

Review Article

Contemporary African food habits and their nutritional and health implications*

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Food is fundamental to human survival, in more than just one way. First, food is basic for averting hunger and maintaining health for every human being. Secondly, food satisfies our palate and makes us happy and emotionally and socially content. Third, food constitutes a form of cultural expression. The food we eat should be safe, palatable, affordable, and of the quality that can maintain mental, emotional, physiologic and physical health. Even with globalization that has seen food movements to and from different parts of the world, for most populations in Africa, food is still very locale-specific, especially in the rural farming areas where it is produced. Many locally produced foods have both nutritional and intrinsic value. The types of foods produced in Western Africa are very different from those produced in Eastern Africa. The staple foods, vegetables and the drinks that go with these foods are different. The way food is prepared is also very different in the two parts of Africa. Cultural specificity appears to be more pronounced in Western Africa, involving more secondary processing in the home and more spicing. Data linking food to health, as something that is understood by traditional communities is not easily available. This paper will collate information that discusses people's perceptions in both Western and Eastern Africa, and try to draw comparisons between the two. The paper presents a community picture of food, nutrition and health.

Key Words: food habits, familiar food, dietary energy supply, meal frequency, traditional diets, dietary practices, culture, staples, Africa.

Introduction

Better nutrition and healthy living require an understanding of factors that influence what we eat. Food habits are among the oldest and most entrenched aspects of many cultures that exert deep influence on the behaviour of people. The cultural background determines what is eaten as well as when and how.¹ A people's culture has a lot of influence on the kind of foods people eat in each community. In every part of the society, people have diverse feeding habits that have been inherited from generation to generation.

Food is used to satisfy hunger, provide comfort and relief from boredom or anxiety, as a status symbol, as well as in the performance of various rituals and rites. Several factors influence the choice of the food we eat. These include availability, economy, cultural and social habits, physiological and psychological attributes, marketing methods, and nutritional knowledge, among others.²

Food habits are slow and difficult to change because food has important psychological associations with the family and the community. Familiar food is satisfying and reassuring, particularly the traditional foods of childhood, which evoke a deep-seated emotional response. Many African countries have in the past three generations experienced extensive changes in food supplies and in housesold

diets. Exotic (untraditional) foods now dominate many urban areas in Africa. Even in the rural areas, the range of traditional domestic foodstuff has been considerably reduced partly due to increased cost of production and processing, and long and laborious domestic preparation methods. Their contribution to the family diet has therefore considerably declined. Most of the dietary energy comes from the staple cereals such as maize, sorghum, millet and rice. These contribute 40-60 percent of the total dietary energy supply (DES). In relation to nutrition, the meal frequency pattern and the distribution of food within the family are important factors. The food habits and dietary patterns are often related to the ecological zone within which people live.

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Linking the African diet and health throughout the lifecycle

Good nutrition is crucial to health status throughout the lifecycle. Appropriate nutritional intake is important, starting from the preconception stage and continuing through to the ageing process. Nutritional needs change throughout the lifecycle, requiring adjustments in the types and amounts we eat to maintain optimal health. The most critical stage of human development is from conception to about three years of age, a period when most physical growth occurs. From the fetal stage onwards, nutrition plays a role in growth and development, bone and skeletal tissue formation, brain development and in adequate protection against early onset of chronic diseases such as hypertension, diabetes, heart diseases, osteoporosis, and some forms of cancer.

Iron deficiency anaemia is one of the most common health problems in Africa today. For instance, in Kenya 50% of the population suffers from various levels of iron deficiency anaemia.³ Another common nutrient deficiency is that of folic acid. Women who have low intakes of folic acid are at increased risk of having an infant with neural tube defects, or incomplete development of spine and brain. Most governments on the continent recommend administration of folic acid tablets to expectant mothers in antenatal clinics.

For children aged 0-6 months, breast-feeding rates are low. The recommended six months exclusive breast feeding is not strictly followed and children are introduced to complementary breastfeeding as early as during the first week. This, however, is heavily dependent on the traditions and job status of the mothers. In most communities, infants are fed additional solid foods at inappropriately early ages - often during the first month of life. Breast milk is the only food recommended for infants during the first six months of life.

