

Effect of Eating Pattern on Scholastic Achievement among Primary School Children in Anshas El-Raml Village

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Abstract: Background: - Eating patterns such as eating frequency, skipping of breakfast, and frequency of meals eaten away from home might influence school-going children's nutritional status, which then influences their health and academic performance. Aim of the study: to assess the eating patterns and scholastic achievement among school age students in Anshas EL Ramel Village. Design: descriptive analytical study design. Setting: school age children attending governmental and private primary schools at the Anshas El-Raml Village of sharkia governorate Sample: A cluster random sample technique used in this study, it consisted of 737 students (boys & girls) in age group (7-12 year) randomly selected. Tools: Data were collected by using interviewing questioner which covers socio-demographic data and all items related eating patterns and scholastic achievement among students, Results: less than half of school children had taking breakfast before going to school and Scholastic achievement was average among more than two thirds of boys and less than two thirds of girls. Conclusion: There were statistically significant relation between scholastic achievement and healthy eating pattern. Recommendation: The study findings the followings are recommended to develop health educational program for schools age children regarding healthy lifestyle to improve healthy nutrients, eating patterns and their importance of scholastic achievement.

Keywords: “school age”, “eating pattern”, “scholastic achievement”,

1. INTRODUCTION

Successful academic performance is a key during school age, and in predicting occupational and social success in one's lifetime. Therefore, positive academic outcomes during adolescence have become a public concern, making the primary goal of schooling a global issue. In accordance, there is a strong tradition and emphasis on education to produce positive academic performance for schoolchildren (So & Park, 2016). Performance in school is affected by a number of factors, including the quality of the school, the characteristics of the student's family such as socioeconomic status (SES) and parents' educational level, and health behavior of the child especially diet and eating pattern (Abudayya, Shi, Abed, & Holmboe Ottesen, 2011). Eating patterns such as eating frequency, skipping of breakfast, and frequency of meals eaten away from home might influence school-going children's nutritional status, which then influences their health and causes low school enrolment, high absenteeism, early dropout and unsatisfactory classroom performance (de Pinho, Silveira, de Carvalho Botelho, & Caldeira, 2014).

Several studies findings on school age children in different level of schools reported fast food consumption and inadequate intake of fruits, vegetables, fiber rich foods, and dairy and other calcium rich foods and increasing snacks and soda drinks consumption (Lateef, Njogu, Kiplamai, Haruna, & Lawal, 2016). In addition, habitually missing breakfast can adversely affect cognitive performance (Lauria et al., 2015).

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There is evidence that early childhood malnutrition, stunting, underweight, and anemia are negatively associated with cognitive development, appropriate behavior and academic attainment in later childhood. Chronically undernourished children fare worse academically and fall behind in class; they are irritable and have difficulty concentrating, which can interfere with learning (*Abudayya et al., 2011*).

School nurse play an important role toward increasing awareness of the important of diet for health promotion and diseases prevention has led to a greater concern about the diet and eating patterns of school children and adolescents(*Ming, Ying, & Kassim, 2006*), the right quantity and quality of nourishment is needed to enhance the cognitive as well as the physical development during this stage(*Ogunsile, 2012*).

School nurse educate parents for helping their children to achieve and maintain healthy body weight. Child feeding beliefs, attitudes and practices of parents determine children's eating habits and influence the development of their self-regulation of energy intake and satiety cues (*Lee & Manan, 2014*)

Significance of the study:

In Egypt, malnutrition disorders affect more than 30% of school children; this problem appears to be largely attributable to poor dietary quality and micronutrient deficiencies, such as iron and vitamin A. Adequate food and nutrition are essential for proper growth and physical development to ensure optimal work capacity, normal reproductive performance, adequate immune reactions and resistance to infections. On the other hand, inadequate nutrition intake has important implications because malnutrition has been shown to negatively affect the cognitive development of primary school children.

Aim of the study:

The aim of the present study was to assess the eating patterns and scholastic achievement among school age students in Anshas EL Ramel Village.

Research questions:

Is there a relationship between scholastic achievement and the eating pattern of primary school children?

Study design: Descriptive analytical design was used in the study.

