

Assessment of Nutritional Status of Primary School Children in Kallin District, Kafr El-Sheikh Governorate, Egypt

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Abstract

Background: School health has been acknowledged as important since the beginning of 20th century. Assessment of nutritional status is a major component of school health services.

Aim of the Study: This study was undertaken to assess the nutritional status of primary school children of Kallin city-Kafr Al-Sheikh governorate, Egypt.

Subjects and Methods: A cross-sectional study design was adopted. 2 in the rural section and 3 in the urban one with a total number of 3773 students. One urban and one rural school were chosen randomly from the governmental schools. A total of 433 pupils were included in the study. For each of the included children, socio-demographic data, dietary habits, food intake, physical examination for signs of nutritional deficiency were obtained and anthropometric measures such as (weight, height, mid upper-arm circumference and triceps skin fold thickness) were measured besides the Hb level which was taken from the health record of the child.

Results: The study results revealed that 29 (6.7%) were wasted, 36 (8.3%) were stunted, 6 (1.3%) suffering from severe thinning, 4 (.9%) were underweight, 137 (31.6%) were overweight, and 56 (13.1%) were obese. There were significant statistical relation between the BMI, residence of children and their socio-economic status, dietary habits, and food intake of the child.

Conclusion: From the results of the study we can conclude that over-nutrition and obesity were the prominent malnutrition problem among studied group while wasting and underweight was affecting a minimum percentage of their number.

Key Words: Nutritional status – Assessment – Primary school children.

Introduction

PUPILS in primary school represent an important social group in the society because they are more vulnerable to malnutrition; underweight or obesity [1].

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According to UNICEF (2011), more than 200 million school age children were stunted and underweight; about one billion school children will be growing up by 2020 with impaired physical and mental development thus directing attention towards obesity as a coming epidemic [2].

According to Egyptian National Nutrition Institute, in the year (2010-2014), malnutrition was still a major health problem in the Egyptian community among different age groups and socioeconomic classes [3-5].

Continuous nutritional assessment of the vulnerable groups especially children is very important for the evaluation of health and nutritional status besides the result of evaluation may be a base for future Planning, prevention and control programs of the nutritional problems [6-8].

Study hypothesis:

Malnutrition would be highly prevalent among primary school children (6-12 years) due to bad dietary habits in addition to inadequate dietary intake.

Subjects and Methods

Study design: A cross-sectional study was carried out among primary school children (6-12 years).

Study site and period: This study was carried out in primary schools of Kallin district; Kafr El-Sheikh governorate and took place between February 2015 and completed by June 2017.

Sample size and technique:

Stratified random sample method was used as follows: Kallin District was purposively chosen out of the 10 administrative districts of the Kafr

Al-Sheikh governorate because of easy feasibility to the researcher. The educational administration of Kallin city includes 5 primary governmental schools; 2 rural and 3 urban with a total number of 3773 pupils. Two schools were chosen randomly (one from rural and one from urban areas). The total number of pupils in the chosen rural school was 561 and in urban school was 674 during the scholastic year 2015/2016.

Each school has (12 classes); two classes in each grade. The sample was collected, one class from each grade (the first up to the six grade). To fulfill the required sample, the total number of studied children in the initial study was 480 pupils. After completion of the study, the total number of included pupils were 433 pupils with total response rate 89% (80% response rate in rural schools and 98% response rate in urban schools).

The data from 193 rural and 240 urban pupils were completed and subjected to statistical analysis.

Inclusion criteria: Primary school children (6-12 years old) were included in this study.

Exclusion criteria: Children less than 6 years or more than 12 years old, those who were suffering from chronic diseases that may affect nutritional status e.g. heart disease, diabetes mellitus and bronchial asthma, and refusal of parents to participate.

Study tools and data collection technique: Data was collected through a direct interview with older children and through examining the health record of them. While young children were sent to their parents to fill in the questionnaire sheet with them, with the co-operation of their teacher, also through direct personal communication through telephone and/or home visits.