During the first six months of life, most infants obtain all the energy and nutrient requirements from breast milk. By the age of six months, they need additional or complementary foods to meet their needs for proper growth and development. The first weaning food a baby gets is usually semi-liquid, made from the starchy staple such as maize, millet, cassava or yam. Plain porridge made from cereals and tuber flour, though commonly used, is not sufficiently rich in energy. It also lacks proteins and essential vitamins, such as A and C. Other foods such as legumes, cowpeas, beans, or pigeon peas may be added to enrich such porridge. Legumes, such as roasted/pounded groundnuts or soybean, or other oil crops, such as roasted or pounded sesame or sunflower seeds are rich in oil and can be added to increase energy concentration. Green leafy vegetables and fruits may also be added to provide vitamins and minerals. Other examples of foods used as complementary or weaning foods include cow's milk, goat's milk, mashed bananas, potatoes and yams. As the infants grow older, foods used by other family members are gradually introduced.⁴

Starting at two years of age, children may eat foods from the family pot, but children under two years of age require special foods because their teeth are not fully developed to chew tough foods. They must adjust

gradually from breast milk to semi-solid foods, and ultimately, to the foods from the family pot.

For school-age children, food habits differ from one community to the other depending on economic activities. For pastoral communities, these children spend up to 70% of their time away from home herding livestock.⁴ They therefore only eat their main meal in the evening. Young children must eat adequate food as they pass through the critical stages of growth and development. Snack foods that provide energy can be eaten raw or cooked and are suitable for filling the gap between the family meal. Example of snacks commonly consumed in Africa include boiled or roasted roots and tubers (cassava, yams, potatoes), plantains; boiled or roasted green maize; roasted ground nuts or oilseeds; fried fish; insects such as locusts or termites; and fruits such as bananas, oranges, mangoes or sugarcane.

For the farming communities, the children spend some time on the farms but in most cases, they spend up to 60% of their time in school and parents have less control over food preparation and the food the child selects and eats. As adolescence begins, the growth associated with this stage increases their appetite considerably. As the African population continues to age, life expectancy has been drastically reduced due to HIV/AIDS. Those lucky to live beyond 60 are plagued by poverty and under-nutrition. Dental problems are among the most common health problems among the elderly on the continent. Seemingly, the aged are now neglected as far as food is concerned.

What we eat in Africa

What the African communities eat can be viewed in the context of the diverse socio-cultural and economic environments. The food consumed is not the same throughout, although there are some striking similarities. Higher income and education almost directly translate into enhanced dietary practices. Generally, Africans eat more grain foods, but most of them consume less than one serving of fruits per day. Locally available staples generally form the basis of a meal, but the meal becomes nutritionally adequate and tasty if a relish or soup (consisting of beans or groundnuts, vegetables, fats or oils, condiments and spices) and fruits are eaten with the staple. In most African communities, people rely on one or two staple crops. Most common are maize, teff, cassava, yam, sweet potato, plantain and enset. These crops provide the bulk of energy intake of household members. To balance their diet, consumers complement staple foods with legumes or foods from animal sources that are rich in proteins and fats/oil.

Apart from animal products, most of the ingredients used to prepare a relish in West African soups or other accompaniments are provided by a variety of vegetables such as beans, lentils or groundnuts with green leafy vegetables. With a few exceptions, all sub-Saharan ethnic groups' cuisine has the basic format that consists of a starchy food eaten with a sauce soup or dip, which may or may not be spicy. Main dishes are made from cereals (maize, millet, sorghum, teff), roots and tubers (cassava, cocoyam, yams), green bananas or plantain. If the staple

is low in certain nutrients, nutritional deficiencies may result.

