بحث رقم (1)

Prevalence of Obesity Among Kindergarten Boys and Their Mothers'Nutritional Awareness

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Abstract

This study was conducted to assess the prevalence of kindergarten children boys of overweight/obesity and its association withmothers' food awareness in Damietta, in 2015.Height, weight, Body Mass Index (BMI)forforty-one children boys, aged 4-6 years were measured, then questionnaires to evaluate the nutritional awareness of mothers, and to track the child's dietary intake were made, from Damietta children. Obtained results indicated that: 4.9% of boys were underweight, 63.4% were normal weight, 22% were overweight, and 9.8% were obese.The study also proved that Nutritional awareness does not reflect the nutritional status of individuals, therefore schools role must be enabled by giving special courses increasing nutritional awareness of mothers.

Key Words:Prevalence of obesity- child boys obesity – BMI

Introduction

The worldwide overweight and obesity prevalence among preschool children has increased from (4.2%) in 1990 to (6.7%) in 2010 and is expected to increase to (9.1%) in 2020 **(De Onis et al., 2010)**

42 million children were overweight or obese in 2013under the age of five**(WHO, 2015).**

The prevalence of overweight and obesity among canadian children increase from 23.3% to 34.7% during 1978-2004 **(Celia Rodd and Atul Sharma, 2016)**.

This increase is disturbing due to the accompanying social, psychological and health effects and the link to subsequent morbidity and mortality**(William, 1994).**

In 2009-2010, the prevalence of obesity in US children and adolescents was16.9%**(Ogden et al., 2012)**

In Saudi Arabia, one in every six children aged (6 to 18) years old is obese **(Kelishadi et al., 2003)**.

Longitudinal observations from a small cohort in France and a somewhat larger cohort in southwestern Ohio suggest that the time at which adiposity rebound begins may have a significant effect on fatness in adolescence and adulthood. In both adolescents and adults, BMI and subscapular skinfold thicknesses were significantly greater among children whose adiposity rebound began early (before 5.5 y of age), compared with children whose adiposity rebound was average (6.0-6.5 y) or late (after 7 y) **(Rolland et al.,1984, Rolland et al.,1987, Siervogel et al.,1991)**

Martorell et al (2000)they measured 150,482 children (12 to 60) monthsobserved that levels of obesity were below the expected value of 2.3% in 32 of 50 countries. The highest prevalence of obesity was found in Uzbekistan, 12.5%, followed by Egypt 7.5%.

Modern lifestyles (inactivity, passive overeating and/or sociocultural/economic influences) in an obese genic environment cause an increased prevalence of obesity among children (**Kruger et al., 2006).**

Birch and Ventura (2009)theymeasured children and adolescentsfound that 25% of preschool children are already overweight, intervening with children before school entry should be a priority in North American. A review of experimental research on the developing controls of food intake in infancy and childhood suggests possible intervention strategies

Schanzenbach (2009) found that children who consume school lunches are more likely to be obese than those who brown bag their lunches even though they enter kindergarten with the same obesity rates.

Shaheen et al (2005)proved that frontier governorates in Egypt had the lowest proportions of obese preschool children, followed by the coastal and canal regions. Metropolitan governorates and Lower Egypt had higher proportions of obese preschool children. This could be explained by changes in dietary habits leading to more energy-dense fast food and beverages with high sugar content. Although overweight among children under five years of age cannot yet be considered a public

health problem in Egypt at this time, the trend is clearly toward increasing prevalence.

Santoshiand Sunita(2016)they find out the association between mother's nutritional awareness and nutritional status of the child (NSC) using 300 children in 3–4 years of age from kindergarten and preprimary schools from Kolkata in India. They used Nutritional awareness of mother questionnaire measuring age, height and weight of children,Theyfound that nutritional awareness of mother significantly influences the nutritional status of the child.

This work aimed to: assess the prevalence of kindergarten children boys of overweight/obesity and its association with mothers' food awareness in Damietta**.**

Subjects and Methods

A random sample of41 children aged4:6years. Wereselected from Damietta Governorate toapply some Anthropometric measurements.