A Pre designed questionnaire sheet containing data regarding:

- Socio-demographic data: Which include age, sex, scholastic year, residence, family income, number of family members, number of rooms, birth order, father's and mother's education and occupation.
- Medical history: To exclude children with chronic disease.
- Assessment of nutritional status through:
- *Anthropometry* : Which include:

A- Weight measurement: Weight was measured to the nearest 0.1kg (100gm) using an electronic scale with children wearing light clothing and without shoes after checking the scale for accuracy

and the result had been compared to that of WHO reference values [9,10].

B- Height measurement: Children's heights were measured using a wooden stadiometer placed on a flat surface. The child stood on the basal part of the device with feet together (without shoes). The shoulders, the buttocks, and the heels had to touch the vertical measuring board. A child standing with his eyes in the horizontal plane, his height was measured to the nearest 1cm. and the result was classified into (normal, short, and tall) according to the growth chart and the result had been compared to that of WHO reference values [9,10].

C- Calculating Body Mass Index (BMI) by using the equation:

BMI = Weight in kilograms/height in meters squared and the result was classified into (normal-sever thinning-underweight-overweight and obese) according to BMI children growth chart (Appendix 1) and the result had been compared to that of WHO reference values [10,11].

D- Mid- Upper Arm Circumference: Mid-Upper Arm Circumference (MUAC) was recorded with the help of flexible non-stretchable plastic measuring tape to the nearest 0.1cm at the mid-point between the tip of the shoulder and the tip of the elbow (olecranon process and the acromion process) on the left upper arm while the arm is hanging down the side of the body and relaxed. And the reading was taken which was classified into (normal, above normal, below normal) as interpretation of the result, which compared with CDC standard values [12].

E- Skin Fold: Triceps skin fold measurement was done to assess subcutaneous body fat. Along the midline on the back of the triceps muscle of the right arm, determine the mid-point between the tip of the shoulder and the tip of the elbow (olecranon process and the acromion process). Pinch the skin so that the fold is running vertically. Grab the skin with the thumb and forefinger about 0.5 inches from the measurement site following the natural fold of the skin. Lift the skin up from the muscle, apply the calipers and wait for 4 seconds before reading the calipers. Fat is compressible, so reading the scale before or after the 4-sec delay may affect the results.

And the reading was taken which was classified into (normal, above normal, below normal) as interpretation of the result, which compared with CDC standard values [12].

- *Clinical examination searching for physical signs of nutrient deficiency:* Which includes changes in hair, eye, teeth, face, lips, gums, skin.... if there is any signs denoting nutrient deficiency.
- *Assessment of food intake:* It was assessed by food frequency questionnaire. Depending on the common food groups [13].
- *Assessment of dietary habits:* Especially regarding the number of meals, snacks types and forms-eating between meals-consumption of fast food, carbonated beverages, coffee, and tea.
- *Laboratory investigations:* Reviewing the school students' health records, to collect data regards hemoglobin percentage (HB %) and results of stool analysis for parasitic infestation. Classification of anemia was done based on WHO criteria [14].

Ethical consideration:

The protocol was approved from the Ethical Committee of the Faculty of Medicine, Tanta University. Then from the administrator of the educational district, to which it belongs. Written consent was obtained from parents before starting the data

collection by sending it through their children with a brief explanation about the study and the nature of the required data. Data was collected anonymously. Confidentiality and privacy was guaranteed during the whole period of the study.

Statistical analysis:

The questionnaire and data collected were filled, a code sheet was developed; sorting, and tabulation and analysis of data were performed by using SPSS-V21. Continuous variables are summarized in the mean, SD, and for quantitative variables, summarized by number and percentage for qualitative variables.

Results

Distribution of the studied pupils according to socio-demographic data in relation to residence (Table 1):

A significant association was found between the residence of the pupils and all items (fathers' educational level, mother educational level, father occupation, mother occupation, family income) except sex and family size.

Table (1): Distribution of the studied pupils according to socio-demographic data in relation to residence.

