

Evaluation of Health Aspects, Nutritional Status and Educational Attainment of Pupils for the Sixth and Seventh Year in Public Schools in the Judaim - El- Zawya Area.

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Abstract

This study was carried out on pupils of the sixth and seventh class of public schools in the district of Judaim, that was during the academic year 2018- 2019. Body length and weight were measured by using Detecto electronic balance, one of the doctors of the Public Health Unit was assigned to evaluate the health aspects of the skin, scalp and tooth decay. Through a scientific questionnaire specifically designed to collect Personal data related by the pupils nutrition. An educational situation was evaluated. Body Mass Index (BMI) was calculated by using special mathematical equations . The results showed that the percentage of healthy male and female pupils were 60% and 61%, respectively , whereas the abnormal cases, such as overweight and underweight, were 16.47% -16% and 8.24% -8% consequently. The pupils medical examination showed that 87.23% had a clean head scalp, while 12.77% had a bad scalp and accompanied by dandruff. Also, these results proved that 69.23% of the females and 54.12% of the males have healthy teeth . About 40.35% of healthy pupils had obtained excellent scores for the mathematics test and 46.49% of them received the same grade in the General Sciences course test. These scores for both tests ranged from 17 to 20. Also, this study included other aspects related to quality of the meals breakfast, lunch, dinner, and different foods, which are purchased from the cafeteria of the school.

Key words: Public Schools, Pupils, Head Scalp, Health Aspects, Meals Breakfast, Nutrition.

Introduction

The population of north-west Libya has similar food habits and traditions, these similarities are the type and quality of food, the methods of preparation and the pattern of consumption [12]. Most Libyan popular diets are prepared in a cooking manner, which usually takes at least twenty minutes to an hour and a half for certain types of meals. Many studies have indicated the nutrition is one of the basic requirements of any living organism to grow and sustain life, the quality and quantity of nutrients necessary for normal growth and to keep an organism in good health during its life span varies with the age of the organism. Any major deviation in the nutrient intake either in quality or in quantity from its requirement can affect growth, particularly the growth of young boys [2 , 4 , 6]. Good nutrition is the foundation to proper growth and development in every human, the absence of which individuals are subjected to multiple health complications. [3 , 5]. Malnutrition is a nutritional disorder that occurs in people and can destroy once health. It is caused by a lack or surplus or imbalance of nutrients in the body [11]. Undernutrition includes stunting, wasting and underweight is a consequence of consuming too few essential nutrients or using or excreting them more rapidly than they can be replaced. Overnutrition which includes overweight and obesity results from eating too much, eating too many of the wrong things, not exercising enough, or taking too many vitamins or other dietary replacements. Genetics has also been implicated in overnutrition. [3 , 9 , 12]. Eating breakfast is a very important meal of the day especially for school-going children, some studies show that pupils who eat breakfast perform better in the classroom and on the playground. A nourishing breakfast improves the learning potential of pupils, allows them to

learn effectively. Good health and nutrition is the basic need to achieved child's full educational potential because good nutrition effect on educational development and good learning ability of pupils. [1]. Healthy lunch is very important for the development of the brain and also helps in concentration and learning process of pupils. Often high-fibre diet helping healthy digestion and reduce feelings of fatigue. Mostly foods which are buying with pocket money from the school cafeteria contain a rich amount of fat, sugar, and salt. In addition, those foods are usually low in iron, fibre, and vitamins and extremely high in sodium [1 , 4 , 8 , 11]. Some of the studies showed that most of the popular Libyan meals cannot provide, all the daily needs of nutrients for the human body, and some of these meals, such as zemitah and macaroni Imbakbka, is poor in the protein and calcium. Adequate nutrition is indispensable to ensure a strong immune system and proper physical and intellectual development in the pupils [4 , 6 , 7 , 10]. Nutritional disorders are generally caused by an inadequate diet, and the affected pupils may be below or above the optimal weight for their age group. These disorders lead to greater susceptibility to disease as a result of deficits in specific nutrients [8 , 9 , 10]. This study aimed to assess the nutritional, health and scholastic performance of pupils in the sixth and seventh years of school. Public schools were chosen in an agricultural area called Judaim.