The study contains three Questionnaires; **Questionnaire(1):** General data: name, age, number of absences, number of family member, child birth order and child's habit's(41 children). **Questionnaire(2):**anthropometric measurements: height (cm), weight(k.g), and BMI (41 children). **Questionnaire(3):** for boys' mothers to recognize nutrition awareness(24 children).

Height and weight were measured to the nearest 0.1 cm and 0.1 kg, respectively.

BMI as an indicator of obesity was calculated according to the following formula:

$$\textbf{BMI} = \frac{\text{Weight (Kg)}}{\text{Height (m}^2\text{)}}$$

The grades of obesity utilizing the BMI are described at (Table 1)

Table 1: The grade of obesity utilizing the BMI.

Weight Status Category	Percentile Range
Underweight	Less than the 5th percentile
Healthy weight	5th percentile to less than the 85th percentile
Overweight	85th to less than the 95th percentile
Obese	Equal to or greater than the 95th percentile

The National Center for Health Statistics in collaboration and the National Center for Chronic Disease Prevention and Health Promotion (2000).

Nutrition awareness	High nutrition awareness	medium nutrition awareness	Poor nutrition awareness
%	≥85%	65%-75%	≤65%

Ola (2013)

RESULT AND DISCUSSION

Anthropometric data:

The characteristics of the samples of body mass index are described in Table 2 and fig.1.

Due to variations in body weight 2 boys (4.9%) were underweight, 26 (63.4%) were normal weight, 9 (22%) were overweight, and 4 (9.8%) were obese, the total number of overweight and obese children were 13 cases (31.7%).

These findings are in agreement with**Nora et al (2013)**who estimated the prevalence of overweight and obesity among primary school children, aged from 6 to 12 years at Port Said city. Eight hundred and fifty-two students participated in this study. They found that the prevalence of overweight and obesity was 17.7% and 13.5%, respectively.

These findings are in disagreement with **El Mouzan et al (2010)**who foundthat among male school children aged 5 up to 11 years in Saudi

Arabia the prevalence of obesity and overweight was 7.8% and 19.9% respectively

On the other hand a study by**El-Bayoumy et al (2009)**in Kuwait showed that the prevalence of obesity and overweight among male children aged 10 up to 14 years was 14.9% and 29.3% respectively.

Inthis respect**Benerand Kamal (2005)**found in the study made in Qatar that the prevalence of obesity and overweight among male children aged 6 up to 9 years was 3.5% and 16.3% respectively.

Table (2): Frequency distribution of Body mass index (BMI).

BMI	Underweight		Normal weight		Overweight		Obesity	
	N	%	N	%	N	%	N	%
	2	4.9%	26	63.4%	9	22%	4	9.8%

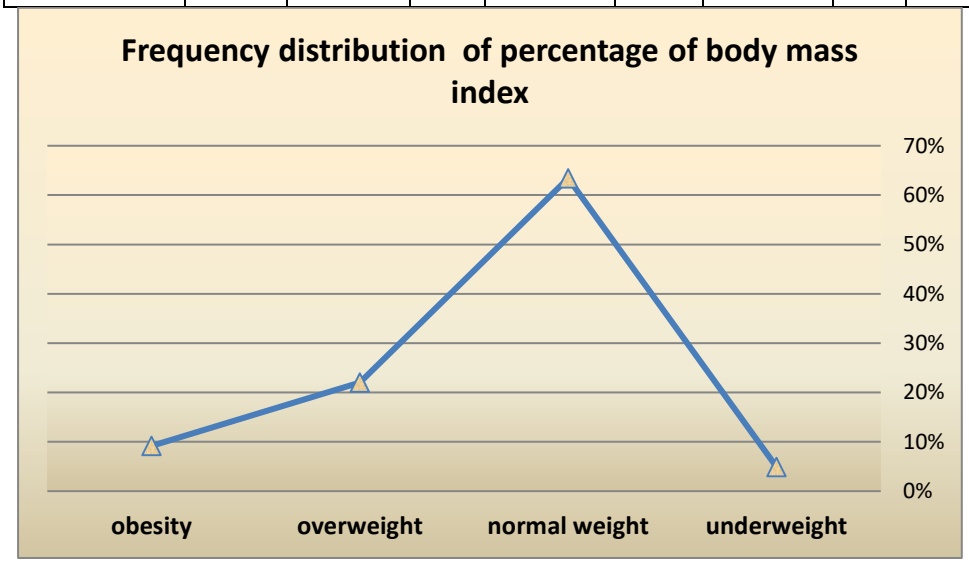

Fig.(1): Frequency distribution of Body mass index (BMI).

