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## Conference on 'Food and nutrition security in Africa: new challenges and opportunities for sustainability'

# Nutrition transition and chronic diseases in Nigeria

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Nutrition transition goes with industrialisation that fosters human development which is usually desirable, especially in developing nations. However, the health consequences of this development include high rates of preventable non-communicable diseases which are usually undermined in the quest for industrialisation. The goal of the present paper is to provide evidence-based information that will promote healthy lifestyle including healthy consumption pattern among urban dwellers. Relevant local and international literature was accessed and reviewed to harvest evidence-based information through the use of validated review guide in addition to observation from the field experience. Industrialisation promotes creation of more job opportunities and this facilitates proliferation of fast-food eateries in the cities. However, it was also observed that many of the available workplaces in urban areas are not health-promoting because employees have poor access to preventive health information and sensitisation to healthy lifestyle has been poorly considered. Ironically, weight gain among urban workers which may be linked with increased intake of high-energy foods and low participation in physical activities as a result of accessibility to many energy saving devices have been highlighted as some of the pull-pull factors that attract many people to the cities. Using the concept of health promoting workplace, the workforce in urban areas can be trained as agent of change in health-promoting lifestyle. Consumption of healthy indigenous foods through aggressive promotion of its health potentials should be seriously advocated through the use of existing structure of urban fast-food vendors who constitute a strong stakeholder in nutrition transition.

**Nutrition transition: Urbanisation: Unhealthy eating: Non-communicable diseases**

Globalisation, the changing demographic dynamics, affluence and the pattern of food consumption are likely to be responsible for the present trend in the prevalence of non-communicable diseases (NCD) in developing countries, especially Nigeria[1]. Nutrition transition is a gradual and steady state of moving away from consumption of natural locally available foods to highly processed and chemicalised fast foods that are synonymous with industrialisation. This changing pattern of eating has great potentials in determining the health status of any given population either at the present time or in the future. Food consumption pattern in developing countries is undergoing transition from largely high-fibre, energy-sparse, low-protein diets to low-fibre, energy-dense and high-protein diets[2]. This changing eating pattern, particularly with respect to consumption of high glycaemic foods/drinks (simple sugar containing foods and drinks), is contributing to increased prevalence of obesity[3]. This is a major risk factor for many NCD worldwide including hypertension, diabetes mellitus, CVD, stroke and several cancers[4]. One of the main challenges of globalisation is its tendency to globalise health risks[1]. Obviously, nutrition transition is an offshoot of globalisation, and has been directly linked with the increased rate of NCD[5].

In the quest for socio-economic development in many sub-Saharan African countries, little attention has been

**Abbreviation:** NCD, non-communicable diseases.

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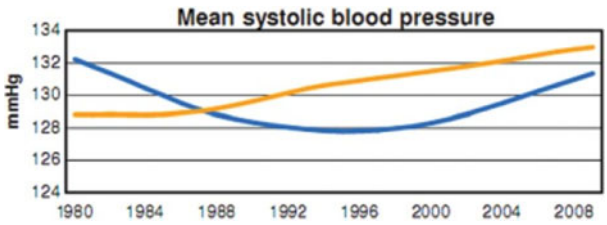


**Fig. 1.** (Colour online) Mean systolic blood pressure[11]. Key: blue line, males; yellow line, females.

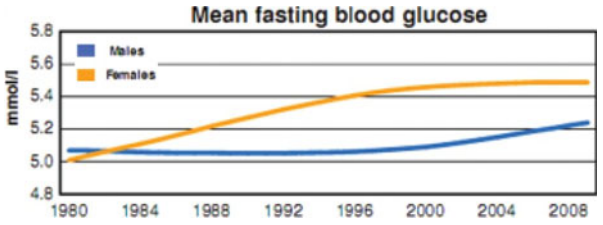


**Fig. 2.** (Colour online) Mean fasting blood sugar[11]. Key: blue line, males; yellow line, females.

paid to the effect of such venture on changing the eating habits of the populace, especially the workforce and the children who will be born in this industrialised environment. Economic development which is associated with rapid industrialisation contributes to the fact that many productive workforces will eat outside homes and in some cases foods that can hurriedly be purchased for consumption are the favourites. The forces of rapid globalisation, urbanisation and mechanisation account for the shift in the dietary pattern and physical activity levels that tend to increase the risk of obesity both in adults and their children[6,7].

