067 were injured in road traffic crashes (16).

Mental Health: According to a national mental health survey in 2002 about 17million (12.1%) (17) Nigerians experienced mental disorder at the time of the survey while about 8 million (5.8%) were found to have current episode of mental health disorder. In a recent review, only about 21% of those affected received any form of treatment (18).

Common NCD Risk Factors

The major risk factors for NCDs are unhealthy nutrition (increasing consumption of fast foods, low consumption of proteins, fruits and vegetables, excessive intake of salt and refined sugars etc), overweight and obesity, lack of physical activity, harmful or excessive alcohol intake, use of tobacco and substance abuse. According to the WHO report on global tobacco epidemic, the current smoking rate for adult Nigerian males is 9.0% and 0.2% in females (19). Other risk factors of NCDs include advancing age, occupational exposure and climate change.

Tobacco is increasingly associated with NCDs particularly chronic respiratory diseases and lung cancers. The report from the Global Youth Tobacco Survey (GYTS) showed that more than 1 in 10 youths aged 13-15 years are current cigarette smokers in Nigeria (20). The likelihood of initiating tobacco smoking varied from 3.6% overall to a peak of 16.2% (17.8% in girls). The use of other tobacco products among the youths currently ranges from 13.1% to a peak of 23.3% (20).

Rationale for Action

In developed countries, deaths from NCDs have declined significantly, but the reverse is the case for developing countries such as ours. Therefore, it is no exaggeration to describe the situation as an impending disaster; a disaster for health of the individual, family, communities and national economies.

Presently, the developing countries have no incentives for international funding of non-communicable diseases and as a result neglected the control of NCDs (21). Majority of people in the low-income economies including Nigeria have limited access to healthy foods, safe places for physical activity and health services. Furthermore, some major NCDs like cancers, sickle cell disease and mental health disorders are not adequately budgeted for and covered by the National Health Insurance Scheme (NHIS) thus posing high financial burden on the affected individuals and the community.

Primary Care

Definition: (22-24)

Primary care for children, adolescents and adults with diabetes is personal health care delivered in the context of family, culture and community whose range of services meets common health needs of the individuals and families being served. Primary care is the integration of services that promote and preserve health; prevent disease, injury and dysfunction; and provide a regular source of care for acute and chronic illnesses and disabilities.

Primary care serves as the usual entry point into the larger health services system and takes responsibility for assuring the coordination of health services with other human services. The primary care provider incorporates community needs, risks, strengths, resources, and cultures into clinical practice. The primary care provider shares with the family an ongoing responsibility for health care.

In both the manner of its organization and the methods of its delivery, effective primary

care for all (including people living with diabetes) should possess the following attributes:

1. First contact
2. Continuous
3. Coordinated
4. Comprehensive
5. Community oriented
6. Family-centered
7. Accessible
8. Culturally competent
9. Developmentally appropriate
10. Accountable

The basic assumption underlying the definition of primary care is that each individual should have a primary care provider who provides care consistent with these attributes.

Rural Health

'Rural' definitions are numerous to the extent that there are almost as many definitions of rural as there are researchers (25). Most rural definitions have been based on geographical concepts, also referred to as technical definitions (26). These have included measures such as population size, population density, distance from an urban centre, settlement patterns, labour market influences and postal codes.

Rural populations appear to be very dynamic in nature especially in Nigeria. Generally, socio-demographic statistics confirm that the rural population is primarily composed of persons under the age of 14 and over the age of 60, while urban areas are in large part composed of the working age group (20-59 years of age).

The rural communities in Nigeria have diverse social, geographic and economic characteristics. Most of our rural communities have a larger proportion of elderly people and children, with relatively small populations of people of working age which results in a higher dependency ratio.

Rural communities show a health disadvantage for many health measures. Compared to their urban counterparts, rural individuals have, poorer socioeconomic conditions, have lower educational attainment, exhibit less healthy behaviors, and have overall higher morbidity and mortality rates.

In Nigeria, there is an "inverse care law" in operation i.e. people in rural communities have poorer health status and greater needs for primary care, yet they are not as well served and have more difficulty accessing health care services than people in urban centres.

