

NUTRITIONAL ASSESSMENT OF PRIMARY SCHOOL PUPILS IN BOKKOS LOCAL GOVERNMENT AREA OF PLATEAU STATE, NIGERIA.

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ABSTRACT

This is a descriptive survey that was carried out to assess the nutritional status of school pupil in Bokkos. A multi-staged sampling technique was used. An interview guide (Structured Questionnaires) was used to obtain data from the pupils of the various primary schools in Bokkos. The result showed that 34% of the pupils are within the age range (7-9) years. and 17.5% of the pupils are of the age range of (13-15) years. Mean age of respondents was 6.6years. Furthermore the average height and weight of the respondents was 1.27m and 27kg respectively. The average body mass index of the study population is 12.6 kg/m². A null hypothesis tested at significant level of 0.05 suggested that, there is no/a significant relationship between BMI and gender. It was therefore concluded that the nutritional status of pupils in Bokkos is low. Recommendations like nutritional education on the constituent of food locally available in the community, and Government should subsidize agricultural inputs so as to encourage local farmers to produce crops that have high nutritional value among others were made.

KEYWORDS- Nutritional assessment, primary pupils, Bokkos.

INTRODUCTION

Millions of children in developing countries suffer from under nutrition. These children are prone to malnutrition because they are at a stage in their life when growth is rapid, nutritional requirements are high and the diet likely to be given to them are inadequate (Barrie and Michael 1999).

Growth reference for this group is inadequate. Among children both under and over nutrition are present in many developing countries. Investigating children will have both short and long term benefit of huge economic and social significance, including reduced health care cost throughout the life cycle, increased adult productivity (William 2012).

Nutritional assessment is only possible through knowing the nutritional habit of a group of people or a society, discovering the insufficiencies and then to be able to propose the best solutions to get the best result (Davis and Stegman, 2001).

Two broad sets of factors determine the nutritional status of an individual.

- The availability of diet, which must provide adequate amount of the essential nutrients.
- Factors that condition the requirement, absorption, assimilation and utilization of the nutrients of the diet.

Proceeded by emphasizing that the basic concept that is been observed in the course of food consumption include under-nutrition and malnutrition. Under-nutrition is an inadequate nutrition due to failure to ingest, absorb or assimilate all the essential nutrients in adequate quantities while malnutrition is any disorder resulting from deficiency or an excess of one or more essential nutrient.

Under nutrition is more common in families who have several young children, when a new baby is born (Maclomack, 2008 as cited in Williams, 2012).

Parasites in children can lead to nutritional deficiencies. The chief offenders are hookworms, which cause vitamin B₁₂ deficiency. Socio-economics status indicator of the family may be the single most important indicator of nutritional status in children (Mahan, 2007). The poorest households are now resorting to dynastic action to meet their food needs (Maclomack, 2008 as cited in Williams 2012). Children are the most vulnerable

to the impact of prolonged hunger which cannot only result in weight loss, but makes children more susceptible to illness, combination of drought and escalating food price has left 4.6 million people urgently in need of food in Ethiopia. Around 759,000 of these are children which are particularly vulnerable to effects of malnutrition such as weight loss and disease (Golbino, 2000).

The economy has grown in recent years, but the democratic government continues to confront a legacy of mismanagement and corruption. Similarly the nutritional status of Nigerian child is poor, (Golbino 2000).

Classification of nutritional status was made according to public health criteria recommended by World Health Organization (WHO). Expert committee for analytical purposes, the subjects were divided into five

- i. Normal
- ii. Low weight for age (stunted)
- iii. Low weight for height (wasted)
- iv. Low height for age and low weight for height (stunted and wasted).
- v. Overweight.

Various methods are used in nutritional assessment, this can be classified basically into two namely indirect and direct method.

Indirect Method:

The amount and kind of food which an individual especially children eat routinely is one indication of their nutritional status. In this method of nutritional assessment, the health workers find out about individual nutritional method by asking various questions in relation to the quality, quantity and other related factors about the client. E.g. family food budget, weaning pattern, types of food available in the community, mothers knowledge on food sources and method of preparation. Food intake, however should not be confused with nutritional status itself.

Direct Method:

This method of assessing the nutritional status of an individual comprise of the following techniques; general observation of appearance, inspecting the child's weights chart against growth, skin fold thickness, mid upper - Arm Circumference, body mass index, and biochemical methods.

STATEMENT OF PROBLEMS

Evidence shows that malnutrition even in its milder form can increase the likelihood or mortality from a number of different disease entities (Wilson, 1996). Such nutritional diseases include Kwashiorkor, Marasmus and Kwashiorkor-marasmus.

