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Breakfast Eating Habits and Nutritional Status of Primary School Children in Orumba South Local Government Area of Anambra State, Nigeria

Ukegbu Patricia Ogechi

Department of Human Nutrition and Dietetics, Michael Okpara University of Agriculutre Umudike Abia State, Nigeria PMB 7267, Umuahia

ABSTRACT

Introduction: This study was carried out to describe breakfast eating habits and nutritional status of primary school children in rural areas of Anambra state, Nigeria. **Methods:** The study was a descriptive cross-sectional survey involving 358 primary school children (aged 6-11 years) randomly selected from 5 private primary schools in Anambra state. A pre-tested questionnaire on dietary habits, breakfast eating habits and content of breakfasts was used to collect data. Data were analysed using descriptive statistics and Chi square. **Results:** The mean age of the children was 8.2±0.7years. The percentage of children who reported taking breakfast on the day of the study was 77.7%, while 71.2% ate breakfast ≥5 times per week. Those who skipped breakfast cited waking up late (48.8%) and lack of enough food at home (43.8%) as reasons for skipping breakfast. Breakfast was usually consumed at home by 90.6% of the children. Foods in the bread/cereal group (61.5%) and tea/cocoa beverages (59.7%) were commonly consumed for breakfast. The snacks brought to school were mainly pastry products (78.8%). The prevalence of underweight, stunting and wasting among the children were 15.9%, 27.4% and 20.7%, respectively. Those who consumed breakfast more than 5 times a week were more likely to have better weight-for-age status than their counterparts (X^2=6.690;p=0.043) (P<0.05). **Conclusion:** Most of the children were reportedly used to having daily breakfast. However, there is a need to assess the nutritional quality and adequacy of breakfasts consumed by young children.

Keywords: Anthropometry, breakfast habits, nutritional status, school children

INTRODUCTION

Insight into breakfast consumption of children is a necessity and of public health concern. This is because studies have identified that there is a possible role for breakfast consumption in maintaining normal weight status in children and adolescents (Rampersaud *et al.*, 2005; Turconi *et al.*, 2015). Breakfast is considered the most important meal of the day (Marika, 2003) and is described as the first meal of the day that breaks the fast that had been on for over twelve to fourteen hours (Goon & Bipasha, 2014). With the need to adjust to the school time, the first meal which is the breakfast is either scanty or omitted entirely

* Correspondence: Ukegbu Patricia Ogechi; Email: *ukegbu.patricia@mouau.edu.ng* or *adanna2025@yahoo.com*

in most settings (Marika, 2003). This is a hazard from the nutritional point of view for children and adolescents. Evidence suggests that skipping or consuming poor or insufficient breakfast is common among children in several countries (Sjoberg *et al.*, 2003); Rampersaud *et al.*,2005; Deshmukh-Taskar *et al.*, 2010).

The quality of the breakfast is important, because the nutritional status, physical and mental growth, health and general well being of the child can be affected (Gibson & O'Sullivan, 1995). Children who do not eat breakfast perform poorly in tasks requiring concentration, have shorter attention spans, achieve lower test scores and are tardy or absent more often than those who eat breakfast (Hayland, Dye & Lawton, 2009). Comparison of studies among school-aged children indicate that breakfast consumption is more beneficial to cognitive function and academic performance than skipping breakfast, particularly in those whose nutritional status is compromised (Benton, 2008; Hayland *et al.*, 2009).

Studies reported that regular breakfast consumption among children and adolescents is positively associated with intake of most vitamins and minerals, while those missing breakfast were more likely to be frequent consumers of unhealthy snack foods (Nicklas *et al.*, 2000; Affenito *et al.*, 2005; Utter *et al.*, 2007). Cross-sectional studies have documented that eating breakfast is associated with lower BMI (Dubois, Girard & Potvin, 2006; Delva, Johnston & O'Malley, 2007), while others found a relationship between breakfast skipping and high BMI (Gillespie & Kadiyata, 2004; Affenito *et al.*, 2005; Utter *et al.*, 2012).