N: number of boys

Nutrition awareness:

Table 3 and fig.2 show BMI distribution in boys as affected withfood awareness.

The results revealed that no cases in highnutritionawareness were underweight, but 3boys (12.5%) were normal weight, 3 boys (12.5%)

were overweight, and one boy(4.2%) was obese, while in mediumnutritionawareness no cases were underweight, 6 boys (25%) were normal weight, 2 boys (8.3%) were overweight, and no cases were obese, and in poornutritionawareness one boy (4.2%) was underweight, 4boys (16.7%) were normal weight, 3 boys (12.5%) were overweight, and one boy (4.2%) was obese.

Mediumnutritionawareness resulted in higher percentage of normal weight.

Also **Kelly et al (2014)**examineda random sample of 400 parents of children aged 5-17 years, in Australia. They found that the majority of parents were concerned about food marketing to children, with the highest level of concern registered for the positioning of food at supermarket checkouts (83% of parents concerned). Parental awareness of certain non-broadcast media food marketing to children was low.

Table (3): BMI distribution in boys as affected withnutrition awareness

BMI / nutrition awareness	Underweight		Normal weight		Overweight		Obesity	
	N	%	N	%	N	%	N	%
high nutrition awareness	0	0%	3	12.5%	3	12.5%	1	4.2%
Medium nutritionawareness	0	0%	6	25%	2	8.3%	0	0%
poornutrition awareness	1	4.2%	4	16.7%	3	12.5%	1	4.2%

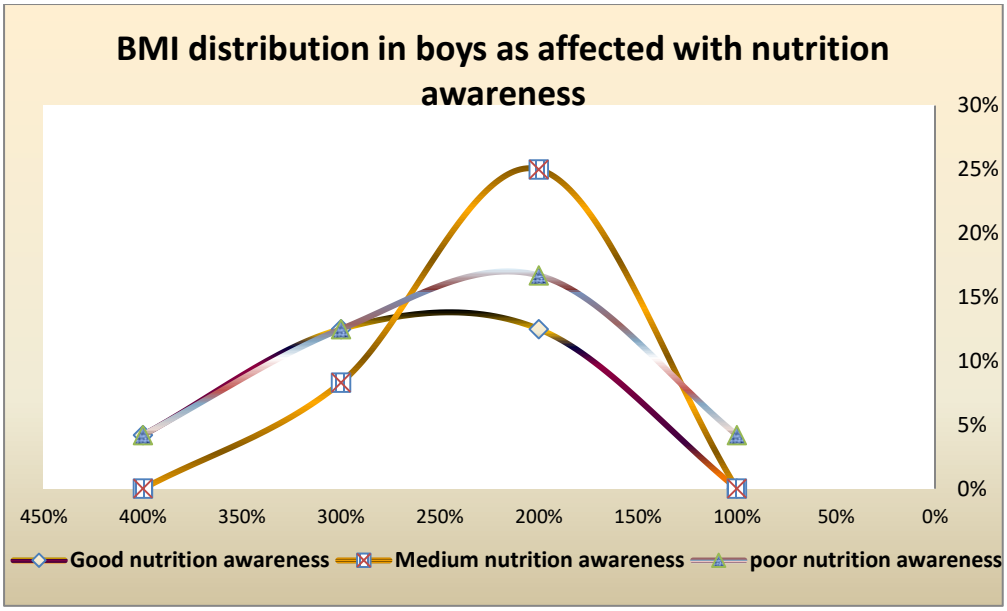

fig. (2) BMI distribution in boys as affected withnutrition awareness.

