

Assessment of Dietary Pattern and Nutritional Status in Some Selected Primary Schools from Dutsin-Ma Local Government, Katsina State

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ABSTRACT

The dietary patterns analysis give a good impression of the food consumption habits within a certain population. Poor dietary habits of primary school pupils had been reported as a lifestyle change in school. The study aim is to determine the dietary habits and nutritional status of selected primary schools participated within Dutsin-Ma local Government. This study applied a cross-sectional survey observed in Dutsin-Ma community. The volunteered participant were 148 primary school children. Pre-tested questionnaire was used to determine the eating patterns of the children. The determination of nutritional status of the children used Anthropometric measurements (Height, Weight, Head and Waist circumference). The age group between 5-10 years of the three different school participants were 79.2%, 70%, and 76% which constitute the higher age percentage of the participants. Their breakfast composed of Tea/Pap and Bread (54.2%, 68% and 50%), and the higher Lunch percentage belong to the category of Rice/Spaghetti/Macaroni (62.5%, 80% and 96%), meanwhile, the highest dinner percentage (54.2% and 48%) belong to the category of Rice/spaghetti/Macaroni for the first (Girls primary school) participant and second (Federal University Dutsin-Ma (Fudma) staff school) participant while the category of millet/maize swallowed had the highest percentage of 64% for Yerima primary school. All the participants dairy product consumption was yoghurt (68.7%, 64% and 54%). The nutritional status of the participants were also evaluated which indicated that there was significant increase in mean height and head circumference for the male of both Yerima and Fudma staff school participant but the female had significantly increased mean weight and waist circumference. The study showed that the participants had partial or absent of milk, cheese, or butter intake, which are important sources of calcium and other essential nutrients. It is important that parents or guardian promote healthy eating habits of their children, which shall improve their health outcome.

KEYWORDS: Nutritional status; Dietary habit; Participant, Dairy product, Pupil.

INTRODUCTION

A child's early nutrition has been linked to their intellectual development, growth, and well-being. It has also been shown to protect them against illnesses that could impair their ability to study and function (Olumakaiye, et al., 2023). Children in school need to eat enough food to stay healthy. From the standpoint of health promotion, children's food and drink intake during school hours can have a substantial effect on their overall health and well-being (Martinchik, et al., 2020). Due to the fact that diet has an impact on both the appropriate development and growth of young people as well as the maintenance of good health into old age, children and teenagers are the most susceptible group to the effects of poor nutrition (Srivastava, et al., 2012). The most prevalent problems among school-age children include excessive food consumption, a lack of diversity in foods and dishes, low nutritional value foods and beverages (such as cakes, fast food, and sugary drinks), and inadequate consumption of cereal items that include grains, fish, vegetables, and fruits (Budhathoki, et al., 2019). Healthy eating practices during childhood encourage optimal growth, health, and intellectual development in addition to reducing acute health difficulties such impaired ability to learn and work (Onifade et al., 2019). Around 22.1% of people in Nigeria are under the age of 21, making up a sizeable fraction

of the global population, particularly in developing nations (Onifade et al., 2019). Among other behavioral risks, such as poor eating habits, are the main causes of morbidity and mortality in children (Maloney, et al., 2022).

METHODOLOGY

Study design and sample size

A cross-sectional study were carried out in Dutsin-Ma Local Government Area of Katsina State, Nigeria. The sample size was calculated based on the prevalence of a similar study with a similar population. A total sample size of 148 school pupils between the ages of 5-15 years attending public primary school.

Inclusion and Exclusion Criteria: Those who were eligible for inclusion into this cross-sectional study were a cohort of 148 mixed gender, 99 girls (48 in girl primary, 26 in Fudma staff school, 25 in Yerima primary), and 49 boys (24 in Fudma staff school, 25 in yerima primary) aged 5-15 years drawn from girl’s primary school Dustin-Ma Katsina State, Fudma staff school and Yerima Primary school Dutsin-Ma. The pupils whose ages could not be ascertained, those outside the age bracket of 5-15 years and those who did not give their consent were excluded.

Sampling procedure

In this procedure, a random sampling method were applied in selecting the respondents from three (3) different schools where the study conducted. The primary schools randomly selected in the Local Government Dutsin-Ma were Yerima Primary school, Girls primary school and Federal University Dutsin-Ma staff school.

Data collection

The questionnaire was self-administered for data collection by the guardians of the children. The participant were guided as they filled the questionnaires with related information of the study. The participants voluntarily participated without any pressure, and required information was given to the interviewers. The response rate from the volunteers was a good, as all questionnaires were filled and returned. The primary school student’s anthropometric measurements—mean weight, height, head circumference, and waist circumference—were taken on the spot. A bathroom scale and measuring tape were used to determine the subject’s height and weight. The students were weighed while standing straight on the scale and wearing loose clothing. With their feet contacting the wall jointly, they measured their height by standing up against the wall and marking it. The mid-upper-arm circumference tape was used to measure the mid-arm circumference.

Ethical Approval: Ethical clearance was obtained from the Ethics Committee at the primary schools Dustin-Ma local Government, Katsina State.

