*Annals of African Medicine, Vol. 13, No. 1; 2014*

Review Article

Access this article online

Quick Response Code:

Website: www.annalsafrmed.org

DOI: 10.4103/1596-3519.126933

PMID: ******

# The burden of non-communicable diseases in Nigeria; in the context of globalization



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## Abstract

This paper highlights the tenets of globalization and how its elements have spread to sub-Saharan Africa, and Nigeria in particular. It assesses the growing burden of non-communicable diseases (NCDs) in Nigeria and its relationship with globalization. It further describes the conceptual framework on which to view the impact of globalization on NCDs in Nigeria. It assesses the Nigerian dimension of the relationship between the risk factors of NCDs and globalization. Appropriate recommendations on tackling the burden of NCDs in Nigeria based on cost-effective, culturally sensitive, and evidence-based interventions are highlighted.

**Keywords:** Globalization, Nigeria, non-communicable diseases

## Résumé

Cet article met en évidence les principes de la mondialisation et comment ses éléments sont propagées à l'Afrique subsaharienne et le Nigeria en particulier. Il évalue la charge croissante des maladies non transmissibles (MNT) au Nigeria et sa relation avec la mondialisation. De plus, il décrit le cadre conceptuel sur laquelle afficher l'impact de la mondialisation sur les maladies non transmissibles au Nigeria. Il évalue la dimension nigériane de la relation entre la facteurs de risque des maladies non transmissibles et de la mondialisation. Issu des recommandations appropriées sur la lutte contre le fardeau des maladies non transmissibles au Nigeria rentable, sensibles à la culture, et des interventions fondées sur des preuves sont mises en évidence.

**Mots-clés :** La mondialisation, Nigeria, maladies non transmissibles

## Introduction

Until recently, the burden of non-communicable diseases (NCDs) was thought to be a problem afflicting only affluent countries. However, emerging evidence has indicated that the problem affects the developing nations more than the developed ones.[1,2] With the decline in prevalence of many infectious diseases and a steady increment of NCDs as major causes of death, Nigeria and other Sub-Saharan African countries are undergoing epidemiological transition.[3] Globalization, the changing demographic dynamics, affluence, and the pattern of food consumption are responsible for this trend. Despite these, there is a global inertia at curtailing the rising trend as evident by the lack of mention of NCDs in the millennium development goals.[4]

Globalization has reduced the world into a "global village," with increase in interaction of people of diverse backgrounds sharing cultural heritage, educational improvement, and economic development. Contemporary globalization has been defined as "intensification of cross-national cultural,

economic, political, social, and technological interactions that lead to the establishment of transnational structures and the global integration of cultural, economic, environmental, political, and social processes on global, supranational, national, regional, and local levels."[5]

This phenomenon has been accelerated by several factors, the most important of which is the rapid turnover of technologies and its adoption by people of diverse cultures, development in communication and transportation, and its widespread availability.

It has bridged geopolitical divides and led to the rapid adoption of liberal economic policies, opening up hitherto circumscribed markets, with attendant interdependence of national economies. These have brought to fore the concept of globalization. Immense internet usage in Nigeria has allowed the populace to share hitherto unknown information and lifestyle with the larger global community, some of which contribute to the risk of NCDs [Figure 1].

The last 20 years has seen increased capital flight from the industrialized world to developing countries as capital investments. It has also seen the presumed siphoning of resources, by leaders of some developing countries, to the financial "safe haven" in the developed world.

One of the main challenges of globalization is its tendency to globalize health risks. The relationship between globalization and NCDs is complex. The impact can be direct by affecting nationalities, communities, and individuals alike. It can also be indirect by affecting economies, education, health policies, and health systems.

It has now become imperative to re-strategize and devote more resources and time toward addressing this emerging challenge.

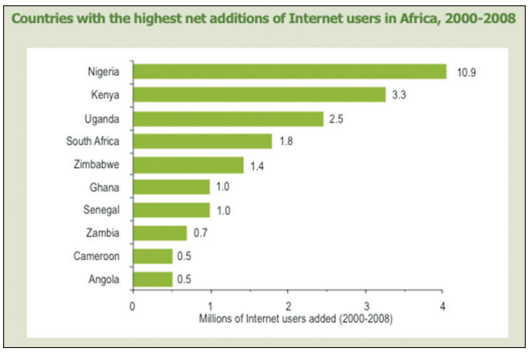


**Figure 1:** Growth of internet users in Africa 2000-2008. Adapted from: http://whiteafrican.com/2009/12/22/internet-mobile-stats-africa-grows-fastest-in-the-world-2009

Although several studies have addressed the epidemiology of NCDs, such as cardiovascular diseases (CVD), diabetes mellitus (DM), and others in Nigeria in addition to a national survey, there is paucity of data on the potential interrelationship between globalization and NCDs in the country.[6-12]

The objective of this review is to examine the burden of NCDs in Nigeria and depict how globalization has affected it.

