

Assessment of the Nutritional Status of Some Primary School Children in Qalyubia Governorate, Egypt.

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Abstract

This study was undertaken to assess the nutritional status of some primary schools children in Qalyubia Governorate, Egypt. Some primary schools from Tersa village, Qaha city, Sahel Degwi village and Toukh city, were selected. A random sample was taken from each school that included distribution between males and females with (43.47%) for males and (56.53%) for females. Pupils were randomly selected, and schools were chosen from different regions to represent different socioeconomic backgrounds. Questionnaires were taken from them over course of three times during semester, where social status of the father and mother for the children of each selected sample. It was found that (99.43%) are married, while there are no cases of divorce and there was one widow in study sample. As for the educational status of the head of the household, it was found average level (53.3%), above average (16.6%), bachelor's degree (30%), while the sample does not include illiterate and PhD degree. The quantities consumed of protein, fatty and carbohydrates foods in the study sample, proved that eggs ranked first among protein foods consumed by primary schools children with 300 eggs / year, followed by milk 72 liters / year, while reached bread ranked first among the carbohydrate products consumed by primary school children 150 pieces / year, followed by potatoes and rice 35 and 32 kg / year, respectively. The characteristics and anthropometric measures for the children of the selected sample were weight, length, middle of the arm circumference, and body mass index showing that weight was 37.1 kg, while length was 129.7 cm. On the other hand, the body mass index was 20.6 cm, and middle of the arm circumference was 22.7 cm. From these results, it could be concluded that nutritional status may affect cognitive development, and the interventions and dietary supplements may improve cognitive abilities in children. Over-nutrition and obesity were the prominent malnutrition problem among studied group, while wasting and underweight was affecting a minimum percentage of their number. Similar studies are needed in the future in different areas in Egypt.

Key words: Nutritional status, Malnutrition, Assessment, BMI percentiles, primary school children.

Introduction

In a 2020 program analysis, the World Food Programme mentioned the following: "The largest school feeding programs in the world, all rely on locally sourced food, which helps create jobs, make markets more predictable and help establish lifelong dietary preferences for locally available fresh foods. There is a need to help low-income countries scale-up home-grown school feeding efforts as key elements of their national programs." (UNWFP, 2021)

The school setting provides continuous contact with the same group of children through the school year, making school an ideal environment to focus intervention activities. Studies have shown that food preferences are shaped during childhood and that establishing favorable behaviors early on can lead to lifelong benefits to health. With the evidence supporting the long-term impact of childhood nutrition growing, many countries have shifted their focus to environmental and policy approaches to child health and nutrition in an effort to positively impact the sustained wellness of their populations, Skelton *et al.*, (2020).

There are approximately 12.5 million school children in Egypt. The age range is 5-18 years old. Lots of These children are especially malnourished. Those with low socioeconomic levels cause a variety of diseases including anemia, Obesity, and stunted growth, CAPMAS (2019). School-age children constitute a little under one a quarter of the world's population, and about three-quarters of these children live in developing countries, Mukherje and Chaturvedi (2017). School-age children spend most of their time away from their parents, therefore, are affected by friends as well as media further affects the formation and stabilization of their dietary practices. There is growing evidence indicating that young children from developing countries are increasingly making unhealthy food choices, especially because of a lack of knowledge and wrong perception towards healthy foods, Kigaru *et al.*, (2015).

Egypt is one of the low-middle-income countries, with growing concerns about overweight and obesity among schoolchildren and a marked increase in prevalence from 6 to 15%, between 1990 and 2010 Hadhood *et al.*, (2017).

The latest results of studies of the National Institute for Nutrition in 2007 showed that 19 percent of Egyptian children are infected with short stature as a result of poor nutrition and the National Research Centre confirmed that 27 % of the Primary school students and 63% of teen agers are suffered from the diseases of poor nutrition and it affects in a negative way on the study's capability and mental performance for students. Department of school feeding of the Minister of Education explained that the World Food Program given Egypt 16.4 million \$ for school feeding from 2006/2007 to 2010/2011, while the nutritional needs for all students was to nearly one billion and 800 000 pounds therefore, the current school feeding don't give the requirements that causing worsen the situation, especially on poor areas where the proportion of injuring children with poor nutrition is high with the absence of the role of treatment in the presence of the one national institute for feeding and the absence of sections of nutrition on clinics and hospitals health insurance. On 2011 the national project of school feeding covered around 1 million students at the Egyptian schools especially in the pre-schools and primary school schools (Azouz, 2011).