Characteristics	Urban school (240)		Rural school (193)		Total		(X ² test)	(p-value)
	No.	%	No.	%	No.	%		
<i>Sex:</i>								
Male	145	60.4	104	53.9	249	57.5	1.86	.204
Female	95	39.6	89	46.1	184	42.5		
<i>Father educational level:</i>								
Illiterate	1	.4	16	8.3	17	3.9	168.1	.005 *
Primary & preparatory	4	1.7	38	19.7	42	9.7		
Secondary & diploma	64	26.7	117	60.6	181	41.8		
University or higher	171	71.3	22	11.4	193	44.6		
<i>Mother educational level:</i>								
Illiterate	1	.4	24	12.4	25	5.8	180.9	.005 *
Primary & preparatory	4	1.7	42	21.8	46	10.6		
Secondary & diploma	65	27.1	108	56.0	173	40		
University or higher	170	70.8	19	9.8	189	43.6		
<i>Father occupation:</i>								
Non skilled	0	0	8	4.1	8	1.8	77.4	.005 *
Skilled	13	5.4	68	35.2	81	18.7		
Employee	127	52.9	58	30.1	185	42.7		
Professional	100	41.7	59	30.6	159	36.8		
<i>Mother occupation:</i>								
Employee	127	52.9	6	3.1	300	69.3	124.7	.005 *
Housewife	113	47.1	187	96.9	133	30.7		
<i>Family income:</i>								
Not enough	12	5	35	18.1	47	10.9	193.1	.005 *
Enough and not saving	37	15.4	134	69.4	171	39.5		
Enough and saving	191	79.6	24	12.4	215	49.6		
<i>Family size:</i>								
<5	80	33.3	12	6.2	92	21.2	11.1	.17
>=5	160	66.7	181	93.7	341	78.8		

* Significant (p-value).

Relationship between socio-demographic characteristics of the child and their nutritional status (Table 2):

A significant association was found between the nutritional status of the pupils and all items of

socio-demographic data (sex, residence, family income, fathers' educational level, mother educational level, father occupation, mother occupation, age) except family size. Where obesity is more found among highly educated parents, governmental employee fathers, and housewives.

Table (2): Relation between socio-demographic characteristics of the child and their nutritional status.

Characteristics	Normal (230)		Over-nutrition (193)		Under-nutrition (10)		Total		X ²
	No.	%	No.	%	No.	%	No.	%	p-value
<i>Sex:</i>									
Male	116	46.6	125	50.2	8	3.2	249	57.5	10.9
Female	114	62.0	68	37.0	2	1.1	184	42.5	.004*
<i>Residency:</i>									
Urban	93	38.8	147	61.3	0	0.0	240	55.4	66.9
Rural	137	71.0	46	23.8	10	5.2	193	44.6	.005*
<i>Father educational level:</i>									
Illiterate	11	64.7	6	35.3	0	0.0	17	3.9	32.3
Primary & preparatory	26	61.9	12	28.6	4	9.5	42	9.7	.005*
Secondary & diploma	110	60.8	65	35.9	6	3.3	181	41.8	
University or higher	83	43.0	110	57.0	0	0.0	193	44.6	
<i>Mother educational level:</i>									
Illiterate	16	64.0	8	32.0	1	4.0	25	5.8	34.8
Primary & preparatory	30	65.2	11	23.9	5	10.9	46	10.6	.005*
Secondary & diploma	102	59.0	67	38.7	4	2.3	173	40	
University or higher	82	43.4	107	56.6	0	0.0	189	43.6	
<i>Father occupation:</i>									
Non skilled	7	87.5	0	0.0	1	12.5	8	1.8	32.0
Skilled	52	64.2	23	28.4	6	7.4	81	18.7	.005*
Employee	84	45.4	100	54.1	1	0.5	185	42.7	
Professional	87	54.7	70	44.0	2	1.3	159	36.8	
<i>Mother occupation:</i>									
Employee	175	58.3	115	38.3	10	3.3	300	69.3	17.9
Housewife	55	41.4	78	58.6	0	0.0	133	30.7	.005*
<i>Family income:</i>									
Not enough	31	3.2	14	29.8	2	4.3	47	10.9	44.98
Enough and not saving	114	66.7	50	29.2	7	4.1	171	39.5	.005*
Enough and saving	85	39.5	129	60.0	1	0.5	215	49.6	
<i>Family size:</i>									
<5	50	54.3	40	43.5	2	2.2	92	21.2	.074
>=5	180	52.8	153	44.9	8	2.3	341	78.8	.964

* Significant (p-value).

