

Assessment of Nutritional Status among Preparatory School Girls in Talkha City

Abd El-Rahman, S. I. & Aly Hassan S. A. & EL-Bastawesy S.I
Community health nursing faculty of nursing zagazig university-Egypt.

ABSTRACT

Background: Adolescence is the period of transition from childhood to adulthood, and it occupies a crucial position in the human life. Nutrition for adolescents is important in which there was found changes in growth and hormones, activity, and food intake.

The objective of the work: was to assess the nutritional status of preparatory school girls in Talkha city.

Patients and methods: a descriptive cross-sectional study on a group of 500 students from the second and third year of the preparatory school girls at Talkha City in Dakahlia governorate, the tools used: 1- A self-administered questionnaire for assessing socio-demographic characteristics of students, anthropometric measurements included weight and height, nutritional health problems, assessing dietary knowledge, and eating habits. 2 - An observational checklist to observe signs of malnutrition for the students.

Results: majority of students, girls aged from 13- 14 years old and their mothers were house wife (69.6% & 77.3%), Only less than half studied sample has correct knowledge about the balanced diet, the components of healthy diet, and the effect of healthy balanced diet on individual's health (34.6% & 20% & 78.4%) respectively. Majority of students prefer eating food during watching TV., eating spices and salty food, and eating much candies (76.2% & 74.6% & 73.6%) respectively. The most common health problems were headache, GIT problems and dental decay respectively. **Conclusion:** only one quarter of the studied sample had correct and complete answers about balanced diet. The present study recommended that, health education for nutrition and healthy balanced diet should be integrated in the curriculum of preparatory school girls. Nurses and medical staff must play a significant role in screening, teaching, and guiding of adolescents about healthy balanced diet.

Key words: Nutrition- health problem- adolescent- malnutrition.

Introduction

Nutrition is one of the most important single factors for the health of the individual or the community, and is consequently a fundamental issue in modern public health⁽¹⁾. Optimal health is found in good nutrition. So that eating the right kinds and amount of food with good dietary habits throughout the entire life cycle means healthier bodies and minds, greater vitality and energy, greater resistance to diseases, efficiency and happiness⁽²⁾.

Nutrition is an essential component of total adolescence health care. Changes occurring during adolescence can cause a crisis in the nutritional needs. Eating habits may change from regular meals prepared at home to irregular meals, skipped meals, nutrition, poor snacks and fast food meals. Healthy eating is associated with reduced risk for many diseases, including several of the leading causes of death: heart disease, cancer, stroke, and diabetes.⁽³⁾

Healthy eating in childhood and adolescence is important for proper growth and development and can prevent health problems such as obesity, dental caries, iron deficiency, and osteoporosis^(1,2).

Adolescents have been found to have the highest prevalence of any age group of an unsatisfactory nutritional status⁽³⁾.

Adolescent girls are particularly vulnerable to malnutrition because they are growing faster than at any time after their first year of life. They need protein, iron, and other micronutrients to support the adolescent growth spurt and meet the body's increased demand for iron during menstruation. Adolescents who become pregnant are at greater risk of various complications since they may not yet have finished growing⁽⁴⁾. Most adolescents consider themselves to be generally healthy.

However, in Egypt, studies reveal a number of widespread health problems among boys and

girls aged between 10 and 19. Malnutrition is a serious problem, with the result that one half of adolescents suffer from anemia, while 17 percent are below average height because of inadequate diet, also, Parasitic infections are another risk, with more than one half of adolescents suffering from intestinal parasites⁽⁵⁾. Nurses can play a vital role in planning policies at the local and national level that support and encourage healthy food environments. It is time for nurses to take the lead in efforts aimed at improving the quality of students' dietary intake in the school⁽⁶⁾. One of the roles of community health nurse is the management and education to the promotion of health among adolescents, Nutrition education involves a combination of activities, including the provision of information, increasing the students' knowledge on why specific foods and behaviors are beneficial, influencing their attitudes and beliefs, helping them to develop personal skills, and motivating them to adopt healthy eating practices.⁽⁷⁾

Nutritional assessment is an essential part of a complete health appraisal, and the aim of the present study is to identify the impact of dietary knowledge and habits among preparatory school girls on their nutritional health status.

Significance of the study:

Adolescent girls need access to information and services related to nutrition, reproductive health, family planning, and general health. Schools can be a key part of helping adolescent girls to become healthy adults. Research shows that promoting female education and literacy can improve nutrition and encourage females to seek regular health care so; it is beneficial to look at how adolescents think about nutrition and how it influences their lifestyle choices.

Aim of the study: was to assess the nutritional status of preparatory school girls in Talkha city in Dakahlia governorate. **The objectives:** 1- assess preparatory school girl's knowledge about components of adequate diet. 2- determine the dietary habits of school girls and 3- assess nutritional status.

Subject and methods
1- Study design: descriptive cross-section design was used to carry out this study.

Setting: this study was conducted at general preparatory school girls in Talkha city in

Dakahlia governorate. Three schools are selected randomly.

Subjects:

The total second and third year students in three schools were 1073 distributed as the follows: Talkha preparatory school girls 514, Meet Anter preparatory school girls 423, and Shernkash preparatory school girls 136 students.

