

Impact of Obesity in School Age of Late Childhood in Helwan Governorate

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ABSTRACT

Background: Childhood obesity is an emerging global public health challenge because of the great increase in the prevalence of obesity among children and adolescents in all parts of the world. In Egypt, the prevalence of obesity among children and adolescent was 14.7 %and 15.08 %for males and females respectively. In addition, the incidence of overweight and obesity among children is slowly becoming a world-wide problem in developed and developing countries .There is no doubt that the percentages are even greater nowadays because of physical inactivity and westernization in diet. In all times and in all cases, prevention is better than cure. So, health care providers need to take a proactive role when treating children and focus on prevention of obesity rather than waiting until the condition exists. **Aim of study:** is to assess life style habits which lead to obesity for school age children and evaluate its effect on puberty in school age children. **Method:** This is a descriptive research design; it was carried out in Ezbet Elwalda in Helwan governorate. Subjects were all obese students and accepted to participate in the study from both sexes, aged 10-12 years old (late childhood stage), 13-17 years old (the adolescent stage) and Marley juvenile diabetes were excluded and their total number was 216. The researchers utilized self administered interview sheet which included the following , personal information, eating habits, life style pattern and gender puberty and physical assessment (height , weight & BMI). All data collected from first of March to the end of April 2010. **Results:** The majority of studied sample had boys, their numbers was 138 from 216 student. The majority of studied sample were prefer to eat fast food on weekly basis (41.7%), drink beverage and eat candy (70.8%), take snacks between meals (52.8%) as ice cream in (66.7%) and eat potato chips (60.2%). Three quarter of obese sample had not seeking medical advice and 71.4 % were physically inactivity. All obese girls had pubic hair, armpit hair, developed nipple of the breast and 40 % of them started menarche at eleven years old. Otherwise there is no significant relation between overweight and obese boys regarding developed testes, emergence of armpit hair, developed growth hand and foot, masculine voice. **Recommendation:** Health care providers need to play a preventive role when treating children and focus on prevention of obesity rather than wait until the condition exists. Also, referring client to an experienced registered dietitian to obtain a full nutritional assessment for the child and family.

Key word: obese, overweight, BMI

INTRODUCTION

Childhood obesity is an emerging global public health challenge because of the great increase in the prevalence of obesity among children and adolescents in all parts of the world. There is no doubt that the percentages are even greater nowadays because of physical inactivity and westernization in diet⁽¹⁾.

World Health Organization estimated that, the number of overweight and obese people worldwide will increase to 1.5 billion by 2015 if current trends continue. In addition, overweight and obesity place a large public health burden on society⁽²⁾. Other researchers said that, there has been a worldwide increase in obesity among people of all ages. As many as 250 million people, or about 7 %of the current world population, are obese⁽³⁾. In Egypt, the prevalence of obesity among children and adolescent was 14.7 %and 15.08 %for males and females respectively⁽⁴⁾. In addition, the incidence of overweight and obesity among children is slowly becoming a world-wide problem in developed and developing countries⁽⁵⁾.

Obesity is a state of malnutrition in which there is excessive accumulation of depot fats such that functioning is disturbed⁽⁶⁾. Also, obese and overweight are often used interchangeably, overweight is preferred to reference children whose excess body weight poses medical risk⁽⁷⁾. However, overweight and obesity are not mutually exclusive, since obese persons are also overweight⁽⁸⁾. The longer the child has been overweight, the more likely that this state will continue into adulthood.

Many assert that obesity is multidimensional. Childhood obesity is seen as resulting from a combination of family, social, and individual experiences that interact and impact one another⁽⁶⁾. There is not one single cause of childhood overweight, rather it is a complex interaction of many variables. Contributing factors include genetics, behavior, environment, and certain socio-demographics⁽⁷⁾. Overweight children and adolescents are at increased risk for several health complications. They are more likely to exhibit risk factors for cardiovascular disease (CVD), high blood pressure, high cholesterol, dyslipidemia, and type 2 diabetes mellitus compared with normal weight individuals. In addition, health complications associated with overweight children include sleep apnea, asthma, and liver damage. Further, childhood overweight has psychological and emotional consequences. Overweight children are at an increased risk of teasing and bullying, low self-esteem, and poor body image⁽⁹⁾.

Also, overweight girls tend to enter puberty early, overweight and obese boys may begin puberty later than thin boys. Most research has focused on obese girls, who appear to reach puberty earlier than slim girls⁽¹⁰⁾. Delayed puberty in boys may be yet another consequence of the childhood obesity epidemic. Puberty for boys typically begins about age 10, but for those at the top of the body mass index charts, the earliest changes of puberty may not begin until age 11 and a half or later⁽¹¹⁾.