Data Analysis: The data obtained was analyzed with SPSS version 24 software for frequency distribution, mean, cross tabulation and Chi square test to examine relationships between variables.

RESULTS

The below table indicated the eating pattern of the school pupil. Majority (79.2) of the student were between the ages of 5-10 years. It describe the eating habits of girls in Dustin-Ma primary school, which states that the number of students that took tea/pap and bread, those that ate rice/spaghetti/macaroni and those that ate millet/maize swallow for breakfast, lunch and dinner. The table also shows the frequency and percentage of students that consume dairy products such as butter, cheese and yoghurt.

Table 1: Eating habits of Girls primary school Dustin-Ma

Variables	Frequency	Percentage%
Age (years)		
5 – 10	38	79.2
11 – 15	10	20.8
Breakfast		
Tea/pap and bread	26	54.2
Rice/Spaghetti/Macaroni	15	31.3
Millet/Maize swallowed	7	14.5
Lunch		
Tea/pap and bread	0	0
Rice/Spaghetti/Macaroni	30	62.5
Millet/Maize swallowed	18	37.5
Dinner		
Tea/pap and bread	2	4.2
Rice/Spaghetti/Macaroni	26	54.2
Millet/Maize swallowed	20	41.6
Dairy products		
Butter	3	6.3

Cheese	6	12.5
Yoghurt	33	68.7
None	6	12.5

Table 2 shows the variables and parameters of the nutritional status of girls in Dustin-Ma primary school such as the mean of the body weight, the mean of the height, the mean of the head circumference and the mean of the waist circumference.

Table 2: Nutritional status of girls in Dustin-Ma primary school

Variables	Parameters
Body weight (kg)	23.63 ± 4.52
Height	47.59 ± 7.02
Head circumference	19.93 ± 2.22
Waist circumference	20.61 ± 0.92

Table 3 shows the majority 70% of the participants are 5-10 years of age and 30% of them are 11-15 years. 68% of the children took meal three times daily, 26% take more than 3 times, 6% took two times, majority of the children eat three times daily.

Table 3: Eating pattern of Federal University Dutsin-Ma staff school pupils

Variable	Frequency	Percentage %
Age (years)		
5-10	35	70
11-15	15	30
Number of meals daily		
Once	0	-
Twice	3	6
Thrice	34	68
More than thrice	13	26
Breakfast		
Tea/Pap and bread	34	68
Rice/spaghetti/Macaroni	16	32
Millet/maize swallowed	0	-
Lunch		
Tea/Pap and bread	3	6
Rice/spaghetti/Macaroni	40	80
Millet/maize swallowed	7	4

Dinner

Tea/Pap and bread	10	20
Rice/spaghetti/Macaroni	24	48
Millet/maize swallowed	16	32

Dairy products

Milk	12	24
Cheese	3	6
Yoghurt	32	64
None	3	6

The below table provided the nutritional status of the pupils, there was a lot of variation in height, weight and ages of the children. The average weight and waist circumference for the male children is significantly less than female category, meanwhile male height and head circumference are significantly higher than the female category.

Table 4: Mean age, height, weight, waist and head circumference of respondent

Gender	Years	Height (inches)	Weight (kg)	Head circumferences	Waist circumference
Male (n = 24)	11.5 ± 0.74	53.6 ± 0.81	23.2 ± 0.48	20.1±0.87	22.5±0.55
female (n = 26)	9.5 ± 0.91	50.8 ± 0.92	25.7 ± 0.53	19.8±1.92	24.5±0.67
Mean Total (n= 50)	10.5 ± 0.33	52.2 ± 0.44	24.45 ± 0.55	19.95±0.59	23.5±0.82

Table 5 shows variables of age, number of meals daily, breakfast, lunch, dinner and dairy product intake of the pupils with its frequencies. The highest percentage age participant is 5-10 years, about 80% ate thrice and they consume more yoghurt than other dairy products.

Table 5: Eating pattern of Yarima primary school Dutsin-Ma

Variable	Frequency	Percentage %
Age (years)		
5-10	38	76
11-15	10	20
16-20	2	4
Number of meals daily		
Once	2	4
Twice	5	10
Thrice	40	80
More than thrice	3	6
Breakfast		
Tea/Pap and bread	25	50
Rice/spaghetti/Macaroni	15	30

Millet/maize swallowed	10	20
Lunch		
Tea/Pap and bread	0	-
Rice/spaghetti/Macaroni	48	96
Millet/maize swallowed	2	4
Dinner		
Tea/Pap and bread	1	2
Rice/spaghetti/Macaroni	17	34
Millet/maize swallowed	32	64
Dairy products		
Milk	13	26
Cheese	7	14
Yoghurt	27	54
None	3	6

Table six shows mean deviation variables of gender, years, height in inches, weight in kilograms, head and waist circumference of the children. There was a lot of variation in height, weight and ages of the children. The average weight and waist circumference for the male children is significantly less than female category, meanwhile male height and head circumference are significantly higher than the female category.

