

# Relationship between Type of Nutrition and Pupils' Level of Diseases in Ogbomoso North Local Government of Oyo State, Nigeria

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## Abstract

The increasing prevalence of poor diet and diseases need to be considered amongst school children. Malnutrition is still highly prevalent in developing countries. School children may also be at high nutritional risk, not only under-five children. The objective of the present study was to determine relationship between type of nutrition and pupils' level of diseases in both public and private schools in Ogbomoso, Nigeria.

The study adopted a descriptive survey design. The sample selected for this study is five hundred and eighty-two (582) school children (282 from public schools and 300 from private schools). Self-developed questionnaires were used to collect data. Descriptive statistics were used for data analysis.

Result shows respondents in public schools eat 96.6% of energy giving foods, 1.7% of body building foods and 1.7% of protective foods while those in the private schools take 83.5% of energy giving foods, 9.3% of body building foods and 7.2% of protective foods. It was also observed that the average weight for all the respondents was 25.72 kg and average height was 124.52 cm which contradicts the assumption of the Food and Nutrition board of USA, thus signifying the prevalence of under nutrition and stunted growth. The study revealed that 82.6% of the respondents in the public schools were healthy while 17.4% had various types of ailments, also 90% of the respondents in private schools were healthy and 10% had various types of ailment. Common ailments found among respondents from both public and private schools that feeds mostly on energy giving foods were skin infection (3.6%), wound (7.1%), Chest infections (2.2%), eye problem (1.7%), Ringworm (2.2%). The nutrient intake of majority of the respondents from both public and private schools were considerably lower than the recommended daily intake.

**Keywords:** Relationships; Nutrition; Schools

## Introduction

Malnutrition and particularly undernutrition is still highly prevalent amongst school children in developing countries [1]. The increasing prevalence of poor diet and diseases need to be

considered amongst school children and it is easier to reach them through institutions such as schools because most children in Nigeria spend their time in schools [2]. The aim of school nutrition is to promote and maintain good health, prevent and treat nutritional diseases and deficiencies [3]. Another aim of school feeding was to provide the children with nutritionally balanced mid-day meal [4]. School meal can play a large part in levelling up nutrient intakes of pupils in primary schools. Gibson et al. [5] stated that children must consume sufficient and adequate diet to facilitate growth and development; therefore, promoting healthy growth is a strategy for preventing malnutrition. Lamis et al. [6] discussed that school feeding will alleviate short-term hunger by providing 25% of the energy requirement of the child per day but micronutrient requirements were, however, not always met, they further explained that studies have shown that micronutrient deficiencies persists in schools, despite the school feeding program. The school feeding services offers an excellent opportunity for targeted intervention in this age group, especially with regard to fortification. Good nutrition can make a difference in the incidence of many diseases and nutritional deficiencies [7]. Berry & Hollingsworth, opined that a child with a small stature for his age, with poor muscular development and poor muscle tone, thin, pale and with little desire for exercise, is described as being in a poor nutritional state. Mukherjee et al. [8] lamented that in India, the National Family Health Survey I & II reported that both chronic and acute under nutrition was high in many states which had resulted in decreased scholastic performances, lower IQ levels, poor psychosocial development, decreased cognitive functions and reduced adult size. Shimazono, stated that in Japan, school meals are said to have played a major role in increasing the heights and weights of schoolchildren by providing one-third of energy, three-eighths of protein, half of vitamins needed. Bernadette Kathryn [9] in association with The Institute for Integrative Nutrition stated that the guidelines for a healthy menu should contain 40% Low Carbohydrates, 30% Lean Protein and 30% Healthy Fats.

School feeding was introduced by the south west government of Nigeria in primary schools in 1954 when two lady doctors examined pupils in Ibadan and Abeokuta and they found out that majority of the pupils lacked protein and vitamins. Osun state of Nigeria reintroduced free school meal services during the regime of governor Oyinlola in the year 2006 and Aregbesola continued with this programme in 2010, while in some states, it was subsidised. Oyo state of Nigeria employed the services of food vendors who were trained to

cook school meals that contained all the body nutrients in a hygienically prepared manner. Parents were then encouraged to give their children certain amount of money for midday meal. Lagos state of Nigeria also run similar programme with Oyo state. In Imo state Nigeria, Governor Rochas Okorochoa also introduced monetised free meal in public primary schools. Kano state also gave free meal three times a week to pupils in public schools.