Methodology

The study population was students from three public schools. They were 85 males and 104 females. They are studying in sixth and seventh grades of basic education. They attend school during the morning period. The data was collected by using a good scientific questionnaire, which included several questions about personal and nutritional information, such as the ingredients of breakfast and lunch, and about their consumption of milk, fruits and vegetables. A specialized educational supervisor was relied upon to prepare methodological questions related to mathematics, chemistry, and biology, in order to assess the educational attainment of students, he works in the Office of Educational Services, also he is charged with following up the teachers working in these schools. A doctor from the Public Health Center, helped us to evaluate the general health status of pupils, such as skin, hair, teeth, and ears.

Analysis of Date

Depending on the age, height, and weight of each pupil's body, the Body Mass Index (BMI) can be identified by using special mathematical equations as follows:

Body Mass Index Formula

$$BMI = \frac{mass (kg)}{height(m)^2}$$

Ponderal Index Formula

$$PI = \frac{mass (kg)}{height(m)^3}$$

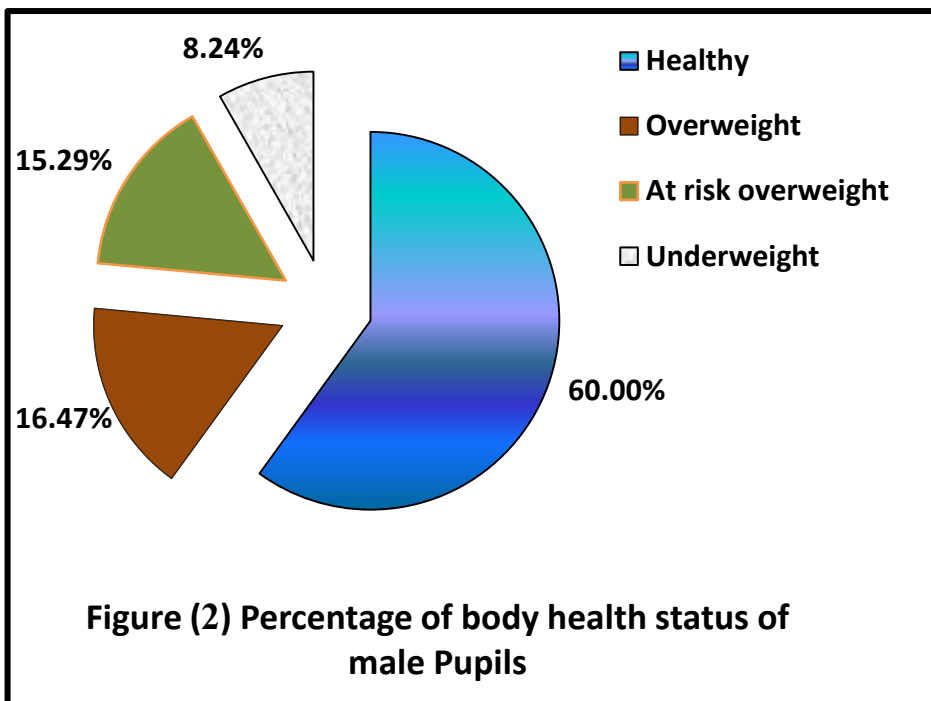
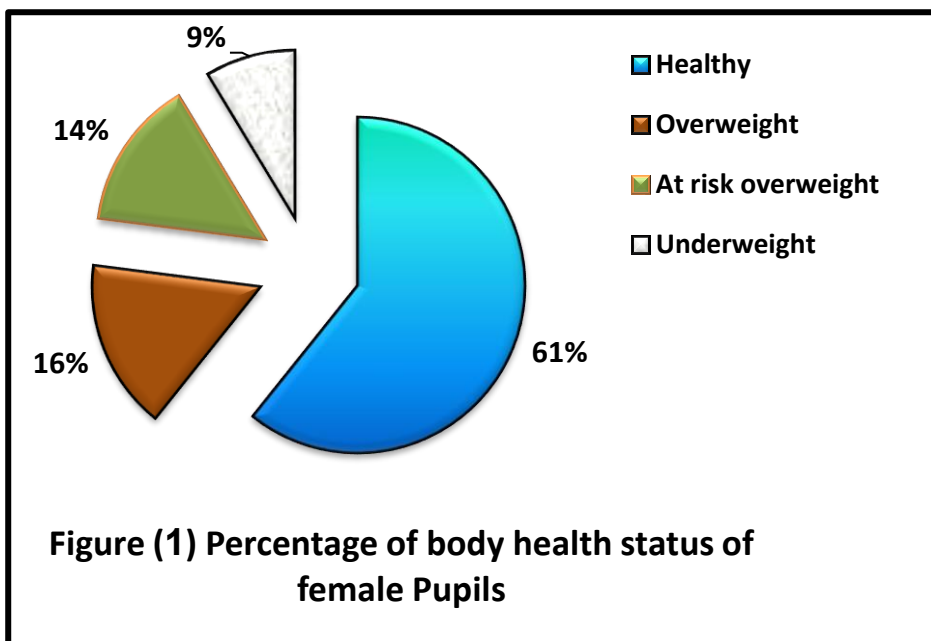
The descriptive statistical analysis was used to discuss the data of this study, such as calculating the percentage and statistical averages, with the tabulation of some data and the representation of others in the form of graphs, as shown below.