According to Wilson (1996), "If the world wants to see an era of harmony and wellbeing in future, it must look out for the children of the present enabling all children to see that, their hope becomes reality, with the light of a loving global community shining in their eyes." The children of today the promise of tomorrow. In view of this, the study is aimed at assessing the nutritional status of primary school pupils in Bocks Local Government of Plateau State. The study will provide an answer to the following research questions:

- What is the nutritional status of primary school pupils?
- What is the weight for age of primary school pupils?
- What is the average weight for height of primary school pupils in Bokkos?
- What is the mid upper arm circumference of primary school pupils?

OBJECTIVE OF THE STUDY

- To assess the nutritional status of primary school pupils.
- To assess weight for height of primary school pupils.
- To assess the mid upper arm circumference of primary school pupils.

SIGNIFICATION OF THE STUDY

The study will be of importance to educational sector. It will provide basic information on the nutritional status of primary school pupils thereby setting the stage for proper planning. The study will give an evaluation of the

nutritional status of the primary school pupils of the various schools in Bokkos. The result of the study will help the primary Education Board in planning their health, education program me focused on the children.

NULL HYPOTHESIS.

There is no significant relationship between BMI and gender among children in Bokkos.

CONCEPTUAL FRAMEWORK OR THEORETICAL FRAMEWORK

Nutrition in its broadest sense is not limited to biochemistry and physiology of the body. In addition, nutrition must be concerned with social, economic, cultural and physiological implication of the food and eating.

Conceptually, it is helpful to consider nutrition in the context of agent, host environment, interaction system, the human body is the host, that part of environment we normally consume is food. The agent is nutrition and is that of food which nourishes the body, and the term nutrient is applied to this food and nutrient and are synonymous, not everything in food nourishes the body e.g. fiber, additives and toxins (Donald, 2007).

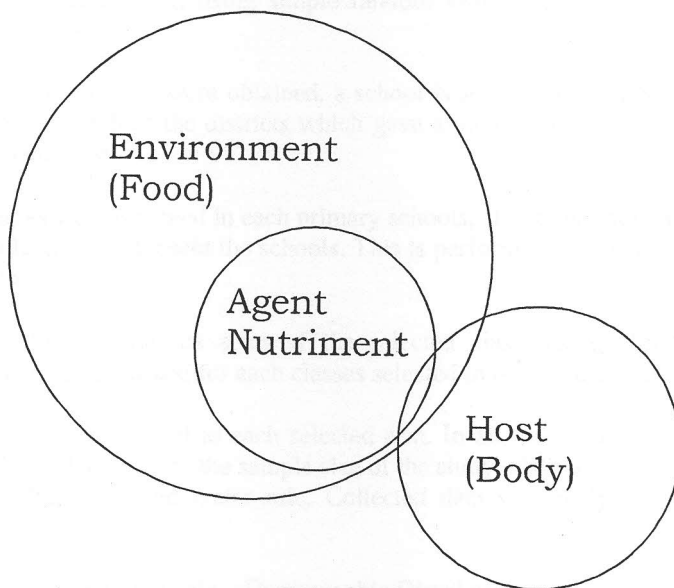


Fig 1: Agent - Host - Environment Concept applied to nutrition

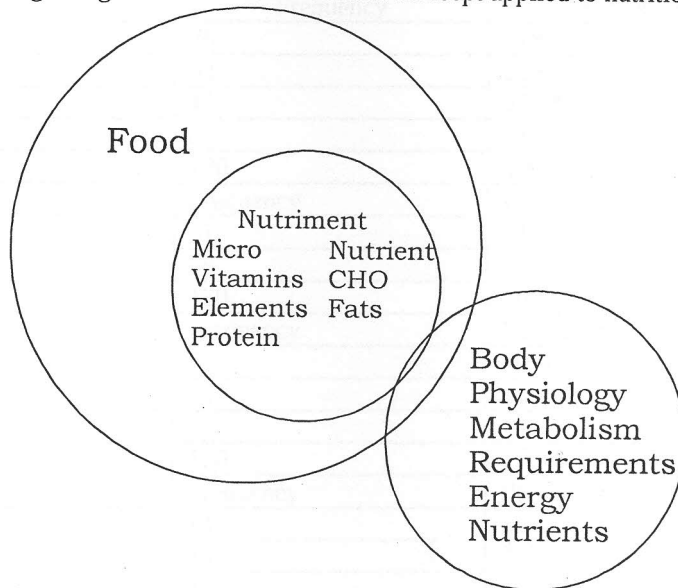


Fig 2: Interrelationship of food, nutriment and the body in more details

Figures 1 and 2 show the concept of host agent environment. Agent - host - environment concept applied to nutrition. Nutrient may be divided into macro and micro nutrients, according to the amount consumed.