The accompaniment which is known as relish, sauce or soup depending on the part of the continent, may consist of a vegetable dish (green leafy vegetables) or dish made from legumes, meat or fish, where and when available. Main dishes are also made from a combination of cereals and legumes or seeds. For example maize is eaten with beans, cowpeas, bambara nuts or groundnuts; rice can be eaten with cowpeas, beans, or melon seeds. Few population groups add green leafy vegetables to cereal-legume dishes. Nomadic pastoralists do not normally cultivate crops. Their traditional diets are based largely on animal products, supplemented seasonally by a variety of wild gathered foods. Cereal products such as sorghum and millets are also included in their diets.⁵

In humid regions of east and central Africa, the abundant green bananas and plantain are used as the base of the main dish. The main dish may be eaten with a relish made from pumpkin, cowpea or cassava leaves, with addition of groundnut sauce or red palm oil. The nutritional value of a meal made from a cereal and legume mixture can be improved by adding seasoned fruits, particularly fruits that are good sources of vitamin A and C. Main dishes commonly eaten in different parts of Africa include: Fufu, Ugali (also known as nshima, mealie pap, sadza, or tuwo in different parts of the continent), cassava and cowpea stew, mashed pumpkin with peanut butter, matoke, githeri, mukimo, nuthokoi, steamed pumpkin with honey, yam balls.

Relishes or accompaniments include: groundnut/peanut butter soup, green leaves with peanut sauce, vegetable stew, cassava stew with coconut milk, jute leaves, cassava leaves with groundnuts, chickpea with flour cakes. Snacks and sauces include: fried plantain, stewed sweet potatoes, stewed green bananas, nettle and barley sauce, akara and cotton seed sauce. Other examples include:

- fura/fula da nono, a millet meal mixed with cloves, ginger, peppercorn and rolled in millet flour into a ball;
- it is consumed in West Africa especially in Ghana and Nigeria;
- gari water, a cereal like food made from grated and dry-roasted cassava;
- akara, a snack eaten along the West African coast - it is essentially a snack or mini-meal, depending on the richness of the ingredients used - it is made from black eye beans;
- jollof rice, commonly consumed among the West African communities;
- mtori, a nutritious dish from Tanzania, is usually prepared for invalids or nursing mothers;
- steamed pumpkin and honey, a dish from Zimbabwe;
- yam balls, a popular West African dish - it can be eaten on its own as a snack or with sauce;
- groundnut/peanut butter soup, a nutritious soup eaten all over sub-Saharan Africa;
- egusi/palauer sauce, popular in Nigeria, Benin, Togo and Ghana - it is basically a spinach sauce with egusi (milled pumpkin seeds).⁶

Food categories

Staples

The main staples include roots and tubers, bananas and cereal grains and legume. The main legumes eaten include: bambara nuts, cowpeas, cluster beans, hyacinth beans, mung beans, lima beans, groundnuts, pigeon peas and soy beans. Grains form the bulk of food consumed in Africa. Grains are important in our diet because they provide complex carbohydrates (starches), vitamins, minerals, dietary fibre and phytochemical compounds. Grain servings can be divided into two types: whole grains, which make most of the African diet and non-whole grain servings, predominantly consumed in urban centres.

Dietary fibre is vital because of its effect on possible diet related diseases. The insoluble dietary fibre has long been known to relieve constipation and is believed to be beneficial in reducing the incidences of colon cancer. Soluble dietary fibre may dissolve in the body fluids. It helps in reduction of cardiovascular diseases and diabetes. Grains provide a substantial amount of vitamin E and selenium. These nutrients are important due to their antioxidant and anticancer properties. The antioxidant vitamin E helps to protect unsaturated fatty acids from damage by cancer causing agents. Phytochemicals play a protective role against certain chronic diseases. For example, phytoestrogens found in grains are believed to have protective properties and to reduce the risk of cancer. Examples of cereals traditionally consumed and still eaten in Africa today are as follows:

Sorghum (Sorghum bicolor (L.) Moench

This is a traditional grain crop of most communities living in arid and semi-arid regions of Africa. The grain is pounded into flour for making ugali or porridge. In Kenya, it is used greatly by the Kamba, Luhya, Luo, Turkana, Tharaka, Taveta, Mijikenda, Kikuyu, Embu, Meru, Tharaka, Taveta, Turgen, Marakwet, Duruma, Dogi, Teso, Rabai, Ribe, Kambe, Jibana, and Kauma communities. The grain may be mixed with cassava and ground into flour. The flour may be mixed with maize or finger millet flour. The flour is also used for making traditional beer among the Kisii, Luo and Teso communities. The stems of some sorghum cultivars are sweet and chewed as sugarcane. These are often sold in markets in southern Africa, especially in South-Western Zimbabwe.