Setting:

The study was conducted in five primary schools at Anshass El-Raml Vailliage, Zagzig governorate in Egypt. Namely Anshass Institute Primary Azhari, Albody primary school, Anshass old primary school, Menyal primary school, and Model Institute Azhari for basic education.

Sampling:

A cluster random sample was obtained from entire public and private primary schools in Anshass village at Zaizg Governorate in Egypt including children aged from 7-12year during January 2015. A list of public and private primary schools in Anshas village at Zazig Governorate children aged from 7 -12 year, was obtained from the ministry of education. The cluster sampling called also multistage. First stage the total from the list primary number of schools was seven, five schools were chosen randomly. Second stage selects one class from each grade at different educational level in school. Third stage was the selection of a classroom. In this stage, the list of all classrooms in each school was listed in slips paper and randomly selected. Finally a the total number of students were 773 from above setting free from any communication problems, chronic diseases and accepts to participate in the study.

Tools for data collection:

Two tools used to collected data. **First tool**, An interviewing questionnaire developed by the researchers to collect data to assess eating patterns among primary school students it included the following; A-Socio-demographic data for students as regard their age, school grades, residence, mother (education and job), and family income per month. In addition to question for assessing school children eating pattern regarding breakfast, eating between meals and also include food items preferences and frequency of intake among school children. It was concerned with milk, cheese, meat, poultry, fish, eggs, vegetables, salad and fruits.

Second tool: scholastic achievement: As an index of academic achievement of students, grade point average (GPA) was recorded from the school record of the last semester. The subjects included Arabic language, mathematics, social studies, and sciences. The maximum marks that can be awarded to each subject are 50 marks. Accordingly, the total scores of previous subjects <50% were recorded as poor, 50-80 were recorded as average and scores >80-100% were recorded as good.

Validity test was done by three expertises from faculties' staff nursing of community specialists.

Reliability test was done by applying the questionnaire to 20 students using test-retest and Pearson Coefficient factor was 90.8%. The scale was applied on them and retested after 2 weeks. The degree of Spearman's rank correlation coefficient test was (0.82).

A pilot study:

It was carried out on 10% students to ascertain the clarity and applicability of the tools. Those students who shared in the pilot study were excluded from the main study sample.

Ethical Considerations

Written permission for collection of data was obtained from the responsible director of schools after explaining the aim of the study. Also, the aim was explained to the student's participant to be familiar with the importance of her participation. Promote the confidentiality of data and student's freedom to withdraw from the study at any time.

Administrative Design:

An official letters were issued from the Faculty of Nursing, Suez Canal University to The directorate of education and the Anshas El-Ramel educational administration to obtain permission for collecting the necessary data from the selected schools. Meetings were held with the directors of schools to clarify the purpose of the study and to gain their cooperation during data collection.

Field of work:

At beginning it was necessary for the researcher to introduce herself and briefly explain the study objective. The study questionnaire was distributed to all students and collected by the investigator. Data were collected over a period of 5 months from 1st January 2015 to May 2015, 3 days per week from 9am-12MD.

Statistical Analysis

Data were entered using Epi- Info version 3.5.3 and analysis was performed using SPSS version 18.0 statistical software. Bivariate and multivariate models were run to assess any relationship between each independent variable (socio-demographic factors, eating patterns, eating between meals and food items preference and its scholastic achievement).

2. RESULTS

Table 1: Distribution of school children according to their socio-demographic characteristics (n=737)

Items	Boys(=380)		Girl(=357)		X2 test
	No	%	NO	%	
Age (mean±SD)	10±1.8		9±1.4		
Child birth order:					5.17
1st order	129	33.9	94	26.3	
2nd order	162	42.6	166	46.5	
3rd order or more	89	23.4	97	27.2	
Father education:					2.76
Illiterate	45	11.8	31	8.7	
Intermediate	231	60.8	235	65.8	
High	104	27.4	91	25.5	
Father job:					
Unemployed	35	9.2	23	6.4	