With the implementation of midday meal in many states of Nigeria, it is expected that nutritional deficiencies and diseases will decline to the barest minimum [10]. Therefore, this study aimed to determine the relationship between type of nutrition and pupils' level of diseases in public and private primary schools in Ogbomoso, South West Nigeria.

## Research Questions

1. What types of food nutrients do pupils from both private and public schools take?
2. What are the common nutritional diseases among the pupil in public & private primary school pupils?
3. Is there any relationship between the type of nutrition and diseases in public & private primary school pupils?

## Materials and Methods

The design adopted for this study is a survey.

Research population were children in both public and private primary schools. Only four schools were purposively selected in the urban areas of Ogbomoso North local government for this study. Two public primary schools (ADS 168 pupils and Masifa 114 pupils) and two private nursery primary schools (Aduke goodness and mercy 168 pupils and LAUTECH 202 pupils). All boys and girls in the first, third and sixth years classes participated in the study except in LAUTECH primary school where the highest class was primary 5. The sample size for this study was five hundred and eighty –two pupils, three hundred from private schools (51.4%) while two hundred and eighty-two were from public primary schools (48.5%).

Research tool for this study was a self-structured close ended questionnaire. The questionnaire had two sections, A and B. Section A had three parts, the first part is on information on the demographic characteristics of the respondents, the second part elicited information on the nutritional status of the respondents and the third part elicited data on current health issues, such as infections that may have influenced nutritional status and growth of the respondents. The questionnaire was guided by review of literature for consistency and construct validity. The reliability test was carried out using test retest method which yielded 0.86.

Section B was used to measure the height and weight of the respondents using the metric system. Body weight was recorded with the help of bathroom weighing scale to the nearest 0.1 kg with their uniforms without any footwear and one kilogram was deducted for weight of uniform. Height was measured with the help of anthropometric rod to the nearest 0.1 cm.

All questionnaires were retrieved and were used for data analysis. All data were entered into the PASW Statistics 18. Descriptive statistics of frequency and percentages were used to analyze all the data.

**Ethical consideration:** The objectives and methods of the study was explained, permission was sought from the headmaster/mistress of each school that participated in the study. This was granted. Dates were then given when the pupils can be available in each of the schools.

## Results

Out the 582 study subjects, 282 respondents were from public primary schools (143 males, 139 females) while 300 from private primary schools (143 males, 147 females). The average mean age recorded in this study was 9years. The respondents in private schools came from nuclear families (251) polygamous (31), extended (5) while the respondents in public schools came from nuclear families (197) polygamous (57) extended (31). The respondents' fathers from private schools were civil servants (112), business/traders (73), and artisans (54). In public schools, the respondents' fathers were artisans (83), business/traders (73), and drivers (50). The mothers occupation of respondents in private schools were civil servants (94), business/traders (116) artisans (22) and in public schools mothers' occupation recorded include civil servants (15), business /traders (220) artisans (30).

**Table 1** What are the types of food you take?

	Energy giving food	Body building foods	Protective foods	Total
Public school	96.6	1.7	1.7	100%
Private school	83.5	9.3	7.2	100%

**Table 1** described the type of food taking by respondents. In the public schools, the pupils took 96.6% of energy giving foods, 1.7% of body building foods and 1.7% of protective foods. In the private schools, the pupils took 83.5% of energy giving foods, 9.3% of body building foods and 7.2% of protective foods. On the average, all the pupils in the selected schools took 84.6% of energy giving foods, 6.9% of body building foods and 6.7% of protective foods for breakfast.

**Table 2** Descriptive height.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
ADS	168	124.35	15.422	1.19	122	126.7	97	160
ADUKE	98	127.06	11.662	1.178	124.72	129.4	100	156
LAUTECH	202	123.15	10.125	0.712	121.75	124.56	103	151
MASIFA	114	125	11.58	1.085	122.85	127.15	106	162
Total	582	124.52	12.426	0.515	123.51	125.53	97	162

**Table 2** explained that the mean height of pupils in private primary schools (LAUTECH, ADUKE) were 123.15 cm and 127.06 cm respectively while those in public primary schools (ADS, MASIFA) were 124.35 cm and 125 cm. The average height for all the respondents was 124.52 cm.