Health care providers need to take a proactive role when treating children

and focus on prevention of obesity rather than waiting until the condition exists. The prevention and treatment of childhood obesity is the responsibility of several bodies, such as schools, parents, and school nurses. Good prenatal support, such as healthy food, regular checkups, avoiding excessive maternal weight increase, controlling sugar intake, and offering nutrition education can play a significant role in preventing children from becoming overweight⁽¹²⁾. Other ways of preventing childhood obesity are to avoid fast food, and unhealthy snacks between meals. Encouraging school age children to do exercise to prevent them from becoming obese in the future is also important. In all times and in all cases, prevention is better than cure⁽¹³⁾.

Aim of the study:

The aim of the present study is to assess life style habits which lead to obesity and evaluate its effect on puberty in school age children.

Hypothesis:

We hypothesized that obesity may have direct or indirect effect on delay puberty in boys and early in girls.

Methodology

The research design:

An exploratory descriptive research design was used in carrying out the study.

The research setting :

This study was carried out in five schools at Ezbet Elwalda in Helwan governorate. This is a slums area with large number of population covered by three primary schools and two preparatory schools, the total numbers

of pupils in those schools are 6424; the previous data comes from Ministry of Education.

Subjects:

All obese students in the previously mentioned settings accepted to participate in the study and were available at the time of data collection. Students from both sexes, aged 10-12 years old (late childhood stage), 13-17 years old (the adolescent stage) and Marley juvenile diabetes were excluded.

Sample:

A purposive sample totaled 216 students was picked up by utilizing the non probability sampling technique. The students were chosen from the five schools. Those schools were Osama Ben Zaid primary school =1192, Asmae Bent Abo Baker primary school = 1823, Nagieb Mahfouze primary school =1191, Ezbet Elwalda preparatory boys = 1202 and Ezbet Elwalda preparatory girls = 1016. The criteria of selection excluded all students with juvenile diabetes. Students who appeared to be overweight or obese were chosen.

Tools:

A self administered interview sheet was designed; validated and utilized by the researchers to collect the necessary data. It entailed the following items:

- Personal information of students such as age, sex, grade, parents' education and occupation ...etc.
- Eating habits included questions about preference to eat fast food, take soft drink with food, eat chocolate and delights or candy daily, eat potato chips, and ice creametc.

- Life style pattern of students included questions about physical activity, eating prior to sleep, eating outside home, eating in front of TV, time spent in front of TV, computer or play stationetc.
 - Students medical complains included questions about suffering from respiratory problems, depression, low self esteem , isolation, pain, visits to health care units , seeking health advice from school nurse ,..... etc. .
 - Family history of obesity, hypertension, heart disease, diabetes or thyroid disturbance.
 - Gender puberty includes questions about breast emergence, pubic hair, and preparation for this period and so on.
 - Student awareness of obesity and puberty such as definition, signs and symptoms, risk factors and preventive methods....etc.
 - Physical assessment sheet included measuring weight, height and BMI calculation.
- Field work:**
- Official letters from the Faculty of nursing , Helwan University were forward to the Ministry of Education to obtain their permission to visit the schools
 - A pilot study was carried out on 10 students from Nagib Mahfouze primary school to test clarity and applicability of the tools
 - Tools were reviewed by experts in the different fields of nursing and medicine
 - Appropriate study modifications were done prior to data collection for the actual study
 - Official letters were available with the approval of the Ministry of Education addressing the directors of the schools. Each director was informed about the time and date of data collection
 - Each student was interviewed individually after explaining the purpose and method of the study and obtaining his or her approval to participate in the study with confidentiality.
 - Each student was examined to assess his or her height by tape and weight by bath scale.
 - Each interview took approximately 10-15 minutes to complete the study tools depending upon the understanding and response of the students .Data were collected during the period from first of March to the end of April 2010
 - Body mass index (BMI) was calculated as weight in kilograms divided by the square of height in meter and determine if the student is overweight or obese , the CDC and international obesity task force standards for BMI were used . Students with a BMI of 25.00 – 29.00 were considered as overweight while those with BMI \geq 30.00 were classified as obese.
 - A scoring system measuring awareness regarding both obesity and puberty based on literature was adopted. 75 % or more correct answers were given good credit, 50% - 75% were given satisfactory credit, and less than 50 % were given a weak credit.