Farmer	258	67.9	239	66.9	5.08
Employee	81	21.3	82	23	
Retired	6	1.6	13	3.6	
Mother education:					
Illiterate	34	8.9	26	7.3	3.94
Intermediate	253	66.6	221	61.9	
High	93	24.5	110	30.8	
Mother job					
Housewife	294	77.4	264	73.9	3.34
Working	86	22.6	93	26.1	
Family size					
5 ≥	165	43.4	233	65.1	0.02*
9 – 6	211	55.5	121	34.0	
10 ≤	4	1.1	3	0.9	

Table (1) A total of 737 children was recruited to the study, 380 of them boy and 357 girls. Describes that father's had intermediate education in less than two thirds of boys and girls. (60.8% and 65.8%, respectively) so more than two thirds of boys and girls (67.9% and 66.9/o) of the fathers were skilled workers. Regarding mothers' education, less than two thirds of them had intermediate education, (66.6% among boys and 61.9% among girls) and three quarters (75.8%) were housewives. Concerning child birth order, less than half of boys and girls (42.6%&46.5%) had a second order.

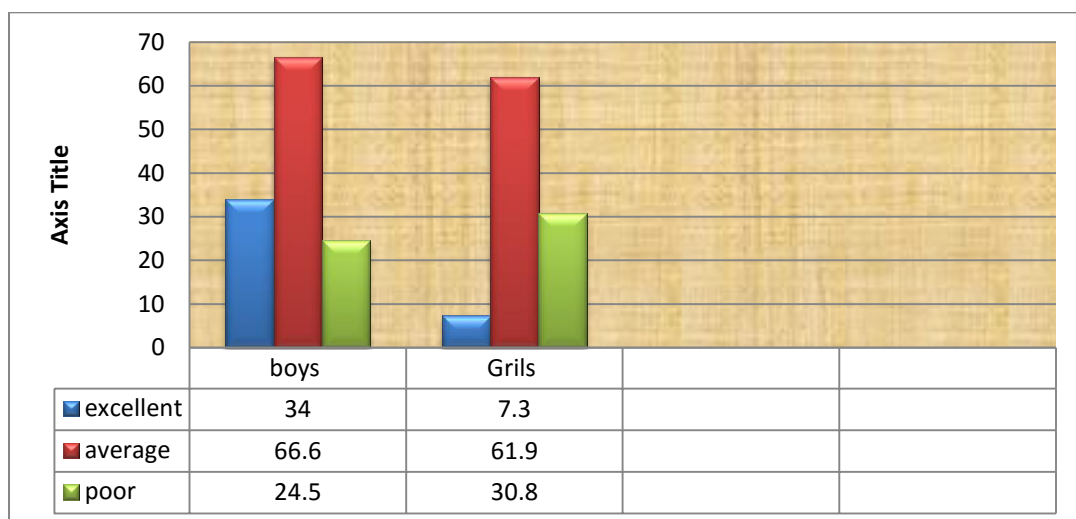


Figure 1 distribution of school children according to their scholastic achievement

Figure (1) shows that the Scholastic achievement of primary school children was average among boys (66.6%) and (61.9%) of girls.

Table 2 distribution of school children according to their eating pattern(n=737)

Items	Boys(n=380)		Girl(n=357)		X2 test
	No	%	No	%	
Having breakfast before going to school:					
Never	61	16.1	47	13.2	2.10 >0.05
Sometimes	159	41.8	143	40.1	
Always	160	42.1	167	46.8	
Taking main three meals daily:					
Never	38	10.0	30	8.4	6.89 (<0.05*)
Sometimes	115	30.3	81	22.7	
Always	227	59.7	246	68.9	
Items of favorite snakes foods(n=415)@					

Dairy	41	18.1	41	21.7	6.62 >0.05
Cereals	76	33.6	71	37.6	
Protein (animal/plant)	59	26.1	37	19.6	
Sweets (candy, cake, soda, juice)	52	23.0	63	33.3	
Fruits /vegetables	45	19.9	52	27.5	
Eating food from peddlers:					20.32 (<0.001*)
Never	234	61.6	271	75.9	
Sometimes	109	28.7	55	15.4	
Always	37	9.7	31	8.7	

Table (2) indicates that (42.1%) of boys and girls (46.8%) were always having breakfast before going to school. (38.2% and 36.8%) of boys and girls respectively were taking daily three meal. However, statistically significantly more boys gave three meals (18.6%), compared to (8.9%) of the girls $P < 0.05$.

