# DIET, NUTRITION AND PREVENTION OF CHRONIC DISEASES: COMMUNITY HEALTH EDUCATION OPTION

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## Abstract
*The paper is on the importance of diet and nutrition in the prevention of chronic diseases. Malnutrition is usually accompanied by growing rates of lifestyle related diseases such as obesity, diabetes and cardiovascular diseases. Therefore, a healthful and nutritious food must incorporate the six components of good food for enhancing good health and reduction of chronic diseases. The paper explained the reasons why some people are under-nourished, offers six descriptions of a dietary and nutritious food based on the World Health Organization's report and also examined the role of community health educators in ensuring that the people in communities maintain a high standard of dietary and nutritious lifestyle. The paper has also documented many of the ongoing diet and lifestyle interventions in low and middle-income countries and successes in reduction of major chronic diseases. However, it is expected that similar benefits will take place in Nigeria if the importance of diet and nutrition are acknowledged by the most people using available channels of communication.*

**Key words:** *Diet, Nutrition, Chronic diseases, Community health education.*

## Introduction
Diet and nutrition are important factors in the promotion and maintenance of good health throughout an entire life course. Their roles as determinants of chronic non-communicable diseases are well established and they therefore occupy a prominent position in prevention activities (World Health Organization, WHO, 2015). The diet which people eat, in all their cultural variety, defines to a large extent people's health, growth and development. Risk behaviours, such as tobacco use and physical inactivity, modify the result better or for worse. All these take place in a social, cultural, political and economic environment that can aggravate the health of populations unless active measures are taken to make the environment a health-promoting one (Yach, Hawkes, Gould and Hofman, 2004).

The burden of chronic diseases is rapidly increasing worldwide. It had been calculated that, in 2001, chronic diseases contributed approximately 60 percent of the 56.5 million total reported deaths in the world and approximately 46 percent of the global burden of disease (WHO, 2013). The proportion of the burden of non-communicable diseases is expected to increase to five percent by the year

2020. Almost half of the total chronic disease deaths are attributable to cardiovascular diseases; obesity and diabetes are also showing worrying trends, not only because they already affect a large proportion of the population, but also because they have started to appear earlier in life.

Chronic diseases are largely preventable. Although more basic research may be needed on some aspects of the mechanisms that link diet to health, the currently available scientific evidence provides a sufficiently strong and plausible basis to justify taking action now. Beyond the appropriate medical treatment for those already affected, the public health approach of primary prevention is considered to be the most cost effectively affordable and sustainable course of action to cope with the chronic disease epidemic worldwide (Aboderin, 2002). Modern dietary patterns and physical activity patterns are risk behaviours that travel across countries and are transferable from one population to another like an infectious disease, affecting disease patterns globally. While age, sex and genetic susceptibility are non-modifiable, many of the risks associated with age and sex are modifiable. Such risks, according to Aboderin (2002), include behavioural factors (e.g. diet, tobacco use, alcohol consumption); biological factors (e.g. dyslipidaemia, hypertension, overweight, hyperinsulinaemia): and finally societal factors which include a complex mixture of interacting socioeconomic, cultural and other environmental parameters.

Diet has been known for many years to play a key role as a risk factor for chronic diseases. What is apparent at the global level is that great changes have swept the entire world since the secured half of the twentieth century, inducing major modifications in diet, first in industrial regions and more recently in developing countries. Traditionally, largely plant-based diets have been swiftly replaced by high-fat, energy-dense diets with a substantial content of animal-based foods but diet, while critical to prevention, is just one risk factor. Matsudo (2002) noted that physical inactivity, now recognized as an increasingly important determinant of health, is the result of a progressive shift of lifestyle towards more sedentary patterns in developing as much as in industrialised nations. The combination of these and other factors, such as tobacco use, is likely to have an additive or even a multiplier effect, capable of accelerating the pace at which the chronic disease epidemic is emerging in the developing countries.

Yach, *et al* (2004) highlighted that nutrition is coming to the fore as a major modifiable determinant of chronic disease, with scientific evidence increasingly supporting the view that alterations in diet have strong effects, both positive and negative, on health throughout life. Most importantly, dietary adjustments may not only influence present health, but may determine whether or not an individual will develop such diseases as cancer, cardiovascular disease and diabetes much later in life.