N: number of boys

General data:

Table 4 and fig. 3 showed BMI distribution as affected withnumber of absence ofboys per week.
The result showed thatunderweight cases one had onlyone absence per week, the other didn't have anyabsences per week, inthe obesity cases two boys had one day absence per weekand the other two boys didn't have any absences per week, while normal weight cases revealed that most boys had no absences, and overweight casesshowedthat most of the boys weren't absent.

In the case of boys not absent 2 from 27(7.4%) were obese, but in the case of one-time absence2 from 13(15.4%) were obese, these results revealed that attendant boys were lesser in obesity than absentboys.

Table (4): BMI distribution as affected with times of absentboys per week

BMI / number of absences	Underweight		Normal weight		Overweight		Obesity		Total	
	N	%	N	%	N	%	N	%	N	%
No absences	1	2.4%	16	39%	8	19.5%	2	4.9%	27	65.9%
One time absence	1	2.4%	9	22%	1	2.4%	2	4.9%	13	31.7%
Two times absences	0	0%	1	2.4%	0	0%	0	0%	1	2.4%

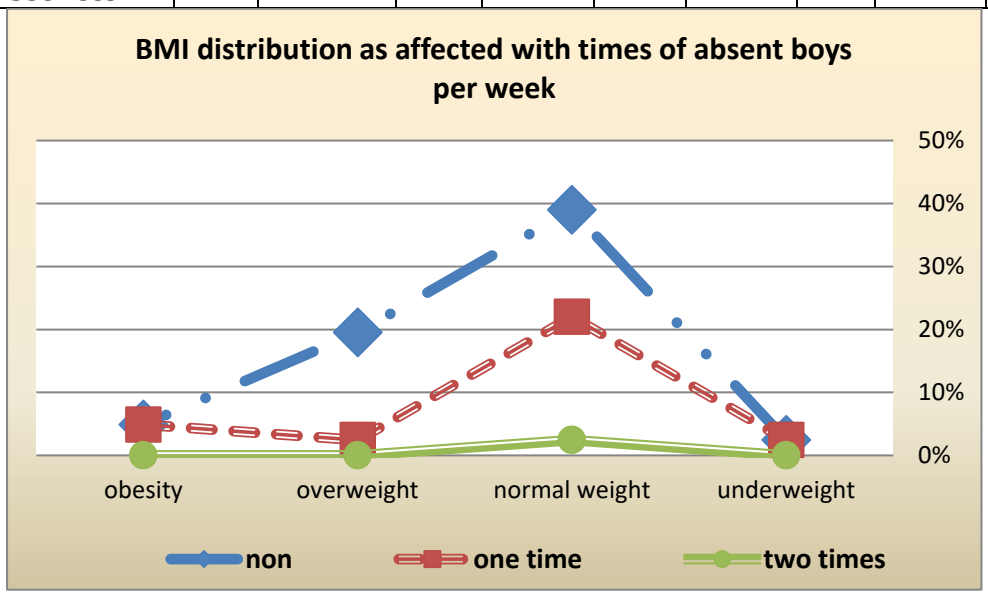

fig. (3) BMI distribution as affected with times of absentboys per week

N: number of boys

Table 5 and fig. 4 showedBMI distribution in boys as affected withthe number of family members.

The results showed that, two cases were underweight in families consistingof four tosix members, while obesity was obvious in families consisting ofsix members, the overweight boys were obvious in families consisting of four or five members, and normal weight boys were obvious in families consisting of five members.

Table (5): BMI distribution in boys as affected with Family member

BMI / Family member	Underweight		Normal weight		Overweight		Obesity	
	N	%	N	%	N	%	N	%
Three members	0	0%	1	2.4%	0	0%	0	0%
Four members	1	2.4%	10	24.4%	4	9.8%	1	2.4%
Five members	0	0%	11	26.8%	4	9.8%	0	0%
six members	1	2.4%	4	9.8%	1	2.4%	2	4.9%
seven members	0	0%	0	0%	0	0%	1	2.4%