**Table 3** Weight.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
ADS	168	25.47	7.14	0.551	24.38	26.55	15	50
ADUKE	98	26.35	7.074	0.715	24.93	27.77	17	45
LAUTECH	202	25.95	5.613	0.395	25.17	26.73	16	48
MASIFA	114	25.13	7.075	0.663	23.82	26.44	16	54
Total	582	25.72	6.619	0.274	25.18	26.26	15	54

In **Table 3**, the mean weight of pupils in private primary schools (LAUTECH, ADUKE) were 25.95 kg and 26.35 kg respectively while those in public primary schools (ADS, MASIFA) were 25.47 kg and 25.13 kg. The average weight for all the respondents was 25.72 kg.

**Table 4** Type of skin diseases common among the pupils in both public and private schools.

		Skin infection	Wound	Eye problem	Chest infections	Ringworm	Healthy	Total	
School type	Public	Count	11	20	9	0	9	233	282
		% within school type	3.90%	7.10%	3.20%	0.00%	3.20%	82.60%	100.00%
		% within Disease	52.40%	62.50%	100.00%	0.00%	69.20%	46.30%	48.50%
	Private	Count	10	12	2	2	4	270	300
		% within school type	3.30%	4.00%	0.70%	0.70%	1.30%	90.00%	100.00%
		% within Disease	47.60%	37.50%	22.20%	100.00%	30.80%	53.70%	51.50%
Total	Count	21	32	9	2	13	503	582	
	% within school type	3.60%	5.50%	1.50%	0.30%	2.20%	86.40%	100.00%	
	% within Disease	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	

Table 4 described the type of skin diseases common among the pupils in both public and private schools. In the public schools, 82.6% of the pupils were healthy, and 3.9% had skin infections, 7.1% wound, 3.2% eye problem, and 3.2% ringworm.

In the private schools, 90% of the pupils were healthy, and 3.3% had skin infections, 5.5% wound, 0.7% chest infections,

0.7% eye problems and 3% ringworm. On the average, in both private and public schools, 86.4% of the pupils were healthy and 3.6% had skin infections, 7.1% wound, 1.7% eye problem, 3% chest infections and 2.2% ringworm.

**Table 5** What are the class of food eaten by pupils in both private and public schools?

			What are the type of food you take?			Total
			Energy giving	Body building	Protective	
Disease	Skin infection	Count	8	0	2	10
		% within Disease	80.00%	0.00%	20.00%	100.00%
		% within class of breakfast?	3.50%	0.00%	5.60%	3.30%
	Wound	Count	12	0	0	12
		% within Disease	100.00%	0.00%	0.00%	100.00%
		% within class of breakfast?	5.30%	0.00%	0.00%	4.00%
	Bronchitis	Count	2	0	0	2
		% within Disease	100.00%	0.00%	0.00%	100.00%
		% within class of breakfast?	0.90%	0.00%	0.00%	0.70%
	Eye problem	Count	2	0	0	2
		% within Disease	100.00%	0.00%	0.00%	100.00%
		% within class of breakfast?	0.90%	0.00%	0.00%	0.70%
	Ringworm	Count	4	0	0	4
		% within Disease	100.00%	0.00%	0.00%	100.00%
		% within class of breakfast?	1.80%	0.00%	0.00%	1.30%
Total	Healthy	Count	198	37	34	269
		% within Disease	73.60%	13.80%	12.60%	100.00%
		% within class of breakfast?	87.60%	100.00%	94.40%	90.00%
		Count	226	37	36	299
		% within Disease	75.60%	12.40%	12.00%	100.00%
		% within class of breakfast?	100.00%	100.00%	100.00%	100.00%

It has been observed in table 5 that diseases were common among the children who ate mainly carbohydrates. These diseases include skin infections (3.5%), wound (5.3%) chest infections (.9%), eye problem (.9%), Ringworm (1.8%).

## Discussion

The aim of this study was to establish evidenced relationship between type of nutrition and pupils' level of diseases in public and private schools in Ogbomoso, Nigeria.