A total sample size: of 500 students determined by soft- war Epi-inf version 6 according to the following equation: $S = \frac{Z-Z_p}{1-D-D}$

Tools of data collection:-

Three types of data collection tools have been used to fit this study which is:

1- Questionnaire interview sheet (Appendix 1):- it aims to collect data about:

A- Student's Socio-demographic data such as: age, residence, birth order, parents educational level, family size ...etc, and socio-economic class. It was modified after, **Fahmy and El-Sharbinny model**⁽⁸⁾. Validity and reliability of the model obtained from expertise's, and pilot study on 30 students.

B- Twenty six questions constructed by the researcher depending on literature review, it was formed of multiple choice question regarding to the main food groups, balanced diet, sources and importance of essential diet elements and definition of ideal body weight. The maximum knowledge score was 30, the general dietary knowledge classified into two groups: Satisfactory knowledge if score $\geq 50\%$ of maximum score and unsatisfactory if $< 50\%$.

C- Fourteen questions; determined the dietary habits, it was based on modified model proposed by Nour- El-Din⁽⁹⁾: included question answered as "yes" or "no" and covered number and regularity of meals, snacks, components of meals, spices, sweets, and candies, and influence of psychological state on appetite.

For each yes answer one point was granted to sum up to a maximum score 14 points. The dietary habits rating scales as in Nour- El-Din model⁽⁹⁾, founded no, very good and good categories, regarding our sample, total habits categories was modified in form of healthy habits if score $\geq 50\%$, and unhealthy if $< 50\%$.

3- Clinical Assessment sheet (Appendix 11): it covered:

1- Student's weight and height measurement: was obtained and their body

Mass index calculated ,according to Garraw⁽¹⁰⁾,as the following equation :BMI=weight \(\text{height})^2 in meters and categorized depending on Malina &Kaatazmarzyk⁽¹¹⁾ who stated that ,obesity in adult and adolescents as the following :

< 18.5 considered underweight,
18.5-24.5 normal weight.
25-29.5 overweight and ≥ 30 obese.

2-Examination :-each students was examined by the researcher to observe malnutrition signs in hair, face ,nail, lips, tongue ,gum ,skin and teeth ,adapted from Dudek⁽¹²⁾ .Malnutrition sings were categorized as good or healthy nutritional status if $\geq 50\%$ of maximum score and poor or unhealthy nutritional status if $< 50\%$.

11-Operational design:

In this design, the pilot study and field work were done as follows.

A pilot study was carried out after the development and modification of tools and before starting data collection. It was done on 30 students from the studied schools. Individual meeting was conducted for each one who participated in the pilot study, necessary modification and clarification of questionnaire sheet was done.

Field Work: The study was conducted during the period from March to the end of June 2008.

111-Adminstreative design:

An official permeation was obtained from the manger of security department in the Ministry of Education, other one obtained from the educational region in Talky city .All ethical issues were considered during all phases of the study.

1V-Statistical analysis:

All data coded, entered and analyzed by using SpSS ,(Statistical program version 10,which applied for frequency tables ,Chi-square to detect the relations between the variables ,

$$\text{Chi -Square test } X^2 = \frac{(O - E)^2}{E}$$

E

ii-E= expected.⁽¹³⁾

Results:

The studied sample aged from 13- 14 years old and their mothers were house wife, and more

than half of them came from large family size and, rural area, and less than half of them belonged to low socio-economic. As regard educational level of the parents, more than one third of their fathers and one quarter of their mothers were highly educated ,**Table (1)**.

However, only less than half of studied sample has correct knowledge about the balanced diet, the components of healthy diet, and the effect of healthy balanced diet on individual's health. However, the majority of students 53.6% knowing the sources of food rich in Carbohydrates, and 58.4% gave correct answers about the effect of CHO deficiency on health. While more than three quarter of them (79.4%) mentioned correctly sources of food rich in fat. As regard vitamins, three quarter of the students gave correct answer about sources of food rich in vitamins, and half of them mentioned correct answers about the importance of vitamin A, and gave correct answers about sources of food rich in Iron, **table (2)**

Regarding the prevalence of unhealthy habits, the majority of studied sample prefer eating food during watching TV., eating spices and salty food, and eating much candies. (76.2% &74.6%& 73.6%) respectively. On the other hand, some of them reported that they drank water during meal, eating between meals, and drink tea immediately after meal (69.2% & 57.2% &36.8%) respectively. Table (3)

As regard studied sample habits and socio-demographic characteristics nearly quarter of the studied sample who practice unhealthy habits belonged to low and middle- social classes (21.7% & 25.4%), and they were from rural areas (25.2%). As regard mother's education about one quarter of the students who practice unhealthy habits their mothers were illiterate and house wives, compared to 16% of highly educated mothers. **Table (4)**

However, more than one quarter of the studied sample is over- Weight (27.2%) and the minority of them is under weight and obese (4.6% & 4.2% respectively). **Figure (1)**.