Distribution of the studied pupils according to their anthropometric measurements and residence (Table 3) (Figs. 1,2):

A significant association was found between the residence of the pupils and all items of the table. Concerning weight, 14.5% were underweight among rural pupils compared to 4% underweight among urban pupils. As regards to height, 8.3% were stunted where only 15.5% were short in rural children compared to only 2.5% in urban. Whereas, 1.2% were tall (above normal). Regarding BMI, about one third (31.6%), were overweight and

13.1% were obese, where 38.8% of urban pupils were overweight and 22.4% were obese compared to 22.7% and 1.3% respectively among rural children. Only 0.9% were underweight and 1.3% were wasted, where 2% of rural children were underweight, and 3.1% were wasted while no one of the urban pupils were underweight nor wasted. As regard to mid-upper arm circumference, the majority of pupils (85.9%) had normal mid upper-arm circumference, while 12.5% and 1.2% were below and above normal standards respectively, where only 20.2% of the rural pupils were below normal values compared to 7.1% in urban one and only

1.7% of the urban pupils had circumference above normal values, compared to 0.5% in rural one. Concerning triceps skinfold thickness (TSF thickness), it was above the normal standards in about

a quarter (24.2%) of them. Where 37.1% of urban students had a TSF thickness above normal values, and none of the urban and rural pupils had a thickness below normal values.

Table (3): Distribution of the studied pupils according to their anthropometric measurements and residence.

Characteristics	Urban school N (240)		Rural school N (193)		Total		(X ² test)
	No.	%	No.	%	No.	%	p-value
<i>Weight for age:</i>							
Normal	197	82.1	165	85.5	362	83.6	65.63
Underweight	1	.4	28	14.5	29	6.7	.005*
Overweight	42	17.5	0	0	42	9.7	
<i>Height for age:</i>							
Normal	229	95.4	163	84.5	392	90.5	27.33
Short	6	2.5	30	15.5	36	8.3	.005*
Tall	5	2.1	0	0	5	1.2	
<i>BMI:</i>							
Normal	93	38.8	137	70.9	230	53.1	388.4
Sever thinning	0	0	6	3.1	6	1.3	
Under-weight	0	0	4	2	4	.9	
Overweight	93	38.8	44	22.7	137	31.6	.005*
Obese	54	22.4	2	1.3	56	13.1	
<i>Mid upper-arm circumference:</i>							
Below normal	17	7.1	39	20.2	56	12.9	17.94
Normal	219	91.2	153	79.3	372	85.9	.005*
Above normal	4	1.7	1	.5	5	1.2	
<i>Triceps skinfold thickness:</i>							
Normal	151	62.9	177	91.7	328	75.8	48.28
Above normal	89	37.1	16	8.3	105	24.2	.005*

* Significant (p-value).

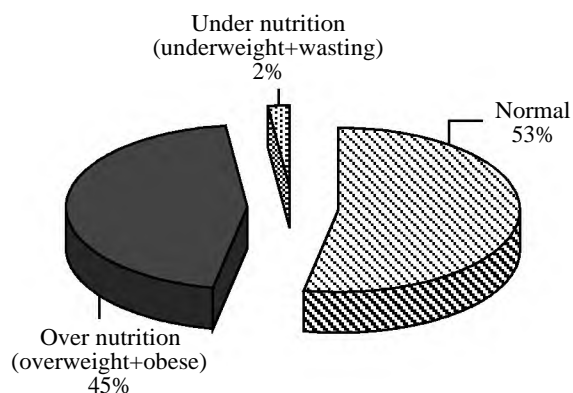


Fig. (1): Distribution of studied pupils according to their weight status.

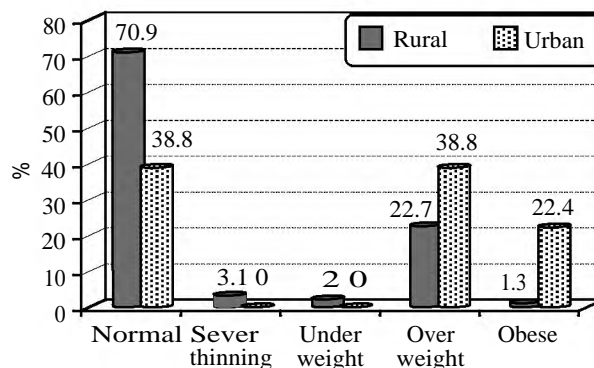


Fig. (2): Distribution of studied pupils according to BMI.