The table also indicates that the boys (59.7%) and more than two thirds of the girls (68.9%) were always taking sandwiches to school, although statistically significantly more girls did so, $P < 0.05$. Meanwhile cereals had the highest intakes, it was more than one third (33.6%) among boys and (37.6%) among girls followed by sugary food, juice as it was less than one quarter (23%) in boys and more than one third (33.3%) in girls. Table clarifies that there was a statistically significant difference between boys and girls regards buying food from peddles, $p < 0.001$.

Table 3 distribution of school children according to food preferences and frequency of intake

Items	Boys			Girl			X2 test (p value)
	No	%	Mean ±SD	No	%	Mean ±SD	
Fruits	338	88.9	5.4±2.5	317	88.8	5.4±2.2	0.09(>0.05)
Sweet	329	86.6	5.5±2.6	302	84.6	5.3±2.5	0.92(>0.05)
Soft drink	326	85.8	3.2±2.0	284	79.6	2.9±1.7	2.74(<0.05*)
Milk	323	85.0	5.2±2.9	297	83.2	4.8±2.4	1.98(<0.05*)
Poultry	322	84.7	3.2±2.2	294	82.4	2.8±1.8	2.89(<0.05*)
Cheese	319	83.9	5.1±2.5	318	89.1	5.1±2.6	0.98(>0.05)
Vegetables	308	81.1	5.4±2.6	273	76.5	5.3±2.2	0.31(>0.05)
Egg	288	75.8	4.5±2.7	252	70.6	4.1±2.3	2.0(<0.05*)
Fish	269	70.8	2.6±2.1	256	71.7	2.1±1.8	2.75(<0.05*)

Table (3) illustrates that the highest percentage preference of boys likes was for fruits (88.9%), followed by salad (86.6%), meat (85.8%), milk (85%), and poultry (84.7%) while for girls the most food preferences were cheese (89.1%) followed by fruits (88.8%), salad (84.6%), milk (83.2%), poultry (82.4%). Fish was the list preferred food, it was (70.8%) among boys while egg was 'the least preferred food among girls (76.5%). As regard frequency of intake of food items, the least frequently" eaten food item was fish, both in boys (2.6±2.1SD-times per week), and in girls 2.1±1.8SD times per week). Conversely, the most frequently food item eaten among boys was salad (5.5±2.6SD times per week), while in girls, it was fruits (5.4±2.2SD times per week). The table demonstrates also, statistically significant differences between boys and girls as regards the frequency of intake of milk, meat, poultry, fish and eggs at $P < 0.05$.

Table 4 Relation between eating Pattern and Academic Performance among school children (n=737)

Items	Scholastic achievements				X2 test
	Average		Excellent		
	No	%	No	%	
Having breakfast before going to school:					6.59 (0.04)*
Never	31	45.6	37	54.4	

Sometimes	206	60.2	136	39.8	
Always	186	186	164	46.9	
Eat sald with meal:					
Never	32	5.0	32	5.0	2.91 (0.09)
Sometimes	224	42.0	305	57.7	
Always	81	48.5	86	51.5	
Eating vegetables:					
Never	26	26.0	25	49.0	4.91 (0.09)
Sometimes	201	41.0	285	58.6	
Always	110	49	113	50.7	
Eating snak:					
Never	64	52.0	59	48.0	6.34 (0.04*)
Sometimes	210	44.9	258	55.1	
Always	63	37.3	106	62.7	

(*) statistically significant

Table (4) shows that, healthy eating pattern as daily breakfast before going to school and eating snake meal effect on **Scholastic achievements among studied students.**

3. DISCUSSION

School age is one of the most active growing stages for a child, involving both physical and mental development. Under nutrition among school age children is a major public health problem globally, particularly in Asia and Africa (*Abdelfatah & Nofal, 2016*). Proper attention should be given to this group of children because their performance will impact the socioeconomic development of a country. Unsatisfactory nutritional status during school age were also linked to low enrolment in school, higher school dropout rate, absenteeism and low performance in school (*Lee & Manan, 2014*).