i-Observed Regarding Observed Signs of Malnutrition and Social Class of the Studied Sample nearly half of the students who suffer from unhealthy hair belonged to middle and low social class (48.1% & 44.8%) respectively, however more than half of the students who suffer from dental decay

present among nearly or above half of the studied students belonged to the low-social class (50.2%, 48,6%, 54,1%)respectively). **Table (5)** Lastly, the most common health problems reported by the studied students were headache, GIT problems and dental decay respectively. **Figure (2).****DISCUSSION** Adolescents are tomorrow's adults, and 85% of them live in developing countries ⁽¹⁴⁾. Adolescence marks as an important time in the process of human development, the passage between childhood and adulthood. It is a time of tremendous opportunity and promise, when young people begin to explore their burgeoning individuality and independence and begin to think critically about themselves and the world around them ⁽¹⁵⁾. Healthy eating in childhood and adolescence is important for proper growth and development and can prevent health problems such as obesity, dental caries, iron deficiency, and osteoporosis. ^(14, 16)

The present study revealed that more than three quarter of the studied sample had un-correct knowledge about healthy nutrition, this result is attributed to lack of knowledge they had, due to inefficiency of the implemented health education program about nutrition for this age of adolescents by health authority which either deficient or unsuitable. This finding is in agreement with **Abd-Elaziz & Abd El-Rahman** ^(17,18) who stated that high proportion of adolescent girls had poor dietary knowledge, and this finding might be due to lack of interest toward this area of knowledge, and absence of nutritional knowledge in their school curricula.

The current study showed that two third of the studied sample mentioned incorrectly answers about the components of balanced diet, and the majority of them report wrong answers about the effect of healthy balanced diet on individual's health, the sources of food rich in vitamins A & D, and its importance to health. Also lack of dietary knowledge and the knowledge about the consequences of malnutrition among future mothers was studied in Poland by **Kozłowska et al.** ⁽¹⁹⁾, they find that the majority of girls didn't have adequate knowledge about the influence of diet and nutrition during puberty and childbearing period on the development of their future fetus.

The current study found that most of the studied students who had good dietary knowledge were belonged to high social class and live in urban areas. These results may attribute to the availability of different kinds of mass media as T.V., journals, and internet, which help them to know more about healthy diet. Also parent's education, socio- economic level was directly affecting the student's lifestyle.

The current study revealed that one quarter of the subjects who practice unhealthy dietary habits belonged to low and middle social class, came from rural areas, their mothers were illiterate and were house wives. These results supported the view of **Koura** ⁽²⁰⁾ who stated that, parent's education, occupation, and their socio- economic standard, all of these factors can help in control the unhealthy dietary habits among their children. Also poor girl's knowledge about the sources of food rich in iron, especially those belonged to low social class and lives in rural areas, may play an important role when explaining why anemia particularly iron deficiency anemia more prevalent among Egyptian adolescent's girls more than boys **NSEA** ⁽²¹⁾.

Regular breakfast eating (RBE) has been identified as an important factor in nutrition, especially during growth. Eating breakfast regularly is also an important contributor to a healthy lifestyle and health status. **Chen et al.** ⁽²²⁾, found that there were significant relationships between skipping breakfast, and depressive symptoms, stress, catching cold, chronic disease, and high body mass index (BMI) in adolescents. Also, irregular breakfast eating (IRBE) had a significant negative association with quality of life among Japanese school children. Also some studies have shown that earlier menarche or dysmenorrheal is more common in girls with IRBE than in girls with RBE⁽²³⁾.

Rampersaud et al. ⁽²⁴⁾ mentioned that lack of breakfast has been implicated as a contributor to poor school performances: e.g. lower attendance rate; lower scores on math, English, social study and science; impaired short- term memory, problem solving skills and mental performance; and lower class rank. However, one third of studied girls skipped their breakfast, because they afraid of obesity, or have no time and hurry

to go to school, low socio- economic level, have no appetite, in addition their mothers not keen about breakfast. This result comes in agreement with the study conducted in Swede by **Vagstrand et al.** ⁽²⁵⁾ who reported that adolescents' females were more likely than males to skip breakfast and lunch, and the two major reasons for skipping breakfast were a lack of time in the morning, and not being hungry.

Regarding to snacks , three quarter of the studied subjects were preferring eat spices and salty foods, and consuming much candies (as chips, forkoa louz, crunches, nuts. ..), and more than half of them consuming snacks regularly.

It may be attributed to the fact of influence of mass media, which conveys massages to consume these things, particularly different types of chocolate, and chips. This result comes in agreement with the study conducted by **Abd-El mesieh**⁽²⁶⁾ who found that nearly all girls in his study consumed snacks regularly. On the same line a recent study conducted in Australia by **Gayle et al.**⁽²⁷⁾ who assessed the association of snacking in different contexts with the skipping of meals, found that adolescents who frequently snacked on the run, on the way to or from school, all day long, or in the middle of the night were more likely to skip meals. However, the higher reported frequency of snacking among girls while hanging out with friends and while doing homework or watching T.V may reflect the greater time girls spend with their friends and watching T.V.

The present study showed that, more than three quarter of the studied sample preferring eating food while watching TV. This result goes with a study conducted in Australia by **Kylie et al.**⁽²⁸⁾ who found that, television viewing and electronic game use are prevalent pastime for preparatory school children which become more prevalent as the children get older. These pastimes appear to be associated with overweight and may represent a useful means of assessing the risk of overweight in clinical practice.