The children are the future, they need nutrition and health care to prevent them from developing nutrition-related diseases especially malnutrition. It has been found that a lot of the developing countries suffered from nutrition-related diseases, especially in children as a result of unbalanced diets (Smart *et al.*, 2006). Being more susceptible and quicker to develop symptoms. For these reasons, their nutritional habits in school and at home have to be amended (Ben khayal *et al.*, 2006).

There are limited studies concerned with the different variables related to the nutritional status of some Qalyubia Governorate, Egypt school children. Therefore the present study was carried out and focused on the nutritional status of some selected primary school children in Tersa village ,Qaha city ,Sahel Degwi village and Toukh city, Qalyubia Governorate as well as to assess the anthropometric measures for these children , I.e. weight ,length, middle of arm circumference and body mass index as a parameters for the nutritional status.

Materials and Methods

Materials:

3.1. Place of work and subjects:

The present study was carried out at 2018/2019 in Qalyubia Governorate, Egypt. This study included the distribution between males and females at a rate of (43.47%) for males (56.53%) for females of the total sample level. Primary schools named Tersa primary school, El shaheed Osama Nassar, Ali Ahmed Elewa , and El glaa primary school at Tersa village, Qaha city, Sahel Degwi village and Toukh city, respectively, were chosen . The indicated table shows the selected number of children in the sample by about (18) , (14), (12)and (15) pupils in the selected schools, respectively, while average age of pupils is swallowed by about (11), (11), (12),and (11) years in Tersa primary school, El shaheed Osama Nassar, Ali Ahmed Elewa , and El glaa primary school respectively. Pupils were randomly chosen and Schools were selected from different areas to represent different socioeconomic background as shown in Table 1.

Table 1. Pupils distribution according to their school areas

School name	Number of interviews	Days of interview	Home address
Tersa Primary school	18	First day	Tersa village
	18	second day	
	18	third day	
El shaheed Osama Nassar Primary school	14	First day	Qaha city
	14	second day	
	14	third day	
Ali Ahmed Elewa primary school	12	First day	Sahel Degwi village
	12	second day	
	12	third day	
El glaa Primary school	15	First day	Toukh city
	14	second day	
	15	third day	

3.2. Ethical considerations

The aims and benefits of this study were explained to the children's parents by the researcher. School administrations made arrangements for children to come with their mothers. They had the choice to accept or refuse to join the study without any consequences. Oral consent was obtained from

the participated students and confidentiality was maintained at all times, Hassan *et al.*, (2016).

3.3. Data Collecting Technique

Data were collected through a personal interview with pupils and their mothers in their schools during the acadmic year 2018/2019 to fill the

questionnaire sheet designed for the study, for the assessment of the socioeconomic characteristics of their families, life styles, eating habits, mothers' awareness and nutritional status.

Methods:

3.4. The questionnaire sheet included the following categories:

- 1- Data related to the personal information of the surveyed sample, i.e., name, age, and sex.
- 2- Data related to the social characteristics of the pupils' families such as number of family members and family type.
- 3- Data related to the educational characteristics of the parents.
- 4- Data related to the economic status of the family (Parents' jobs and their income).
- 5- Anthropometric measurements of the pupils (weight, height, BMI mid upper arm circumference and body fat %, **Hashad (2016)**).

3.5. The evaluation of different variables

a- Demographic variable.

(1) The social status of the father and mother of the children:

Married, divorced and widow.

(2) Monthly income:

Less than 1000, less than 2000, less than 3000, less than 4000 and 5000 more than 5000 L.E.

(3) The occupation of the father was divided into categories:

Worker, government employee and private sector.

(4) The occupation of the mother was divided into categories:

Housewife and another job

(5) Regarding education of father and mother they were divided as follows:

Illiterate, average, above average, bachelors degree and PhD degree.

Anthropometric measurements:

- (1) **Weight:** was recorded to the nearest 0.1 kg using a calibrated scale, where the subject wearing school uniform and without shoes according to **Gibson (1990)**.
- (2) **Height:** was recorded to the nearest 0.5 cm using a portable stadiometer. The subject stood erect and without shoes with back of head touching the wall according to **Gibson (1990)**.
- (3) **Body mass index (BMI):** was calculated using the standard formula. Two basic variables (weight (kg)/ height (m²)) (BMI healthy weight calculator, **NHS, 2015**). It provides a summary

of children's BMI for age categories and the prevalence of overweight and obesity BMI was evaluated.

- (4) **Mid upper arm circumference (MUAC):** was measured by a flexible tape placed gently firmly around the middle part of the arm according to **Lee and Nieman (2003)**. It was recorded to the nearest 0.1 cm.

3.3.9. Statistical analysis:

Results were expressed as mean and standard deviation. Chi square, Pearson's correlation coefficient and coefficient of variance (CV) were calculated to analyze data using **SPSS (2009)**. A value of $P < 0.05$ was interpreted as statistically significant.