Teff (Eragrotis tef (Zucc.) Trotter

Teff is an old and locally important crop of the Ethiopian communities. Injera (product from Teff) is the staple food of some communities especially in the North-Western, Central and Southern Ethiopia. In Kenya, it is mainly eaten by the Oromo groups including the Borana. The flour is used in preparation of Ethiopian bread known as injera (Ethiopia) or anjera (Borana), porridge and cakes. Injera is served with meat stew (often spiced) or vegetables on large shallow plates.

Finger millet (Eleusine coracana Gaertn.)

Finger millet has been cultivated in Africa since ancient times and it is the traditional food of many communities. The flour is used in preparation of porridge or ugali (stiff

porridge). Flour and grain are also used in local beer brewing.

Ensete (Ensete vantricosum)

Also known as false banana, it is limited to Ethiopia, where it is a staple crop in the southern highlands. The parts of ensete prepared for food may vary from one place to the other, but they generally include the starchy portions of pseudostem pulp, the young shoot, the trunk of the tuberous root stock and in some cases the upper part of the root.⁷

Fruits and vegetables

Commonly eaten fruits in Africa include: avocado, baobab fruit, citrus fruits, guava, mango, papaya, passion fruit, banana and jackfruit. Eggplant, gourd, green pepper, okra, squash, pumpkin, tomato, chilli, amaranth, spinach, leaves from baobab, cassava leaves, cowpea leaves, sweet potato and pumpkin leaves are among the vegetables commonly eaten.⁵

Fruits are important in a diet because they provide good sources of vitamins, minerals fibre and phytochemical substances. Vitamin C is important because of its role in healing wounds, fractures, bruises, and preventing bleeding gums. Potassium is important to keep the body parts running smoothly and is involved in maintaining water and electrolyte balance and regulating nerve and muscle functions. Fruits are generally, good sources of potassium. Vitamin A, a fat-soluble vitamin plays an important role in vision, growth, bone development and normal reproduction. Folate is important for DNA metabolism and its deficiency can lead to many problems during pregnancy. Orange juice is a major source of folate.

The prominent phytochemicals in fruits and vegetables are called flavonoids. These compounds act as antioxidants or anticancer agents by preventing the alteration of DNA. Flavonoids may also protect against heart diseases. Unlike consumption of other food groups, fruit consumption remains low in the continent from infancy throughout adulthood. Consumption of fruits is influenced by a number of factors. Africans with a higher income appear to consume more fruits than those with a lower income level. For those with higher incomes, fresh fruit may be easier to find and purchase. As with income there is also a positive correlation between education level and daily fruit consumption. Accessibility also plays a role in consumption of fruits. Populations living in rural areas consume more fruits than their urban counterparts regardless of education level or level of income. This is because Africans living in rural areas may have better access to fruit in abundance and variety depending on seasonality.

Vegetables are important in the diet because they provide vitamins, including vitamins A, C and folate and minerals including, iron and magnesium; proteins and phytochemicals. They are also good sources of fibre. Healthy vegetable consumption includes eating dark green leafy vegetables, deep yellow vegetables, beans, tomatoes, and starchy vegetables. Dietary fibre aids the digestive system, helps reduce cardiovascular diseases and diabetes and promotes healthy weight maintenance.

Vegetable sources of proteins come from dry beans and peas. However, these sources are deficient in the essential amino acids methionine and tryptophan.