The need for adequate nutrition can therefore not be over emphasised since it is important for children to reach their maximum growth, development and health potential (Fugas *et al.*, 2013). Despite the advantages of breakfast consumption in children, studies have shown that many children go to school without breakfast (Partnership for Child Development, 2001; Rampersaud *et al.*, 2005). Partnership for Child Development (2001) also reported that about 60%-75% of children go to school without breakfast and they do not even get any meal during school hours in Sub-saharan Africa. The lack of sufficient data on breakfast consumption of primary school children in the country necessitated the study of breakfast eating habits and its relationship with nutritional status of primary school children in Orumba south Local Government Area of Anambra state.

METHODS

Study area

The study was carried out in Orumba South Local Government Area (LGA) of Anambra state in the South-eastern part of Nigeria. It is one of the 21 LGAs in Anambra State, Nigeria with a population of about 162,014 (National Population Commission, 2006). The LGA is made up of both urban and rural areas and has basic amenities like accessible roads, hospitals, schools and electricity. The major occupations of the inhabitants are employment in the civil service, trading and farming. The LGA has 42 registered public and 10 registered private primary schools (Federal Ministry of Education, 2014).

Study subjects and sample selection

This cross-sectional study involved primary 3 to 6 pupils aged 6-11 years who were selected from a list of the 10 registered private schools in the LGA. The ten schools were subjected to balloting to obtain 5 primary schools. Sample size was calculated using the formula by Araoye (2003): $n=Z^2 \times p \ (100-p)/ X^2$, where Z represents 95% confidence interval taken to be 1.96, X is 5% margin of error and P is percentage of school age children who do not consume breakfast estimated to be 60-75% (Partnership for Child Development, 2001). The total number of students in

primary 3 to 6 classes from each school was determined and 10% of the pupils were selected from each school. Simple random sampling was employed to select children (from primary 3 to primary 6) classes until the required number of pupils from each school was obtained. A total of 358 school children were selected and used in the final data analysis.

Children whose parents gave written consent were included in the study. Pupils excluded were those with any illnesses such as fever and this information was obtained from the parents. The Anambra State Universal Basic Education Board and proprietors/head teachers of the selected schools gave clearance before commencement of the study.

Data collection

A structured questionnaire was used to collect information from the parents of the children under study on socio-economic characteristics, foods commonly consumed at breakfast and breakfast eating habits. The questionnaire was validated by some lecturers in the Department of Human Nutrition and Dietetics of Michael Okpara University of Agriculture, Umudike. The questionnaire was pre-tested by administering it to 40 pupils of Michael Okpara University of Agriculture, Umudike staff primary school after which necessary corrections and modifications were made before undertaking field work.

Children's anthropometric measurements

Five research assistants were trained on anthropometric measurements. The ages of the children were collected from the class register in the school. Anthropometric measurement of height and weight were taken using standard procedures (World Health Organisation, 1995). Height was measured to the nearest centimeter using a portable stadiometer with subject's arms hanging freely by the side. Body weight was measured to the nearest kilogram with a portable bathroom scale (Hanson Ireland Model). In each case, two measurements were taken and the mean values were used for the analysis. Data on weight, height and age were used to compute Z-scores for weight-for-age, height-for-age and weight-for-height using World Health Organisation (2008) ANTHRO software to assess nutritional status.

Data analysis

Statistical analyses were performed using the statistical software package SPSS for Windows version 20.0 (SPSS, Chicago, Illinois, USA). Frequencies and percentages were calculated, while the Chi square test was used to evaluate the relationship between categorical variables. A p-value of less than 0.05 was accepted as statistically significant.