According to Mohsen and Shahla (2016), physical activity and food intake are both specific and mutually interacting behaviour that are and can be influenced partly by the same measures and policies. Lack of physical activity is already a global health hazard and is a prevalent and rapidly increasing problem in both developed and developing countries, particularly among poor people in large cities. In order to achieve the best results in preventing chronic diseases, the strategies and policies that are applied must fully recognize the essential role of diet, nutrition and physical activity.

Yach *et, al.* (2004) further asserted that, there is a continuity in the influence contributing to chronic disease development, and also the opportunities for prevention. These influences include the life course; the microscopic environment of the gene to macroscopic urban and rural environments; the impact of social and political events in one sphere affecting the health and diet of populations far distant, and the way in which already stretched agriculture and oceanic systems will affect the choices available and the recommendations that can be made. For chronic diseases, risks occur at all ages; conversely, all ages are part of the continuum of opportunities for their prevention and control. Both under nutrition and over nutrition are negative influences in terms of disease development, and possibly a combination is even worse. Consequently the developing world needs additional targeting. Those with least power need different preventive approaches from the more affluent (Buss, 2004). Work has to start with the individual risk factors, but, critically, attempts at prevention and health promotion must also take account of the wider social, political and economic environment.

## Origin of Chronic Diseases

The development of chronic diseases rests in the course of events over time. Food directly contributes to body composition and the process of the human genome. The complexity of this interrelationship has become more exposed, particularly in view of the interactions between food components and genetic expression. The implications are that diet is important at all points in time. The poor diet is likely to have a deleterious effect if prolonged or occurring at critical points of the development phase, and that modifications in diet may play a pivotal role in managing the disease process. The mechanisms by which diet influences health are complex. They relate to physiological mechanism in multiple organs and are linked to regulations at the level of genes, gene expression proteins and metabolites (Corthesy-Theulez, 2005). Luan (2001) submitted that fatly acids, for example, are known to influence gene expression, proteins and metabolites and this has led to influence gene expression in relation to the development of obesity.

Overall, the interaction between nutrients and genes is considered to have a central impact on lifespan and disease development (Prolani-Giacobino, Grimble and Richard, 2003). The relationship, however, is not linear, with incremental environmental exposure being a critical factor in genetic expression. Perhaps one of the most significant observations here is that early exposure to food components influences long term health. In a longitudinal study of 4630 males followed by 12 years in Helsinki, Finland Barker (2001) and colleagues noted that low birth weight and subsequent poor growth during infancy was related to increased risk of developing lifestyle related disease reflective of weight gain.

**Role of Diets and Nutrition in the Prevention of Chronic Diseases**

Food, diets and nutritional status are important in the prevention of chronic diseases. What we eat and our nutritional status can affect cardiovascular diseases. They are essential for prevention of overweight, obesity, elevated blood pressure and blood cholesterol, and resistance to the action of insulin. A healthy diet is one which contains the six constituents of food in the right proportion. Consuming predominantly plant based diets has been observed to reduce the prevalence of chronic diseases. As observed by WHO (2002), fruits and vegetables independently contribute to preventing cardiovascular diseases. Such vegetables and fruits include cabbage and broccoli, and many other fruits that are rich in foliate.

According to Pradeep and Mallikarijuma (2012) eating of red and processed meat increases risk of developing colorectal cancer. Saturated fat and trans fats increase blood cholesterol and cardiovascular risk. Higher sodium/salt intake is a major risk factor for elevated blood pressure and cardiovascular diseases, and probably stomach cancer. Diets high in meat and dairy also increase blood pressure. Also, diets high in energy-disease, highly-processed foods and refined starches and /or sugary beverages contribute to overweight and obesity. Thus, frequent consumption of fruits and vegetables as diet would significantly help to reduce the prevalence of chronic diseases in human (Agarwal and Rao, 2008). Vegetable sources like broccoli, cabbage cauliflower and brussel sprouts with a rich repository of glucosinolates are according to Doughari (2012), known to exert a substantial projective support against colon cancer.