Macronutrient comprise the bulk of any diet and consist of carbohydrate, protein, and fats, they and sources of energy, comprise most of the structures and non-essential for the body in itself but what it yield for digestion e.g. glucose and other monosaccharide, fatty acid and glycerol and amino acid respectively (Donald, 2007).

The micro-nutrients includes vitamins and elements, vitamins are non energy producing organic components occurring naturally in food and necessary for health. It could be fat soluble or water soluble. The fat soluble vitamins (A D E and K) are store by the body, water soluble vitamins (Thiamine, Riboflavin, Niacin, Pyridoxine, Folic acid Vitamin B₁₂ of the B groups and vitamin C).usually are little stored and mostly as co-enzymes (Donald, 2007).

METHODS

The study adopted the descriptive survey design. This method is used for collection analysis of data for the purpose of assessing the nutritional status of primary school pupils.

First stage involved clustering the area into districts that; Bokkos, Butura, Tangur, Mushere, Forof, Tarangol, Bokkos West, Manguna and Richa District, using simple random sampling, four districts were selected to represent the Local Government Areas.

In the second stage list of primary schools were obtained, a school is selected to represent all the schools in a given district. This is repeated for each of the districts which gave a total of four (4) schools representing the districts in the Local Government Area.

In the third stage, a list of classes were obtained in each primary schools, classes are numbered and using simple random sampling a class is selected to represent the schools. This is performed for each selected school given a total of four schools for the study.

The fourth stage involved listing of various arms of the selected class, using simple random sampling techniques, to select an arm. This is performed for each classes selected in the various district.

Thirty (30) pupils were purposively allocated to each selected arm. In all, the sum of (120) one hundred and twenty subjects were selected which constitute the sample size of the study. Data was collected by interview and the use of shakir strip, weighing scale and meter rule. Collected data was analyzed using descriptive and inferential statistics.

Table 1: Socio - Demographic Distribution

Age	Frequency	Percentage
4 - 6	26	21%
7 - 9	32	26.6%
10 - 12	41	34.2%
13 - 15	2	17%
Total	120	100%
Sex	Frequency	Percentage
M	61	51%
F	59	49%
Total	120	100%
Religion	Frequency	Percentage
Christianity	95	79%
Islam	25	21%
Others	---	---
Total	120	100%
Ethnicity	Frequency	Percentage
Kulere	24	20%
Mushere	25	21%
Ron	48	40%
Others	23	19%
Total	120	100%

Table 1 shows that 34.2% of the pupils fall within (10 – 12) years, 26.6% of the pupils fall within (7 – 9) years, while the least percentage of 17.5% of the pupils falls within (13 – 15) years of age.

It can be seen from the Table 1 that male 51% while the female is 49%.

Ninety – seven percent of the pupils are Christians while 21% are Muslims. No any other religion was recorded among the pupils.

The Ron (Challah) ethnic group of the pupils are more represented by 40% followed by the Nushere ethnic group of the pupils represented by (21%) percent, and the Kulere ethnic group of the pupils are represented by (20%), the reset represent others by 19% of the pupils (Table 1).

Table 2: ANTHROPOMETRIC DATA

Mean height= 1.27m

Height (M)	Frequency	Percentage (%)
1.0 – 1.2	46	38%
1.3 – 1.4	60	50%
1.5 – 1.6	14	12%
Total	120	100%
Weight (kg)	Frequency	Percentage (%)
18 – 23	31	26%
24 – 29	60	50%
30 – 35	13	11%
36 – 41	16	13%
Total	120	100%
Mu/A/Circumference	Frequency	Percentage
16 – 19	28	23%
20 – 23	30	25%
24 – 27	52	43%
28 – 31	10	9%
Total	120	100%
BMI	Frequency	Percentage
7 – 10	19	15.8%
11 – 14	80	66.7%
15 – 18	20	16.7%
19 – 22	1	0.8%
Total	120	100%

Mean weight= 27±5 kg, Mean Mu/A/ circumference= 22.5±5cm Mean BMI= 12.6Kg/m²

Table 2 shows that 50% of the pupils are within the height of (1.3 – 1.4) m, while 38% of the pupils are within are within the height (1.5 – 1.6) m.

50% of the pupils are within the range of (24 – 29) kg of body weight. 26% of the pupils have body weight of (18 – 23) kg. 13% of the pupils have body weight within the range of (36 – 41) kg of body weight while 11% of the pupils are within the range of (30 – 35) kg body height.

The table shows that 43% of the pupils have mid upper arm circumference of (24 – 27) cm. 25% of the pupils have mid upper circumference of (20 – 23) cm, 23% of the pupils have mid upper arm circumference of (16 – 19) cm. while 9% of the pupils have mid upper arm circumference of (28 – 29) cm.