Distribution of the studied pupils according to their dietary habits in relation to nutritional status (Table 4):

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).

Distribution of the studied pupils according to their dietary habits in relation to residence (Table 5):

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. While there was no significant association between residence of the pupils and the remaining items (number of main meals, skipped meal and type of disliked food).

Table (4): Distribution of the studied pupils according to their dietary habits in relation to nutritional status.

Characteristics	Normal 230		Over-nutrition 193		Under-nutrition 10		Total 433		X ² <i>p</i> -value
	No.	%	No.	%	No.	%	No.	%	
<i>Number of main meals:</i>									
Two	90	58.4	58	37.7	6	3.9	154	35.6	6.44
Three	140	50.2	135	48.4	4	1.4	279	64.4	.040*
<i>Taking breakfast daily:</i>									
Always	33	55	27	45	0	0	60	13.9	1.66
Sometimes	197	52.8	166	44.5	10	2.7	373	86.1	.437
<i>Skipped meal:</i>									
Breakfast	115	52.3	96	43.6	9	4.1	220	50.8	
Launch	2	100	0	0	0	0	2	.5	
Dinner	95	55.2	76	44.2	1	.6	172	39.7	.251
More than one meal	7	50	7	50	0	0	14	3.2	.311
None	11	44.0	14	56	0	0	25	5.8	
<i>Taking snacks:</i>									
Always	8	42.1	11	57.9	0	0	19	4.4	
Sometimes	197	52.0	177	46.7	5	1.3	379	87.5	34.1
Rarely/never	25	71.4	14.3	5	14.3	5	35	8.1	.005*
<i>Types of snacks:</i>									
Healthy snacks	51	45.5	59	52.7	2	1.8	112	25.8	41.4
Unhealthy snacks	179	55.8	134	41.7	8	2.5	321	74.1	.005*
<i>Type of disliked food:</i>									
Milk	50	54.9	39	42.9	2	2.2	91	21	
Meat	20	57.1	15	42.9	0	0	35	8.1	6.79
Fish	29	42.8	38	56.7	1	1.5	68	15.7	.560
Cooked vegetables	131	54.8	101	42.3	7	2.9	239	55.2	
<i>Circumst-ances of eating food:</i>									
Eating during studying, watching TV and computer (alone)	49	21.3	101	52.3	0	0	150	34.6	11.0
Outside with friends	24	52.2	22	47.8	0	0	46	10.6	.026*
With family	157	68.3	70	36.3	10	2.6	237	54.8	

* Significant (*p*-value).

Table (5): Distribution of the studied pupils according to their dietary habits in relation to residence.

Characteristics	Urban school N (240)		Rural school N (193)		Total		(X ² test)	p-value
	No.	%	No.	%	No.	%		
<i>Number of main meals:</i>								
Two	89	37.1	65	33.7	154	35.6	.541	.462
Three	151	62.9	128	66.3	279	64.4		
<i>Taking breakfast daily:</i>								
Always	17	7.1	43	22.3	60	13.9	20.69	.005*
Sometimes	223	96.9	150	77.7	373	86.1		
<i>Skipped meal:</i>								
Breakfast	110	45.8	110	57.0	220	50.8	7.99	.065
Launch	1	.4	1	.5	2	.5		
Dinner	105	43.8	67	34.7	172	39.7		
More than one meal	11	4.6	3	1.6	14	3.2		
None	13	5.4	12	6.2	25	5.8		
<i>Taking snacks:</i>								
Always	11	4.6	8	4.1	19	4.4	11.12	.004*
Sometimes	219	91.3	160	82.9	379	87.5		
Rarely/never	10	4.2	25	13.0	35	8.1		
<i>Types of snacks:</i>								
Healthy snacks	66	58.9	46	41.1	112	25.9	49.07	.005*
Unhealthy snacks	174	54.2	147	45.8	321	74.1		
<i>Type of disliked food:</i>								
Milk	49	20.4	42	21.8	91	21	5.67	.200
Meat	14	5.8	21	10.9	35	8.1		
Fish	37	15.4	31	16	68	15.7		
Cooked vegetables	140	58.3	99	51.3	239	55.2		
<i>Circumstances of eating food:</i>								
Eating during studying, watching TV and computer (alone)	100	41.7	50	25.9	150	34.6	6.42	.023 *
Outside with friends	33	13.8	13	6.7	46	10.6		
With family	107	24.7	130	67.4	237	54.8		