## Burden of non-communicable Diseasesin Nigeria

### Cardiovascular diseases

Cerebrovascular diseases (cerebrovascular, cardiac, and peripheral vascular diseases) are the most important causes of morbidity and mortality globally, accounting for 80% of all deaths occurring in developing countries.[13]

Nigeria, with an approximate population of 160 million, has an estimated proportional mortality attributable to CVD of 12%.[14] In 2008, the estimated mortality due to a combination of CVD and diabetes was put at 435.9/100,000 and 475.7/100,000 for males and females, respectively.[14] Nigeria has not established a mechanism for community-wide data collection on NCD. Currently, WHO and local researchers have published hospital-based data on CVD in Nigeria. These reports and studies suggest a rising trend in CVD risk factors, such as systemic hypertension[15,16] [Figure 2].

Furthermore, the morbidity and mortality of systemic hypertension-related complications are also on the rise in Nigeria. Hitherto, ischemic heart diseases were considered to be rare in Nigerians; however, recent data has shown it to be on the rise.[17]

Other reports suggest an increase in morbidity and mortality associated with complications of hypertension,such as stroke heart failure and renal failure.[18,19]

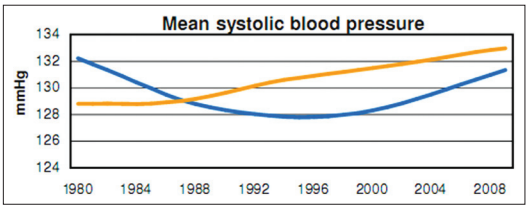


**Figure 2:** Mean systolic blood pressure. Accessed from World Health Organization. Global health observatory. Non-communicable diseases country profile; Nigeria 2010. http://www.who.int/nmh/countries/nga_ en pdf

The economic burden of CVD is restricted to not only the developed countries, but also the developing ones. This comes in form of loss of income from disability and increased cost of healthcare. Although there are no studies on the burden of these diseases in Nigeria, extrapolating from the global burden of diseases indicates that it may likely have more adverse effects on middle-aged less-privileged people. This may relate to their higher risk profile and limited access to health interventions, which ultimately affect national productivity and development.[20,21]

## Diabetes mellitus

DM is an increasing problem in sub-Saharan Africa, especially Nigeria, with type 2 DM being the most common. It is becoming more prevalent owing to the increasing rates of obesity, physical inactivity, and urbanization [Figure 3]. The Framingham study revealed that the burden of DM, which also increases the risk for CVD, has remained fairly constant over the last 50 years.[22,23] Studies have shown that the risk of CVD mortality is higher in diabetic men compared with non-diabetic men having controlled for other CVD risk factors.[24,25]

Similar to other developing countries, Nigeria is experiencing a rise in the incidence of DM, as shown by an increase from 2.0% in 1992 to 2.2% in 1997.[26,27]

The current projected prevalence estimate of DM in Nigeria, based on the International Diabetes Federation figures, is 4.04%(5th International Diabetic Federation (IDF) Diabetes Atlas, 96-127: 2011).

DM comes along with the added cost of care disability from its complication and loss of productivity to the nation. Although data is scanty on the actual economic burden of DM in Nigeria, it can however be assumed to approximate that of countries with similar socioeconomic and geographical profiles.[25-27]

Although there is no nationwide population-based study on the complications of DM, anecdotal hospital-based reports suggest that it is on the rise. A study in Jos, Nigeria, found 75% prevalence of peripheral neuropathy in diabetics, whereas a study in Kano, Nigeria, found 36% prevalence of diabetic retinopathy.[28,29]

