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Prevalence of obesity among primary school children in el minea governorate

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ABSTRACT

Background: Obesity in childhood has significant impact on both physical and psychological health, overweight and obesity are associated with hyperlipidemia, Hypertension, abnormal glucose tolerance, and infertility. In Addition, psychological disorders such as depression occur with an increased frequency in obese children. **Purpose:** To determine prevalence of obesity in primary school children in Al Minea Governorate. **Material and methods:** a cross-sectional study was carried out on 1000 Egyptian children to calculate prevalence of overweight and obesity among primary school children at age of 6–12 years in the second semester of academic year 2015/2016. Nine schools from nine districts in Al Minea Governorate including both sexes were selected randomly in this study. Data were collected in form of anthropometric measurements including weight, height, waist circumference, and body mass index, to calculate percentile body mass index. **Results:** the prevalence of overweight and obesity is relatively high 429 (42.9%) distributed as 227(22.7%) overweight, 202(20.2%) obese underweight 15(105%), healthy 556(55.6%).the population divided into 3 age group according to their age (6-8),(8-10),(10-12)y. **Conclusion:** This study provides further evidence of the increasingly high burden of overweight and obesity among primary school children living Al Minea governorate in Egypt. Different strategies can be implanted through many approaches to outline some important targets for anticipatory guidance to prevent obesity.

Keywords: *obesity, ALMinea, prevalence.*

I.INTRUDUCTION

The increasing prevalence of childhood obesity has become a growing matter of public health concern worldwide. Obesity has increased from 4.2% in 1990 to 6.7%in 2010 worldwide and is expected to reach 9.1% in 2020.The risk is more for children in industrialized countries where the

prevalence has increased more than twice in the past three decades .In 2010, 43 million children were estimated to be obese worldwide, out of whom, 35 million (81.4%) were from developing

countries .The estimated prevalence of childhood obesity in Africa in 2010 was 8.5% and is expected to reach.7% in 2020.[(1)]

Obesity may be described as a physical condition characterized by excessive deposition or storage of fats in adipose tissues. Obesity usually results from consumption of foods in excess of physiological needs. It is a serious health hazard as the extra fat puts a strain on the heart, kidneys and liver as well as the large weight bearing joints such as the hips, knees and ankles, which ultimately shortens the life span. There is now growing realization that much adult obesity has its origin in infancy, childhood and adolescence. The prevention of obesity should there-fore begin in infancy. It is however, not necessary that fat babies become fat children, but obese five-years-old are more likely to become fat adolescents.[(2)]

In the current study body mass index (BMI) recommended as the preferred measure for evaluating obesity among children and adolescents 6 to 12 years of age. BMI expresses the weight-for-height relationship as a ratio, that is, weight (in kilograms)/[height (in meters)]2. Experts recommend BMI because it can be obtained easily, it is correlated strongly with body fat percentage (especially at extreme BMI levels), and it identifies the fattest individuals correctly, with acceptable accuracy at the upper end of the distribution (eg, ≥85th or ≥95th percentile for age and gender).[(3)]

Purpose of the study: To determine prevalence of obesity among primary school children in Al Minea Government.

Significance of the study: With the increasing body of evidence that childhood obesity often persist through adulthood and higher possibility of lifestyle modification in children as opposed to adults, interventions aiming at modifying risk factors to prevent childhood obesity should be a top priority. It is imperative to understand the prevalence and determinants of childhood obesity in order to develop effective preventive strategies. [(4)]

There is no previous study about prevalence of obesity in upper- Egypt. Overweight and obesity in childhood have significant impact on both physical and psychological health, Overweight and obesity are associated with hyperlipidemia, Hypertension, abnormal glucose tolerance, and infertility. In Addition, psychological disorders such as depression occur with an increased frequency in obese children**.** [(5)]

II. Subjects, material and methods

I-Subjects: students aged 6-12 years old with a total number of 1000 students of both sexes included in the study.