Moderate intake of diets and nutrition right from birth could influence the health status of children. The provision of nutrients in the womb, from birth onwards influences the size and shape of the human body throughout the life course. These processes influence the rate at which we grow and mature from conception to adult life, and our physical and mental development. Babies who

are under-nourished conversely are likely to develop chronic diseases such as overweight, high blood pressure, obesity, diabetes, cardiovascular diseases, and some forms of cancers. According to Sakr (2012), foods and herbs known to have high anticancer activity include ginger, garlic, cabbage, soybeans, fenugreek, green tea, flaxseed and the unbeliifous vegetables among others.

However, The World Health Organization (WHO, 2002) reported six aspects of diets for which strong evidence indicates important health implications. One of such aspects of diet is to ensure generous consumption of fruits and vegetables and adequate folic acid intake. The report shows that high intake of fruits and vegetables will reduce the risk of cardiovascular diseases and stroke. Some of these benefits are mediated by higher intakes of potassium, but folic acid probably also plays a role. This corroborates the finding of Hu and Willett (2002) that supplementation with folic acid reduces the risk of neural tube defect pregnancies. The author further found that low folic acid intake is associated with greater risk of colon and possibly breast cancer and that use of multiple vitamins containing folic acid reduces the risk of these cancers.

In addition, consumption of cereal products in their whole-grain, high-fiber form is essential in reducing chronic diseases. Consuming grains in a whole-grain, high-fiber form has double benefits. First, consumption of fiber from cereal products has consistently been associated with lower risks of cardiovascular diseases and type 2 diabetes (Hu and Willet, 2002). This is because of both the fiber itself and the vitamins and minerals naturally present in whole grains. High consumption of refined starches exacerbates the metabolic syndrome and is associated with higher risks of cardiovascular diseases. Second, higher consumption of dietary fiber also appears to facilitate weight control and helps prevent constipation (Swinburn, 2004).

The third diets for which strong evidence indicates as having the capacity to reduce chronic diseases is to limit consumption of sugar and sugar-based beverages. Sugar contributes to the dietary glycemic load, which exacerbates the metabolic syndrome and is related to the risk of diabetes and cardiovascular diseases (Hu and Willett, 2002). An upper limit of 10 percent of energy from sugar was suggested by the World Health Organization (WHO, 2003), but lower intakes are usually undesirable because of the adverse metabolic effects and empty calories.

The fourth diet and nutrition which could reduce the prevalence of chronic diseases is limiting excessive caloric intake from any source. Given the importance of obesity and overweight in the causation of many chronic diseases, avoiding excessive consumption of energy from any source is fundamentally important. Limiting sodium intake is also significant in reducing the effect of high blood pressure, a major risk factor for stroke and coronary disease. WHO

(2013) suggested an upper limit of 1.7 grams of sodium per day (5 grams of salt per day). Lastly, the report suggested the replacement of saturated and trans-fats with unsaturated fats, including sources of omega -3 fatty acids. This is because unsaturated fats have a capacity of preventing ventricular arrhythmias and thereby reduce fatal cardiovascular diseases. Trans-fatty acids produced by the partial hydrogenation of vegetable oils have unique adverse effects on blood lipids. In many developing countries, trans-fat consumption is high because partially hydrogenated soybean oil is among the cheapest fats available. Among other risk factors, higher intakes of trans-fat and lower intakes of polyunsaturated fat increase risk of type 2 diabetes.

Therefore, from the above review, it is observed that people who fail to apply moderate habit of diets and nutrition are most likely to develop chronic diseases in early life. It is increasingly recognised that unhealthy lifestyles do not just appear in adulthood but drive development of obesity, dyslipidaemia and high blood pressure, impaired glucose tolerance and associated, disease risk.

## Community Health Education Options

Nations and regions can promote a variety of initiatives to encourage better diet intake and nutrition. These initiatives are likely to be most effective when they are multi-faceted and coordinated and when they are developed with the active involvement of individuals and organisations within communities (Puska, 2008). Many countries are undertaking efforts to educate their populations about healthful lifestyles. For instance, in the Islamic Republic of Iran, the *Isfahan Healthy Heart Program*, a WHO collaborating center for research and training for CVD control, prevention, and rehabilitation for cardiac patients, has developed a comprehensive, integrated community intervention that involves schools, worksites, health care facilities, food services, urban planners, and the media. Physical activity is promoted by creating safe routes for walking and bicycles riding and by organising recreational walking that involves entire families (Puska, 2008).