- Instructional handouts were developed by the researchers in simple Arabic language to explain the meaning of obesity, puberty, risk factors from obesity and healthy life style pattern to decrease obesity.

Statistical analysis of data:

After data were collected, they were coded and transferred into specially design format to be suitable for computer feeding. The statistical package for social science (SPSS version 12) was utilized for data analysis and tabulation. All the entered data were manually verified for the errors, Mean, Stander deviation, Chi square, fisher exact test were used. The 0.05 was used as the cut of value for statistical significance references.

RESULTS

Table 1: display the socio demographic characteristics of

students. The age of the majority of studied sample (77.7 %) ranged 13-17 years old in adolescent stage. The majority of them were students in preparatory school.

The table also, showed a significant relation between girls and boys students in age, academic achievement, mother education and occupation, family income, and how near schools from their homes.

This table indicated that the majority of students father occupation was employee (47.2 %) also 38.9 % father educational level was read and write.

It also showed that the majority of mothers were house wives (86.1%). Illiterate mothers constituted the highest percentage (40.3%). In addition, family income (65.3 %) had not satisfactory. Regarding means of transportation for going to schools, 73.6 % of students go to school by walking.

Table (1): Distribution of studied sample according to their socio demographic characteristics (n =216)

Characteristics	Girls (N=78)		Boys (N=138)		Total (N=216)		P-value
	No	%	No	%	No	%	
Age in year:							
(10-12 years old) late childhood stage	21	26.9	27	19.6	38	33.3	0.002
(13-17 years old) the adolescent stage	57	73.1	111	80.4	168	77.7	
$\mu \pm SD$	13.115 \pm 1.127		13.587 \pm 1.299				
Student graduation :							
Primary school	33	42.3	15	10.9	48	22.2	0.000
Preparatory school	45	57.7	123	89.1	169	77.8	
Father occupation:							
Employee	30	38.5	72	52.2	102	47.2	0.020
Worker	12	15.4	27	19.6	39	18.1	
Self employed	27	34.6	21	15.2	48	22.2	
Died	6	7.7	9	6.5	15	6.9	
Others*	3	3.8	9	6.5	12	5.6	
Father education:							
Illiterate	15	19.2	30	21.7	45	20.8	0.412
Read & write	36	46.2	48	34.8	84	38.9	
Secondary	18	23.1	42	30.4	60	27.8	
University	9	11.5	18	13	27	12.5	
Mother occupation:							
House wife	66	84.6	120	87	186	86.1	0.003
Employed	12	15.4	15	10.8	27	12.5	
Died	0	0	3	2.2	3	1.4	
Mother education:							
Illiterate	18	23.1	69	50	87	40.3	0.001
Read & write	39	50	36	26.1	75	34.7	
Secondary	12	15.4	21	15.2	33	15.3	
University	9	11.9	12	8.7	21	9.7	
Family income :							
Satisfactory	37	47.4	38	27.5	75	34.7	0.001
Not satisfactory	41	52.6	100	72.5	141	65.3	
School close to their home:							
Yes	39	50	114	82.6	153	70.8	0.000
Way to go to school :							
By walking	51	65.4	108	78.3	159	73.6	0.117
By car	21	26.9	24	17.4	45	20.8	
By underground train	6	7.7	6	4.3	12	5.6	

*father traveled

Table 2: demonstrated that the majority of studied sample prefer to eat fast food on weekly basis (41.7%), drink beverage and eat candy (70.8 %), take snacks between meals (52.8 %) as ice cream in (66.7 %) and eat potato chips (60.2 %).

This table showed a significant relation between girls and boys students in relation to chew well, prefer to eat ice cream constantly, prefer to eat junk food and prefer whole milk and diary products.

Table (2): Distribution of studied sample according to their eating habits (n =216)