Spatial and Temporal Boundaries of Study.

This study was carried out on the sixth and seventh-grade students of basic education in mid-2019, at Judaim Schools, located in the eastern part of the Zawia city, about 35 km west of Tripoli. It is also a rural agricultural area.

Results and Discussion

BMI is a measurement of a person's leanness or corpulence based on their height and weight and is intended to quantify tissue mass, Its results do not reflect the composition of the body, but it is used as a general indicator of healthy body weight. The Ponderal Index (PI) is similar to BMI in that it measures the leanness or corpulence of a person; it is more reliable for use with a person of very long height or very short stature. In this study, BMI and PI were calculated and no differences were found, so BMI results were relied.



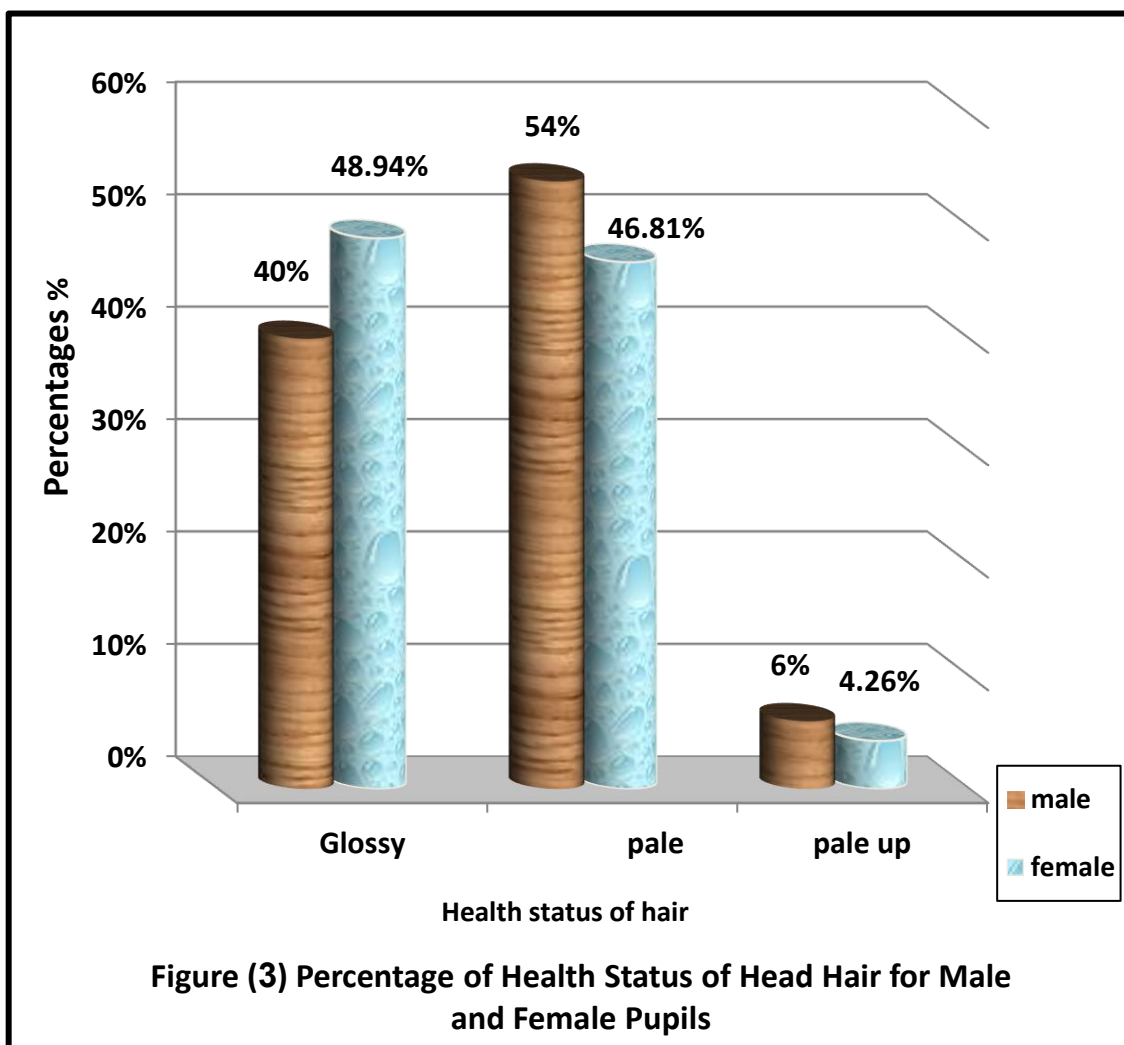
From the figures (1) and (2) it can be observed that 60% and 61 % represent the proportion of healthy male and female pupils respectively, while the abnormal cases such as overweight and underweight, were relatively close Between 16% to 16.47% and 8.24 % to 9% however, the