Results and Discussion

This study assessed the nutritional status (by different methods) of primary school children in some village at Qaliubiya Governorate, Egypt. By social status of the father and mother as well as educational status and average monthly income of head of household, The nutritional habits in terms of the number of basic meals, the extent of snacking for children study sample and anthropometric measures for children study sample were also measured.

4.1. Selected schools for study according to age and type of pupils respondents:

Data in **Table (1)** refers to the schools selected in the study sample, which are Tersa primary school, El shaheed Osama Nassar, Ali Ahmed Elewa primary school, and El glaa primary school and the indicated that table shows the selected number of children in the sample by about (18), (14), (12), (15) pupils in the selected schools, respectively, while the average age of the pupils is swallowed by about (11), (11), (12), (11) years in Tersa primary school, El shaheed Osama Nassar and Ali Ahmed Elewa primary school, respectively, distributed between males and females at a rate of (43.47%) for males. (56.53%) for females at the total sample level. Primary school age is a dynamic time of physical growth in addition to child mental development. These results are in agreement with those obtained by **Bassuoni et al., (2021)** and (**Sallou and Ashry (2018)**), as for the distribution of children according to age. They reported that, the age of 56.1% of the children was 12 years, while the children at 9 years and 10 years were 12.12% and 13.63%, respectively.

Table 1. Selected schools for study according to age and type of pupils respondents.

School name	Number	Semester	Home address	Age	Type			
					male	%	female	%
Tersa Primary school	18	First day	Tersa village	11	10	55.56	8	44.44
	18	second day		11	9	50	9	50
	18	third day		11	9	50	9	50
average	18			11	9	50	9	50
El shaheed Osama Nassar Primary school	14	First day	Qaha city	11	7	50	7	50
	14	second day		11	7	50	7	50
	14	third day		11	7	50	7	50
average	14			11	7	50	7	50
Ali Ahmed Elewa primary school	12	First day	Sahel Degwi village	12	2	16.67	10	83.33
	12	second day		12	2	16.67	10	83.33
	12	third day		12	2	16.67	10	83.33
average	12			12	2	16.67	10	83.33
El glaa Primary school	15	First day	Toukh city	11	10	66.67	5	33.33
	14	second day		11	7	50	7	50
	15	third day		11	8	53.33	7	46.67
average	15			11	8	53.33	7	46.67
Total sample	59			11.19	6.63	43.47	8.06	56.53

4.2. The social status of the father and mother of children selected sample:

Data in **Table (2)** indicates the social status of the father and mother of the children of the selected sample, showing that (99.43%) are married, while there are no divorce cases, while there is one widow for the children selected in the study sample. These

results are in agreement with those obtained by **Hassan *et al.*, (2016)** which revealed the majority of children's parent was married (94.7%). Most of the children belonged to nuclear families (88.3%). 46.8% of families had between 4-6 children while 41.5% of them had 1-3 child

Table 2. The social status of the father and mother of children selected sample.

Number of interviews	Days of interview	home address	Mother's social situation			father social situation		
			Married	Divorc ed	wido w	Marri ed	Divorc ed	wido w
18	First day	Tersa village	17	0	1	17	0	1
18	second day		18	0	0	18	0	0
18	third day		18	0	0	18	0	0
14	First day	Qaha city	14	0	0	14	0	0
14	second day		14	0	0	14	0	0
14	third day		14	0	0	14	0	0
12	First day	Sahel Degwi village	12	0	0	12	0	0
12	second day		12	0	0	12	0	0
12	third day		12	0	0	12	0	0
15	First day	Toukh city	15	0	0	15	0	0
14	second day		14	0	0	14	0	0
15	third day		15	0	0	15	0	0
176	0	0	175	0	1	175	0	1
%			99.43		0.57	99.43		0.57

4.3. The educational status of head household for children selected sample:

Data in Table (3) containing the educational status of the head of the family for the children of the sample, it was found that those with an intermediate qualification represent about 72.2%, 50%, 50%, and 41.1%, for is Tersa primary school, El shaheed Osama Nassar, Ali Ahmed Elewa primary school, and El glaa primary school, respectively, while those with an above average qualification were estimated at 11.1%, 21.4%, 25%, and 9%, respectively, for the investigated schools. Accordingly, those who obtain a university degree represent 16.7%, 28.6%, 25%, and 49.8%, which showed that Toukh children sample was the higher one followed by Qaha, Sahel Degwi and Tersa. As for the level of the sample, it was found that 53.3% had an intermediate qualification, 16.6% qualified above average, 30% a high qualification at the level of the total sample.