Habits	Girls (N=78)		Boys (N=138)		Total (N=216)		P-value
	No	%	No	%	No	%	
Prefer to eat fast food on weekly basis:							
	36	46.2	54	39.1	90	41.7	0.194
Prefer home made meals:							
	65	83.3	120	87	185	85.6	0.68
Have breakfast before going to schools :							
	39	50	45	32.6	84	38.9	0.009
Prefer home made sandwich :							
	28	35.9	45	32.6	73	33.8	0.413
Prefer to drink fruit juice concentrated constantly :							
	45	57.7	78	56.5	123	56.9	0.491
Prefer to have soft drink with food :							
	33	42.3	72	52.2	105	48.6	0.105
Prefer to eat chocolate and candy daily :							
	51	65.4	69	50	120	55.6	0.20
Eat potatoes chips on daily basis :							
	43	55.1	87	63	130	60.2	0.141
Chew well :							
	72	92.3	105	76.1	177	81.9	0.002
Take snacks between meals:							
	45	57.7	69	50	114	52.8	0.172
Prefer whole milk and diary products :							
	69	88.5	93	67.4	162	75	0.000
Prefer to eat junk food :							
	27	34.6	75	54.3	102	47.2	0.005
Prefer to eat ice cream constantly:							
	39	50	105	76.1	144	66.7	0.000
Drink beverage and eat candy:							
	57	73.1	96	69.6	153	70.8	0.350
Prefer fresh fruit & vegetables:							
	45	57.7	96	69.6	141	65.3	0.054
Preferred type of food content :							
Carbohydrate	27	34.6	36	26.1	63	29.2	0.007
Protein	30	38.5	72	52.2	102	47.2	
Sugar	9	11.5	15	10.9	24	11.1	
Fat	6	7.7	12	8.7	18	8.3	
Salt	6	7.7	3	2.2	9	4.2	

Table 3: This table showed a significant relation between girls and boys students in relation to their life style pattern as performs physical activity, play sports in schools quotas for games, and prefer to ride a bike, -----etc.

11.5 % of girls in studied sample showed low performing family physical activity and appear to demonstrate significant degree of inactivity.

There was no significant relation between girls and boys in relation to time spent in front of TV and have meals prior to sleeps.

Table (3): Distribution of studied sample according to their life style Pattern (n =216)

Pattern	Girls (N=78)		Boys (N=138)		Total (N=216)		P-value
	No	%	No	%	No	%	
Perform physical activity :							
	9	11.5	69	50	78	36.1	0.000
Have meals prior to sleep:							
	42	53.8	54	39.1	96	44.4	0.026
Prefer eating outside home:							
	15	19.2	42	30.4	57	26.4	0.50
Eat in front of TV :							
	54	69.2	96	69.6	150	69.4	0.539
Sleeping too much :							
	36	46.2	45	32.6	81	37.5	0.34
Having TV in bedrooms:							
	24	30.8	33	23.9	57	26.4	0.174
Family sports activity :							
	9	11.5	45	32.6	54	25	0.000
Family encouragement to sport activity:							
	24	30.8	99	71.7	123	56.9	0.000
Participate in sports :							
	3	3.8	45	32.6	48	22.2	0.000
Play sports in schools quotas for games:							
	15	19.2	87	63	102	47.2	0.000
Prefer to ride a bike:							
	12	15.4	81	58.7	93	43.1	0.000
Like to run continuously:							
	27	34.6	81	58.7	108	50	0.001

Table 4: showed significant relation between overweight and obese students in relation to their life style pattern such as sibling numbers, time spent in front of TV or computer or play station and sleeping hours per day. In addition to, prefer to eat chocolate, candy, potato chips and junk food.

Most of obese sample watch TV more than 1 hours a day and spent more than 2 hours per day in front of computer or play station (39.3%) & (60.6 %) respectively. Otherwise, three quarter of obese sample had not seeking medical advice and 71.4 % were physically inactive.

Table (4): Distribution of over weight and obese student according to their life style

	Over weight		Obese		Normal weight		Total		p-value
	N=87	%	N=84	%	N=45	%	N=216	%	
Number of siblings:									
1	6	6.9	3	3.6	0	0	9	4.2	0.000
2-3	24	27.6	33	39.3	21	46.7	78	36.1	
4-9	57	85.5	48	57.1	24	53.3	129	59.7	
Time spent in front of computer or play station:									
1h/day	33	37.9	30	35.7	18	40	78	37.5	0.000
2h/day	36	41.4	51	60.6	21	46.7	108	50	
3-4h/day	18	20.7	3	3.6	6	13.3	27	12.5	
Time spent in front of TV.:									
1 h	33	37.9	33	39.3	21	46.7	87	40.3	0.000
2h/day	18	20.7	27	32.1	6	13.3	51	23.6	
3-4 h	21	24.1	9	10.7	12	26.7	42	19.4	
More 4h	15	17.2	15	17.9	6	13.3	36	16.7	
Number of sleep hours per day:									
8 h or less	45	57.7	39	46.4	24	53.3	108	50	0.000
More than 8h	42	48.3	45	53.6	21	46.7	108	50	
Seeking medical advice:									
No	72	82.8	63	75	39	86.7	174	80.6	0.223
Physical inactivity:									
	54	62.1	60	71.4	24	53.3	138	63.9	0.006
Have soft drink with food:									
	36	41.4	48	57.1	21	46.7	105	48.6	0.114
Eat potato chips:									
	54	62.1	39	46.4	36	80	129	59.7	0.001
Eat in front of TV:									
	60	69	54	64.3	36	80	150	69.4	0.180
Prefer to eat chocolate and candy:									
	51	58.6	54	64.3	15	33.3	120	55.6	0.003
Have meals prior to sleep:									
	30	34.5	45	53.6	21	46.7	96	44.4	0.040
Prefer to eat junk food:									
	33	37.9	45	53.6	24	53.3	102	47.2	0.000
Type of preferred food content :									
Carbohydrate	21	24.1	24	28.6	18	40	63	29.2	0.000
Protein	48	55.2	36	42.9	18	40	102	47.2	
Sugar	9	10.3	15	17.9	0	0	24	11.1	
Fat	3	3.4	6	7.1	9	20	18	8.3	
Salt	6	2.3	3	1.7	0	0	9	4.2	