According to the present study finding, more than one third of preparatory school girls drinking tea immediately after meal and taking daily soft drinks (cola, bebsi..), and half of them did not take all their three meals regularly. It may be due to the prevalence of private

lessons after school day, which considers the most important factor for success in our society. Drinking sugar-sweetened beverages can result in weight gain, overweight, and obesity.⁽¹⁴⁾

At the same line **Council of Economic Advisor**⁽²⁹⁾, showed that the major reasons cited by adolescents for not having family meals included busy parents, dissatisfaction with family relations, dislike of food served at home, and socializing with friends. Also, this result agrees with **Spear** ⁽³⁰⁾ who stated that teens often perceive themselves as too busy to worry about food, nutrition, meal planning, and eating right. In contradiction with **Lytle & etial** ⁽³¹⁾ who observed that, adolescents tend to consume inadequate amounts of fruits and vegetables, whole grains, calcium containing food and iron. The current study showed that the majority of the studied sample prefers eating fruits and Vegetables. It may be related to that more than half of the studied samples were from rural areas, and nearly half of them belonged to low social class, so they tend to replace their demands by eating fresh vegetables and fruits which may be cheapest than other types of foods.

WHO ⁽³²⁾ reported that, malnutrition is a broad term referring to any type of disorders in the nutritional status of the individual, and the most nutritional disorders prevalent among adolescents are under- nutrition in terms of stunting or thinness, over-nutrition (overweight and obesity)and micro- nutrients deficiency in form of iron deficiency, iodine deficiency, dental caries, and zinc deficiency. Eating disorders usually begin early in life, the period between 14-18 years old is the riskiest and by age 20, fully 86% of people with eating disorders have already experienced symptoms.

Studying the relationship of overweight indicated that one quarter of the studied sample were overweight, and more than half of them came from rural areas, their mothers were illiterate and belonged to low social class. It may be due to poor nutrition, a sedentary lifestyle, less likely to eat the recommended daily amount of fruits, vegetables, and whole grains, and are more likely to consume high amounts of fat, candies (chips, nuts, crunches, and chocolates), soft drinks; they also are less likely to be physically active and more likely to watch television while eating.

Concerning to underweight the current study showed that the minority of the students were under weight, it might be due to low income, faulty dietary habits as skipping breakfast, and eat three meals irregularly. The present study finding agree with **Reedy et al.**⁽³³⁾ who referred to some groups of adolescents who are at risk for reduced energy and food intake especially whom live with low income families, and those run away from home, so this lead to under-nutrition. Similar finding were reported by **NSEA**⁽²¹⁾ which reported that the Egyptian adolescents survey found under-nutrition, over-nutrition, micro-nutrients deficiency especially iron, calcium, and iodine were the most nutritional disorders among them.

Adolescent girls in rural areas could be at great risk of nutritional stress because of early marriage and early conception before completion of their physical growth. Also, this result attributed to cultural attitudes toward overweight which may be more accepting especially in low-social group; calorie- dense foods are often cheap, satisfying.

Recent studies suggest that many adolescents have diets that do not meet current recommendations for foods or nutrients. **Brady et al.**⁽³⁴⁾ revealed that 1% or fewer of adolescents meet all of the recommendations for food group intake according to the recommendations of the Food Guide Pyramid (FGP).

Furthermore, with urbanization and modernization trends that typically reduce physical activity, excessive soft drinks and snacks consumption and also family eating pattern and lack of positive model play critical role^(32,33). Concerning underweight, teenage girls tend to eat less, as they are concerned about their weight, and the changes in fatty tissue increase this concern. Thus, they also may consume a diet deficient in nutrients. With the beginning of the menstrual cycle, there are greater demands for iron and other nutrients as well.

A recent study conducted in Washington by **Suitor & Gleason**⁽³⁵⁾ reported that the risk of inadequacy for vitamin E, foliate, phosphorus, magnesium, and calcium was substantial among children aged 6–18 years.

Another study conducted by **NSEA**⁽²¹⁾ found the nutrition related deficiencies among Egyptian adolescents such as thinness, and anemia are associated with a number of factors including residence in rural areas where the majority of population working in agriculture, and have low income, in addition there is still a high prevalence of illiteracy and traditional beliefs.

Concerning to signs of poor nutrition status, the current study revealed that, nearly half of the students from rural areas suffering from unhealthy hair (easily falling hair) and the minority of them suffering from acne spots and pallor face. It may be a result of many causes but the most important one is regarding to the fact of adolescents usually reduce their intake from vitamins particularly A and C, also minerals particularly iron, and calcium, and excess intake of sweets and snacks. Also the adolescent girls prefer starchy foods and carbohydrates as bread, macron, and potatoes rather than food rich in protein as meat, fish, milk, and milk products.