proportion of pupils who at-risk overweight was 14% and 15.29 % ,respectively. On other hand the results with PI for the 12 and 13 -year-old female pupils who at risk of overweight and overweight were ranged from 16.06 to 17.33 kg / m³, and 15.70 and 16.89 kg / m³ respectively, while for the male pupils were 20.04 to 22.89 kg / m³ and 19.26 to 27.77 kg / m³ sequentially. Also the PI results regarding the health status, overweight, at-risk overweight and underweight for male pupils 12 to 13 years old were 13.50 to 14.81, 14.81 to 16.40, 16.89 to 15.76 and 17.33 to 18.16 kg / m³, respectively.

The emergence of signs of unhealthy in some members of the study community, due to the nutritional aspects in addition to the lack of school sports programs, which will be discussed later in the following paragraphs.

Regarding to the Apparent State of the Scalp and Hair.

The medical examination showed that 76% of the female pupils had a clean scalp, while 24% of them had a non-clean scalp with the pallid skin. Only one case had an on-clean scalp with lice. While the health examination of male pupils showed that 87.23% had a clean head scalp, while 12.77% had a bad scalp and accompanied by dandruff. Also the results showed that the percentage of healthy hair was 48.94% for males and 40% for female pupils as shown in Figure (3). The results showed that the percentage of pale and pale up hair in female and male pupils was 46.81%, 4.26 % and 54%, 6%, consequently.



Regarding the health of teeth:

Table (1) shows that 69.23 % of females and 54.12% of males have healthy teeth, and 55.78% of schoolgirls have beautifully arranged teeth, while in males 50.59 %. A public health unit physician's observations showed that 12.50% of females and 17.65% of male pupils should undergo orthodontic procedures.

Table (1) Percentage of the Apparent Health Status of Male and Female Pupils' Teeth.

Cases	Females		Males	
	<i>Repetition</i>	<i>percentage</i>	<i>Repetition</i>	<i>Percentage</i>
Unharmed	72	69.23 %	46	54.12 %
Arranged	58	55.78 %	43	50.59 %
Unarranged	11	10.58 %	19	22.35 %
Need to calendar	13	12.50 %	15	17.65 %

The following table shows that the number of tooth decay of female pupils is lower than that of males. The rates of dental caries in the lower jaw for males and females were 48.56 %, and 53.04%, respectively, while the upper jaw was 51.44 % and 46.96%, respectively.