Table 2 shows 66.77% of the pupils have (BMI) body mass index within the range of (11 – 14) kgm⁻¹ 16.7 of the pupils have BMI within the range of (15 – 18) kg 15.8% of the pupils have BMI within the range (7 – 10) kgm⁻¹ while 0.8% of the pupils have the BMI within the range of (19 – 22) kgm⁻¹

This table also shows significance of association between gender and BMI (body mass index).

Table 3: contingency table of BMI against gender.

<i>BMI</i>	Gender		Total
	Male	Female	
7-10	7	12	19
11-14	48	32	80
15-18	6	14	20
19-22	0	1	1
Total	61	59	120

$X^2 = 118.99$, critical value $7.815 = df = 3$, significant level = 0.05.

Table 3 reveals that there was significant association between gender and body mass index (BMI).

The table shows that there was significant of association between body mass index and age.

DISCUSSION

From the data collected, the pupils were predominantly of the age (10-12) years as shown in results represented with 34.2% and 25.6% of the pupils are within the age (7-9) years, 21.7% of the pupils are within the age (4 – 6) years and 17.5% of the pupils are of the age range (13 – 15) years.

This shows that most of the pupils enrolled into primary school late. This could be due to growth retardation as a result of poor nutrition which definitely affected their growth rate.

From the analyzed data, it shows that most of the pupils are predominantly male, that are represented by 51% while the female forms 49% as seen from the result.

From the analyzed data, it show that most pupils are from Christian background as seen which make up 79% of the pupils, while 21% of the pupils are Islamic background. This shows that most of the pupils are Christian.

The result also shows Ron (Challah) ethnic group in the area of the study, with representation of 40% Kulere are represented by 20%, Mushere have 21% while other which comprises of the various ethnic groups are represented by 19% of the study population.

This indicates that, Ron ethnic group are the majority of the study area. Mushere ethnic group with 21% in the study population after which Kulere ethnic groups with 20% of the pupils and others with 19% of the study population. Anthropometric chart shows that 50% of the pupils falls between 1.3 – 1.4 m, 38% of the pupils falls between 1.0 – 1.2 m and 12% falls between 1.5 – 1.6m.

This could be an indication of inadequate nutrition. This might be related to socio-economic status of the parents and belief and taboos held by some cultures.

The result shows that 50% of the study population weighs between (24 – 29) kg, 26% of the pupils weigh between (18 0 23) kg, 13% of the pupils weigh 36 – 41kg and 11% of the pupils weigh between 30 – 35 kg. in this study, it is seen that majority of the children bellow the normal average weight.

This indicates greater part of the pupils are under weight , this could be due to poor nutrition, or lack of adequate intake of portentous diet, which usually is necessary for adequate growth and replacement of warn out tissues in the body.

Barasi, (2003), stated that adequate dietary intake and nutritional status among children are important for their growth and development.

The result shows that 43% of the pupils have the mid upper arm circumference of (24 – 27) cm. 25% of the pupils have the mid upper arm circumference of (20 – 23) cm, 23% of the pupil have mid upper arm circumference of (16 – 19) cm and 9% of the pupils have mid upper arm circumference of (28 – 29) cm.

The result also shows that 66.7% of the pupils have a body mass index (BMI) of 11 – 14kg, 16.7% of the pupils have BMI of 15 – 18 kgm⁻¹, 15.8% of the pupils ave BMI of 7 – 10 kgm⁻¹ and 0.8% of the pupils have BMI of 19 – 22kgm⁻¹

This indicates that greater parts of the pupils are undernourished. This could be due to poverty, intake of low or no notorious diet at all.

The result also shows that there is a strong association between Gender and body mass index. Since the association is positive, it shows that, they are moving in the same direction.

CONCLUSION

Protein Calorie Malnutrition (PCM) which present as marasmus, kwashiorkor or marasmic-kwashiorkor affect mainly children especially in the rural areas where there is less nutritious diet.

RECOMMENDATION

There is need for health education on the constituent of balance diet in the local available food in the community.

Government should subsidize agricultural inputs so as to encourage local farmers to produce crops that have nutritional values.

Agriculture extension workers should be send to the rural areas to show and teach the local farmers the new techniques on the improved variety of crops.

Government should introduce free breakfast in primary schools so as to boost the nutritional status of the pupils.

Parents should be educated on the need of given the best part of the meal to the children, because they are in a stage where growth and development is rapid.

Multi-sectorial approach should be used in campaigning and enlightenment on the need of using the community agricultural resources to burst their nutritional intake.

Community should be educated on the strategies for empowering community using Colnisa Strategy

COLNISA

CO	=	Community
L	=	Level
N	=	Nutrition
I	=	Information
S	=	System for
A	=	Action

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