RESULTS

A total of 358 pupils were used in the final data analysis comprising 41.6% males and 58.4% females. The majority (63.4%) lived with both parents, 46.1% had between 3-4 siblings, about half (53.4%) were driven to school, while 78.2% consumed dinner the night preceding the study (Table 1).

Breakfast habits

On the day of the study, the majority (77.7%) of the children reported they ate breakfast. Those that did not eat breakfast (n=80) reported waking up late (48.8%) and lack of food (43.8%) in the house as the reasons for skipping breakfast. On the day of the study, bread and cereal group was the main source of breakfast (61.5%), while tea/cocoa (59.7%) was the common beverage consumed. Breakfast was mainly eaten at home by 90.6% of the children and only 1.8% consumed it at school. Common snacks brought to school on day of the study were mainly pastries (73.2%). The breakfast consumption pattern showed that the majority of the pupils (71.2%) consumed breakfast five or more times a week (Table 2).

Table 1. Personal characteristics of the private school pupils

Variables	*Frequencies*	*Percentages (%)*
Sex		
Male	149	41.6
Female	209	58.4
Living with both parents		
Yes	227	63.4
No	131	36.6
Number of siblings		
1-2	84	23.5
3-4	165	46.1
5 and above	109	30.4
Consumption of dinner the previous night		
Yes	280	78.2
No	78	21.8

Association between frequency of breakfast consumption and nutritional status

The prevalence of underweight, stunting and wasting were 15.9%, 27.4% and 20.7%, respectively (Table 2). Evaluation of pupils based on their nutritional status indicators and frequency of breakfast consumption revealed that children who consumed breakfast more than 5 times a week had better weight-for-age Z-scores compared to their counterparts who ate less than 5 breakfasts per week (X^2=6.690;p=0.043) (Table 3).

DISCUSSION

Results from this study revealed that the majority (77.7%) of the children ate breakfast on the day of the study while 23.3% skipped breakfast. This is similar to findings of Onyechi & Uwunnadi (2009) in a study of primary school pupils in Nsukka, Nigeria which reported that 90% and 78% of rural and urban children, respectively consumed breakfast daily. Another study carried out among pupils in two public primary schools in the city of Santa Fe, Argentina (Fugas *et al.*, 2013) reported that 75% of the children had breakfast on a daily basis, while, Turconi *et al.* (2015) reported that 85% of pupils in public primary schools in Italy ate breakfast daily. The breakfast skipping prevalence on the day of the survey reported in other studies ranged from 12% to 34% (Nicklas *et al.*, 2000; Videon & Manning, 2003).

For those that skipped breakfast, the main reasons given were waking up late and lack of enough food in the house. This is in agreement with other surveys conducted among school aged children which reported that the major barrier to eating breakfast was waking up late (Chitra & Reddy, 2006); Fugas *et al.*, 2013; Turconi *et al.*, 2015). The issue of waking up late by the children in this study may probably mean that the children did not go to bed in time. This may make it difficult for them to get up in time in the morning and as such breakfast may be hurried or missed. The child's ability to attend class and learn his lessons may be affected if he is hungry during school due to poor or lack of breakfast. It is therefore important that attention be given to time management by parents so that children do not go to bed so late at night. Nicklas *et al.* (2000) reported that inadequate breakfast contributes to poor school performance with the dietary inadequacies rarely compensated for in other meals of the day.