* Significant (p-value).

Distribution of studied pupils according to stool analysis (Fig. 3):

A significant association was found between parasitic infestation and nutritional status of the pupils. p-value (.012*).

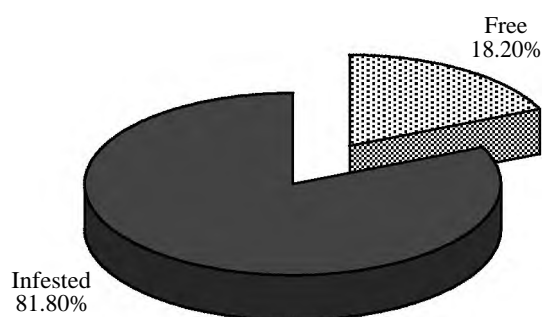


Fig. (3): Distribution of studied pupils according to stool analysis.

Distribution of studied pupils according to HB% (Fig. 4):

A significant association was found between BMI of the pupils and HB %. p-value (.005*).

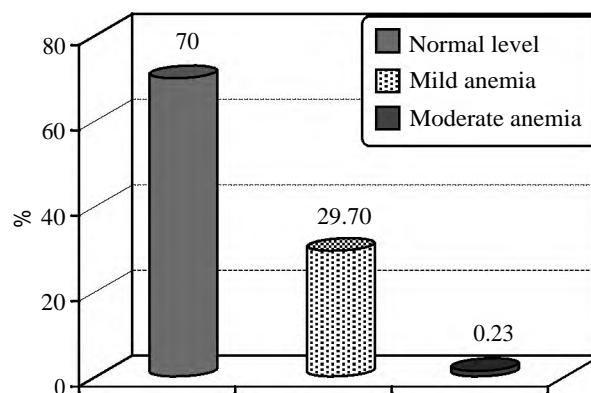


Fig. (4): Distribution of studied pupils according to HB%.

Discussion

Prevalence of malnutrition among studied children:

The present work revealed a higher prevalence of over-nutrition and lower prevalence of under-nutrition among the studied sample. The prevalence of overweight and obesity in this study was higher than that reported in previous Egyptian studies where Hafez et al. [15], Hassan et al. [16] in Giza, Ghalli [17], El-Masry [18], also, Elsayed et al. [19], El-Masry [20], and El-Shafie and his colleagues [21,22,23] in Dakahlia; Besides Matijasevich et al. [24] in UK and Brazil who reported their prevalence as (8.7% and 4%) respectively. These results were also in agreement with those of Pena Reyes et al. [25] in Turkey who reported higher values of height, weight, BMI in urban boys than the rural boys. However, Singh et al. [26], Tsimeas et al. [27], found no significant differences in body mass index between urban and rural Greek children. Whereas Johnson et al. [28] (2015), Emam et al. [29] found that residence in rural areas was associated with higher prevalence of childhood obesity, compared to children living in urban areas.