While the sample does not include illiterate or PhD holders. These results are in agreement with those obtained by Salwa *et al.*, (2018); Sallou and Ashry (2018); Charles, (2021), and Sardar *et al.*, (2021), who illustrates that 33% of the mothers having passed Primary school and 25% had studied up to matric. An only a small proportion of mothers 4.6% had qualified above graduation. More than one-fifth of respondent's mothers 22.2% were illiterate. Out of 323 respondents, only 14.8% of respondent's mothers were graduates. While the father's education of respondents less than one-fifth 15.7% of the fathers were illiterate. More than a third of the respondents were Primary school pass, which was 37.7%. Only a small proportion of fathers 10.5% were qualified above graduation level, and less than one-fifth 17.6% were qualified. Also confirmations that less than one-fifth of the respondents 18.2% were matric pass.

Table 3. The educational status of head household for children selected sample.

Number of interviews	Days of interview	Housing and schools	Educational Status							
			illiterate	Average	%	above average	%	bachelors degree	%	Ph D
18	First day		0	13	72.2	2	11.1	3	16.7	
18	Second day	Tersa village	0	13	72.2	2	11.1	3	16.7	0
18	third day		0	13	72.2	2	11.1	3	16.7	0
14	First day		0	7	50	3	21.4	4	28.6	0
14	Second day	Qaha city	0	7	50	3	21.4	4	28.6	0
14	third day		0	7	50	3	21.4	4	28.6	0
12	First day		0	6	50	3	25	3	25	0
12	Second day	Sahel Degwi village	0	6	50	3	25	3	25	0
12	third day		0	6	50	3	25	3	25	0
15	First day		0	6	40	1	6.7	8	53.3	0
14	Second day	Toukh city	0	7	50	1	7.1	6	42.9	0
15	third day		0	5	33.3	2	13.3	8	53.3	0
176			0	8	53.3	2.3	16.6	4.3	30	0

4.4. The employment status of head household for children selected sample.

Data in Table (4) indicates the employment status of the head of the family for the children of the sample, showing that those working profession represent about 22.22%, 7.14%, 25%, 11.43%, which are the schools of Tersa primary school, El shaheed Osama Nassar, Ali Ahmed Elewa primary school

, respectively, and the total sample of 176. As for those working in the government sector, they represent about 11.11%, 42.86%, 16.67 and 25.08% in the schools of Tersa and Qaha, Sahel Degwi and Toukh and the total sample respectively, while workers in the private sector represent about 16.67%, 7.14%, 33.33% and 27.3%, respectively, while those who are under housewife account for about 25.9%,

28.57%, 25%, 27.31% for the schools referred to respectively, and finally those who work in other professions represent about 22.22%, 14.29%, 0.0% and 8.88% of the schools mentioned, respectively. These results are in agreement with those obtained by Hassan *et al.*, (2016) and Salwa *et al.*, (2018) which revealed that, a significant association was

found between the residence of the pupils and all items (fathers' educational level, mother educational level, father occupation, mother occupation, and family income) except sex and family size. Relationship between socio-demographic characteristics of the child and their nutritional status.

Table 4. The employment status of head household for children selected sample.

Number of interviews	Days of interview	Housing and schools	Worker	%	Government employee	%	Private sector	%	House wife	%	Another job	%
18	First day	Tersa village	4	22.	2	11.	3	16.	5	27.	4	22.
18	Second day		4	22.	2	11.	3	16.	5	27.	4	22.
18	Third day		4	22.	1	5.5	3	16.	4	22.	6	33.
14	First day	Qaha city	1	7.1	6	42.	1	7.1	4	28.	2	14.
14	Second day		1	7.1	6	42.	1	7.1	4	28.	2	14.
14	Third day		1	7.1	6	42.	1	7.1	4	28.	2	14.
12	First day	Sahel Degwi village	3	25	2	16.	4	33.	3	25	0	0
12	Second day		3	25	2	16.	4	33.	3	25	0	0
12	Third day		3	25	2	16.	4	33.	3	25	0	0
15	First day	Toukh city	1	6.6	4	26.	3	20	4	26.	3	20
14	Second day		2	14.	4	28.	4	28.	4	28.	0	0
15	Third day		2	13.	3	20	5	33.	4	26.	1	6.6
176			2.42	16.45	3.33	23.47	3	21.11	3.92	26.7	2	12.28

4.5. Monthly income of head household for children selected sample:

Data in Table (5) containing the average monthly income of the head of the household in the study sample, it was found that their income is 1000 pounds or less, representing about 40.7%, 35.7%, 33.3%, 22.7%, 33.1% in the schools of Tersa Qaha, Sahel Degwi of Toukh, and the total sample, while their income is 2000 pounds or Less represented 37.03%, 41.7%, 27.3%, 28.6% and 33.6% in the indicated schools and the total sample, while those with less than 3000 pounds represent about 22.2%,