Table 5: showed a significant relation between girls and boys students in relation to their medical complains such as respiratory problems.

Regarding childhood medical complains less than half of girls suffer from respiratory problems , low self esteem , isolation from their friends, because musculoskeletal problems (46.2 %), (42.3 %), (30.8 %) and (46.2%) respectively.

Otherwise, the majority of medical complains among boys were depression, low self esteem because musculoskeletal problems (37 %), (32.6 %) and (43.5 %).

This table showed a significant relation between girls and boys students in relation to their medical complains as visit health care unit for follow up.

Table (5): Distribution of the studied sample by sex according to their Complains

Complains	Girls (N=78)		Boys (N=138)		Total (N=216)		P-value
	No	%	No	%	No	%	
Suffer from any disease :							
	3	3.8	30	21.7	33	15.3	0.000
Suffer from respiratory problems:							
	36	46.2	33	23.9	69	31.9	0.001
Suffer from behavioral problems:							
	24	30.8	33	23.9	57	26.4	0.174
Suffer from depression:							
	18	23.1	51	37	69	31.9	0.024
Suffer from low self esteem:							
	33	42.3	45	32.6	78	36.1	0.101
Suffer from isolation from friends:							
	24	30.8	30	21.7	54	25	0.087
Suffer from joint pain:							
	36	46.2	60	43.5	96	44.4	0.406
Visit health care unit for follow up:							
	6	7.7	36	26.1	42	19.4	0.001

Table 6: Correlation was done between some diseases as hypertension, heart disease and obesity among family members related to family history. The correlation revealed that there was no significant relation between family member suffering from obesity, high blood pressure and other chronic diseases as heart disease and diabetes mellitus.

More than half of studied sample (53.8 %) of girls had their family members suffer from obesity.

Table (6): Distribution of the studied sample according to family history

Family history	Girls (N=78)		Boys (N=138)		Total (N=216)		P-value
	No	%	No	%	No	%	
Having family members suffering from obesity:							
	42	53.8	90	65.2	132	61.1	0.067
Having family members suffer from high blood pressure:							
	36	46.2	75	54.3	111	51.4	0.155
Having family members suffer from heart disease:							
	6	7.7	15	10.9	21	9.7	0.307
Having family members suffers from diabetes mellitus :							
	24	30.8	45	32.6	69	31.9	0.452
Having family members suffers from thyroid problems :							
	6	7.7	30	21.7	36	16.7	0.005

Table 7: showed that the most of signs and symptoms of puberty appeared in obese girls than overweight and decreased in normal weight girls.

All obese girls appear had pubic hair, armpit hair, developed nipple of the breast and 40 % of them started menarche at eleven years old.

This table showed a significant relation between over weight and obese girls in relation to emergence of armpit hair, developed nipple of the breast and menarche. Regarding mother as source of confidence 88.9 % of overweight and 50 % of obese showed trusted to their daughter.

Table (7): Distribution of over weight and obese student girls according to early puberty

	Over weight		Obese		Normal weight		Total		p-value
	N=27	%	N=30	%	N=21	%	N=78	%	
Having breast emergence :									
	27	34.6	30	38.5	21	26.9	78	100	
Appearance of pubic hair :									
	27	100	30	100	15	71.4	72	92.3	0.000
Emergence of armpit hair:									
	21	77.8	30	100	15	71.4	66	84.6	0.003
Developed nipple of breast:									
	21	77.8	30	100	15	71.4	66	84.6	0.003
Increase of height :									
	18	66.7	27	90	15	71.4	60	76.9	0.056
Mother orientation of girl for puberty:									
	21	77.8	24	80	9	42.9	54	69.2	0.009
Menstruating :									
	24	88.9	24	80	12	57.1	60	76.9	0.031
Time of menarche :									
None	3	11.1	6	20	9	42.9	18	23	0.000
10 th y	3	11.1	0	0	0	0	3	3.8	
11 th y	9	33.3	12	40	6	28.6	27	34.6	
12 th y	6	22.2	6	20	0	0	12	15.4	
13 th y	6	22.2	6	20	6	28.6	18	23.1	
Mother as source of confidence :									
	24	88.9	15	50	15	71.4	54	69.2	0.006