Vegetables such as tomatoes, pepper, dark leafy vegetables are also rich in vitamin C. Vitamin A can be found in dark leafy vegetables and red, orange and yellow vegetables. Alium are a group of phytochemicals found in vegetables, particularly onions and garlic. These compounds account for the distinct flavour and smell of these compounds as well as possible health benefits. Research indicates that garlic and onions give protection against cancer. Garlic may also protect against heart disease by decreasing the formation of clots and reducing cholesterol levels. Compounds found in the cruciferous family, such as broccoli, cabbage and beans, may protect against cancer.

As with fruits, consumption of vegetables on the continent is influenced by certain factors. There is a noticeable relationship between income levels and vegetable intake. Vegetables are basically considered a poor mans' diet and as such are more widely consumed among the poor sections of the population. Higher education does not seem to positively influence vegetable consumption. Populations living in the rural areas eat more vegetables than their urban counterparts due to accessibility and variety. Attitude also plays a major role in consumption of vegetables. In general, vegetable consumption is not highly regarded and is more often than not an issue of availability against other options. Some specific examples of vegetables commonly consumed are as follows.

Pigeon peas (Cajanus cajan)

Peas may be cooked into a stew and eaten along with ugali. They may also be mashed with other foods such as potatoes. Among the Luo community of Kenya, peas are mashed and rolled into balls or boiled with sorghum.

Cat whiskers (Cleome gynandra)

Widely used as a vegetable in Kenya. In Western Kenya, milk is added and preferably left overnight in a pot to reduce the bitterness. The water obtained from boiling the leaves is used to cure diarrhoea.

Black nightshade (Solanum nigrum)

The leaves are used as vegetables in Kenya. It is normally eaten with Ugali. Amongst the Miji Kenda, it is mixed with less bitter vegetables such as amaranth and cowpeas. The unripe fruits are applied to aching teeth. The leaves are also used to relieve stomach pain.

Ethiopian cabbage (Brassica carinata)

The leaves are used as vegetables among Kisii, Luo, Luhya, Mijikenda and Suba communities in Kenya. Among the Luo, the vegetable is mixed with Cleome gynandra and dried in the sun and stored in clay pots known as egulu. The leaves are also fried with meat and used as a relish. In Malawi, the leaves are mixed with those of Solanum nigrum and Cleome gynandra. In Southern Africa, oil is extracted from the seeds and used for cooking and rubbing on the skin. The water obtained from the boiled leaves is used to treat diarrhoea among the Luo community. Other members of the Brassica genus commonly consumed are *Brassica oleracea L. var.*

capitata (cabbage) and *B. oleracea L. var. acephala* (kales).⁸

Animal products

Consumption of animal products especially milk and meat increases with income and urbanization. On average, meat and meat products take up to 3.2 percent of the dietary energy requirements (DES) in sub-Saharan Africa. However, the consumption of meat and meat products is higher in some countries.⁴ Milk is hardly consumed providing about 2.5 percent of DES except among pastoral populations where milk can contribute up to half of DES. The low consumption levels are due to low production, lack of preservation technology and also the high prevalence of lactose intolerance among African populations. Milk is most commonly consumed among the nomadic and pastoral communities. Among other communities, milk is hardly consumed because of low production of milk per animal and the lack of preservation technology. Most of the coastal Savannah and tropical forests rear livestock for meat and not for milk. In Eastern and Southern Africa, livestock including camels and some dairy products are an important part of culture and hence diet.

Fats and oils

Dietary intake of fats is often low due to cost implications. Refined oils and animal foods, which are sources of fats, are expensive making the dietary intake of fats and oils in African meals low. The fat or oil content of many African diets tends to be low. Total dietary fat provides an average 18% of total food energy in sub-Saharan Africa with some countries obtaining as little as 7-15 % of food energy from fats.⁹

Fats are an important source of energy, they increase satiety and help the body in its absorption of some vitamins, especially vitamin A. Oils also make the starchy staples more palatable and satisfies the appetite. In Africa, much of the fat content of traditional diets comes from plant oils such as red palm oil, groundnut oil, coconut oil and sesame.⁴ Foods rich in fats include groundnut, sesame, olive, palm and palm kernel oil, corn, sunflower, coconut and safflower oils among others. The fats and oils can be used for frying and other cooking methods.