Nigeria has witnessed a rise in the number of fast food restaurants[8] serving meals with high salt and sugar content, often also containing saturated fat. This is accompanied by an increase in the availability of sugared bottled drinks. Furthermore, canned and packaged fruit juices are becoming fashionable and these are replacing natural fruits in the diet. These eateries are patronised by people across all economic bands in the society. Eating away from home has many health disadvantages, which include high-energy intake and consumption of nutritionally unbalanced meals. 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[1]. This is the beginning of nutrition transition in many sub-Sahara African countries, which is defined as the changes in dietary patterns and nutrient intakes when populations adopt modern lifestyles during economic and social development, and urbanisation[9]. Nutrition transition is promoted by proliferation of fast-food business, which is one of the money spinning ventures in any urban settings because there are always potential customers[8]. Many employers of labour invest more on the production capacity of workers with little attention on factors that may positively influence preventive health; including eating habits. Unhealthy eating behaviour among the workforce in many developing nations may have contributed to the increase in prevalence rate of chronic diseases in the population[10]. This paper is aimed at providing information on the dangers associated with nutrition transition and suggests ways to reduce the effects in urban locations.

## Methodology for this review paper

This is a descriptive review of published articles supported with observational information. The following objectives were used to develop working themes that guided the writing of the article: (1) to assess prevalence of NCD as a result nutrition transition in Nigeria; (2) to identify factors contributing to nutrition transition in Nigeria; (3) to explore available opportunities to promote healthy nutrition transition in Nigeria.

Some key words including 'nutrition transition and urbanisation; nutrition transition and NCD; health promoting workplace; fast food industries; nutrition transition and obesity', among others were in-put into Google search engines. More than 150 articles from local and foreign authors were accessed. The themes from set objectives were used in developing a review guide to identify articles that were related to the goal of this presentation. Irrelevant articles were removed and this narrowed down the number of articles to few suitable ones. In addition to this, an observational checklist was also used to assess the health promoting indicators at workplaces and fast-food restaurants.

## Information collected from the reviews and observations

Based on the reviewed articles and information from the observational checklist, the following was highlighted in nutrition transition.

Nigeria, with an approximate population of 160 million, has an estimated proportional mortality attributable to CVD of 12 %, mainly among adult population who presented at the secondary health care facilities in the cities[11,12]. 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[11]. Nigeria has not established a mechanism for community-wide data collection on NCD. However, in 2008, WHO presented an estimate of 5·1 % level of obesity among adult population in Nigeria[13]. Presently, WHO and local researchers have published hospital-based data on NCD in Nigeria. These reports and studies suggest a rising trend in CVD risk factors, such as systemic hypertension[14] (see Fig. 1).

Morbidity and mortality of systemic hypertension-related complications are also on the rise in Nigeria. Hitherto, IHD were considered to be rare in Nigerians; however, recent data have shown it to be on the rise[12]. In addition to this, the present projected prevalence

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**Table 1.** Non-communicable diseases risk factors; its burden before and after globalisation in Nigeria and recommendations

| Risk factor | Pre-globalization | Post-globalization | Recommended intervention |
|---|---|---|---|
| Diet (average per capita energy availability) | 1761·0 kcal (1975–1979) | 2043·0 kcal (1998–2002) | Encourage use of local foods rich in fibre low in fat |
| Obesity | 2·0 % (rural Nigeria) | 21·0 % | 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 | 27·1 % | 35·4 % | Discourage use of tobacco |

Source:[25,26].

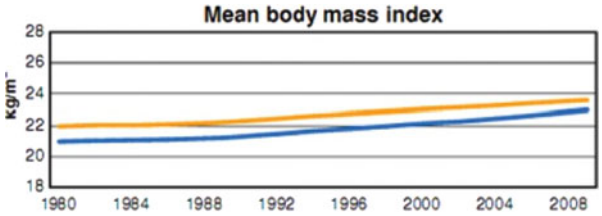


**Fig. 3.** (Colour online) Mean body mass index[11]. Key: blue line, males; yellow line, females.

estimate of diabetes mellitus in Nigeria, based on the International Diabetes Federation figures, is 4·04 %[15]. The trend is presented in Fig. 2.

## Urbanisation, technology and physical health

As a nation develops, there is rapid drift of workforce from rural areas to the cities in search of job opportunities. The distribution of Nigeria's population is shaped to a great extent by this process leading to urbanisation. Between 1952 and 1991, the number of urban areas in Nigeria increased from 56 to 359[16] and may triple with the current infrastructural transformation agenda in Nigeria. The proportion of urban dwellers as a percentage of the overall population rose from 28·6 % in 1980 to 46·2 % in 2005, while the country's urban population now grows at a rate of 3·78 % annually[17].