14.3%, 25%, 25.1%, 21.6% for the investigated schools and the total sample, respectively, while those with 4000 Less were 21.4%, 27.3%, and 12.2% of the Qaha and Toukh schools respectively, while those who earn 5,000 pounds or more represented about 6.68% and 1.71% at Toukh and the total sample, these results are in agreement with those obtained by Charles (2021) and Sardar *et al.*, (2021), indicates displays 30.6% of the respondent's household income was less than 10,000. One-third of the respondent's household income (35.8%) was between 10,001 to 15000.

Table 5. Average monthly income of head of household in the study sample.

Number of interviews	Housing and schools	less than 1000		less than 2000		less than 3000		less than 4000		5000 And more	
			%		%		%		%		%
First day	Tersa village	8	44.	6	33.	4	22.	0	0	0	0
Second day		7	38.	7	38.	4	22.	0	0	0	0
third day		7	38.	7	38.	4	22.	0	0	0	0
First day	Qaha city	5	35.	4	28.	2	14.	3	21.	0	0
Second day		5	35.	4	28.	2	14.	3	21.	0	0
third day		5	35.	4	28.	2	14.	3	21.	0	0
First day	Sahel Degwi village	4	33.	5	41.	3	25	0	0	0	0
Second day		4	33.	5	41.	3	25	0	0	0	0
third day		4	33.	5	41.	3	25	0	0	0	0
First day	Toukh city	3	20	4	26.	4	26.	4	26.	1	6.6
Second day		3	21.	4	28.	4	28.	4	28.	1	7.1
third day		4	26.	4	26.	3	20	4	26.	1	6.6
		4.92	33.	4.92	33.	3.17	21.	1.75	12.	0.25	1.7
			1		6		6		2		1

4.6. Children's eating habits in selected schools with the study sample:

Data in **Table (6)** indicates the food habits of children in the selected schools in terms of the number of basic meals, their dates and the extent of snacking, which showed that the number of meals that the sample members eat daily was three meals which are breakfast, lunch and dinner, but as for the distribution of basic meals, the breakfast represents about 25.9 %, 11.9%, 61.9%, 66.7% at Tersa primary school, El shaheed Osama Nassar, Ali Ahmed Elewa primary school, and El glaa primary school, respectively, The lunch meal represented about 72.4%, 52.4%, 38.1%, 23.8 % Of the investigated school children, while with dinner, it represented 35.7%, 9.5 in Qaha and Toukh schools, while distributing meals at the sample level in the three interviews shows that 39.8%, 49.4%, 10.8% for each of Breakfast, lunch and dinner, respectively. As indicated by the results of the table according to the extent of the regular mealtime dates, it showed that 11.1%, 35.7%, 83.3% and 68.2% attend meals while 88.9%, 64.3%, 16.7%, 29.6% do not attend schools. As for the sample level, it was found that about 46% are regular in eating meals, 54% are not regular in eating meals. The obtained data showed that the children's answers about eating snacks recorded

70.37%, 100%, 100%, 90.77% to answered yes for eating them Snacks, while 29.63%, 0, 0, 9.33% were shown in Tersa primary school, El shaheed Osama Nassar, Ali Ahmed Elewa primary school, and El glaa primary school, Tersa village, Qaha city, Sahel Degwi village and Toukh city, respectively, with no for their snacks and at the sample level, it was found that 88.6% were eaten, while snacks while 11.4% are not. These results are in agreement with those obtained by **Salwa et al., (2018), who noticed** a significant association was found between the nutritional status of the pupils and these items (number of main meals, taking snacks, types of snacks, circumstances of eating food); While there was no significant association between the nutritional status of the pupils and the remaining items p-value (0.437, 0.311, 0.560 respectively), a significant association was found between residence of the pupils and these items (taking breakfast, taking snacks, form of snacks, place of eating food, circumstances of eating food) where rural pupils were better than urban pupils regarding their dietary habits.

Table 6. Nutritional habits in terms of the number of basic meals, their dates, and the extent of snacking for children of the study sample.