Meal frequency and food distribution within the family

Meal frequency is adapted to lifestyles and work patterns of the family. In a traditional rural household, the main family meals are prepared in the evening. Breakfast often consists of reheated cold left overs from the previous days' main dish together with tea or porridge. In urban areas, bread and tea or coffee is often taken for breakfast. In most families, due to poverty, children go to school without eating. In urban areas, men and women eat a midday meal at the work place, purchased either from the vendor or from canteens.

Pre-school children and infants may travel with the mothers to the farm, or to the local market. When the child remains with the mother throughout the day, they are fed regularly on breast milk and/or snacks. Older siblings, grandparents or other relatives may care for

small children left at home. Ensuring adequate food intake for such children is often difficult and breast-feeding may be reduced or abandoned at an early stage. The family meals are eaten together, often in the evening or at weekends. The manner of serving the meal and the distribution markedly affects the dietary intake of different family members.

In some communities such as the Luo of Kenya, it is customary for every one to eat from a communal bowl. Where this is the case, the children suffer because they have to give preference to their elders, especially regarding the meat content of the soup or relish. In some communities, the mother will serve the husband first and will only join her children in eating after the man is satisfied. In some cases the male children are fed first before the mother and female children. This order results to under-nutrition for most vulnerable groups.

A general rule is to give every one different amounts of the staple, but the same share of relish. A small amount of animal food can be added to the relish to improve the protein value of the meal, the animal food also helps to provide fat for energy, haem iron and vitamins (especially vitamin A and folate).⁴ Where foods of animal origin are often available, the quality of the proteins in the diet can be improved by providing a mixture of vegetable products at each meal.

Culture and food

Socio-cultural beliefs and customs have a significant influence on family nutritional well-being. In terms of food choice, some foods are more prized than others and a meal is never considered complete until they are included. Should the favourite food be a root or tuber, the children are most disadvantaged because a weaning diet based on roots and tubers is bulky and has low concentration of nutrients unless enriched with additional foods such as fats, oils, fruits and vegetables.

Unfortunately, cultural food beliefs and taboos are often related to foods of animal origin and mainly affect women and children. Cultural influences may also include attitudes towards certain foods, food preparation, breast-feeding and infant feeding practices. They may also influence systems of food sharing and distribution within the family. Intra-family food distribution is often related to hierarchical position with the head of the family receiving priority in eating, while mothers and children receive a smaller share of the family's food, relative to their needs.

Most communities have evolved methods of dealing with health and nutrition problems and with seasonal food insecurities such that special nutrient rich foods are reserved for newly delivered babies and nursing mothers.⁴ Finger millet, *Eleusine coracana*, is the preferred cereal for lactating women in some Kenyan communities. Traditionally, germination and fermentation are used in preparation of cereal porridges.

Urbanization

Urbanization has greatly influenced the African feeding habits. In urban areas, food habits consist of high consumption of processed foods and snacks that may be prepared and marketed under unhygienic conditions leading to food contamination. Many 'urbanites' have

taken up untraditional food as part of their daily diet. Majority of these foods are snacks, that are consumed as meals during lunch or supper. Changes in life styles and eating habits have led to a demand for more 'snack foods'; consequently, snacking has become a regular feeding habit. Snack foods have been found to have a high proportion of fat, starch and high sugar content.² An excess of fats and starch is stored as body fat, sugar accelerates tooth decay and excess sugar is also stored as body fat. This scenario has seen a rapid growth of fast food restaurants in major African towns and cities. Fries and soda, a common meal in urban Africa today, presents a diet high in fat, carbohydrates and sugar.

Health implications of modern feeding habits

Modern feeding habits have brought a number of life-threatening nutritional disorders to Africa. These include: obesity, hypertension, diabetes mellitus, cancer and cardiovascular disorders

Obesity

Obesity is becoming more common as the African population leave their traditional feeding habits to embrace the modern ones. Due to urbanization people have changed their lifestyles and feed mostly on snacks. In addition, they use high amounts of fat and sugar, which predisposes them to obesity. The traditional diet is high in complex carbohydrates, as well as pulses and vegetables, lowering the risk of obesity.