Regarding to the socio-demographic characteristics of studied students, the results showed that less than two thirds of the fathers had intermediate education, and skilled workers. Regarding mothers education, less than two thirds of them had intermediate education and they were housewives. Concerning child birth order nearly half of the studied sample was a second birth order. In accordance to study in Gaza conducted by (*Abudayya et al., 2011*) on health promotion nutritional educational program on primary school children and their mothers in Egypt, it was found that the majority of mothers had intermediate education more than half of them were employees and about two-thirds of the families had family size less than 6 members.

According to school Scholastic achievement for school students the results revealed that more than two thirds of boys and girls had average level scholastic achievement, these foregoing study findings were in congruence with (*Lee & Manan, 2014*) who studied malnutrition status and academic performance among primary school children in Malaysia and the academic level of most students was average. It is my point of view that the school level affected by factors such as economic factors and the level of education of the mother and the father not only eating patterns.

According to school children eating pattern of taking breakfast, findings of this study revealed that more than half of school children skipped breakfast before going to school these foregoing study findings were in congruence with (*Lateef et al., 2016*) who studied breakfast and food consumption pattern among students in Nigeria, where most of the school children skipping breakfast meal . Also study in Gaza conducted by (*Abudayya et al., 2011*) reported that school children did not prefer to eat the bread done at home in the breakfast, but they preferred to take money and buy sandwichs from food handlers around the school. Consensus of the results of the study with (*Wahba, Mekawy, Ahmed, & Mohsen, 2006*) in primary schools children in Cairo who reported that most of children skipping breakfast meal before going to school.

I believe that this is due to several reasons, such as children rushed morning or fear of becoming late to attend the enriched educational course submitted by the school early in the morning before school day, lack of appetite to eat morning meal and mothers not getting up early in the morning to prepare breakfast for their children.

In relation having breakfast and scholastic achievement the differences were statistically significant. On the same line (*Lee & Manan, 2014*) study in Malaysia showed that breakfast consumption, there was significant difference in the academic performance among the children who consumed breakfast daily and three or less than three days in a week. Similarly, in another study in New Zealand, daily school breakfast provision in school has a significant effect on children's academic performance and cognitive abilities (*Hasz & Lamport, 2012*).

In my point of view, Breakfast meal effect on cognitive abilities because the first meal of the day is expected to be consumed after seven to eight hours of sleep. It is the meal that keeps an individual alert and keeps active to work for several hours in a day before lunch-break

As regards eating between meals the present study had shown that it was common among more than half of school children. Regarding the food items eaten, less than one quarter in boys and about one third in girls were for sugary food and juice drink. This indicates a bad dietary habit with intake of "empty calories" that affect negatively the food balance and nutritional status of children. These forgoing present study findings were in accordance with the results of a national study carried out by the Egyptian Nutrition Institute (*Abdelfatah & Nofal, 2016*) who found that both boys and girls in Cairo, EL Sharkia and Quena were having snacks in-between meals.

In relation food preferences, likes, dislikes and frequency of intake. The findings revealed that fish, meat, and poultry were the least frequently eaten items. This probably due to the deficit information about full balanced diet, in addition to that the economic factors would certainly play a role in the frequency of intake of these rather high-cost items. The frequency was thus higher for less costly items such as eggs, fruits, and salads. The findings were even higher than those reported by (*Lauria et al., 2015*) who found that only less than half of students were regularly drinking milk, eating eggs, and eating fruits during the week. Meanwhile, the present study found that fish was the least liked food item, This could be as clarified by (*Lee & Manan, 2014*) due to fish and meat are associated more with adult tastes.

4. CONCLUSION

In conclusion the results of the present study have shown eating patterns of school children were less than half for boys and girls were always having breakfast before going to school. It was more than one third among boys and girls followed by sugary food, juice as it was less than one quarter in boys and more than one third in girls. More than two third of studied students have average score of scholastic achievement. There were statistically significant between scholastic achievement and healthy eating pattern in primary school children.

5. RECOMMENDATION

The study findings the followings are recommended to develop health educational program for schools age children regarding healthy lifestyle to improve healthy nutrients, **eating patterns and their importance** of scholastic achievement.

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