Table (2) Repetitions and Percentages of Number of Tooth Decay in Pupils.

Dental decay	One		Two		Three		Four		Five & Up	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Repetition	18	25	9	12	3	2	3	5	1	0
Percentage%	21.18	24.04	10.59	11.54	3.53	1.92	3.53	4.81	1.18	0.0

Table (2) shows that the largest incidence of tooth decay was 30.77% for female pupils, of whom 24.04 % were carriers of one infected tooth. While one tooth decay in male pupils was 21.18 %. Cases of tooth decay from one to two reach about 74%. It represents the most percentage of the study population. In general, the high incidence of tooth decay may be attributed to several overlapping factors, most notably the desire of most pupils to buy snacks from the school cafeteria such as chocolate, sweets and sugary juices, as well as dry salted foods such as roasted salted potato chips. Often, they are eaten in the classroom, even during classes,

lack of good toilets in public schools, and the absence of clean water sources. Most pupils are not used to brushing their teeth with proper paste, especially after meals. All of these factors gave a good chance of bacterial growth on the teeth. The absence of a nutritionist from the main cadre of public schools led to the absence of follow-up and guidance to correct the wrong dietary patterns. All of these factors may have the most important role in the appearance of increases or decreases in body weights and tooth decay

Figure (4) shows that the percentage of female and male pupils who had breakfast at home was 38.30% and 42%, respectively. On the other hand, 61.70% and 58% of male and female pupils, respectively, were skipping breakfast in the morning at home.