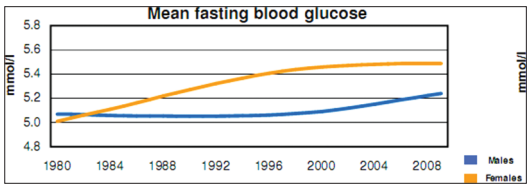


**Figure 3:** Mean fasting blood sugar. Accessed from World Health Organization. Global health observatory. Non-communicable diseases country profile; Nigeria 2010. http://www.who.int/nmh/countries/nga_ en pdf

These complications include retinopathy, neuropathy, peripheral vascular disease, and diabetic foot.[30,31]

The direct medical cost of treating a single diabetic patient in Cameroon was US$489in 2001.[32] An IDF estimate reports the ratio of cost of care for diabetics in Nigeria (age 20-70 years) compared with non-diabetics as approximately double making it one of the countries with the most expensive costs of diabetes care in Sub-Saharan Africa.[32]



## Chronic respiratory diseases

Chronic respiratory diseases represent a spectrum of airway ailments, ranging from reversible airway obstruction, like bronchial asthma (BA), to irreversible airway diseases like emphysema. Globally, 235 million people are afflicted with BA and another 64 million with chronic obstructive pulmonary disease (COPD).[33]There were 3 million COPD-related deaths worldwide in 2005, representing 5% of all causes of mortality; it is to be noted that majority of these deaths occurred in developing countries.[33,34]

Africa has an estimated 0.6% disability adjusted life year (DALY) caused by BA and 0.5% DALY by COPD.[35]There are no community-based surveys of chronic respiratory diseases in Nigeria; thus, most reports were hospital-based, in addition to estimates by extrapolation of data from other developed countries. In the time span from 2006 to 2009, studies on respiratory disease prevalence in urban areas showed a prevalence of chronic bronchitis in Nigeria as 0.3%, with that of BA varying between 14% and 18%.[36-38] Although there is paucity of data on past prevalence of these diseases, lower prevalence are reported from rural areas and they can be used as surrogate indicators because rural localities are less exposed to elements of globalization.[39]

Whereas the cost of BA and COPD care in Nigeria has not been properly documented, figures from developed countries range from $300 to $1300 and $813 to $1522 per patient per year, respectively.[35,40]

These costs comprise direct and indirect economic costs contributed to by loss of man-hour at work, school absenteeism, and loss of earnings from early retirement.

## Cancer

Cancer is one of the major causes of death globally, with 7.6 million deaths in 2008, mostly from developing countries.[41] Most cancers are linked to environmental and lifestyle changes;ironically, they are mostly preventable. While cigarette smoking is the main cause of the burden of global cancer mortality, other risk factors such as sedentary lifestyle, reduction of fruit and vegetable intake, and alcohol consumption also play major roles.[41]

In native Africans, 650,000 people of a projected 965 million are diagnosed to have cancer yearly, with the lifetime risk of females being twice that of their peers in the developed world.[42]

Reports of cancer prevalence in Nigeria are scanty and hospital based, due to paucity of cancer registers. Commonly occurring cancers in Nigeria include cervical, breast prostrate, skin, and gastric cancers.[43,44]

A population-based survey carried out in Ibadan, covering the time period of 1960-1963, found 648 cases of cancer. It was estimated to represent a crude annual incidence of 45 per 100,000 of the population.[43]

A review of the Kano cancer register spanning the years 1995-2004 documented 1990 cancer cases, showing an increasing trend, with a marked increase from 1999-2004. Being hospital based, the true population burden could be higher, since not all cases are reported in the hospital.[44]

It is projected that by 2020, cancer incidence in Nigerian males will rise to 90.7/100,000 and for females to100.9/100, 000.[45]

A report showed that only 10% of diagnosed cancer cases in Nigeria have access to care.[46] Only 5% of the reported figure has resources to access centers with specialized human and material resources, where they incur costs ranging from $10,000 to $15,000 for a course of radiotherapy.[46]

## Frame work of impact of globalization on NCDS in Nigeria

Nigeria has witnessed various forms of economic reforms, commencing with the Structural Adjustment Program (SAP) of 1986. These changes have been introduced to accommodate the challenges of limited resources available for a rapidly growing population. The reforms have led to exposure of the Nigerian economy to global economic tides. Nigeria reached the peak of its thrust into the matrix of globalization by joining the World Trade Organization (WTO). It has subsequently seen deterioration in its human development indices, with increasing urban poverty level from 17.2% in 1980 to 58.3% in 1996 even as it continued to record decline in per capita calorie intake, in the midst of a progressively increasing food deficit.[47]

The conceptual framework of the impact of globalization on Nigeria will be considered from the premises of a liberalized economy that encourages open international trading, while endorsing multi-lateral trade agreements, characterized by increased foreign direct capital investment.[48]

The country has also witnessed increased access to information technology, global media, and increased ease of communication. These factors facilitate the entrenchment of tenets of globalization on host environs.[47] Ultimately, a behavioral change ensues, leading to the development of risk factors for NCDs.