The present study finding agrees with **Heiba et al**⁽³⁶⁾ who found good proportion of adolescent girls who had malnutrition sings regarding to face, hair, and nails signs. Another study conducted by **Beegum**⁽³⁷⁾ showed the same finding, it was observed that good proportion of adolescent girls were had malnutrition particularly regarding to pallor skin, underweight, and minerals and vitamins deficiency. Also, the current study found that more than half of the students who are from urban areas suffer from dental decay. It may be due to excess carbohydrates consumption, daily soft drinks, eating much sweets, and ignorance of milk intake by those girls.

At the same line, a study done in Zagazig city by **Abd-Elaziz**⁽¹⁷⁾ who found that good proportion of the studied sample has easily falling hair, gum bleeding, pallor skin, and dental caries.

Teenagers need to realize the importance of good nutrition, which can help a great deal in promoting nice-looking skin and general good looks. Dental caries are more common in adolescence, probably due to hormonal changes, a poor diet high in refined sugars, and mineral deficiencies. A more wholesome diet along with regular brushing and flossing will also promote healthy teeth⁽³⁸⁾.

As regard nutritional health problems, the present study showed that the most common health problems reported by the studied students were headache, gastrointestinal problems and dental decay, which considered signs of malnutrition, and revealed that those students received unbalanced diet.

Concerning, GIT problems it may be due to skipping breakfast, taking much sweets and candies, irregular taking daily three meals, also it may be as a result of stress and emotional changes occurred for those adolescent students at this stage of life. These findings are in accordance with **Staley** ⁽³⁹⁾ who have found that constipation, anorexia, dyspepsia, and distention are the most frequent problems among adolescent students.

On the other hand, **WHO** ⁽⁴⁰⁾ reported that the most common complaints among Egyptian adolescents were common cough and cold followed by gastrointestinal problems.

On the other hand, the current study found that more than two third of studied students who came from rural areas suffering from parasitic diseases and headache, it may be due to lack of food practice hygiene among rural people, also ,they have illiterate mothers and belonged to low social class.

These results are in agreement with **Rai et al.** ⁽⁴¹⁾ who found that the higher prevalence of parasitic infection present among those belonged to low social class and having illiterate mothers, and added that highly educated and working mothers give mothers opportunity to frequently change knowledge and practice about good healthy nutritional and hygienic habits.

Also at the same line **Abu Mourad** ⁽⁴²⁾ reported that poor socio-economic status, environmental health, and hygiene practice play a major role in the occurrence of intestinal parasites and diarrhea.

CONCLUSION:

We could conclude from this study that nearly three quarter of the studied sample had unsatisfactory level of knowledge about healthy nutrition .Regarding to unhealthy dietary habits, (76.2%) of the students prefer eating food during watching TV., (74.6%) eating spices and salty food, and(73.6%)eating much candies. The majority of the students did not drink milk regularly and half of them did not take all their three meals regularly. Concerning to healthy dietary habits, (89%) of the students prefer eating fruits and vegetables, two third of them eating their breakfast. However, more than half of them taking sandwiches at school. One quarter of the studied sample is over-Weight and practice unhealthy habits, also , their mothers were illiterate and house wives , belonged to low and middle social classes .

The majority of the students who came from rural areas and belonged to middle and low social class suffering from unhealthy hair (easily falling hair) and dental decay present among nearly or above half of the studied students regardless to low social class .The most common health problems reported by the studied students were headache, GIT problems and dental decay respectively.

This study recommended that: Schools should implement programs to increase sound information, habits, and values concerning nutrition health problems resulting from insufficient diet. Nurses and medical staff must play a significant role in screening, teaching, and guiding of adolescents about healthy balanced diet. School health team should organize mother class to improve the dietary knowledge of student's mothers, teach them how to accommodate their budget and eat balanced diet, also how to organize the time for their daughters to avoid busy time which prevent the consumption of healthy diet. Support the subject of home economy at school to learn girls practically how to prepare balanced meals contain all food elements.

RESULTS:

Table (1): Distribution of Preparatory School Students According to their Socio-Demographic characteristics (n= 500)

Items	No	%
<u>Age in years:</u>		
- 13- 14	348	69.6%
- 15- 16	152	30.4%
<u>Birth order:</u>		
- Alone	154	30.8%
- 1 st	236	47.2%
- 2 nd or more	110	22%
<u>Family size:</u>		
- 2	5	1%
- 4	205	41%
- > 4	290	58%
<u>Father 's education:</u>		
- Illiterate or read & write	136	27.2%
- Elementary	182	36.4%
- University	182	36.4%
<u>Mother's education:</u>		
- Illiterate or read & write	182	36.4%
- Elementary	193	38.6%
- University	125	25%
<u>Mother's work:</u>		
- House wife	387	77.3%
- working	113	22.7%
<u>Residence of students:</u>		
- Rural	290	58%
- Urban	210	42%
<u>Social class :</u>		
- Low	221	44.2
- Middle	181	36.2
- High	98	19.6

Table (2): Distribution of the Students According to their Correct Dietary Knowledge (n= 500)