The subjects were selected with the following Criteria: Students in regular governmental and private school selected randomly form different area of Al Minea governorate .The age of student range between 6 and 12 years old. Both genders have been participated in this study.

II- Material:

Weight scale: Soehnle, Qualitskontrolle 406, made in Germany.

Metallic meter scale: measuring *Height* to the nearest 0.5 cm.

BMI: **Calculating body mass index by dividing weight in kg by square height in meters.**

$$BMI = weight\ (kg) / height\ (m)^2$$

III-Methods:

Sampling size: Based on previous reports about the prevalence of obesity among children in Egypt , prevalence ranging from 5% to 15% is mentioned by **Galal**[6][7].this equation will be used to determine the sample size assuming 15% obesity, over weight with a confidence level of 95% and maximum marginal error of about 0.04.

$$N = \frac{Z^2 x P x q}{E^2}$$

Where N= sample size.

Z= 1.96

P = proportion of population affected.

q = 1- P

E= standard error.

The sample size was calculated to be 306 but we collect data from 1000 child

Sampling technique:

A multistage random sampling technique used to select the sample. In this type of sampling we combined more than one sampling technique. First, a cluster sample was taken by choosing one single school from each of the 9 districts of El Minea government inside each school. Pupils chosen out of different school grade strata by selecting the students sitting in the middle three desks from each row of all classes of the whole school. The size of primary student population with age ranging from 6 to 12 years is about 70000 students. The total number of governmental and private schools in Al Minea Government (110) distributed over the 9 districts the schools classified according to their districts locality. Then each one of these schools had a number. The different numbers written on pieces of papers, these pieces were put in 9 different bags and 9 different numbers were randomly chosen one from each bag. It consists of 1000 students covering the districts. Permission obtained from heads of educational directorates**.** The study was conducted during the second term of the academic year 2015-2016.

Procedures:

The study conducted in school going children aged 6-12 years studying in different schools of different areas in Al Minea governorate. A total of 1000

students selected through multistage random sampling technique first taking permission from the head of the selected schools and verbal permission from selected student .

Students were weighed to the nearest one kg, lightly dressed and barefooted. Standing height was measured to the nearest one cm, with shoes off, feet together and head in horizontal plane. [8]

The body mass index (BMI) was calculated from a person's weight in kilograms and height in meters (kg/m2). Percentile body mass index was obtained by plotting BMI against standard percentile Egyptian curves for each sex overweight was defined as BMI more than 85th and less than 95th percentile for age and sex, and obesity was defined as BMI more than 95th percentile for age and sex compared to standard Egyptian growth charts instructed by the faculty of medicine Cairo University and National Research Center. [5]

Statistical analysis: statistical analysis of the data including data coding, entry, sorting and statistical manipulations were performed. The collected data were tabulated and analyzed statistically using SPSS program version (20) the association between waist circumference and PBMI has been done by using Spearman product-moment correlation coefficient in order to determine if there is any significant relation. The level of significance was ($P<0.05$).

III.RESULTS

The present study (cross section survey) was carried out in schools from different area in El Minea governorate The study conducted at the second semester of the academic 2015-2016 year It involved 1000 primary school students, both sexes were selected through multistage random sampling technique, age ranged between 6 to 12 years old.

Demographic characteristics of participants

Age ,weight, height, body mass index (BMI),Percentile body mass index (PBMI).participant was $8.5^{\pm}1.9$ years with range from 6 to 12 years, for height the mean value $112^{\pm}28$ cm range from 115 to 144, for weight the mean value was $32^{\pm}15$ kg range from 22 to 98,for body mass index the mean value 25.7 $^{\pm}$ 1.4 range from 13 to 26,for percentile body mass index (PBMI) the mean value was $74^{\pm}22$ range from 5 to 99.

Table(1) demographic characteristics of the participants (1000) student.