Globalization directly and indirectly facilitates increase in the burden of NCDs. The indirect impact is brought about largely by changes in international economic dynamics. Factors like global monetary policies and trade agreement have placed developing nations like Nigeria at a disadvantage. This is translated in reduction in household incomes, reduction in governmental spending on public sector, and decline in purchasing power in the global arena from rising debt profile.[49-51]

Increased ease of communicating, increased speed and frequency of mobility, and cross-cultural exchanges indicate more Nigerians are able to share ideas with others. This has its advantages, besides the repercussions of sharing foreign lifestyles, which might be deleterious to health. Habits like changes in food choices and usage, alcohol consumption, and smoking have been given a greater impetus with global liberalization of these social habits.[5]

Globalization directly affects the health of Nigerians by opening up Nigeria's market to foreign goods, thereby tilting the balance of trade against Nigeria. Widespread availability of cheap foreign goods in Nigerian markets means local producers cannot compete and thus there will be closure of factories, loss of income, and retrenchment of workers.

These would have a direct effect on the ability of people to access healthcare, ultimately affecting the quality of their health.

## Risk factors for developing NCDS

### Diet

The traditional diet in Nigeria had been largely made of fiber-rich carbohydrates, minimal fat, and sparring protein. However, this profile has seen a gradual change over the years, starting from the period of colonization by the British. This trend has been given a boost in the last 10 years with the rapid uptake of the elements of globalization and with free trade agreements leading to the opening of Nigerian markets to foreign goods. Often these foreign meals are energy-dense, high in salt, and high-sugar containing meals. Furthermore, they

come with a lower price tag compared to those locally sourced. This has been aided by a growth in demand for pre-prepared meals from an ever-increasing urban populace, facilitated by migration from rural areas. Changes in food consumption of such a manner is called nutrition transition.[52]

Nigeria has witnessed a rise in the number of fast food restaurants – serving meals with high salt and sugar content, often also containing saturated fat. This goes hand in hand with an increase in the availability of bottled drinks. Furthermore, canned fruit juices are becoming fashionable and are replacing natural fruits. These eateries are patronized by people across all economic bands in the society. The fortunes brought about by recent economic gains have brought about an emerging middle class with an enhanced purchasing capacity. The working class and the wealthy in Nigeria consider eating outside as trendy; as such, people of limited resources also tend to follow the emerging trend.

Eating away from home is not only related to urbanization and social class, but also to the demand of shift work imposed upon industrial workers and services delivery points like hospitals per capita. All these have brought about increase in per capita annual food consumption in Nigeria [Figure 4].

## Obesity

Obesity is a risk factor for DM, hypertension, and cancer; thus,an increasingly obese population will bear the increased burden of these NCDs.[53] The Nigerian population is becoming more overweight and obese as shown by recent data [Figure 5]. Although these changes affect both rural and urban dwellers, it is more pronounced in the urban populace. These changes are brought about by changes in dietary habit, with the adoption of a westernized diet. Facilitation

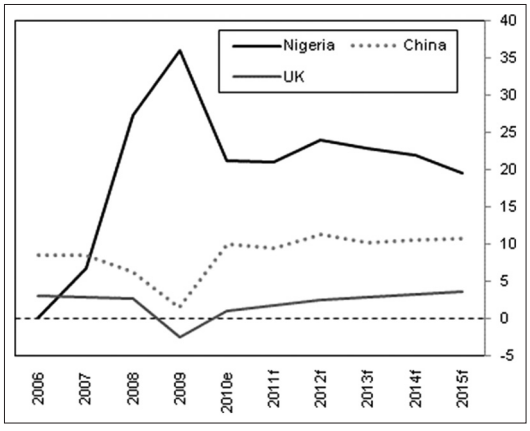


**Figure 4:** Per capita annual food consumption growth (%) – Historical data and forecasts: 2006-2015. Source: Central Bank of Nigeria, National Bureau of Statistics, Department for Environment Food and Rural Affairs (Defra), BMI.http://store.businessmonitor.com/article/468129

of social acceptance of fast food by the global media outlets and advert billboards has potentiated this nutritional transition.[54,55]