Knowledge about	No	%
Components of healthy diet	173	34.6
Definition of healthy balanced diet	382	76.4
Effect of healthy balanced diet on individual's health:	100	20
1- Protein:-		
- Sources of food rich in Protein:	392	78.4
- Importance of protein	270	54
- Effect of protein deficiency on health	389	77.8
2- Carbohydrates:-		
- Sources of food rich in CHO	268	53.6
- Importance of CHO	223	44.6
- Effect of CHO deficiency on health	292	58.4
3- Fat:-		
- Sources of food rich in fat	397	79.4
- Importance of Fat	217	43.4
4- Vitamins:-		
- Sources of food rich in Vitamins(fresh vegetables &fruits)	385	77
- Sources of food rich in vitamin A	80	16
- Importance of vitamin A	217	54.2
- Effect of vitamin A deficiency on health	42	8.4
- Sources of food rich in vitamin D	114	22.8
- Importance of vitamin D	93	18.6
- Effect of vitamin D deficiency on health	111	22.2
- Sources of food rich in Iron	324	64.8

Table (3): Distribution of Students according to their Unhealthy Dietary Habits (n= 500).

Unhealthy habits items	No	%
Preferring eating food while watching T.V	381	76.2
Preferring spices and salty foods	373	74.6
Taking much candies	368	73.6
Drinking water during meal	346	69.2
Eating between meals	286	57.2
Drinking tea immediately after meal	184	36.8
Daily soft drinks	187	37.4

Table (4): The Relation between Some Socio-Demographic Characteristics of the Studied Subjects and their Dietary Habits (n= 500)

Habits Socio-demographic Characteristics	Healthy Habits		Unhealthy Habits		X2	P-Value
	No	%	No	%		
Social class :-						
- Low	173	78.3	48	21.7	2.449	0.294
- Middle	135	74.6	46	25.4		
- High	81	82.7	17	17.3		
Residence:-						
- Rural	217	74.8	73	25.2	3.532	0.060
- Urban	172	81.9	38	18.1		
Mother's education:-						
- Illiterate or R&W	139	76.4	43	23.6	3.793	0.150
- Elementary	145	75.1	48	24.9		
-University	105	84	20	16		
Mother's work:-						
- House wife	94	76.2	19	23.8	2.452	0.117
- Working	295	83.2	92	16.8		

Figure (1): Body mass index of the studied sample

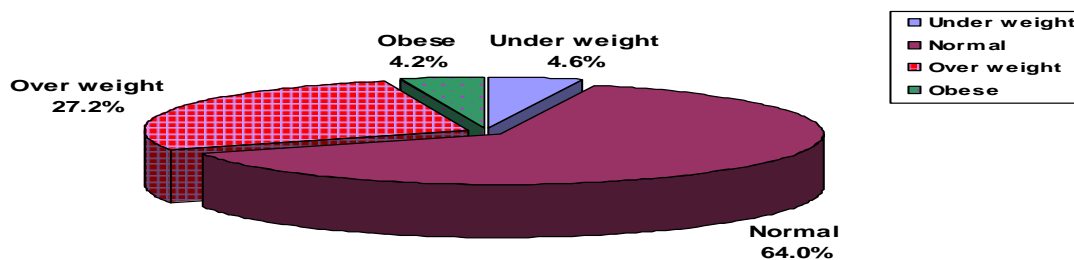


Figure (1): Body mass index of the studied sample:

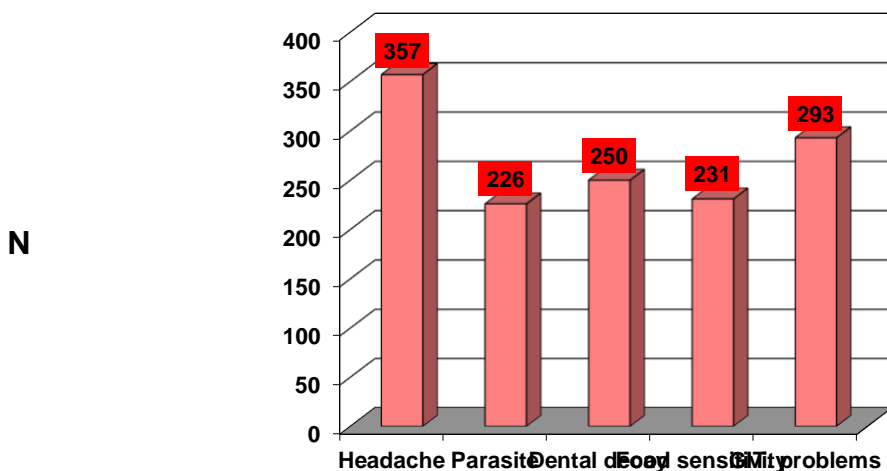
Figure (1) indicated that more than one quarter of the studied sample are over- Weight (27.2%) and the minority of them are under weight and obese (4.6% & 4.2% respectively).