Table 2. Breakfast eating habits of private school pupils

Variables	*Frequencies*	*Percentages (%)*
Breakfast consumption on day of the study		
Yes	278	77.7
No	80	22.3
Total	358	100
Reasons for not consuming breakfast (n=80)*		
Waking up late	39	48.8
Not enough food in the house	35	43.8
Not hungry	3	3.7
No time for them to cook	3	3.7
Total	80	100
Foods consumed for breakfast on the day of study		
Cereal products (noodles, pasta, rice, bread)	171	61.5
Legume products	62	22.3
Roots and tubers with sauce/soup	45	16.2
Total	278	100
Beverages consumed for breakfast on the day of study		
Tea/cocoa beverage	166	59.7
Water	87	31.3
Fruit juice	25	9.0
Total	278	100
Place where breakfast was eaten on the day of study		
At home	252	90.6
On the way to school	15	5.4
In the car	6	2.2
School	5	1.8
Total	278	100
Snacks pupil brought to school on the day of study		
Pastries	262	73.2
Fruits (apple, orange)	76	21.2
Sweets	20	5.6
Total	358	100
Frequency of breakfast consumption in a week		
< 5 times a week	103	28.8
≥ 5 times a week	255	71.2
Total	358	100

* children not consuming breakfast on day of the study, 278= answers for children that consumed breakfast

Lack of enough food in the house was another reason cited with regard to skipping of breakfast. It is possible that lack of food in the home could be due to food insecurity especially in rural households whereby families are unable to have adequate access to safe and nutritious foods at all times to lead an active and healthy life. Though, most of the rural households in developing countries cultivate some of the foods consumed, they still need to purchase those they do not cultivate and this might actually pose a challenge for some families due to cost. Onyechi & Ugwunadi (2009) and Egal & Lopiore (2006) noted that there might be problems of food accessibility

Table 3. Relationship of nutritional status with frequency of breakfast consumption

Nutritional status indicators	*Frequency of breakfast consumption per week*			
	<5 times per week	*≥ 5 times per week*	*Total*	*X^2;P-value*
Weight-for-age (WAZ)				
Underweight (≤-3SD)	24(23.3)	33 (12.94)	57 (15.9)	
Normal (-2 to +2SD)	75 (72.1)	206 (80.7)	281 (78.5)	6.690;0.043*
Overweight (>+2SD)	4 (3.88)	16 (6.3)	20 (5.6)	
Height-for-age (HAZ)				
Stunted (≤-3SD)	31 (30.10)	67 (26.27)	98 (27.4)	
Normal (-2 to +2SD)	54(52.42)	145 (56.86)	199 (55.6)	0.667;0.716
Tall (>+2SD)	18 (17.47)	43 (16.86)	61 (17.0)	
Weight-for-height (WHZ)				
Wasted (≤-3SD)	24 (23.3)	50 (19.61)	74 (20.7)	
Normal (-2 to +2SD)	68 (66.02)	172 (67.45)	240 (67.0)	0.812;0.666
Overweight (>+2SD)	11 (10.70)	33 (12.94)	44 (12.3)	

* Significant at $p<0.05$

and availability in most urban and rural settings in developing countries, which in turn results in mothers giving their children easily available and less expensive foods.

Breakfast was mainly eaten at home by most of the children. This is quite encouraging as an author noted that breakfast habits are established at a young age and persists into adulthood, and that meal time is a family matter which comes along with companionship and greatly enhances the possibility of eating breakfast (Turconi *et al.*, 2015). The authors were also of the opinion that parental modelling is key to the establishment of healthy habits and socialisation for the family (Turconi *et al.*, 2015).

The type of breakfast meal consumed will affect the quality of nutrient intake (Onyechi & Ugwunnadi, 2009). Cereals of all kinds were the most consumed for breakfast by the school children and these ranged from noodles, pasta and rice to bread and maize gruel (*pap*). The lists of foods consumed for breakfast were similar to those cited by Onyechi & Ugwunnadi (2009) among rural and urban school children in Nsukka. The content of breakfast for the children appeared to be monotonous in nature and lacked diversity. There was no evidence of consumption of ready-to-eat breakfast cereals and fruits/ vegetables for breakfast which could improve the micronutrient content of the breakfast. Olumakaiye (2012) reported low dietary diversity among Southwestern Nigerian children studied and attributed it to family food insecurity in the study area. The beverages commonly consumed were tea with tea bags or cocoa beverage.