The perception of greater economic opportunities in the cities has led to rapid urbanization due to mass migration from rural areas. This in turn has disrupted the traditional meal customs and meal options, resulting in poor eating habits and eating patterns, all contributing to obesity. Challenges of urban life bring about economic pressure, which often leads to the adoption of urbanized lifestyles.[56]

Traditional Nigerian societies are highly mobile, often walking several miles to visit relations, access markets, or just for leisure. Furthermore, a significant proportion of the society was, in the past, engaged in non-mechanized farming and other energy-demanding endeavors.

These have been replaced by a sedentary lifestyle and low energy-demanding vocations, facilitated by the availability of mass transportation systems across various parts of the country, and further complemented by more people using private vehicles to commute. Advancements in technologies, such as live television broadcasts, computers, the internet, and electronic games, have also made the Nigerian populace less ambulatory.

Studies have shown that attitudinal and cultural changes are associated with obesity.[57] Traditional Nigerian societies do sleep early and wake up after sunrise; however, with modern working requirement, sleep time has become increasingly shorter, leading to sleep deprivation. This is worsened by stress from demand of modern organizations to meet targets. Evidence from around the world have alluded to these contributing to the risk of being overweight and obese.[57] This picture is against the background of an ever-increasing working class mothers, who,similar to their male counterparts, have to live up to the demands of a modern workplace. These events not only bring about stress to the involved families, but also disrupt the opportunity of a regular traditional meal, which takes longer time to prepare.

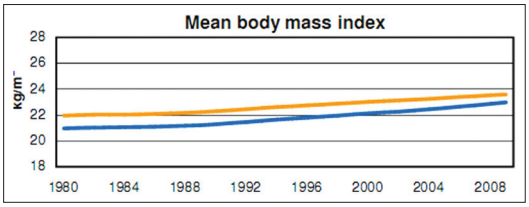


**Figure 5:** Mean body mass index. Accessed from World Health Organization.Global health observatory. Non-communicable diseases country profile;Nigeria 2010. http://www.who.int/nmh/countries/nga_ en pdf

Cultural preferences for an obese phenotype as a marker of affluence or wellbeing in Nigeria and other parts of Africa have helped in fuelling the growing obesity epidemic and its attendant comorbidities. In some parts of Nigeria, young women are kept in fattening homes where they are fed high-calorie energy-dense fatty meals with minimal physical activity as part of preparations for a wedding ceremony.

### Physical inactivity

Physical inactivity is one of the major causes of death due to NCDs; globally, it contributes to about 3 million preventable deaths yearly.[58] It is also related to other NCDs risk factors such as high blood pressure, obesity, and DM. To date, it was assumed that this problem is limited to the developed western world; however, globalization has created the enabling environments for the elements that allow inactivity to prosper in developing countries, including Nigeria. Studies have shown the prevalence of physical inactivity to be as high as 40% among young Nigerian adults.[59-61]

Heightened rural-urban migrations lead to the formation of urban slums and overstretching of urban facilities. It also leads to an increased demand for lodging services. This scenario puts pressure on land demand and ultimately restricts the options for physical activity by having limited or no parks in some cities, lack of proper sidewalks, and exercise services such as gymnasium and football pitches. The ever-increasing automation of activities, both domestic and at places of work, limits physical activity. Although many Nigerians have been engaged in farming, modern living and the abandonment of rural farms have nullified the earlier benefits.

Easy access to computers and other sedentary lifestyles would mean that more people would be exercising less. In Nigeria, this has become more pronounced among the young, creating childhood obesity and its attendant implications.

A widely spaced urban neighborhood encourages the culture of moving in cars, also creating limited access to local public spaces and recreational facilities.