Maximum	Minimum	SD	Mean	
12	6	1.9	8.5	**Age (y)**
98	22	15	32	**Weight(kg)**
144	115	28	112	**Height(cm)**

26	13	1.4	20.7	**BMI**
99	5	22	74	**PBMI**

This study revealed that the overall prevalence of obesity was 429 (42.9%) distributed as 227 (22.7%) overweight and 202 (20.2%) obese, underweight 15(1.5%), healthy 556(55.6%). As shown in table (2) and figure (1).

table (2) distribution of number and percentage of ,healthy, overweight,obese and underweight.

%	Count	
55.6	556	**Healthy**
20.2	202	**Obese**
22.7	227	**Over weight**
1.5	15	**Under weight**

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Fig (1)Distribution of number and percentage of healthy, overweight, obese and underweight children.

groups were distributed according to population divided in to 3 age The Age group I ranged from (6 to less than 8 .age) into three groups) their group II ranged from (8 to less than 10years), and group III age,(years ranged from (10 to less than 12 years). The percent of frequency

83 there were at age group I distribution of PBMI at each group showed there were, 43 (12.9%) ,As well .overweight, and 55 (16.3%) obese(%24.8) overweight, and 98(29.3%) obese at group II. Additionally, there were, 101 group III, as shown in age (30.2%) overweight, and 49 (14.7%) obese at .(table (3

IV.DISCUSION

The important finding of our study is the high prevalence of overweight and obesity among the primary school children at EL Minea governorate (42.9%) distributed as 227 (22.7%) overweight and 202 (20.2%) obese which clearly shows that the childhood obesity epidemic is becoming evident in our country and this suggest that Egypt is in a state of increasing childhood overweight and obesity as different countries because of lifestyle changes. Obesity in childhood and adolescence has adverse consequences on premature mortality and physical morbidity in adult hood and is associated with impaired health during childhood itself. Once obesity is established in children it is hard to reverse. Monitoring the prevalence of obesity in order to plan services for the provision of care and to access the impact of policy initiatives is essential. [(9)]

The current study revealed that there are changes in the pattern of the 50th percentile of BMI charts regarding the different age groups. This may reflect and could be explained by the changes in growth rates and growth spurt among different age groups. These results were also confirmed by others. **(10)**

The problem of underweight is no longer the most prevalent nutritional problem in children in Upper Egypt as previously stated by the National Nutrition Institute (2000), reported underweight is more prevalent in Cairo and Alexandria and rarely found in Upper Egypt. Underweight prevalence in El Minea governorate is (1.5%). the of that The problem of overweight and obesity seems to be more prevalent than the problem of underweight in Upper Egypt especially in El Minea governorate (42.9%).

Comparison with deferent governorate in Egypt, These results of prevelace of obesity amoge primary school children in El Minea governorate (42.9%) agree with **Ezzat**[(11)] **,**who found that among primary school children at EL Qalubia Governorate, Egypt, the prevalence of obesity was 57.8% distributed as 37.4% overweight and 20.4% obese. On the contrary similar study conducted in Damanhur city in El-Behera governorate, Egypt, revealed that the overall prevalence of overweight was 17.2% and that of obesity was 19.8% with a total of 37%. This difference in rates and the time gap between the two studies may reflect the steady

rapid increase of the prevalence of obesity due to the rapid social changes in the Egyptian community.

Those results are similar to the result of **Khalifa**[12] who found that among primary school childern at EL-SHARQIA governorate – KAFR SAQR district that the overall prevalence of obesity was 58.6% distributed as 34.2% overweight and 24.4% obese.

V. CONCLUSION

This study provides further evidence of the increasingly high prevalence of overweight and obesity among primary school children living El Minea governorate in Egypt. Different strategies can be implanted through many approaches to outline some important targets for anticipatory guidance to prevent obesity. The prevalence of overweight and obesity is high 429 (42.9%) distributed as 227 (22.7%) overweight and 202 (20.2%) obese. Obesity is more prevalent among (8 <10 years) age group.

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