Table (5): The Relationship between Observed Signs of Malnutrition and Social Class of the Studied Sample (n= 500).

social class observational site	Low N0= 221		Middle No=181		High No=98		X2	P - value
	No	%	N0	%	No	%		
<u>Appearance:-</u> Healthy.	221	100	181	100	98	100	-	-
<u>Skin (color &smooth):-</u> Healthy.	221	100	181	100	98	100	-	-
<u>Hair (Strength &Scalp):-</u> Healthy. Unhealthy:	122 99	55.2 44.8	94 87	51.9 48.1	61 37	62.2 37.8	2.742	.254
<u>Face(color &skin moisture):-</u> Healthy. Unhealthy.	208 13	94.1 5.9	176 5	97.2 2.8	97 1	99.0 1.0	5.226	.073
<u>Eyes(Vision during night):-</u> Healthy. Unhealthy.	198 23	89.6 10.4	159 22	87.8 12.2	85 13	86.7 13.3	.626	.731
<u>Lips: color:</u> Healthy. Unhealthy.	221 0	100 0	180 1	99.4 .6	98 0	100 0	.776	.414
<u>Smooth & moisture:-</u> Healthy. Unhealthy.	220 1	99.5 .5	181 0	100 0	98 0	100 0	.265	.531
<u>Tongue (color &surface):-</u> Healthy. Unhealthy.	221 0	100 0	181 0	100 0	97 1	99 1	4.110	.128
<u>Teeth: Complete:</u> Healthy. Unhealthy.	221 9	95.9 4.1	172 9	95 5	98 0	100 0	4.748	.091
<u>Bleeding:-</u> Healthy. Unhealthy.	221 0	100 0	181 0	100 0	97 1	99 1	4.110	.128
<u>Color changes & dental decay:-</u> Healthy. Unhealthy.	110 111	49.8 50.2	93 88	51.4 48.6	45 53	45.9 54.1	.764	.683
<u>Nails: color:-</u> Healthy. Unhealthy.	220 1	99.5 .5	181 0	100 0	98 0	100 0	1.265	.531
<u>Shape &Strength:-</u> Healthy. Unhealthy.	217 4	98.2 1.8	172 9	95 5	97 1	99 1	5.075	.079

Figure (2): Common health problems among the studied sample.

Figure (2) displayed that the most common health problems reported by the studied students were headache, GIT problems and dental decay respectively.



References:

1. **Tulchinsky T H, Varavikova EA (2000):** The New public health. New York: A Harcourt Science and Techno Co., pp. 337-338, 401-42.
2. **Dietary Guidelines Advisory Committee (2010):** Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, to the Secretary of Agriculture and the Secretary of Health and Human Services. Washington, DC: U.S. Department of Agriculture.
3. **Polnay L (2002):** Community pediatrics, 3rd ed., New York: Mosby Co., p. 381.
4. **Justin C K ,Oladapo A , and Ladipo (2000):** "Nutrition and Obstructed Labor," American Journal of Clinical Nutrition, 72 (1): 291S-97S.
5. **UNICEF Egypt (2004):** Report about the Egyptian adolescents, Located at [http:// www. Google.com](http://www.Google.com).
6. **Malone SK (2005):** Improving the Quality of Students Dietary Intake in the School Sitting, The Journal of School Nursing, 21(2): 70-76.
7. **Downie J (2001):** The everyday realities of the multi- dimensional role of the high school community nurse. Australian Journal of Advanced Nursing, 19(3): 13.
8. **Fahmy SI, El-Sherbini AF(1988):** Determining simple parameters for social classification for health research. The Bulletin of the High Institute of Public Health.;13:95–108.
9. **Nour-El-Din E (2001):** Biochemistry for medical students, (4thedition): Synopsis of nutrition. Faculty of Medicine. Zagazig University. P 76-77.
10. **Garrow J (1980):** Treat obesity seriously: a clinical manual. Churchill & Livingstone, Edinburgh. UK.
11. **Malina R, & Kaatzmarzyk P (1999):** Validity of the Body Mass Index as an indicator of the risk and presence of overweight in adolescents. American Journal of Clinical Nutrition. 70: 131-136.
12. **Dudek SG (2001):** Nutrition Essentials for nursing practice, New York: McGraw-Hill Lippincott , Co., 4th ed., pp. 201-215.
- 13- **Dean AG, Dean JA, CoulombierD, and Brndel KA (1994):** Epi- info version 6: a ward process: data base and statistics program for epidemiology on micro – computer. CDC, Atlanta. Georgia. USA.
- 14- **Senderowit Z (1995): Adolescent health:** reassessing the passage to adulthood. World Bank Discussion Paper No. 272, Washington, D.C: World Bank,
15. **Nahar, Khuda B (2004):** reproductive health needs for adolescents in Bangladesh, A study report , Dhaka, International center of diarrheal disease Research, working paper; (2): 9-11.
- 16- **Elizabeth I, Ransom, and Leslie K (2008):** Nutrition of Women and Adolescent Girls Why It Matters - Population Reference Bureau.mht located at [http:// www. Google.com](http://www.Google.com).
- 17- **Abd El-Rahman SI (2005):** The Impact of Educational Program for Secondary School Girls in Zagazig City about some Aspects of Health Promotion and Protecting Life Style, Unpublished MD thesis Faculty of Nursing ,Zagazig University,PP.105- 118.
18. **Abd-Elaziz M (2005):** Assessment of nutritional status among secondary school girls in Zagazig City,

Unpublished M.Sc thesis Faculty of Nursing ,Zagazig University, PP. 57-66.

19.Kozłowska, W M ,and Wujee MM , (2003): Study about the consequences of malnutrition among future mothers in Poland, Unpublished M.Sc thesis, Powsinska: 61/63, [Article in Polish].