Previous studies have established that urbanisation has resulted in nutrition transition from the traditional diets to western diets (which include more saturated fats and sugars and less of the traditional diet of fibre and protein)[18]. Movement of the people to cities has serious implications for nutrition security; usually demand for food, hygienic shelter, health care services, etc. may exceed supply. Along this line, easy-to-prepare and energy-dense processed foods fill the gap created by the population explosion as a result of urbanisation. There is the possibility of lifestyle changes among the workforce that moved from the rural communities to the cities.

Table 1 shows the patterns of consumption pre- and post-globalisation and the prevalence of NCD. Globalisation has influenced dietary intake positively by increasing the energy intake. This has led to corresponding increase in the prevalence on NCD. However, possible intervention strategies were also presented.

Globalisation has created an enabling environment for an expansion in the alcohol market, more so in developing countries like Nigeria[11]. This is compounded by the aggressive marketing strategies aimed at women and young people. A new culture of social relevance is created for alcohol in Nigeria by linking it to social status[1]. These lifestyle changes apart from nutrition transition also include smoking, inability to cope with stress associated with urban lifestyle and lack of recreational time. The risk of becoming obese is very high among urban workforce. The majority of urbanised Africans are now either overweight or obese and women are more likely to be obese, compared with men. This high proportion of overweight and obesity may be a reflection of the sedentary lifestyle which is now prevalent in most urban cities in Africa. Many more adults now spend about 7 h daily on desk jobs, driving or being driven to and from work[19].

Studies have confirmed that the Nigerian population is becoming more overweight and obese as shown by recent data (Fig. 3). 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 westernised diet. Facilitation of social acceptance of fast food by the global media outlets and advert billboards has potentiated this nutritional transition[20,21].

## Physical activities and nutrition transition

Modernisation and industrialisation in Nigerian cities have given rise to a generalised state of reduction in the use of human energy during labour as well as capital intensive manufacturing of goods and services[22]. Sometimes, energy saving technologies in the workplace may also contribute to the risk of obesity. For instance, the working environment is made conducive to keep energy instead of burning it. Workers use chairs with rollers to move from one end to another without standing up; have unlimited access to coffee drinks and soda; use intra-phone/intercom to communicate with co-workers in the next office; many manually operated machines are now digitalised and climbing staircases

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has given way to using the office lift, even when the destination is the next floor! All these count in contributing to energy build up and subsequent weight gain that may lead to obesity. Overweight and obese individuals are more prone to health challenges including NCD.

## The missing link in urban workplaces to improve nutrition transition

Observational assessment of some workplaces revealed that health clinics were set up to focus mainly on treatment of diseases with little consideration for preventive care. This preventive care includes regular screening and provision of health information. Health promoting facilities including access to recreational room, healthy eating food canteens, health education materials e.g. handbills and posters and periodic invitation of public health professionals for health discourse that will create awareness on preventive health among the working population are basically lacking in many workplaces.

## Nutrition transition and indigenous foods in sub-Saharan Africa

In the course of nutrition transition, consumption of local indigenous foods is sidelined despite the potential health benefits in these foods because of their naturalness and absolute non-chemicalised nature. The attraction to live a city life, which is considered as more sophisticated, promotes eating lifestyle that has potential to predispose to NCD. Sometimes, however, many people in sub-Saharan Africa appear favourably predisposed to the new body image that nutrition transition brings. Overweight or even obesity in this part of the globe is not seen as a public health challenge because there is a status symbol attached to big body size among both males and females. Obesity can be viewed as a social phenomenon[23] especially based on the Bordieu concept of habitus. According to the Bordieu concept of habitus which states that the body (inclusive of appearance, style, behaviour, affinities) is a social metaphor of a person's status[24], no little wonder, the possession of 'pot belly' or 'beer belly' in men (accumulation of fats on the abdominal region-abdominal obesity) is seen as a sign of wealth, health, power and high socio-economic status, so that even men of low socio-economic status may desire it. Cultural preferences for an obese phenotype as a marker of affluence or well-being in Nigeria and other parts of Africa have helped in fuelling the growing obesity epidemic and its attendant co-morbidities[1]. This suggests a case of poor perceived susceptibility to NCD among the people.