Number of interviews	Housing and schools	How many meals does he eat daily	The basic meal for the child						Do meals for dates				Does he eat snacks?			
			Number	breakfast	%	Lunch	%	Dinner	%	Regular	%	Irregular	%	Yes	%	No
18	Tersa village	3	5	27.8	13	72.2	0	0	2	11.1	16	88.9	1	6.3	6	33.3
18		3	4	22.2	14	77.8	0	0	2	11.1	16	88.9	1	7.3	7	33.3
18		3	5	27.8	13	72.2	0	0	2	11.1	16	88.9	1	7.3	7	33.3
14	Qaha city	3	2	14.3	7	50.0	5	35.7	5	35.7	9	64.3	1	7.1	1	7.1
14		3	2	14.3	7	50.0	5	35.7	5	35.7	9	64.3	1	7.1	1	7.1
14		3	1	7.1	8	57.1	5	35.7	5	35.7	9	64.3	1	7.1	1	7.1
14	Sahel Degwi village	3	5	35.7	9	64.3	0	0	10	76.9	2	15.4	1	7.7	1	7.7
12		3	9	75.0	3	25.0	0	0	10	83.3	2	16.7	1	8.3	1	8.3
12		3	9	75.0	3	25.0	0	0	10	83.3	2	16.7	1	8.3	1	8.3
14	Toukh city	3	10	71.4	3	21.4	1	7.1	11	78.6	4	28.6	1	7.1	9	64.3
14		3	9	64.3	3	21.4	2	14.3	10	71.4	4	28.6	1	7.1	8	57.1
14		3	9	64.3	4	28.6	1	7.1	9	64.3	6	42.9	1	7.1	9	64.3
176		3	70	-	87	-	19	-	81	-	95	-	15	-	2	-
%		-	39.8		49.9		10.8		46.6		54.4		8.6		11.1	

4.7. The quantities consumed of protein and fatty and carbohydrates foods in the study sample.

Data in Table (7) shows the quantities consumed of protein, fatty and carbohydrates food in the study sample at Tersa primary school, El shaheed Osama Nassar, Ali Ahmed Elewa primary school, and El glaa primary school, Different types of protein eaten by primary school children were observed. The egg was ranked the first one among protein foods consumed by primary school children with a mean

value of 300 eggs / year, followed by milk with a mean value of 72 liter/ year. Meats such as chicken, beef, and mutton are all rich in protein, which a balanced diet includes protein from meat. Red meat is the source of iron and different essential vitamins. Carbohydrates products are an important which a necessary element of the diet. Different types of carbohydrates products such as bread was ranked the first among carbohydrates products consumed by primary school children with a mean value of 150

pice / year , followed by potato and rice with mean values of 35 and 32 kg/ year , respectively. These results are in agreement with those obtained by Bassuoni *et al.*, (2021); (Liu *et al.*, 2003) and Sardar *et al.*, (2021), who illustrates that dairy products are an important source of protein which is a necessary element of the diet. Different types of dairy products were ranked 1-6. Tea was ranked 1st

among dairy products consumed by primary school children with a mean value of 4.08, followed by yogurt and milk with mean values of 3.40 and 3.21, respectively. Buttermilk was ranked 4th in dairy products eaten by children with a mean value of 3.09. The cream was ranked at the last number among dairy products eaten by children with a mean value of 1.65.

Table 7. The quantities consumed of protein, fatty and carbohydrates foods in the study sample.

Type of food	Food shapes	The number of times the consumption			
		Day	Week	Month	Year
Protein foods	Meat	0.034	0.24	0.96	11.5
	Liver	0.018	0.13	0.50	6
	Chicken	0.104	0.73	2.92	35
	Fish	0.036	0.25	1.00	12
	Eggs	0.893	6.25	25.00	300
	Milk	0.214	1.50	6.00	72
	Yellow cheese	0.048	0.33	1.33	16
	White cheese	0.060	0.42	1.67	20
	Yogurt	0.030	0.21	0.83	10
	Bean	0.024	0.17	0.67	8
	Cowpea	0.018	0.13	0.50	6
	Chickpeas	0.015	0.10	0.42	5
	Butter oil	0.015	0.10	0.42	5
	Fatty foods	Industrial butter oil	0.021	0.15	0.85
Oil		0.036	0.25	1.00	12
Butter		0.015	0.10	0.42	5
Industrial fat		0.030	0.21	0.83	10
Carbohydrates foods	Animal fat	0.036	0.25	1.00	12
	Bread	0.446	3.13	12.50	150
	Rice	0.095	0.67	2.67	32
	Pasta	0.074	0.52	2.08	25
	Potato	0.104	0.73	2.92	35

The source collected and calculated from the data of the field study sample during the academic year 2018/2019.