Diabetes mellitus

According to the Kenya Diabetes Association, a third of Kenyan population is suffering from diabetes. Diabetes mellitus has been defined as a disease characterised by raised glucose concentration in the blood, as a result of deficiency or diminished effectiveness of insulin.¹⁰ There are two types of diabetes mellitus: Type 1-insulin dependent diabetes mellitus (IDDM) and Type 2 - non insulin dependent diabetes mellitus (NIDDM).

Both types of diabetes have similar symptoms that include, polyuria, polydipsia, and polyphagia.¹ Sugary or starchy foods such as chocolates, cakes, biscuits, bread and potatoes elevate the levels of sugar in the blood, if the body output of insulin is too low or the insulin produced is ineffective, the blood sugar remains high. This condition is referred to as hyperglycaemia, which is a risk factor for type 2 diabetes mellitus. By observing healthy feeding habits, maintaining healthy weight and by being physically active one can reduce the risk of type 2 diabetes and also control type 1 diabetes. Taking reduced fat dairy foods, cutting down visible fats and oils, eating more fruits and vegetables, reducing fatty nutrient poor snack foods and reducing alcohol intake will help to reduce the chances of developing diabetes mellitus.

Hypertension

As earlier mentioned, obesity is closely linked to the modern urban foods. The packaged snacks such as crisps, peanuts and chips contain a lot of salt, which is a risk factor for hypertension.

Cardiovascular diseases

Although coronary heart disease (CHD) is responsible for the death of many Africans every year, it's primarily a

disease that is associated with the 'western' type of diet and lifestyle.¹¹ Untraditional diets, as said earlier, contain a lot of fats and simple sugars. These diets have been linked to diseases of affluence.

Conclusion

Whereas traditional feeding habits may have been associated with some nutritional deficiencies, modern feeding habits have also brought a number of life-threatening nutritional disorders, thus presenting the double burden of disease in the continent. It is important to point out that African communities have developed diets that maximize the use of local foodstuffs, given their limitations of resources and access to different foods. Dietary deficiencies, therefore often result from lack of money, resources, including labour and land, and of time, especially for women. In addition, good feeding habits need to be emphasized while ensuring adequate awareness campaigns. Both the rural and urban masses in Africa require updated nutrition education that gives information on nutrients and their importance while pointing out the recommended food sources. Integral family-oriented approaches for long term dietary change seems to be the way forward in ensuring a step up consumption early and throughout life.

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Legumes, Nutrition, Anti-Nutritional Factors, Health Benefits. The high cost and limited supply of animal proteins have necessitated contemporary research efforts geared towards the study of food properties and potential utilization of protein from locally available food crops, especially from under-utilized or relatively neglected high protein oilseeds and legumes [23].

Anti-nutritional factors: The use of legume seeds in food and feed is usually limited because of their deficiency of sulfur-containing amino acids, low protein digestibility and the presence of several anti-nutritional components. Our dietary habits are based on foods, usually of plant or animal origin, that contain essential nutrients for our bodies, such as proteins, fats, carbohydrates, vitamins and minerals that can be ingested and assimilated for producing the energy required for growth and life. Their fermentation, specifically the fermentation of non-digestible carbohydrates, is an important activity of the gut microbiota, providing energy and driving the carbon economy of the colon [19].

The relationship between vegetarianism and health benefits is often difficult to demonstrate and some studies have even shown contradictory effects [45]. In modern science, research has not only focused on dietary habits [46] but also the association between dietary patterns and microbiota diversity. Human health implications of organic food and organic agriculture.

8.1.7. The link between animal welfare and animal health in organic husbandry . 48.

The development of environmentally sustainable and healthy food systems is an international priority and in this report we discuss how organic food and organic agriculture can contribute to this in relation to public health. Human and animal studies directly addressing the health effects of organic food are reviewed. However, the nutritional value of plant foods is only slightly affected by organic vs. conventional management and, based on what is currently known, is limited to a moderately higher content of phenolic compounds in organic foods.