
THE ESSENCE OF NUTRITION EDUCATION AS AN IMPETUS OF FUNCTIONAL EDUCATION FOR GAINING VALUES, KNOWLEDGE, SKILLS AND NATIONAL DEVELOPMENT

By

Magdalyn Aboh, (Ph.D.)
*Department of Religious Studies,
Faculty of Arts,
Nasarawa State University,
Keffi.*

Abstract

National policy on education fourth edition (2004:21) has grouped food and nutrition under group 'b' as non vocational electives. With this, it is human or (Nigerian) right to nutrition education as there is a slogan that "Health is wealth". It benefits all to seek knowledge, as good health is an individual responsibility. In this vein, the scientific knowledge of food preparation in order to achieve maximum nutrients for healthy living will be learnt. In effect without nutrition education an individual will be a slave to disease as all that will be consumed will be served as garbage to human system. Thus, the nutritional value of all members of the family will be known. In line with the various nutrient values of all foods and how the nutrients can be retained from the different destroyers, the major one being 'Heat'. In effect, the paper shall examine the essence of nutritional education to the family, the nutritional education status of an individual. With a guide on food group, the types of heat transfer, the educational effects of heat on various nutrients, finally on food storage and preservation will be reviewed and summed up with conclusion.

The early man searched for food in his surroundings, cooked and ate food for survival. Food is of the basic human need. In Nigeria food is prepared and consumed in diverse ways without much thought of the scientific preparation of food. The scientific preparation of food is the art of food preparation in order to achieve maximum nutrients for healthy living. Food here is taken to be an edible substance consumed by living things for survival. Here, nutrients are the essential part of food that provides the body with materials required for growth, repair and maintenance. In Tension's (1980:20) view

Academic Excellence

nutrition is the study of how nutrients are produced, observed, utilized by the body organs including the mode of waste production.

Education, according to Grant's (1972:11) view is "the effort to train an individual whole being, helping his mind, body and personality to grow to the full. In this vein, the aim of education is to help the child mentally, physically, morally, socially and emotionally".

Thus, nutrition education will enlighten the individual on how each food nutrient has its specific function in the body. With this, the knowledge of nutrient education will help us to know how these nutrients combine for the nutritional needs of the family. Nutrition education will enable individuals to learn about the techniques involved in purchasing food items, the criteria for adequate balancing and preparation of meals and storage of food for future use. In this light, we shall review the effects of heat on food items, in order to take adequate precaution while storing and cooking. Finally, the paper shall examine the essence of nutritional education to the family, nutritional education status of an individual, a guide on food grouping, the various nature of heat transfer, effects of heat on various nutrients and food storage and preservation, then sum up with conclusion.

The Essence of Nutritional Education to the Family

The nutritional needs of family members vary based on various criteria such as age, sex, health and social stratum (income), and their taste. On this basis, the health of the family rest to a large extent on how effectively the mutual needs of the family are considered.

The Family Nutritional Groups and Their Needs

The Aged: Here the nutritional needs of the elderly are lower than that of young adults as they are less active. With this, there should be a dietary adjustment by consuming less fatty foods, more fruits and vegetables as these will aid in the maintenance of the body functions. It is clear that the eyes and teeth too are aging, so there is need to eat softer foods, such as steamed foods or baked foods. As most old people suffer from weakness of the bones, it is necessary for occasional exposure to the sun in order to acquire vitamin D.

The Sick or Invalid: In the family, anybody can be termed or described to be sick at one point in time or the other. In this vein sickness bring about the breakdown of a person's body functions and loss of weight as a result of infection and poor dietary habits. Here, the nutritional requirements of the sick depend on the nature of illness they

Essence of Nutrition Education...

are suffering from. According to Mothram (1982) there are factors to be considered when providing diet for the sick in the family, which are as follows;

- i. The doctors' directives or instructions should be followed concerning drug intake and dietary habits.
- ii. Dietician or nutritionalist should be contacted for adequate confirmation or advise.
- iii. Selected cooking methods like steaming or baking methods should be used for cooking meals for the sick to aid easy digestion.
- iv. Spiced foods should be avoided in order to prevent intestinal irritation and vomiting.
- v. Necessary efforts should be made to present a balanced diet in different forms.
- vi. The sick should eat a little at a time with a lot of fluid repeatedly.

Nutritional Education Status of an Individual

Here, gaining knowledge on nutrition is to learn how to select a diet that will aid one to achieve and maintain a good nutritional status. In this light, a diet is judged to be adequate if those who consume it enjoy long term health, since body function may be affected by inadequate nutritional value and balance. Thus, according to Mothram, (1982) it is important to evaluate the nutritional status of an individual using four common methods. They `which are;

Clinical Examination

Here the individual's nutritional habit indicates his level of health in relation to food consumption. Thus, during clinical examination, the individual's appearance is examined or observed in terms of skin, hair, eyes, teeth and gum. The aim is to verify the physical condition of a well-nourished person free from sickness.