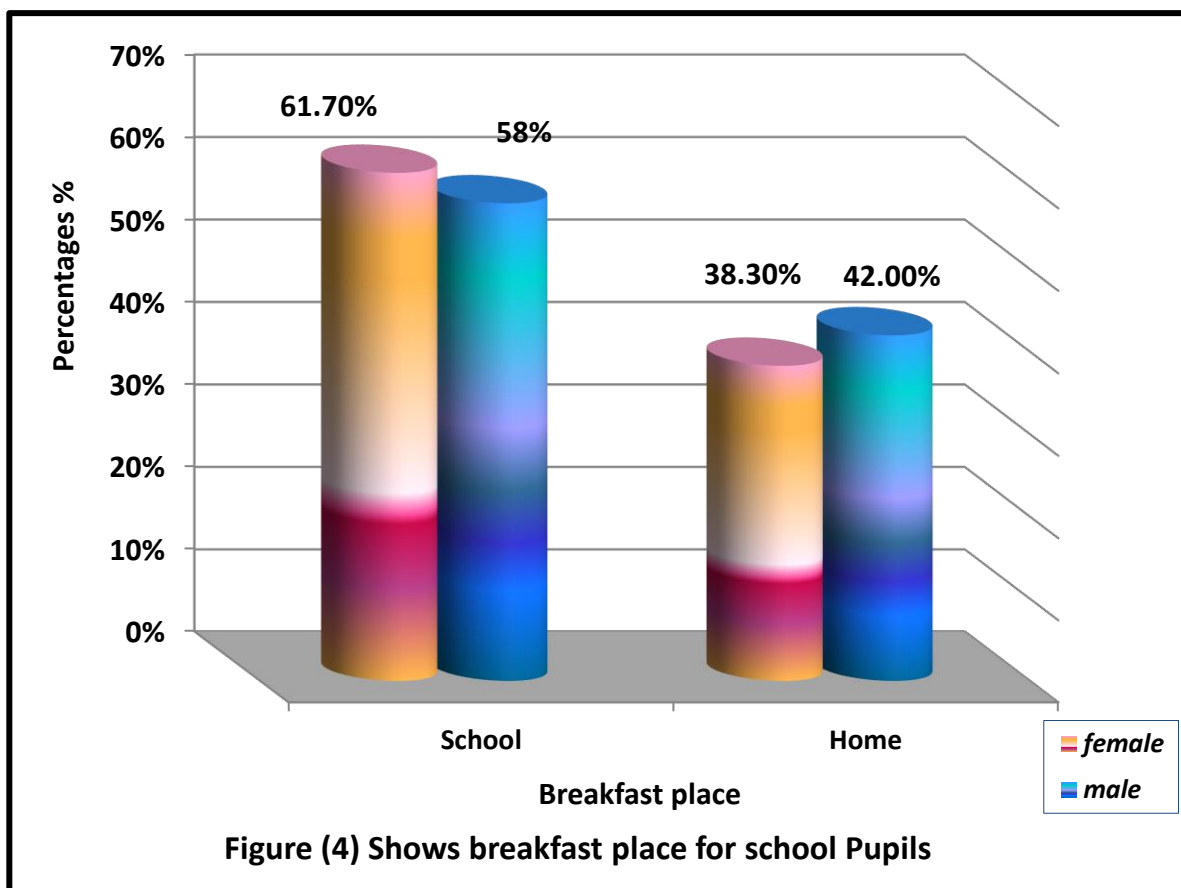


Table (3) The Repetitions and Percentages of the Goods type on the Table of Breakfast.

Goods type	Bread	Tea	Jam	Eggs	Milk	Besisa	Zmitha	Dates	oil	Olive	Others
Repetition	93	41	42	69	44	43	62	31	51		38
Percentage%	95.88	42.27	43.30	71.13	45.36	44.33	63.92	31.96	52.58		39.17

Table (3) shows the types of food on the breakfast table in the study area, the main foods were 95.88% of bread and 71.31%, 63.92%, 52.58% and 45.36% of eggs, Zmitha, olive oil, and milk

respectively. The high percentage of the presence of olive oil, dates, and milk at the breakfast table is attributed to the fact that the study area is an agricultural area, where there is an abundance of olive and palm trees, in addition to the fact that many farmers are interested in raising cows to produce commercial milk. The results showed that not all goods listed in Table (3) were available on the breakfast table for the study population, but only some of them were available. Often bread is served with tea, jam or milk mixed with tea. The results of this study coincide with the results of Obeid Alwan's 2016 study, which indicated that a large percentage of pupils in primary and middle schools skip breakfast. Obeid Alwan's 2016 study indicates that most sixth and seventh-grade students are considered at the beginning of the first stage of adolescence, a stage in which the pupils feels he has an entity that must be respected and appreciated. The results of the survey showed that the pupils want to have money in their pockets and that they are completely free to buy what they want from the school cafeteria, they say this is good and acceptable instead of having a home breakfast.

Regarding to Common Meals at Lunch

Table (4) Repetition and the Percentage of the Common Lunches in the Study Area.

Goods type	Repetition	Percentage	Notes
Imbakbaka with meat	95	97.94%	<i>High percentage</i>
Imbakbaka without meat	17	17.53%	
Couscous with meat	80	82.47%	<i>High percentage</i>
Couscous bel-khdra	14	14.43%	
Bazin	70	72.16%	
Rushda	81	83.51%	<i>High percentage</i>
Rice with meat	64	65.98%	
Rice bel-khdra	19	19.59%	
Plain soup	70	72.16%	
A bean dish	81	83.51%	<i>High percentage</i>
Bazla Cooker	61	62.89%	
Tajine bel-khdra	69	71.13%	
Grilled meet	36	37.11%	
Various popular fries	67	69.07%	

The results of Table (4) indicated that the Libyan popular food (Imbakkba with meat) is the most frequent meal in the study area, and its presence at the lunch table was 97.94%. Obeid Alwan 2016 noted that this meal is easy to prepare and takes little time to cook. For these reasons a housewife tends to prepare this meal and make it a main meal, and is usually served as one dish. Couscous with meat is a meal that was repeated 80 times and by 82.47%, it is a popular meal in most parts of western Libya, it usually served as one dish. Also, the previous table data shows that Rushda, Bean dish, Plain soup and Tajine bel-khdra are meals with a lot of repetition in the Libyan home, and their weekly presence at the lunch table was 83.51%, 83.51%, 72.16%, and 69 %, respectively. According to Obeid Alwan 2016, An approximate analysis of the Libyan popular meals indicates that there are fluctuations in the value of large ingredients and small ingredients, and that these fluctuations are due to the difference of the Libyan families in the types and quantities of the ingredients of those foods. Therefore his study recommended not to rely on these diets only in feeding different stages of life.