### Tobacco usage

Several large prospective epidemiological studies have shown the link between cigarette smoking and CVD; this is in addition to preceding case-control studies that first alluded to the association.[62] Although there are no local studies on the effect of tobacco in Nigeria, such studies could be generalized to the Nigerian population. The constituent participants in these studies from the United States comprise not only Caucasian but also African American populations who have similar genetic constitution as Africans. The implications of the results are further applicable to local Nigerian communities, having been faced with similar challenges of exposure to tobacco smoke. WHO estimates of 2010 state that 9% of Nigerian males and 0.2% of females smoke cigarette.[63]

The globalization of cigarette consumption and promotion has increased the burden of tobacco-related diseases, mostly NCDs, even as the burden is not evenly distributed. The higher burden of tobacco is borne by such countries (like Nigeria) that have opened their markets to global investors in the hope of increasing their national income.[64]

Tobacco corporations are increasingly exploiting legislative loopholes in developing countries, like Nigeria, to target the adverts at the most vulnerable populations, including children and women. This is associated with a potential for a future nucleus for the epidemic, tobacco being a risk factor to most NCDs.

### Alcohol consumption

Alcohol abuse is a major contributor to the global burden of NCDs. Worldwide, it accounts for 4% of DALYs.[65] Up to one-third of global occurrences of diseases,such as esophageal and liver malignancy, homicide, epilepsy, and motor vehicle accidents, are attributed to alcohol abuse.[65]Although the relative contribution of alcohol abuse to NCDs is higher in developed countries, it is expected to increase in developing countries with the widespread opening of their markets to global alcohol conglomerates.[65] The prevalence of alcohol abuse in Nigeria is not known. However, WHO estimates the adult per capita consumption to be 32.06 of pure alcohol.[66]

Globalization has created an enabling environment for an expansion in the alcohol market, more so in developing countries like Nigeria.[67] This is compounded by the "targeted marketing" aimed at women and young people. A new culture of social relevance is created for alcohol in Nigeria by linking it to social status.

## Recommendations

Having established the burden of NCDs and affirmed that they are not only preventable but also share common risk factors, we would articulate global recommendations to be translated to actionable issues in Nigeria. These interventions are cost-effective and evidence-based. They are intended to address disease prevention, control risk factors, and sustain good health.

The global recommendations stand on the premise of behavioral change directed at four key

factors: Tobacco use, sedentary lifestyle,alcohol consumption and harmful diet.

The most cost-effective population-wide prevention approach will have to be a guided and integrated modification of these risk factors. These changes should be targeted not only at individuals but also at families, communities, and the population at large. Prevention should be incorporated into the health system through community actions, with a multi-sectored appeal and be part of the national policies.

### Global recommendations

WHO has developed a multi-sectored global proposal forNCD prevention.These are broad-based with a multi-sectored framework for the prevention and control of NCD.

(A) "Develop and implement a comprehensive policy and plan for the prevention and control of major NCDs, and for the reduction of modifiable risk factors."[67]

(B) "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."[67]

(C) "Conduct a comprehensive assessment of the characteristics of NCDs and the scale of their problems, including an analysis of how different governmental sectors are affected by such diseases."[67]

(D) "Review and strengthen, when necessary, evidence-based legislation, together with fiscal and other relevant policies that are effective in reducing modifiable risk factors and their determinants."[67]

## Recommendation for the Nigerian Setting

Addressing NCDs in Nigeria is a multi-dimensional challenge with multi-faceted implications. Initially, there has to be lobbying at the legislative level and at the doorsteps of developmental partners for appropriate investments and policies. This is to facilitate a national discussion that will result in the incorporation of these policies in the development and health agendas of the nation.

Second, there is a need to develop cost-effective and evidence-based strategic models that are culturally appropriate and resource-sensitive.

## Population-Wide Interventions

The ultimate aim of prevention in relation to NCDs is to prevent the occurrence of risk factors as much as possible. Best results are obtained by population-wide interventions, which do not rely on individual initiatives. These interventions are called "best buy"; so named because they are not only cost-effective and inexpensive, but also practicable and culturally acceptable.

These interventions consist of increment in tobacco tax; limits on smoking in public spaces and work environs; increment in alcohol tax and control of it sale; compulsory and optional salt cutback; and enhanced access to places for physical activity. These interventions could only be achieved through legislative processes; thus,legislation should be encouraged to make enactments on tobacco and alcohol control, healthy diet, and physical activity. These legislations should be in line with the best international guidance so that international investors in food and beverages are not driven away. The laws should incorporate taxation for offenders, the derivative of which should be channeled into prevention services.

The government should control the proliferation of fast food eateries, while encouraging the increased intake of local high-fiber low-fat meals. Where possible, legislation should be made to ban the premarital fattening for brides [Table 1].