20.Koura SK (2003): Factors affecting nutritional status of adolescents 'State Of Art', Faculty of Medicine, Zagazig University, pp. 2-20.

21.National Longitudinal Study for Adolescents Health, (2000): Teens and their parents in the 21th century, An examination of trends in teen behavior and the role of parental involvement, Washington, Available at: <http://www.Whitehouse.gov/whl/new/html/teenconf.html>.

22.Chen X , Sekine M , Hamanishi S , Yamagami T, Kagamimori S(2005): Associations of lifestyle factors with quality of life (QOL) in Japanese children: a 3-year follow-up of the Toyama birth cohort study, Child Care Health and Development, Available at: www.nasn.org/Default.aspx?tabid 279. Accessed 2008 Oct.16.

23- Brady LM , Lindquist C , Herd SL ,and Goran MI (2002): Comparison of children's dietary intake patterns with US dietary guidelines. British Journal of Nutrition; 8(4): 361-367.

24.Rampersaud GC , Pereira MA , Girard BL, Adams J ,and Metz JD (2005): Breakfast habits, nutritional status, body weight, and academic performance in children and adolescents. J Am Diet Assoc;105:743-760.

25.Vagstrand K ,& Barkeling B ,& Forslund HB , &Elfhag K , Linne Y , Rössner S ,and Lindroos AK (2007): Eating habits in relation to body fatness and gender in adolescents - results from the 'SWEDES' study, European Journal of Clinical Nutrition;61:517-525.

26.Abd El- Messeih BB (2001): Evaluation of Health Education Program of a sample of secondary school girls in Mansoura City, Unpublished MD thesis Faculty of Medicine, Mansoura University, pp. 30-59.

27.Gayle S & MacFarlane & Kylie B , Anthony W , and David C (2007): Centre for Physical Activity and Nutrition Research, School of Exercise and Nutrition Sciences, Deakin University, Australia: Snacking behaviors of adolescents and their association with skipping meals.

28. Kylie H , Melissa W , and Elizabeth W. Florkin M (2007): Stability of television viewing and electronic game/computer use in a prospective cohort study of Australian children: relationship with body mass index, International Journal of Behavioral nutrition and physical activity, 4:60, Located at <http://www.Google.com>.

29. Council of Economic Advisors (2000): Available at <http://www.Whitehouse.Gov/whl/new/html/teenconf.htm/> Teens and their parents in the 21st century: An Examination of trends in teen behavior, and the role of parental involvement, Washington.

30. Spear BA (2002): Adolescents growth and development, Journal of the American Dietetic Association, March article.

31- Lytle LA , Seifert TS , Greenstein J , and McGovern p (2000): How do children's eating patterns and food choice change over time? Results from a Cohort Study, AM J. Health Promotion ,14: 222-228.

32. Messina, Virginia (2007) :"A New Food Guide: For North American Vegetarians". Can J Diet Pract Res 2007; (Dietitians of Canada): 82-86. Retrieved 2011-06-20.

33. WHO Expert Consultation, (2004): Appropriate body mass index for Asian Populations and its implications for policy and intervention strategies, Adolescence Journal, 363: 157-163.

34. Reedy J, Krebs-Smith SM (2010): Dietary sources of energy, solid fats, and added sugars among children and adolescents in the United States. J American Dietetic Association;110:1477-1484.

35. Insel P , Turner ER , and Ross D (2003): Discovering nutrition, Jones and Bartlett Publishers, Boston,p.597.

36. Brady LM , Lindquist C , Herd SL ,and Goran MI (2002): Comparison of children's dietary intake patterns with US dietary guidelines. British Journal of Nutrition; 8(4): 361-367.

37.Suitor CW , & Gleason PM (2002): Using Dietary Reference Intake-based methods to estimate the prevalence of inadequate nutrient intake among school-aged children. Journal of American Dietetic Association;102:530-536. doi: 10.1016/S0002-8223(02)90121-5.

38. Heiba SM , Kamel WW , Abd- Elrehim AE , and Abd-Allah ES (2003): The impact of dietary knowledge and habits on nutritional status and oxidative stress among adolescent school girls in Zagazig City, The new Egyptian Journal of medicine, 29 (6):301-311 .

39.Beegum MR (2001): Prevalence of malnutrition among adolescent girls A case study in Kalliyoor Panchayat, Thiruvananthapuram. [url: http://www.Krpedc.Org./Medicine](http://www.Krpedc.Org./Medicine), 29(6): 301-311.

40. Michelle L , Mannino, Y L , Diane C , M , Helen S ,W , and Leann L (2004): "The quality of girls' diets declines and tracks across middle childhood." The Pennsylvania State University, S-110 South Henderson, University Park, PA 16802, USA .

(2008) : "Nutritional Programs for Adolescence: located at <http://www.google.com>.

42. WHO (2000): Working with children: Module 3 understanding substance use, Geneva, Switzerland, 28-30 : 15-16.

43. Rai SK , Nakanishi M , and Upadhyay M P (2000): Effect of intestinal helminthes infection on relation and beta- carotene status among rural Nepalese, Nutr. RES., 20(1): 1.