Biochemical Analysis

With this method, blood and urine is obtained for chemical analysis of blood is the principal medium of transport of nutrients around the body, while urine is used to get a lead to the loss of nutrients through excretion.

Anthropometric Assessment

With the aid of this method, the weight, height, arm circumference and skinfold measurement are taken to assess growth and development of a person. On this basis, the weight and height has direct relationship or link to growth then the measurement of arm circumference and skinfold are used in indicating protein (caloric malnutrition) in children, while skinfolds measurement are done with a tool known as calibrated callipers to estimate the amount of fat in adults.

Dietary Survey

With this method the food consumed by an individual may be assessed by using recall, food intake records, diet history and weighted food intake. Thus, in the recall method, food consumed during 24 hours period is called and it is measured based on need. The food intake method is when a person writes down the amount of food intake for a particular period of time, like a week. Thus, diet history observes the pattern of food eaten by a group revealing the food habits. The weighted food intake is the method where a person weighs all the food consumed for a particular period of time. The food samples to be weighed may be analysed chemically. The evaluation of this can be done using laboratory analysis or the rough computation using recommended dietary tables. Here the Recommended Dietary Allowance (RDA) produced by the Federal Ministry of Agricultural and World Health Organization give quantitative nutritional needs of men, women with pregnant and lactating mothers, infants, children on the basis of age, weight and nutritional needs.

A guide on Food Grouping

According to Recommended Dietary Allowance (RDA), there are a number of food guides available to the planner according to the nutritional needs of men, women, with pregnant and lactating mothers, infant, children on the basis of age, weight, height nutrient need.

Fig. 1: Recommended Daily Intake of some Nutrients for Members of a Typical Family

	Father,	Mother,	Child,	Baby,
	Fairly Active	Active Housewife	7 – 9 years Old	Not yet 1 year old
Kilojoule	12600	10500	8800	3300
g Protein	75	63	53	20
g Calcium	0.5	0.5	0.5	0.6
g Iron	0.01	0.012	0.01	0.006
g Vitamin C	0.03	0.03	0.02	0.015

The other guide is the four food groups that consist of six nutrients that are consolidated into four groups, that is, dairy group, meat group, vegetable and fruit group, bread and cereal group.

Dairy Group

Foods that are found in this group include milk and its products like cheese, sour milk (Nono) ice cream, yoghurt etc. Here milk is a good source of calcium and phosphorous. The required amount is a glass of milk everyday (8 ounce servings), while

Essence of Nutrition Education...

pregnant women and nursing mothers require about four to six glasses respectively. Soybeans milk is good substitutes for milk but it should be taken in larger quantities to meet the required amount.

Meat Group

This group include meat beef, lamb, liver, heart, kidney, poultry and all other meats edible, eggs, and fish. The alternate foods are beans, peas and groundnut. As such, meat group are important source of protein, iron and vitamin B. The required amount of meat are two or more serving that is 2 to 3 ounces over of cooked meat without fat, poultry, fish, two eggs, 1 cup of beans, 4 teaspoons of peanut butter.

Vegetable and Fruit Group

All vegetables and fruits available in a locality. These include mangoes, oranges, pawpaw, green peppers, grape fruit, guava, tomatoes, cabbage, carrots, pumpkin, spinach, etc. The required amount is four or more serving daily, of good source of vitamin C and A.

Bread and Cereal Group

This group consists of whole grain, cereals, corn meal, rice, maize, millet and their products like bread. They are good sources of energy and the B vitamins. The required amount are four servings daily of whole grain, 2 to $\frac{3}{4}$ cup of cooked cereals like rice, spaghetti and macaroni.

Types of Heat Transfer

In Allan (1982) there are different modes of heat transfers which are as follows:

Conduction

This mode of heat transfer is the passage of heat from the fire through the metal or the pot or frying pan to the fat we placed on it.

Convection

Hot gasses and liquids rise, and the cooler, heavier part sinks. In this vein, this movement of hot air is convection. Here when food is cooked in hot water, the water circulates and heat is conveyed to the food by convection. Thus, baking in the oven uses this nature of heat.

Radiation

The radiant heat passes through space such as light and heat objects placed in its path. Here corn, pepper and other food items are put in the sun to dry through radiation.

Academic Excellence

With the knowledge of nutrition education on the different types of degrees of heat enlightens the handlers of food on the appropriate type of heat that is suitable for food preparation and the right methods of cooking that will retain nutrients. Thus, the values, knowledge and skills gained will help in avoiding wastage both to human beings and the nation which in the long run, will result to national development.