Rural health Issues in Nigeria

These include:

- Under-services delivery due to a lack of mal-distribution of resources, both in terms of finance and manpower.
- Lack of specialty services. Medical specialists often do not have enough 'critical mass' of patients to allow them to economically serve a low population area.

The hardship on patients can be particularly demanding in some chronic illnesses such as diabetes, hypertension etc, in which treatment requires regular long distance travel to available health facilities. We must endeavour to reduce the health disparities between rural and urban populations through primary care by implementing policies and programs with the rural population being part of the equation. Policy makers at all levels of governance play a critical role in ensuring the health of rural population. Policies ensuring safe living conditions right through to accessible health care services will result in equal health outcomes across rural and urban locations.

Delivery of Primary Care to people living with Diabetes in resource poor rural areas

Diabetes mellitus is the commonest endocrine-metabolic-disorder in Nigeria, similar to the experience in other parts of the world. With rising incidence and prevalence of diabetes mellitus, the World Health statistics indicate that Nigeria has the highest number of people living with diabetes in sub-Saharan Africa (4).

Most of the burden of diabetes or other NCDs, fall close to people's homes at primary care level and appropriate health programmes for delivering care to people living with NCDs in this situation are required.

A few basic principles apply: (27-29)

1. The primary care model should be appropriate to the local situation and resources.
2. Well supported decentralization of human and physical resources is a priority in order to improve access to healthcare and sustain uptake of long-term treatment.
3. The programme should cover the common NCDs including diabetes, hypertension, and asthma amongst others
4. Clear protocols or guidelines for diagnosis, risk-factor assessment and management should be developed and adopted.
5. Care (diagnosis, treatment and education) can be delivered to the NCD patient either by professional health staff at a clinic or, once the condition is stable, continued via community or village health workers.
6. Diagnosis and initial stabilisation of the condition requires the input of trained staff.
7. A dedicated NCD clinic improves the introduction and standardised use of protocols, increases the exposure of NCD patients to appropriate health information, and aids routine drug ordering.
8. Protocols for diagnosis, management, assessment of complications and clear indications for referral should be developed. The actual content of these will depend on local resources, chances for referral, and availability of any further treatment or investigations.
9. This clinic will not function optimally in isolation from other healthcare services. Eventually it needs to be clearly and firmly placed within the national healthcare system or any existing NCD programme and linked horizontally and vertically within the primary healthcare (PHC) programme.
10. Many Local Government Areas (LGAs) do not yet have a strong NCD initiative, but do manage PHC services, and it will be more feasible to focus on strengthening the NCD clinic link with these PHC service initially.
11. An appropriate primary level NCD clinic will be nurse-led with back-up as available from medical officers.
12. Nurses in PHC and their colleagues in referral institutions should be trained together in the clinic's functioning and protocol usage. This will enhance cooperation and standardisation of care for people with NCDs.
13. One area key to the good functioning of this clinic model is drug supply to the clinics and also to the village health personnel. Nothing discourages a patient faster from taking treatment than not finding it available!
14. The shorter the list of medications and the cheaper or more commonly available they are, the more likely ordering is to be timely and successful. This means staying within the Nigerian essential diabetes medicines' list and limiting the number of drugs in each NCD protocol. Although this may not give the flexibility of management some clinicians would wish for, it will at least ensure an acceptable base-line of treatment options.

Diabetes Clinic Records

- A brief record of each patient, their diagnosis, attendance dates, and treatment should be kept in the clinic and this card filled each time the patient attends for clinical review.

- These cards can be used for statistical records and checking that patients are returning to clinic as planned.
- Patients should be encouraged to keep their own notebooks in which are recorded details of education given, reasons for treatment changes, treatment plans etc.
- These books can then be presented when the patient attends any health facility to give information on their condition and its management.

Conclusion

Diabetes mellitus and related NCDs are increasing in prevalence in Nigeria; their complications pose an immense public health burden. Diabetes is highly correlated to risk factors such as unhealthy diet, physical inactivity, obesity, alcohol intake and smoking. There is a need for our health decision-makers at all levels to develop strategies and interventions to halt the growing trend and burden of Diabetes through effective primary care, especially in rural areas of Nigeria.

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