Table 8: illustrated that there is no significant relation between over weight and obese boys regarding developed testes, emergence of armpit hair, developed growth of hand and foot, masculine voice.

As regarding awareness of puberty, 95 % of overweight and 88.9 % of obese showed diminished role of family versus friends and school mates.

Table (8): Distribution of over weight and obese student boys according to late puberty

	Over weight		Obese		Normal weight		Total		p-value
	N=60	%	N=54	%	N=24	%	N=138	%	
Testicular development:									
	21	35	12	22.2	9	37.5	42	30.4	0.045
Appearance of pubic hair:									
	42	70	21	38.9	6	25	69	50	0.000
Emergence of armpit hair:									
	27	45	12	22.2	6	25	45	32.6	0.012
Development of hand and foot :									
	27	45	15	27.8	9	37.5	51	37	0.044
Change to masculine voice:									
	27	45	18	33.3	3	12.5	48	34.8	0.012
Appearance of face and chest hair:									
	18	30	0	0	3	12.5	21	15.2	0.000
Seeking advice awareness of puberty signs:									
	9	15	9	16.7	3	12.5	21	15.2	0.139
Source of confidence:									
Parent	3	5	6	11.2	6	25	15	10.8	0.065
Friends	57	95	48	88.9	18	75	123	89.2	
Avoid cigarettes smoking:									
	51	85	45	83.3	24	100	120	87	0.109

Table 9: concerning awareness of obesity, the majority of students (73.6 %) had good score in relation, how to prevent obesity and nearly one quarter of studied sample had awareness of the drawbacks of obesity on scholastic achievement and their health (37.5 %& 38.9 % respectively).

Table (9): Distribution of studied sample from over weight and obese Students according to their good knowledge

	Over weight		Obese		Normal weight		Total		p-value
	N=87	%	N=84	%	N=45	%	N=216	%	
Know about obesity:									
	42	48.3	60	71.4	24	53.3	126	58.3	0.007
Know about signs an symptoms of obesity:									
	45	51.7	51	60.7	27	60	123	56.9	0.444
Know about risk of obesity:									
	48	55.2	54	64.3	27	60	129	59.7	0.47
Know about how to prevent obesity:									
	72	82.8	60	71.4	27	60	159	73.6	0.016
Know about puberty:									
	45	51.7	45	53.6	21	46.7	111	51.4	0.754
Know about puberty signs:									
	22	31	27	32.1	3	6.7	57	26.4	0.003
Know about obesity affect on their sleep:									
	36	41.4	27	32.1	27	60	90	41.7	0.009
Know about obesity & overweight drawbacks on scholastic achievement:									
	24	27.6	45	53.6	12	26.7	81	37.5	0.001
Know about obesity affect on their health:									
	27	31	39	46.4	18	40	84	38.9	0.117

DISCUSSION

Obesity is the consequence of a long-term imbalance between energy intake and energy expenditure, determined by food intake and physical activity and influenced by biological and environmental factors. Potential risk factors for obesity in early life include genetic, physical, lifestyle, and environmental conditions⁽¹⁴⁾.

Nestle, (2006)⁽¹⁵⁾ stated that ; since the late 1976 to 2000, obesity rates have more than doubled among American children 6 to 11 years of age and more than tripled among those 12 to 19 years of age. Our study also confirmed this finding where the majority of studied sample ranged from 13-17 years old in adolescent stage.

Dyer, and Elliott, (1989)⁽¹⁶⁾ stated" Unfortunately overweight and obesity are especially evident in some minority groups, as well as in those with lower incomes and less education". Our study also showed that the majority of students fathers occupation was employee, more than one third of fathers had educational level of just read and write. In addition, the majority of mothers were house wives and illiterate.

Also, the researchers in *Parliamentary Office of Science and Technology (2003)*⁽¹⁷⁾ mentioned that one of the risk factors associated with obesity and overweight is low socio-economic grouping. This fact is supported by *Kimbro, et al. (2007)*⁽¹⁸⁾ who mentioned that race, poverty, geography, and lower access to health care, all of which added to increased

risk of obesity for children affected by any of these variables.