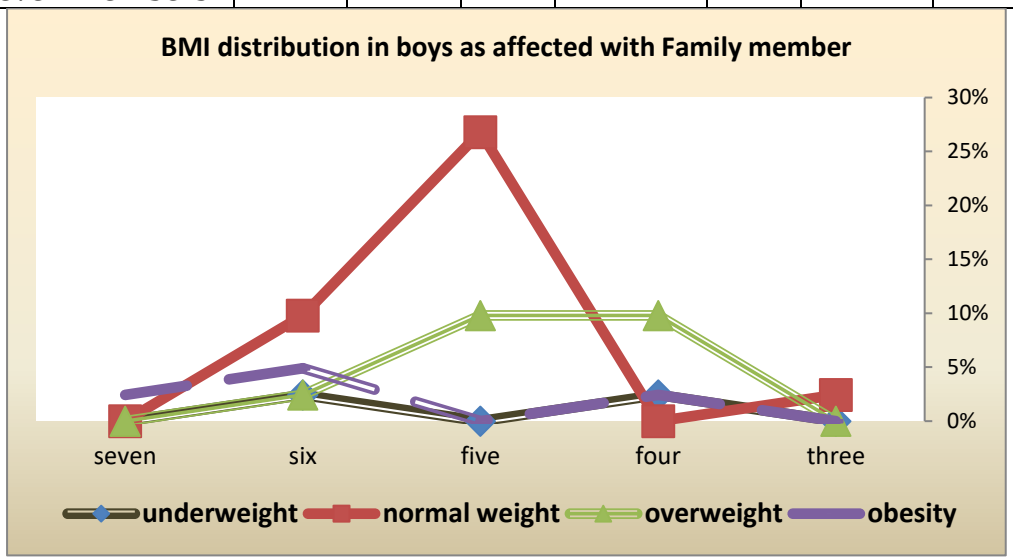

fig. (4) BMI distribution in boys as affected witha number of Family members.

N: number of boys

Table 6 and fig. 5 revealedBMI distribution in boys as affected withbirth order.

These findings revealed thattwo underweight cases were first and third, while the obese was first or second or third or fifth, then overweight wasfound to be the first, while normal weight cases were obviouslythe first child.

In normal weight and overweight 13(31.7%), 4(9.8%) respectively most of the boys were in the first birth order.

Table (6): BMI distribution in boys as affected withbirth order.

BMI boys birth order	Underweight		Normal weight		Overweight		Obesity	
	N	%	N	%	N	%	N	%
The first	1	2.4%	13	31.7%	4	9.8%	1	2.4%
The second	0	0%	7	17.1%	3	7.3%	1	2.4%
The third	1	2.4%	5	12.2%	2	4.9%	1	2.4%
The fourth	0	0%	1	2.4%	0	0%	0	0%
The fifes	0	0%	0	0%	0	0%	1	2.4%