The Educational Effects of Heat on Various Nutrients

In the process of cooking several changes take place in the nature of food as they react in different ways as follows:

Carbohydrate

According to Mothram (1982) carbohydrates contain a lot of starch and sugar. Tubers have high percentage of carbohydrate that contains a lot of starch and sugar; while cereal have high percentage of starch. Here, when dry heat is applied to starch, it changes colour, it becomes brownish based on the formation of dextrin and it turn to black later due to the fact that carbon is formed, when heat continues, carbon burns out as carbon dioxide. In human body when digestion is taking place, dextrans are formed from starch by the actions of enzymes.

Thus, when heat is applied to starch, granules are formed that does not dissolve in water. Here when the heat is high the granules swell suddenly, then the suspension forming a thicker white paste. While starch granules absorb water and swell, a process known as gelatinization occurs. But when the cooled, suspension of most starches is cooked, it thickens to form a gel, an elastic solid like cooked Akamu or baked custard when it heats it browns up in a process known as caramelization.

A typical example can be seen in cooked rice. In the process of cooking rice, when it is washed, put in water to cook, by sorption of water, the granules swell up and double the grains. Sugar caramelization can be seen when sugar is brought to boil, with high heat it changes colour to brown in the process of caramelization. Here this can be used for mixing up some cake mixture to produce brown colour.

Proteins

Proteins change a lot when they are heated as most proteins coagulate on being heated. Coagulation means where heat causes the protein to set like when the egg white is heated, it coagulates. Milk when heated forms a film to show the process of coagulation.

Essence of Nutrition Education...

In Allan's (1982) view meat is composed of two enzymes, collagens which are elastic that are not soluble and easily digested. Thus, smaller cuts consist of more of these enzymes that must be cooked on low or slow heat for quite a long time to soften up. As cooking of tough meat in this manner change collagen to gelatine, the more soluble protein then will form gel. In effect, heat cause the protein in muscle fibre to coagulate, then the meat becomes firm and shrinkage occur which causes extraction of meat juices and a loss of weight. With this, smaller cuts of meat are cooked slowly, to make the enzymes soft and more digestible. An example of this can be seen in cooking of an egg where egg is boiled and the white is observed to have a black spot, justifies over heating of protein, where it makes protein less digestible and reduce food value. With the effects of heat on proteins, fish belonging to this class is best cooked by steaming or poaching methods. Where fish is to be cooked using frying method, then coating of the fish should be done by covering the fish with bread crumbs, flour or eggs to prevent the loss of nutrients.

Water

According to Mottrana (1982:34) water has a boiling point of 100°C. At this point anything above 100°C temperature the water becomes vapour. Water is the medium by which many foods are cooked using different methods of cooking like kerosene, gas, fire wood, etc (yam, moi-moi, rice, etc).

Fat

When it is under high temperature the fats turns to oil and if overheated, it gives a acrid smell. Fat digests very slowly while all excess fat can be stored as energy in the body cells. It is good to apply low temperature to heat fat to allow the food to cook like meat, puff-puff etc. In effect, fat from fish, pork, when consumed in excess cause obesity, as animal fat burn more slowly than the one gotten from plants. In this case vitamin C helps fats to dissolve faster in the body. In Nigeria the sources of fat are found in palm oil, groundnut oil, cotton seed oil, beniseed, soya beans, egusi, vegetables and several others.

Minerals

Minerals are found in vegetables and heat has great effect on vegetables. But they are cooked to soften the tissues and to gelatinize any starch that may be present to make it digestible. Thus, in the process of cooking nutrients loss in vegetables are mainly by the passage of soluble mineral salts and, vitamins through the tissues in the cooking water.

Academic Excellence

According to Nature Magazine, Vol. 8, No. 12 (2012:28) when one cook vegetable with high heat or fire, you kill the medicinal or nutritional values. But with good cooking (steaming) you can get all the natural healing herbs from your soup, ranging from antibiotics to laxative.

In this vein, most vegetable cooked with a little water or oil added to it on a low heat will retain their nutritional property. Within Nigeria, vegetables are added to soup, but it is better added last when cooking to retain nutrients. Vegetables should be chopped as little as possible to avoid release of enzymes that help spoil vitamin C in the leaves. Sodium bicarbonate should not be used on vegetable like okro to improve colour so that it will not destroy vitamin C in it. With this, minerals like some salt are destroyed in water when heat is applied to foods.

Vitamins

In Allan's view (1982:36) heat destroys water soluble vitamins while the fat soluble vitamins are stable and insoluble in water. According to Nature magazine vitamins are lost when it is boiled in large quantity of water and the water is discarded, peeling off the skin, grating an hour before eating them. All these can lead to loss of its nutritional value.