Regarding to Consumption of Vegetables, Fruits, Milk and its Derivatives

Vegetables and fruits are eaten in fresh, dried or canned forms. Their importance lies in providing the body with mineral elements and vitamins, so diets should contain different types of them. The results related to the consumption of milk and dairy products will be presented in the following table.

Table (5) Frequency and Percentage Consumption of Vegetables, Fruits and Milk

Consumption Goods	Daily		Only sometimes		Notes
	Repetition	Percentage	Repetition	Percentage	
Vegetables	42	43.30%	53	54.64%	
Fruits	19	19.59%	86	88.67%	
Milk	39	40.21%	48	49.48%	
Dairy products	21	21.65%	59	60.82%	

Although the study area is agricultural, its inhabitants consume vegetables in small quantities. The results showed that 54.64% of the total population consumed vegetables only from time to time irregularly. On the other hand, the results proved that daily milk consumers did not exceed 40.21% of the total study population, while the consumption of dairy products was 21.65%. These results are not good indicators, because it does not meet the body's nutrient needs, especially for the age group included in this study.

Regarding the Evaluation of Students' Educational Achievement

On assessing the pupil's ability to attain education, the teacher prepares questions under the supervision of a relevant educational instructor. The questions focused on the topics of the first two lessons in the book of General Sciences (Physics, Chemistry, Biology) and Mathematics.

This test included three main paragraphs, represented in multiple-choice questions, correct and false sentences, filling in the blanks and two-column comparison questions. The test was conducted during the first period of the school day. All pupils (male and female) sat in class chairs at random. The General Science Exam was conducted on the third day of the Mathematics Exam. The teacher and the educational instructor assessed together the responses of the pupils. The results obtained were tabulated as shown in Table (5). These results indicated that healthy pupils were superior in their educational achievement, where about 40.35% of them had obtained excellent scores for the mathematics test and 46.49% of them received the same grade in the General Sciences course test. These scores for both tests ranged from 17 to 20.

Also when comparing the results of the mathematics and general sciences tests, for healthy, overweight, and underweight pupils, It turns out that the percentage of achievement in an excellent degree in mathematics was 40.35%, 29.03%, and 18.75%, respectively, while the general sciences test was 46.49%, 38.71%, and 18.75%, respectively.

Table (5) Estimate the educational attainment of students in mathematics and general science courses

Pupil's body status	Mathematics course Degrees			General Science Course Degrees		
	Exam degree	Repetition	Percentages	Exam degree	Repetition	Percentages
Healthy body	17 - 20	46	40.35	17 - 20	53	46.49
	15 - 16	51	44.74	15 - 16	50	43.86
	14 - 13	17	14.91	14 - 13	11	9.65
Over weight	17 - 20	9	29.03	17 - 20	12	38.71
	15 - 16	17	54.83	15 - 16	16	51.61
	14 - 13	5	16.13	14 - 13	3	9.68
At risk Overweight	17 - 20	4	14.29	17 - 20	6	21.43
	15 - 16	13	46.43	15 - 16	10	35.71
	14 - 13	11	39.29	14 - 13	12	42.86
Underweight	17 - 20	3	18.75	17 - 20	3	18.75
	15 - 16	8	50	15 - 16	7	43.75
	14 - 13	5	31.25	14 - 13	6	37.50

Conclusions and recommendation

Lifestyle behaviors and body weight status are closely related to the student's academic performance. Promoting compliance with healthy lifestyle recommendations can improve health and educational outcomes for schoolchildren. Students in the sixth and seventh years of basic school education are at the beginning of adolescence, so good nutrition systems must be followed to meet their needs of nutrients, and the following recommendations may be useful:

- One of the main avenues that schools can use to positively affect health is also one most directly in line with every school's mission: educating students. Nutrition and physical activity lessons.
- Schools can also promote health outside of the classroom, by surrounding students with opportunities to eat healthy and stay active. To improve nutrition, schools can include healthier food offerings in the cafeteria and eliminate the marketing of unhealthy foods.
- Emphasize the consumption of fewer livestock, poultry and more fresh seafood.
- Recommend mixed -vegetable dishes. leafy vegetables could be cooked with other food.
- Recommend yogurt and milk at breakfast or any milk products.

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