4.8. Anthropometric characteristics and measurements for children study sample:

Data in Table (8) indicates the anthropometric characteristics and measurements for the children of the study sample, it turns out that the average weight was 32.5, 32.5, 32.3 kg in Tersa primary school, representing about 87.5%, 87.5%, 87.0% of average weight of schools in the study sample of 37.1 kg, while in the Qaha School, the average weight was 42.3, 42.3, and 42.3 kg, representing about 113.8% of the average weight of schools in the study sample of 37.1 kg, while in Ali Ahmed Elewa primary school School of 39.7, 40.4, 40.4 kg, they represented 106.8%, 108.8%, and 108.8% of average weight of schools in the study sample, which amounted to 37.1 kg, In Toukh school has an average weight of 34.3, 33.6, 33.2 kg, representing 92.4%, 90.4%, and 100% of average weight of schools in the study sample of 37.1 kg.

It turns out that the average length was 132.1, 132.1 and 133.1 cm in Tersa school, representing about 101.9%, 101.9%, 102.6% of

average length of schools in the study sample of 129.7 cm, while in the Qaha School, the average length was 119.5, 119.5, 119.5 kg, representing 92.2% of the average length of schools in the study sample of 129.7cm, while in Ali Ahmed Elewa primary school School 133.5, 133.8, 133.8 cm, they represent 102.9%, 103.1%, 103.1% of the average length of schools in the study sample, which is 129.1 cm, while Toukh school has an average length of 133.9, 133.1, 132.3 cm. They represent 103.2%, 102.6%, and 102.0% of the average length of schools in the study sample of 129.7 cm. Regarding to BMI, it reached 20.5, 20.5, and 20.5 cm in the Tersa school, representing about 99.5%, 99.5%, 99.5% of the average BMI in the study sample of 20.6 cm, while in Qaha school, the average BMI 23, 23, 23 cm, represented about 111.8% of the average BMI for schools with the study sample of 20.6 cm, while in Ali Ahmed Elewa primary school school 20.0, 20.3, 20.3 cm, they represent 97.3%, 98.5%, 98.5% of average BMI for schools with the study sample of 20.6 cm, while Toukh School has an average BMI of

90.4, 90.4, 100.0 cm represent 91%, 90.4%, 90.4% of the average BMI for schools with a study sample of 20.6 cm. It turns out that average mid-arm circumference was 20.8, 20.8, and 20.4 cm in Tersa School, representing about 91.6%, 91.6%, and 90.1% of the average mid-arm circumference for schools with the study sample of 22.7 cm, while in Qaha School, the average mid-arm circumference was 25.3, 25.3 25.3 cm, representing about 111.3% of the average length of schools in the study sample of 22.7, while in the Ali Ahmed Elewa primary school school of 22.8, 22.9, 22.9 cm, they represent 100.2%, 101%, 101% of the average mid-arm circumference of schools in the study sample of 22.7 cm, while Toukh school the mean mid-arm circumference average was 22.2, 21.9, 22.7 cm, representing 96.4%,

97.9%, 96.4% of the average mid-arm circumference of schools with the study sample of 22.7 cm. In judging the nutritional status of a child, poorly nourished children may be quiet and withdrawn, or hyperactive and disruptive during class activities. These results are in agreement with those obtained by Hassan *et al.*, (2016); Salwa *et al.*, (2018); Singh *et al.*, (2017); Metwally *et al.*, (2020); Bassuoni *et al.*, (2021) and Metwally *et al.*, (2020). The significant presence of more overweight children in the control group than the intervention one ($P < 0.001$) could be attributed to the fact that these children were deprived of the highly nutritive school meal which might be replaced with alternatives that easily led to obesity. This emphasized the role of school meal in combating obesity.

Table 8. Characteristics and anthropometric measures for children study sample.

Number of interviews	Housing and schools	weight	%	Length	%	BMI	%	The middle of the arm circumference	%
18		32.5	87.5	132.1	101.9	20.5	99.5	20.8	91.6
18	Tersa village	32.5	87.5	132.1	101.9	20.5	99.5	20.8	91.6
18		32.3	87	133.1	102.6	20.5	99.4	20.4	90.1
14		42.3	113.8	119.6	92.2	23	111.8	25.3	111.3
14	Qaha city	42.3	113.8	119.6	92.2	23	111.8	25.3	111.3
14		42.3	113.8	119.6	92.2	23	111.8	25.3	111.3
12	Sahel Degwi village	39.7	106.8	133.5	102.9	20	97.3	22.8	100.2
12		40.4	108.8	133.8	103.1	20.3	98.5	22.9	101
12		40.4	108.8	133.8	103.1	20.3	98.5	22.9	101
15		34.3	92.4	133.9	103.2	18.7	91	21.9	96.4
14	Toukh city	33.6	90.4	133.1	102.6	18.6	90.4	22.2	97.9
15		33.2	89.4	132.3	102	18.6	90.4	21.9	96.4
176		37.1	100	129.7	100	20.6	100	22.7	100
	Average	37.1	-	129.7	-	20.6	-	22.7	-

The source collected and calculated from the data of the field study sample during the academic year 2018/2019. (BMI): Body mass index.