According to Nature Magazine (2011:9) at the point of purchasing fruits in health food centre or store there is no way you can determine or know how fresh they are. The shorter the time between the harvest and consumption of any fruit or vegetable the more nutritious it will be. This knowledge is very important in the retention of vitamins in the process of preparation.

In the same vein, Laoye (1976:107) confirmed that most of these vitamins are easily destroyed by prolonged or excessive heating, which is very common in most African countries. The types of food containing vitamin B complex overlap and therefore, the three familiar groups of these vitamins could be present in the same food stuffs.

Food Storage and Preservation

The nature and number of storage facilities available determine the amount of various foods to be purchased. This goes in line with the type of home where some have refrigerators and freezers, deep freezers or few storage containers. In the case of cereals and grains, they can be preserved in fitting containers like big empty drums or big empty tins, while jute bags can be used to store grains in large quantity and chemicals are

Essence of Nutrition Education...

added into cereals to last for a duration of three (3) months to preserve it from insects and other pests (fumigation).

According to Harris and Speer (1939) meat can be preserved by freezing it, after cutting it in smaller pieces and packaging in small plastic bags with seals. While the bags might be labelled to show type of meat and date it was packaged for easy selection while cooking. On the other hand, where there are no freezing facilities, some meats may be salted and dried.

In the case of milk, it can be pasteurized to preserve it for a few days and this is done in bottles and freezers. Then powdered milk that does not contain water is preserved in tins with seals for easy use. Milk products like cheese, yoghurt, cream, undergo several processes before preserved in the freezer. Vain, Grosword, Justin and Rusf (1967) went further to state that fruits and vegetables storage is very important because their life span is short. While these foods are known as perishable foods, vegetables can be blanched, dipped in boiling water before preserving in the freezer compartment. Then fruits can be canned, dried or frozen.

Conclusion

From the fore-going, it is clear that heat destroys the valuable nutrients in foods. As such, the right methods of cooking should be adopted by taking to the recommended scientific preparation of food to retain maximum nutrients for healthy living.

Reference

- Cameroon Allan (1982). *The science of food and cooking*. Britain: Whitestable Limited.
- Ministry of Education (2007). Special teachers upgrading programme (STUP) Nigeria certificate in education (NCE) course book on primary education studies. Kaduna: National Teachers Institute, 2007, P. 403
- Federal Republic of Nigeria (2004). *National Policy on Education*, 4th Edition. 2004, pg. 21. Publishing foundation.
- Grant, M. (1972). *School method with younger children*. London: Evan Brothers Limited Montague, House, Russell Square, pg. 11.
- Harris Jessie & Speer Elizabeth (1939). *Everyday foods*. New York: Houghton Mifflin Co. In Federal Ministry of Education, Special Teacher Upgrading Programme

Academic Excellence

(STUP), *Nigeria Certificate in Education (N.C.E.) Course book on Primary Education Studies*. Kaduna: National Teachers Institute, 2007, pg. 398.

Laoye, J. A. (1976) *Principles and practice of health education*. London: Macmillan Education Limited, P. 107.

Ministry of Agriculture and Fisheries (1979) Manual of nutrition. Edited by Buss D. & Robert J. London: Her Majesty Stationary office. In Federal Ministry of Education. Special Teachers Upgrading Programme (STUP), *Nigeria Certificate in Education (NCE) course book on primary education studies*. Kaduna: National Teachers Institute, 2007, p. 388-389.

Mothram, R. F. (1982). Human nutrition. Great Britain: Pitman Press Ltd. Great Britain. In Federal Ministry of Education, Special Teacher Upgrading Programme (STUP), *Nigeria Certificate in Education (N.C.E.) Course book on Primary Education Studies*. Kaduna: National Teachers Institute, 2007, pg. 384.

Omokhua, A. (2011). How to get healing from food. *The nature Magazine*. Lagos: Suit 41, Asucan Plaza, 515, Ikorodu Road, Ketu, Vol. 8, No. 12. , P. 9 and 28.

Tension, H. (1986). The cooks handbook. New York: Hodder and Stroughton David McKay and Co. Ltd. In Federal Ministry of Education, Special Teacher Upgrading Programme (STUP), *Nigeria Certificate in Education (N.C.E.) Course book on Primary Education Studies (PES)*. Kaduna: National Teachers Institute, 2007, pg. 372.

Vaul, E.; Gladys Grosword Routh; Justin Margaret & Rust Lucile (1967). Foods on introducing college course. New York: Houghton Mifflin Co. In Federal Ministry of Education, Special Teacher Upgrading Programme (STUP), *Nigeria Certificate in Education (N.C.E.) Course book on Primary Education Studies (PES)*. Kaduna: National Teachers Institute, 2007, pg. 398.