Regarding their eating habits the majority of the studied sample preferred to eat fast food on weekly basis, drink beverage and eat candy, take snacks between meals as ice cream and potato chips. This was supported by finding of *Davis, (2002)*⁽¹⁹⁾ who mentioned that increased the snacking and meal skipping have coincided with increased overweight rates ,poverty, lack of health insurance, national advertising, and social norms are also problems that contribute to the overweight epidemic. Also, *Horton, (2008)*⁽²⁰⁾ reported that many of lady's children have more calories than whole needed in accordance of their physical activity, thus leading to an increase in body weight .

The study showed significant relation between overweight and obesity among girls and boys students of sedentary life style pattern .This finding is supported in the literature . As stated in the literature review : participating in physical activity is important for children and teens as it may have beneficial effects on bodyweight⁽²¹⁾. This also was supported by the finding of the researchers in *Center for Health Improvement (2009)*⁽²²⁾ who mentioned that poor nutrition and physical inactivity are responsible for 28% of preventable deaths in children.

These findings are in accordance with a study that was carried out on the role of TV viewing among obese patients by *Kuczmarski, et al., (1997)*⁽²³⁾. The results showed that TV time and snacking in front of the TV was positively correlated with

increased weight. Patients who viewed were heavier, had greater waist circumference, more total and abdominal fat, more snacks and had less physical activity when compared to those who spend less time watching television.

Regarding medical complaints the American Obesity Association has identified many adverse health effects associated with overweight and obese children and adolescents. Along with an increase in morbidity and mortality later in life, childhood obesity is positively associated with asthma, type 2 diabetes, hypertension, orthopedic complications, psychosocial effects and stigma, and sleep apnea. Also, The Center for Disease Control and Prevention reports 127 million spent on national hospital costs related to childhood obesity: a number that has tripled in the past 20 years⁽²⁴⁾. These findings also are documented by (Doak, & Visscher, (2006)⁽²⁵⁾ who mentioned that childhood obesity has an immediate impact on a child's physical appearance and can result in additional psycho-social consequences, such as low self-esteem, social alienation, and lack of self confidence.

Horton, (2008)⁽²⁰⁾ proved that obese children may also face psychological consequences. An overweight child may experience criticism from peers while finding it difficult to participate in age-related activities. Considering this fact, one can understand why psychological effects of childhood obesity are of concern.

McKenna, (2007)⁽²⁶⁾ proved that increased body fatness causes the early onset of puberty. In accordance

of the study findings, Wagerson, (2010)⁽²⁷⁾ mentioned that increasing rates of obese and overweight children may be contributing to a later onset of puberty in boys. In the present study it was found that there was a statistically significant relation between overweight and obesity in girls and appearance of signs and symptoms of puberty.

Concerning awareness of obesity, the present study showed that the majority of study sample had no awareness of obesity. However, it was found that nearly one quarter of studied sample were aware of the effects of obesity on scholastic achievement and health and how to prevent obesity.

The World Health Organization 2006 has made this problem a priority and is currently drawing up programs to improve the prevention and management of obesity among children and adults. The organization has recognized the impact of such problem on the future health as well as on the level of productivity and economic growth retardation of communities and nation⁽⁵⁾.

Conclusion:

Prevention of childhood obesity not is cost-effective than its treatment. An emphasis should be placed on changing the person's behavior through increased awareness and ongoing support of the family. The emphasis should be on identifying and discouraging bad food choices or eating habits and promoting regular physical activity habits.

Recommendations:

- Health care providers need to play a preventive role when treating children and focus on

prevention of obesity rather than wait until the condition exists.

- Regarding children identified as overweight or obese, health care providers should consider referral to an experienced registered dietitian to obtain a full nutritional assessment for the child and family.
- Tools to anticipate obesity and to identify the first signs of its presence (e.g., BMI plotting) should be used.
- Practical visual tools to educate and motivate families to change bad eating habit should be used .
- Schools are in the unique position to influence and improve child nutrition since most children spend a substantial portion of their time in school.
- An environment of support for healthy eating should be created by illustrating examples of healthy meals in the classroom, educating parents on healthy eating, and giving children adequate time to eat meals.

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تأثير السمنة في سن المدرسة على الاطفال في محافظة حلوان

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الهدف من البحث : استهدفت الدراسة تقييم عادات نمط الحياة التي تؤدي إلى البدانة للأطفال في سن الدراسة وتقييم تأثيرها على الأطفال في سن البلوغ في سن المدرسة.