The study reported that the urban children showed higher measures as compared to rural children regarding mid-upper arm circumference and triceps skin fold thickness that was in line with Singh et al. [26], and Tsimeas et al. [27], on Greek children in which they found no differences were reported between urban and rural boys with regard to the body compositions. In this study, the prevalence of underweight (low weight for age) was (6.7%), where 14.5% were from rural school compared to only 0.4% in urbans, regarding BMI, only 0.9% were underweight and 1.3% were wasted (low weight for height), where 2% of rural children were underweight, and 3.1 % were wasted compared with the urban pupils being neither underweight nor wasted, stunting (low height for age) was (8.3%). Where 15.5% were from rural school compared to only 2.5% in urbans. Also, 2% of rural children were underweight, and 5.1 % were wasted while none of the urban students were wasted. This comes with El-Masry et al. [20], Elsayed et al. [30], in Zagazig City, and Goon et al. [31], in Makurdi, Nigeria, found that (43.4% and 52.7%) were found to be underweight and stunting respectively. The differences in the reported prevalence rates might be due to biologic, environmental, and socio-economic variations in each community.

Relation between socio-demographic data and residence:

The present result shows a higher anthropometric measures among urban students than rural

students. This can be explained on there was a significant association between the nutritional status of the pupils and those items (fathers' educational level, mother educational level, father occupation, mother occupation, family income), also it has been explained by Bahbah et al. (2015), in Menoufia Governorate; Menouf district showed that dietary variation between urban and rural children could be attributed to excessive intake of snacks between meals as processed meat, processed cheese, rice, artificial juices, and carbonated beverages, as well as the longer duration of sitting when playing video and computer games and influences from advertisements on fatty food. All those behaviors are mostly related to families with higher social class [32]. This had been proved also by Amin [33], and Abuzaid [34] found that urban pupils parent's educational level was higher as compared to parents of rural pupils. Similarly, Nabag [35], and Perveen et al. [36] (2016), found that the level of illiteracy among parents of rural school children was higher compared to the urban ones. El-Masry [18], found that childhood obesity and overweight were more prominent among children with non-working housewives mothers and highly educated fathers (college or above). Elsayed et al. [30] and Hassan [16] found that childhood obesity and overweight were more prominent in urban than rural areas, among children with non-working housewife mothers and highly educated fathers (college or above). In contrary to the present study, El-Masry [18], found that childhood obesity and overweight were more prominent in rural than urban areas. Also, Talat and El-Shahat [37] in Urban Sharkia Governorate; Egypt; they concluded that risk factors for overweight and obesity were significantly higher among children with low educated parents. This was attributed to wrong believes among low educated parents regarding obesity as a good sign of health and so they prefer to introduce high caloric foods to their children. The concurrent result revealed a significant association between obesity and non-working housewife mothers; where obesity occurs due to unhealthy eating habits and sedentary lifestyle rather than working status of the mother. This was in agreement with Güven et al. [38] in Turkey, while Hawkins et al. [39], and Thibault et al. [40] found a significant association between obesity and working status of the mother as the child is more likely to be overweight if his mother works more hours per week during childhood that prevents young children's access to healthy foods and physical activity.

BMI, residence and dietary habits:

In this study 94.2% of the studied sample skipping meals, 50.8% skipping breakfast 39.7% skip-

ping dinner. 22.3% of rural students always took breakfast daily compared to 7.1 % of urban students, regarding snack intake, 91.9% taking snacks, 47.1 % take unhealthy snacks, where it was more prevalent in urban students than rural one (54.2% & 45.8% respectively), also 41.7 % overweight pupils taking unhealthy snacks, 55.2% of studied pupils dislike cooked vegetables compared to 21% dislike milk, 15.7% dislike fish, and 8.1% dislike meat, 25.9% of rural children ate during watching T.V compared to 41.7% of urban pupils. This was in agreement with National Institute of Nutrition (NIN), Egypt [41] (2003-2004), Amini, [42] (2014), and Handa et al. [43] (2008), in India, also Zaki et al. [44], reported that one of the main reasons for obesity in children was lacking of physical activity, Also, she showed that obese children significantly spent more time watching television and less time exercising than normal weight children. Also, this was in line with a previous report from the WHO reported that children had an increase in body fat often associated with irregular meals, changing food habits, and inactivity [45]. The current findings regarding snack consumption amongst rural and urban children are supported by the study of Aziz & Devi [46], showed that instant sweet and chocolate are more consumed by urban children than rural children. Abu Zaid [34] (2012), Perveen et al. [36], and Davis et al. [47] reported that rural pupils take breakfast daily more than urban pupils and the trend of skipping breakfast is more common amongst urban school children than rural students, and also showed that urban pupils were more influenced by TV than rural ones.