Breakfast across the world varies from region to region. In Nigeria, with over 250 different ethnic groups, there is a corresponding variety of cuisines. Typical meals for breakfast in Nigeria consists of tea and bread, rice, noodles or pasta and porridge made from corn and served along with cakes or pudding made from ground cowpeas. In contrast to this study a qualitative assessment of breakfast quality of Spanish children (9-13years), revealed that 8-10% had dairy, cereals and fruits for breakfast (Ortega *et al.*, 1996).

Another study among immigrant children in Spain (average 11 years) revealed that most of the surveyed children ate alone and were probably

responsible for choosing the food they ate, and this may actually determine breakfast quality (Castells *et al.*, 2006). Fugas *et al.* (2013) however concluded that only very few children actually eat a good quality breakfast. The majority of the children in this study brought different types of snacks to school as in-between meals. These included pastry products consisting of biscuits, meat pie, fish/egg roll, buns etc which are energy dense.

The relationship between breakfast consumption and body weight is not well established (Rampersuad, 2005). Some studies have documented a relationship between breakfast skipping and higher BMI (Sjoberg *et al.*, 2003; Affenito *et al.*, 2005; Utter *et al.*, 2007), while others have shown breakfast consumption to be associated with lower BMI (Dubois *et al.*, 2006; Delva *et al.*, 2007). Results from this study, however, revealed that children who consumed regular breakfast (>5 times per week) were more likely to have better weight-for-age status than their counterparts who ate breakfast less than 5 times a week. Similarly, Turconi *et al.* (2015) showed that that there was no substantial differences in food choices of the meals analysed (breakfast, mid-morning and afternoon snack) among normal weight, overweight and obese children; nevertheless those with normal weight had a greater tendency to consume meals more regularly. Again, Chitra & Reddy (2006) revealed that breakfast consumption had a direct impact on the weight status of school children they studied.

Our study is not without limitations. The first was the cross-sectional nature of the study. Secondly, breakfast quality and quantity of servings were not assessed in this study. Thirdly, the study was based on self-reported breakfast consumption. It is thus possible that the children may have over reported their breakfast consumption on the day of the study. Conclusions should be made with care since the sample represented only pupils from selected private primary schools in the area, who were probably from privileged homes. Despite these limitations, the study is able to add knowledge on the prevalence of children who consume breakfast regularly and weekly, and give insight on the types of foods consumed for breakfast in the study area.

CONCLUSIONS

The study revealed that the majority of the children reported eating breakfast on the day of the study before going to school. Though, this is quite encouraging, more research should however be conducted to ascertain the nutritional quality of the breakfast consumed by children, so as to provide an insight to their nutritional adequacy. This is because empirical evidence suggests that breakfast consumed by the children is monotonous and consisted mainly of traditional cereals to the detriment of other food groups like fruits/ vegetables and meat and dairy products. Promoting increased consumption of other food groups during breakfast and other meals could lead to increased consumption of other food groups and overall change in eating patterns. These food groups are in actual fact required by growing children to fight diseases and infections and for normal growth, development and general well being.

The challenge of providing school meals falls primarily on the families. In some cases, the families may not have the resources to cater for all the food needs of the children due to economic hardship and food insecurity. However, parents can still be encouraged to give their children a variety of locally available nutritious foods that can be found in the locality and which in some cases are gradually going extinct due to nutrition transition.

It is true that private schools are established with the main aim of profit making. They can still stand out from others by including meal packs consisting

of fruits and vegetables which can be offered to children on a daily basis. This will definitely go a long way to improve variety and add value to total micronutrient intake of school children even if they eventually end up not consuming any fruit/vegetables in the meals taken at home.

Policy makers also have a role to play in ensuring the formulation of policies that would ensure the provision of nutritious school meals to children both in private and public schools. Community and faith based as well as nongovernmental organisations (NGOs) who provide free meals at intervals to children in different settings will also benefit from results of this study.

Conflict of interest

The authors report no conflict of interest in this work.

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