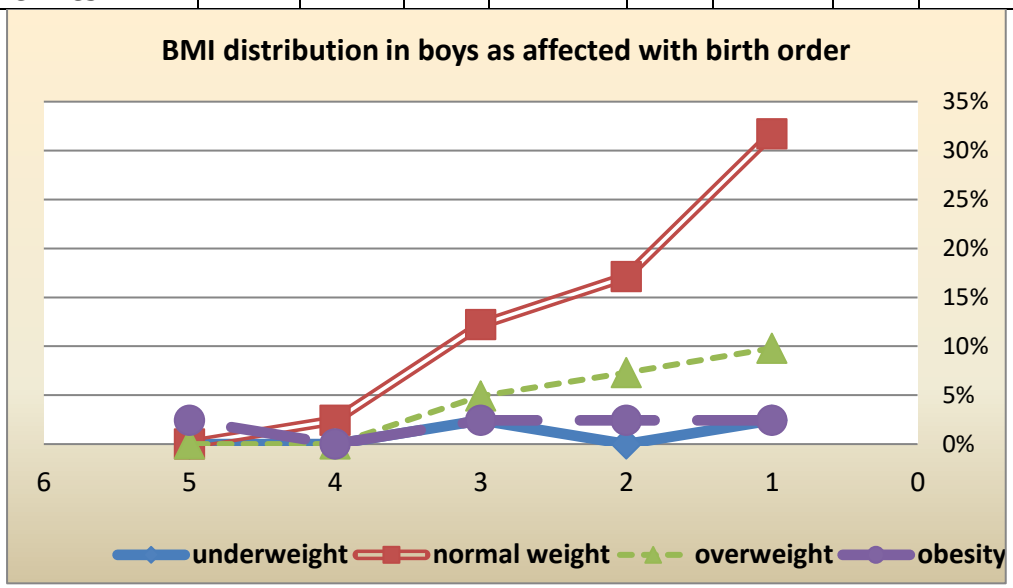

fig. (5) BMI distribution in boys as affected withbirth order.

N: number of boys

Table 7 and fig. 6 showed theBMI distribution in boys as affected withtaken breakfast in school

The results showed that one case whoeats breakfast before going to schoolwas underweight, also obesity was found in two cases who eat breakfast before going to school, concerning overweightcases eight.fourhave breakfast,and in normal weight cases eight don't eat breakfast whilethe other four cases eat breakfast.

On the other hand **Meg et al (2016)**fond that the prevalence of consuming two breakfasts was 34%. Children's overweight/obesity

status was inversely related to two-breakfast consumption, but it was significant only for the Hispanic subgroup; the odds of being overweight/obese was 60% lower among those who ate two breakfasts The likelihood of consuming a second breakfast increased over twofold among children who woke up before seven a.m.

Table (7): BMI distribution in boys as affected witheating breakfast in school

BMI / Take breakfast in school	Underweight		Normal weight		Overweight		Obesity	
	N	%	N	%	N	%	N	%
Yes	1	4.2%	5	20.8%	4	16.7%	2	8.3%
No	0	0%	8	33.3%	4	16.7%	0	0%

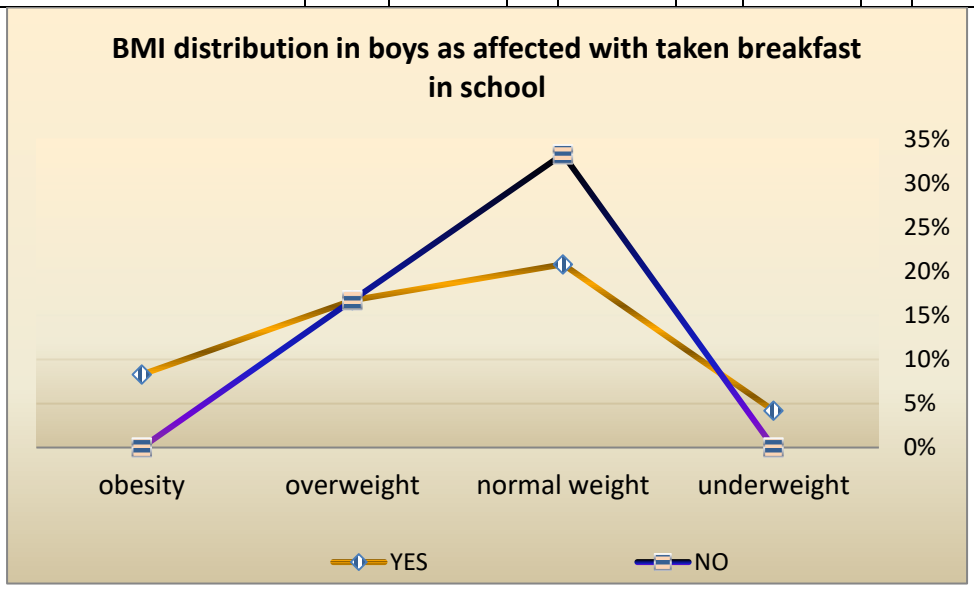

fig (6). BMI distribution in boys as affected witheating breakfast in school

N: number of boys

Table 8 showed the distribution of kind of home food intake during school day.

The results revealed 87.5% of the boys bring cheese sandwiches to school, 75% bring bread, (4.2%)boys bring Biscuit, jam, Yogurt, pizza, Luncheon.

Table (8): kind of home food intake during school day.