Conclusion:

Over nutrition and obesity were the prominent figure of malnutrition among studied group when compared with undernutrition. Also anemia was recorded among considerable percentage of the studied pupils especially among overweight that was attributed to dietary quality rather than quantity, due to bad dietary habits such as excessive CHO, snacks consumption, wide spread of fast food in addition to lack of protein, fruit and vegetables intake, eating in front of TV, computers in addition to meal skipping especially breakfast and an increase in soft drink and beverages intake. Besides parasitic infections was prevalent among the majority of children and was significantly associated with malnutrition. Nutritional status was strongly associated with life style, socio-demographic data, food intake and dietary habits.

Recommendation:

Continuous assessment of nutritional status of school children is important for regular check of

the health status of these sectors of the community. Basic facts in nutrition and healthy eating practices should be included in the curriculum of all school stages. In addition to nutritional education programs should be directed to teachers, school children and their parents especially regarding nutritional requirements and healthy feeding practice and how to eat a balanced diet and impact of bad feeding practice. Also recommending that efforts should be directed towards increased physical activity inside & outside schools besides the time for physical exercise should be mandatory in school schedule with giving special interests to playgrounds. Attention should be paid to school feeding program as a chance to nutritional education for a child besides supplying considerable amounts of energy requirements for children. Also school canteen should be observed to supply healthy food only.

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تقييم الحالة الغذائية لتلاميذ المدارس الابتدائية بمنطقة قلين محافظة كفر الشيخ مصر

مقدمة: تم الاعتراف بأهمية الصحة المدرسية منذ بداية القرن العشرين. وتشكل الحالة التغذوية عنصراً رئيسياً في الخدمات الصحية المدرسية.

الهدف: وقد أجريت هذه الدراسة لتقييم الحالة التغذوية لأطفال المدارس الابتدائية بمنطقة قلين محافظة كفر الشيخ.

الموضوعات والطرق: تم اعتماد تصميم دراسة مستعرضة. تم اختيار مدرستين حكوميتين ابتدائيتين (واحدة حضرية وواحدة حيث كان عدد الطلبة من المدرسة الريفية ٥٦٦ تلميذاً ومن المدرسة الحضرية. باستخدام طريقة عشوائية متعددة المراحل ريفية) ٦٧٤ تلميذاً خلال العام الدراسي ٢٠١٥/٢٠١٦ في بداية الدراسة كان عدد التلاميذ ٤٨٠ تلميذاً وبعد الانتهاء من جمع البيانات كان لدينا ٤٣٣ تلميذاً فقط بنسبة استجابة ٨٩٪ ما بين ٤٣٣ طفلاً الذين تتراوح أعمارهم بين ٦-١٢ سنة تم قياس الطول والوزن ومحيط منتصف الذراع وسمك طبقات الجلد للعضلة ثلاثية الرؤوس حيث جمعت البيانات المتعلقة بالتفاصيل الديمغرافية والعادات الغذائية للطفل والتعليم والمهنة والدخل الشهري لأولياء أمورهم.

النتائج: من بين ٤٣٣ طفلاً حيث كان حوالي الثلث (١٣.٦٪) يعانون من زيادة الوزن و ١٣.١٪ يعانون من السمنة المفرطة. و ٠.٩٪ فقط كانوا يعانون من نقص الوزن و ١.٣٪ كانوا يعانون من الضعف العام و ٦.٧٪ كانوا يعانون من الهزال و ٨.٣٪ كانوا يعانون من القدامة. وقد تبين أن هناك علاقة قوية بين الحالة التغذوية للطفل والوضع الاجتماعي والاقتصادي لهم.

الخلاصة: على ضوء نتائج الدراسة وجد أن نسبة السمنة وزيادة الوزن تؤثر في حوالي ثلث الأطفال قيد الدراسة وأن نقص التغذية تتمثل في نقص الطول والوزن تمثل نسبة صغيرة من الأطفال. وكانت زيادة الوزن والسمنة أكثر انتشاراً بين الاطفال ذوى الاء والامهات الأكثر تعليماً وبين ربات البيوت من الامهات أكثر.