In Nigeria, community health intervention geared towards educating the people on the relevance of considering a moderate standard of diet and nutrition for prevention of chronic diseases is of utmost importance. According to Lambert, Bohlmann, and Kolbe-Alexander (2001), interventions expected of developing countries (including Nigeria) involves increasing the availability and reducing the cost of healthful foods. In this regard, policies regarding the production, importation, distribution, and sale of specific foods can influence their cost and availability. Policies may be directed at the focus of agricultural research and the types of production promoted by extension services. Policies

that would encourage the production and consumption of fruits, vegetables, nuts, legumes, whole grains, and healthful oils would tend to enhance rather than reduce health.

Community health professionals are also expected to promote healthful food choices and limiting aggressive marketing to children. Ideally, such efforts are coordinated among government groups, retailers, professional groups, and nonprofit organisations and investment; and such efforts should include the careful testing and refining of social-marketing strategies and choices of people regarding consumption of fruits, vegetables, and legumes (Pucher and Dijkstra, 2003).

The development of comprehensive school programmes that integrate nutrition into core curricula and healthy nutrition into school food services should be encouraged by community health professionals. Regional or national standards to promote healthful eating should be developed for school food services. Also, community health professionals are expected to work with agricultural sectors and food industries to replace unhealthful fats with healthful fats, including adequate amounts of omega -3 fatty acids. This goal can be achieved through a combination of education, regulation, and incentives. Specific actions will depend on local sources of fat and on regional production and distribution. For example, in areas where palm oil is dominant, research could focus on developing strains that are lower in saturated fat and higher in unsaturated fat through selective breeding or genetic alteration. Labelling requirements or regulation can be used to discourage or eliminate the use of partially hydrogenated vegetable oils and to promote the use of non-hydrogenated unsaturated oils instead.

Community health educators are also expected to place much emphasis on the production and consumption of healthy food products in agriculture support and extension programmes. Pucher and Dijkstra (2003) noted that community health educators should always educate community members on the use of folic acid fortification if folic acid intake is low. The authors added that community health educators could encourage healthful lifestyle by promoting healthful food at worksite food services. Worksites can also promote physical activity by providing financial incentives for using public transportation or riding bicycles (and by not subsidising automobiles by providing free parking). Providing areas for exercise during work breaks and showers may be useful.

## Conclusion

Moderate diet intakes and nutritional status is seen as the prerequisite for prevention of chronic diseases. Chronic diseases are widespread diseases and

these present a great burden for society as they are the most common causes of deaths in the world. They are largely preventable through a healthful lifestyle involving a balanced diet and regular physical activity. The paper has identified many of the ongoing diet and lifestyle interventions in low and middle-income countries and few have documented reductions in the rates of major chronic diseases. However, the successes of Finland, Singapore, and many other high-income countries in reducing rates of cardiovascular diseases, stroke, and smoking-related cancers strongly suggest that similar benefits will emerge in the developing countries like Nigeria if the importance of diet and nutrition are communicated to a vast majority of people on regular bases using available channels of communication. The following recommendations were made based on the important health benefits of diet and nutrition as found in this work.

1. Community health educators should always assist the government in developing comprehensive natural and local plans that take advantage of every opportunity to encourage and promote healthful eating and active living. These plans would involve health care providers, schools, media, worksites, urban planners, all levels of food production, processing and preparation and governments. The goal is culture change in the direction of healthful living. An important element in cultural change is rational leadership by individuals and by professional organisations. Specific interventions will depend on local physical and cultural conditions and should be based on careful analysis of existing dietary and activity pattern and their determinants. Initiatives at community level, nations and regions can promote a variety of initiatives to encourage greater physical activity and better nutrition. These initiatives are likely to be most effective when they are multifaceted and coordinated and when they are developed with active involvement of individuals and organisations within communities.
2. State government in partnership with Community Health Educators should design participatory prevention strategies and implement activities in disadvantaged communities that promote healthful living. Programmes can be integrated into existing channels where individuals are currently involved, like churches and recreation centers.

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