العينة البحثية : شملت عينة الدراسة ٢١٦ (١٣٨ طالب و ٧٨ طالبة) يعشن في محافظة حلوان وقد تمت الدراسة في خمس مدارس بعزبة الوالدة وهي مدرسة اسامة بن زيد و اسماء بنت ابو بكر و نجيب محفوظ الابتدائية المشتركة و عزبة الوالدة الاعدادية بنين و بنات في الفترة من اول مارس إلى نهاية شهر ابريل ٢٠١٠ .

ادوات العينة : تم جمع بيانات هذه الدراسة من خلال المقابلة الشخصية مع الطلبة بواسطة الباحثين وذلك عن طريق استمارة استبيان لجمع البيانات الاتية :

المواصفات الشخصية للطلبة وعادات الاكل و نمط الحياة و شكوى الطلاب و تاريخهم العائلي للمعاناة من الامراض الى جانب بعض الاسئلة عن بداية البلوغ بالنسبة للولد و البنات مقارنة بالوزن و الطول لحساب معدل كتلة الجسم.

نتائج البحث :

- أظهرت نتائج هذه الدراسة إن معظم اهالي الطلبة من محدودى الدخل لانهم موظفين وغالبية الامهات ربات بيوت فى ٨٦.١% من إجمالي الأمهات اللاتي أجريت عليهن الدراسة وولدن في المنزل كانوا ربات بيوت ٢٧ و ٤٠% أميات.
 - أظهرت نتائج البحث أن ٤١.٧% من الطلبة يفضلوا اكل الوجبات السريعة اسبوعيا الى جانب اكل الحلوى و المشروبات بالإضافة إلى اكل الايس كريم ٦٦.٧% و اكل الشيبسى ٦٠.٢%.
 - أظهرت نتائج هذه الدراسة وجود دلالة احصائية بين الولاد و البنات فى نمط الحياة اليومي فى ممارسة الرياضة و الوقت المستغرق امام التلفزيون
 - أظهرت نتائج هذه الدراسة وجود علاقة ذات دلالة احصائية بين زيادة الوزن و السمنة بين الطلاب من خلال الوقت المستغرق امام التلفزيون و الكمبيوتر و عدد ساعات النوم الى جانب العلاقة المرتبطة بتفضيل اكل الشوكلاتة و الحلوى و الشيبسى مع عدم ممارسة الرياضة و الذهاب للمتابعة الطبية.
 - أوضحت نتائج الدراسة أن ٥٣.٨% من امهات البنات يعانين من السمنة.
 - أظهرت نتائج هذه الدراسة أن معظم البنات ظهرت عليهن علامات و مظاهر البلوغ فى سن مبكرة و ٨٨.٩% الام هي مصدر الثقة لابنتها بالرغم من تاخر مظاهر البلوغ عند الاولاد الى جانب عدم دور الاسرة لتجهيز ولدها للبلوغ.
 - أوضحت نتائج الدراسة أن ٧٣.٦% من الطلبة لديهم الوعي الجيد لكيفية منع السمنة مع عدم ادركهم بتأثيرها السلبى على التحصيل الدراسى و الصحة.
 - وقد خلصت الدراسة إلى أن الوقاية من السمنة في مرحلة الطفولة اقل فى التكلفة من العلاج فيما بعد وينبغي التشديد على تغيير سلوك الشخص من خلال زيادة الوعي ودعم متواصل من قبل الأسرة ، و التركيز ينبغي أن ينصب على تحديد و تثبيط الخيارات الغذائية الفاسدة أو تناول العادات وتعزيز النشاط البدني المنتظم العادات.
- وقد أوصت الدراسة إلى الآتي :**
- مقدمي الرعاية الصحية بحاجة للعب دورا وقائيا عند الأطفال و التركيز على الوقاية من السمنة خير من العلاج.
 - مراجعة اخصائي تغذية للحصول على تقييم كامل لتغذية الطفل و الأسرة.
 - تحفيز الأسر على تغيير العادات السيئة فى الأكل .
 - المدارس لها مكانة فريدة من حيث التأثير و تحسين تغذية الأطفال حيث أن معظم الأطفال يقضون جزءا كبيرا من وقتهم فى المدرسة.
 - ينبغي إنشاء بيئة صحية لتقديم الأكل الصحي والتي توضح وجبات صحية فى الفصول الدراسية ، و تعمل على تعليم الآباء و الأمهات تناول الطعام الصحي ، وإعطاء الأطفال الوقت الكافي لتناول الطعام.