Findings showed that the predominant components of pupils diet for breakfast, lunch and supper were foods rich in carbohydrates which was prevalence in both public (96.6%) and private schools (83.5%). But the pupils from private

primary schools take more of body building (9.3%) and protective foods (7.2%) than pupils from public primary schools with body building foods (1.7%) and protective foods (1.7%). This findings may be due to the socio cultural background of the respondents' families which is in contrast to the study of Fernández San Juan [11] who discovered that there was an unbalance in the intake of macronutrients, with a higher than recommended caloric contribution due to fats (40%) and proteins (16%) and a lower than recommended intake of carbohydrates. He further stated that pre-school and school- aged children in Spain do not have adequate parental supervision as regards to amount of foods and snacks consumed because these children were left alone at home for

long periods each day with no company other than television and game console.

The mean age of children under study was nine years. The normal height for children of nine years of age is 135 cm and weight is 30 kg according to food and nutrition board in USA, on the contrary, this study showed that the average height for all the respondents was 124.52 cm and weight 25.72 kg, therefore, it is glaring that under nutrition and stunted growth was prevalent among the respondents in both public and private schools. This study is similar to the report of Mukherjee et al. [8] analyzing the prevalence of stunting, wasting and underweight as markers of under nutrition among children in Pune and found them to be present in 13.81%, 6.71% and 9.87% of children respectively. This study agreed with the findings of Groeneveld et al. [12] that discovered a coexistence of under nutrition and overweight of school children of high and low socio economic status in the urban area of Guatemala.

Some diseases were also identified in this study. The diseases identified were skin infections (3.9%), wound (7.1%), eye problem (3.2%), and ringworm (3.2%) in public schools, and in private schools, skin infections (3.3%), wound (5.5%), chest infections (0.7%), eye problem (0.7%) and ringworm (3%). The result of study found that the social class differences of parents in both public and private primary schools, made a significant difference in the prevalence of diseases among the pupils from both public and private primary schools. Studies of Srihari et al. [13] on Nutritional status of affluent Indian school children revealed the high prevalence of anemia, overweight and obesity and micronutrient deficiencies, while Addo [14] discussed inadequate dietary intake and diseases as vital causes of malnutrition among children in Nigeria. Ahmed et al. [15] explained that school meals with micronutrient supplementation and deworming will prevent nutritional health problems such as raw hunger, unsafe water, intestinal worms, URI and GIT infections, malaria, IDA, VAD & IDD.

Majority of the pupils from both public and private primary schools seems to be healthy, but when comparing both public and private primary schools in Ogbomoso North Local government studies revealed the rate of carbohydrate (energy giving food) intake was high among both groups. These pupils had stunted growth as revealed by their heights in this study, LAUTECH (123.15 cm), ADUKE (127.06 cm) and those in public primary schools ADS (124.35 cm), MASIFA (125 cm). Addo [14] posited that the high prevalence of stunting in Nigerian children is an indication of long standing dietary. Most of the pupils who contacted diseases were pupils who majorly ate energy providing foods. The reason could be attributed to the type of family the pupils belong to, the occupation of parents and their socio economic status. Bernadette [9] argued that poverty forces emphasis on the cheapest staple foods, this may result in a monotonous diet or restriction of food intake or restriction of choice. They further discussed that food intake can depend on the number of siblings and family size and the economic status of parents. Fernández San Juan [11] discussed that family educational level and socioeconomic status have a

marked effect on children's lifestyles and dietary habits especially that of the mother.

The prevalence of common diseases affecting pupils in both public and private primary schools although, the incidence higher in public primary schools may be as a result of the socioeconomic status of the respondents' family.

## Conclusion

The health status of the pupils depends largely on the quantity and quality of food available. The present study showed that the nutritional status primary school pupils in Ogbomoso North LGA of Nigeria needs attention because all the pupils in both private and public primary schools had low weights and heights thus signifying stunted growth and under nutrition. The indication of common occurring diseases among these pupils can be related to the quality of nutrition and the socioeconomic status of the parents. There were also indications that micronutrient deficiencies exist because both body building and protective foods were below the recommended range in both private and public schools.

## Recommendations

Malnutrition and occurrence of diseases has been identified as health problem among pupils in both private and public schools, therefore,

- Free school meals should be encouraged by the government
- Adequate information about nutrition should be provided.
- School health programme should be revisited.
- The Food and Nutrition Association of Nigeria should work on a standardised weight and height for Nigerians.
- Education of parents on healthy diet for their children.

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