## Individual Interventions

Although population-wide interventions have enormous benefits in reducing the burden of NCDs, it does not address the individual needs of people with established diseases or those at risk. Individualized interventions require a strong health system as well as a system-wide approach focused at the social determinants of NCDs.

The health system should be structured in such a way that people have quick access to proper care. Currently, such care is mostly available in secondary and tertiary care centers. The way forward is to develop the capacity of primary healthcare centers(PHC)to be able to recognize these risk factors and initiate basic prevention and treatment strategies. Furthermore, referral systems between PHC and higher care points should be established and enhanced. This will allow care to be stepped up and down in synergy with individual needs. It will also enhance compliance to therapy by bringing access closer to those who need them.

Strengthening the capacity of PHC to carry out basic assessment of NCD risk factors and diseases such as blood pressure assessment, weight measurement, and blood sugar checks will reduce the burden of

**Table 1: Non-communicable diseases risk factors, its burden before and after globalization in Nigeria and recommendations**

| Risk factor | Preglobalization | Postglobalization | Recommended intervention |
|---|---|---|---|
| Diet(average per capita calorie availability) | *1761(1975-1979) | *2043 (1998-2002) | Encourage use of local foods rich in fiber low in fat |
| Obesity | ^2.0% (rural Nigeria) | ^21% | Encourage physical activity and moderation of food intake |
| Physical inactivity | No data | 61.9% | Encourage physical activity |
| Tobacco usage | ¶¶8.8% (rural) | 9.9% | Discourage use of tobacco |
| Alcohol consumption | ΦΦ27.1% (rural) | ΦΦ35.4% | Discourage use of tobacco |



*Impact of globalization on food consumption, health and nutrition in Nigeria Kolawole Olayiwola Adedoyin Soyibo and Tola Atinmo. www.ftp://ftp.fao.org/es./esn/food_systems/olayiowola_f.pdfsed.Accessed 14th October 2012. ^Okesina AB, Oparinde DP, Akindoyin KA, Erasmus RT. Prevalence of some risk factors of coronary heart disease in a rural Nigeria population. East Afr Med J 1999;76:212-6. Kolawole W Wahab,Mahmoud U Sani,Bashir O Yusuf,Maruf Gbadamosi,Akeem Gbadamosi, Mahmoud I Yandutse. Prevalence and determinants of obesity: A cross-sectional study of an adult Northern Nigerian population.InternationalArchivesofMedicine 2011;4:10. ΦΦWorld Health Organization. Health behavior monitor amongNigerian adult population,2003. www.who.int/entity/chp/steps/2003_STEPS_Report_Nigeria.pdf. Accessed 14th October 2012

NCDs. These can be achieved through retraining and mentoring by staff from secondary and tertiary care centers. Patients who have developed NCDs should have prompt commencement of therapy. This has the beneficial effect of preventing or slowing the rate of progression to complications as well as reducing the overall cost of care. The government should collaborate with multinational bodies, pharmaceutical firms, and health insurance conglomerates to tackle the cost of NCD medications and diagnostic tools. Cost is a limitation to accessing and making available the choices to patients with NCDs; thus, tackling it will reduce the disease burden.

Secondary and tertiary care centers should have the capacity to address intervention for complications such as coronary events and stroke. These have been shown to improve the survival of patients with CVD. There should be wide availability of early cancer detection, and palliation care for cancer patients should be made accessible and affordable.

## Summary

The burden of NCDs is on the rise in Nigeria due to various forces of globalization, even though most of its predisposing factors can be curtailed by behavioral modification.Although much is known about the policies for controlling its consequences, little is advanced on how to translate such policies to culturally acceptable practicalities. The major contributors to the risks for NCDs have been clearly recognized as tobacco and alcohol usage, sedentary lifestyle, poor eating habits associated with the consumption of foods containing excess fat, salt, and sugar. These factors work together to result in NCDs; hence, it is pertinent to tract the burden of these risk factors. To arrest the rising incidence of NCDs, concerted efforts should be targeted at strengthening the Nigerian health systems. Although population-wide interventions are cost effective, they have to be supported by care at the individual levels, especially for high-risk groups and those with disease.

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**Cite this article as:** Maiyaki MB, Garbati MA. The burden of non-communicable diseases in Nigeria; in the context of globalization. Ann Afr Med 2014;13:1-10.
**Source of Support:** Nil. **Conflict of Interest:** None declared.