Conclusions

This study concluded that some primary school children in Qalyubia Governorate children were over-weighted. Nutritional status was strongly associated with life style, socio-demographic data, food intake and dietary habits. Over nutrition was the prominent figure of malnutrition among studied group when compared with undernutrition. The quantities consumed of protein ,fatty and carbohydrates foods in the study sample showed that eggs ranked first among protein foods consumed by primary school children, followed by milk, bread ranked first among the carbohydrate products and followed by potatoes and rice, respectively. The characteristics and anthropometric measures for the children of the study sample (weight, length, middle of the arm circumference, and body mass index) showing that weight was 37.1 kg, while length was 129.7 cm and on the other hand the body mass index

was 20.6 cm, and middle of the arm circumference was 22.7 cm. We suggested that interventions and dietary supplements may improve cognitive abilities in children so future studies may confirm.

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تقييم الحالة التغذوية لبعض المدارس الابتدائية بمحافظة القليوبية جمهورية مصر العربية

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في هذه الدراسة تم تقييم الحالة التغذوية وعلاقتها بالحالة الصحية لتلاميذ المرحلة الابتدائية لبعض مدارس محافظة القليوبية ، حيث تم اختيار مدرسة ترسا الابتدائية (قرية ترسا) ومدرسة الشهيد أسامة نصار (مدينه قها) ومدرسة علي أحمد عليوة الابتدائية (قرية ساحل دجوي) ومدرسة الجلاء الابتدائية (مدينه طوخ). و اخذ عينة عشوائية من كل مدرسة اشتملت على التوزيع بين الذكور والإناث بنسبة (43.47%) للذكور و (56.53%) للإناث. تم اختيار التلاميذ بشكل عشوائي ، وتم اختيار المدارس من مناطق مختلفة لتمثيل خلفيات اجتماعية واقتصادية مختلفة. تم اخذ الاستبيانات منهم على مدار ثلاثة مرات خلال العام الدراسي ، حيث تم دراسة الحالة الاجتماعية للأب والأم للتلاميذ في عينة الدراسة تبين أن (99.43%) متزوجون ، بينما لا توجد حالات طلاق وتوجد أرملة واحدة للتلاميذ في عينة الدراسة. كذلك مستوى التعليم لرب الأسرة للتلاميذ في عينة الدراسة تبين ان مستوى التعليم المتوسط يمثل (53.3%) ، مستوى التعليم فوق المتوسط يمثل (16.6%) ، مستوى التعليم الجامعي يمثل (30%) ، بينما العينة لا تشمل على عديم القراءة والكتابة والحاصلين على الدكتوراه. بالنسبة إلي الكميات المستهلكة من البروتين والأطعمة الدهنية والكربوهيدرات في عينة الدراسة. فقد تمثل البيض المرتبة الأولى بين الأطعمة البروتينية التي يستهلكها أطفال المدارس الابتدائية بمتوسط 300 بيضة / سنة ، يليها الحليب بمتوسط 72 لتر / سنة ، احتل الخبز المرتبة الأولى بين منتجات الكربوهيدرات التي يستهلكها أطفال المدارس الابتدائية بمتوسط قيمة 150 قطعة / سنة ، تليه البطاطس والأرز بمتوسط 35 و 32 كجم / سنة ، على التوالي، والفحص البدني وتم قياسات الجسم من حيث (الوزن ، الطول ، محيط منتصف الذراع ، ومؤشر كتلة الجسم) تبين ان متوسط وزن التلاميذ 37.1 كجم بينما بلغ متوسط طول التلاميذ 129.7 سم ، ومن ناحية أخرى متوسط مؤشر كتلة الجسم لتلاميذ عينة الدراسة كانت 20.6 سم ، ومتوسط محيط ذراع لتلاميذ عينة الدراسة كانت 22.7 سم ، ومن هذه النتائج يمكن استنتاج أن الحالة التغذوية قد تؤثر على التطور المعرفي ، والتدخلات والمكملات الغذائية قد تحسن القدرات المعرفية لدى التلاميذ. كان الإفراط في التغذية يحدث مشكلات من أبرزها مشكلات سوء التغذية والسمنة بين المجموعة التي شملتها الدراسة . هناك حاجة إلى دراسات مماثلة في المستقبل في مناطق مختلفة في مصر.

الكلمات المساعدة : تقييم الحالة التغذوية ، سوء التغذية ، محيط منتصف الذراع ، مؤشر كتلة الجسم ، تلاميذ المدارس الابتدائية، القياسات البدنية .