Table 6: Mean age, height, weight, waist and head circumference of respondent

Gender	Years	Height (Inches)	Weight (Kg)	Head Circumferences	Waist Circumferences
Male (n=25)	10.5±0.94	47.3±0.61	25.5±0.82	22.5±0.98	20.5±0.52
Female (n=25)	8.7±0.1145.5±0.84	28.5±0.95	21.5±1.25	24.3±0.61	
Mean Total (n=50)	9.6±0.3246.4±0.42	27.0±0.45	22.00±0.59	22.4±0.88	

5.1. DISCUSSION

Findings from the study revealed that (Table 1) comprises the age group of female students, those within the range of 5-10 years (79.2%) and 11-15 years (20.8%). The eating habits of participants in girl's primary school Dustin-Ma using frequency and percentage, stated that the percentage number of students that took tea/pap and bread for breakfast are 54.2%, rice/spaghetti/macaroni are 31.3% and millet/maize swallow are 14.5%. For lunch no student took tea/pap and bread, but rice/spaghetti/macaroni were 62.5% and millet/maize swallow were 37.5%. For dinner, tea/pap and bread 4.2%, rice/spaghetti/macaroni 54.2% and millet/maize swallow were 41.6%. For dairy product consumption, butter was 6.3%, cheese 12.5%, yoghurt 68.7% and none consumption of dairy products was 12.5%. The children consumed more yoghurt than other dairy products. Table 2 shows the variables and parameters of nutritional status of the participant. The body weight, height, head and waist circumference indicated average value. In this research targeting 48 participants, the limited evidence suggests that the dietary intake patterns in school-going girls, aged 5–15 years shows that they have poor dietary habits and inadequate nutritional status. The low intake of dairy products and proteins, coupled with high intake of carbohydrates has resulted in the imbalance of their diet. The high prevalence of underweight and micronutrient deficiencies indicates that the participants are not getting the essential nutrients required for growth and development (Perin, *et al.*, 2019).

Meals consumed by the pupils (Table 3) majorly consisted of carbohydrate (rice, spaghetti, macaroni, millet and maize swallow) which alone is not enough for a complete and balanced nutritional status as there were little to no traces of vitamins, proteins and animal sourced foods (fish, meat and eggs). Only 4% ate once daily, 10% ate twice a day, 80% ate thrice, 6% ate more than thrice. For the breakfast, tea, bread and pap 50%, rice, spaghetti and macaroni 30%, millet or maize swallow only 20%. For lunch, tea was 0%, rice, spaghetti and macaroni 96%, millet or maize swallow had (64%), Dinner had 2% for tea, 34% for rice and spaghetti and 64% for maize or millet swallow. Dairy products such as milk had 26%, cheese 14%, yoghurt 54% and none for 6%. The mean ages, heights, weights, head circumference and waist circumference from the tables in the results showed a high level of underweight and amongst the pupils. Healthy eating during childhood is important for growth and development (Onifade *et al.*, 2016; Pabayo *et al.*, 2012). Food likes and dislikes play an important role in food choices, especially in children (Scagiloni *et al.*, 2011).

Result from the table 5 indicated that a higher percentage (76%) of the children between the age of 5-10 were participated in the study. The percentage number of meals daily was found to be 80% for those that were eating thrice a day, breakfast, lunch, and dinner. About 4% ate once, 10% twice and 6% more than thrice. For the breakfast, about

half (50%) of them took Tea/Pap and bread, some percentage 30% and 20% preferred rice/spaghetti/ macaroni or maize/millet swallowed for the breakfast. For lunch, majority of the participant (96%) preferred rice/spaghetti/macaroni with little percentage of 4% that preferred millet/maize swallowed for the lunch. Majority preferred taking millet/maize swallowed for the dinner about 64%, while more than quarter (34%) of them ate rice/spaghetti/rice with little percentage (2%) that took Tea/Pap. This study showed a typical Hausa eating habit, that majority preferred Tea/Pap for breakfast, Rice/spaghetti/macaroni for lunch, and swallowed for dinner. The nutritional status of the participant indicated that, the mean height and head circumference of the male were higher than female. The mean weight and waist circumference of female were higher than the male. This indicated that the male side of the participant were taller than the female participant while the female weighed more than the male participant. Previous studies have also revealed that eating breakfast is associated with more healthful food choices and higher diet quality (Sjoberg *et al.*, 2003) while breakfast skippers were found to have lower diet quality and increased energy intake from snacks (Dubois *et al.*, 2008). Although a higher proportion of all the primary school children who participated in this study ate breakfast, lunch and dinner. Growing kids have the tendency to develop an attitude of hard to please with meals especially during the early childhood. Sometimes, meal choices influences eating pattern of children during early years. Good eating pattern is an important factor of child growth and development (De Cosmi *et al.*, 2017).

CONCLUSION

The majority of the participants do not consume foods that promote good health, as most of their meals are inadequate for growth and proper body maintenance. Such meals are not taken within the appropriate times of meals and their nutritional practices are not hygienic. Therefore, recommend that various interventions are put in place to sensitize parents and caregivers on how to become better for the health and development of their children. The study found an association between eating pattern and nutritional status.

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