Therefore, it is important to address the issue of perception when considering challenges of nutrition transition. Unless the issue of perception is addressed, many may still be well-disposed to savageries of nutrition transition.

## Workplace as health promoting setting in Africa

Many of the workers who moved to cities in search of job opportunities are oblivious to what nutrition transition entails including the associated health risks. This is one of many reasons why they care less about consumption of 'city foods', which they consider as part of being sophisticated. The concept of the health promoting workplace is becoming increasingly relevant as more private and public organisations recognise that future success in a globalising marketplace can only be achieved with a healthy, qualified and motivated workforce. The workplace directly influences the physical, mental, economic and social well-being of workers and in turn the health of their families, communities and society. It offers an ideal setting and infrastructure to support the promotion of health to a large audience. The health of workers is also affected by non-work related factors. Even though workplace has been identified as one of the settings that can be used to promote health of the workforce, the potential has not been fully harnessed. It has the propensity to reach workers easily as a captive audience and it is possible to conduct a periodic assessment on them as follow-up exercise; peer education strategy can be used as an effective intervention among the group. Workplaces can be more health-promoting if the stakeholders are aware of the economic benefits of incorporating preventive care for the workforce on a regular basis. Apart from the fact that morbidity and mortality rates among staff will reduce, economic benefits will be maximised because a healthy work force is a productive enterprise. Preventive care costs less when compared with curative care where many employers of labour usually divert resources. Nutrition transition issues can be presented to employees in workplaces by nutrition professionals to educate workers on the expected transition in food intake that will definitely take place in the cities. It is possible to be in urban settings and still eat healthily when there is much awareness on food consumption.

## Working with the stakeholders in urban food eateries to promote consumption of healthy indigenous foods

Addressing the negative aspects of nutrition transition should focus on the sources of the problem. In urban settings, food vendors contribute significantly to consumption patterns of the workforce. Many of the food stakeholders in urban communities are less aware of the health risk potentials of the types of food they present for sale to the public. Therefore, promotion of consumption of indigenous foods in urban communities should be encouraged by stakeholders in food business. Food vendors can include indigenous dishes in the daily menu just as they do with fast foods. This will make healthy foods available in the cities for workers to promote healthy eating. Presently in Nigeria, some of the established fast food industries have created sections in their eateries to prepare only indigenous foods for sale. This has been running for more than a decade now, which suggests

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high patronage of indigenous foods. However, establishment of such a section is seen more from the lens of profits by food stakeholders, rather than helping to reduce the dangers associated with negative nutrition transition in urban settings. A forum of urban food eateries may be necessary to involve the stakeholders in this business in the quest to promote healthy eating.

## Conclusion and recommendation

Nutrition transition is one of the major public health challenges that is yet to be given due attention. High prevalence of NCD, especially in urban setting, can be reduced if nutrition transition issues are considered and strategies to reduce the tides are highlighted as part of public health policy. The individual who migrated to the city, the workplace and the stakeholders in food industries in urban communities have roles to play in reducing the negative aspects of nutrition transition. Individuals should be wary of consumption of unhealthy foods when moved to the city for employment opportunities. Reduced intake of high-energy foods should be considered and intake of fruit and natural foods should be encouraged. Wrong perception of big body size should be discouraged through an appropriate health information package. The workplace needs to focus more attention on preventive healthcare of the workforce and de-emphasise curative care; it should be made more health promoting by establishing policies that are pro-health. Regular health talk seminars can create awareness among the workers on what they can do on their own to promote health. The work environment should be designed to facilitate light exercise mechanisms to help workers move around even when at work. Food canteens at work places should be made to produce and sell healthy meals. Services of nutrition professionals could be sought to assist in doing this. Nutrition transition in urban communities can be made to promote health if the national policy makers know more about the problems associated with it and develop a national guideline to assist in reducing the problems. In addition to the afore-mentioned recommendations, WHO also have a set of recommendations that can be adopted.

## Global recommendations by WHO

WHO[11] has developed a multi-sectored global proposal for NCD prevention. These are broad-based with a multi-sectored framework for the prevention and control of NCD. (1) Develop and implement a comprehensive policy and plan for the prevention and control of major NCD, and for the reduction of modifiable risk factors. (2) 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. (3) Conduct a comprehensive assessment of the characteristics of NCD and the scale of their problems, including an analysis of how different governmental sectors are affected by such diseases. (4) 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.

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## Conflicts of Interest

None.

## Authorship

The authors are responsible for all aspects of preparation of this paper.

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