Kind of home prepared food	N	%
Cheese sandwiches	21	87.5%
Bread	18	75%
juice	9	37.5%
egg	5	20.8%
Vegetable	3	12.5%
potato	3	12.5%
Halvah	3	12.5%
cake	2	8.3%
chicken	2	8.3%
Biscuit	1	4.2%
jam	1	4.2%
Yogurt	1	4.2%
pizza	1	4.2%
Luncheon	1	4.2%

N: number of boys

Table 9 and fig. 8showedBMI distribution as affected with alternative food to home prepared food

When they don't bring food fromhome, one underweight case was eating from school canteen, also most of the obese caseswere eating from school canteen, mostof overweight cases eat from school canteen, however most ofnormal weight boys were eating from school canteen.
Also***Sanjoy*** **et al. (2012)**study that about two-third (65.6%) of students take foods from the shops for their school meal and only one-third (34.4%) of the students bring foods from home for their school meals.

In this respect***Amidu*** **et al. (2013)** study was conducted to assess the prevalence of childhood overweight/obesity, Random sampling 400 children aged 6-12 years was examed. They found that the prevalence of childhood overweight and obesity were 9.8% and 7.5% respectively. The prevalence of overweight (15.0% vs. 4.5% p= 0.0006) and obesity (12.5% vs. 2.5%) in children who took food to school from home and these who ate food at the school's canteen.

Table (9):BMI distribution as affected with alternative food to home prepared food

When boys don't bring food from home \ BMI	Underweight		Normal weight		Overweight		Obesity	
	N	%	N	%	N	%	N	%
Take food from school canteen	1	4.2%	15	41.7%	7	29.1%	2	8.3%
Do not eat at school	0	0%	3	12.5%	1	4.2%	0	0%

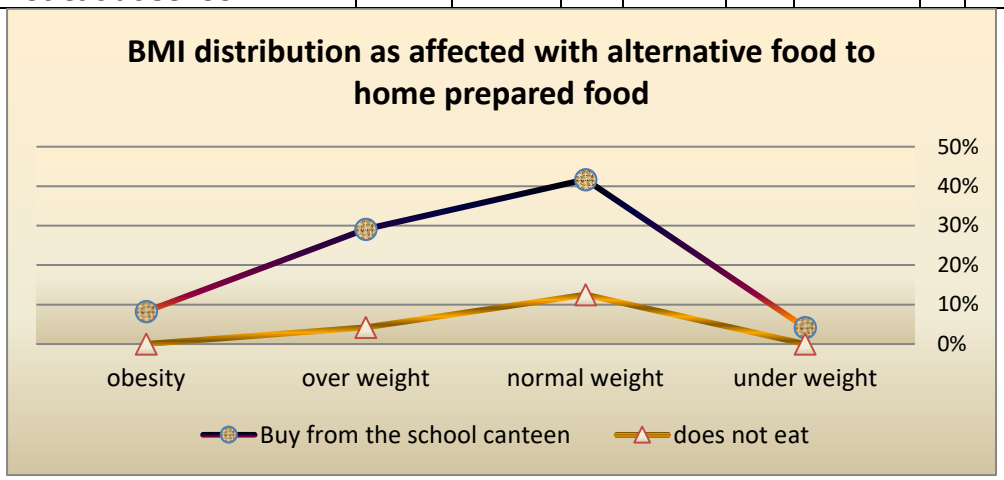

fig. (8) BMI distribution as affected with alternative food to home prepared food

N: number of boys

Table 10 and fig. 9 showed BMI distribution as affected with some kind of food intake from school canteen

The results showed thatmost food intake was Biscuit, Chocolate, Juice, Potato Chips,19(79.2%), 18(75%), 12(50%), and 10(41.7%) respectively.

Lowest food intake wassoda and candy, 1(4.2%), and 1(4.2%) respectively.

Table (10): BMI distribution as affected with some food intakefrom school canteen.

BMI / Some food intake from school canteen	Underweight		Normal weight		Overweight		Obesity		Total	
	N	%	N	%	N	%	N	%		
Biscuit	0	0%	11	45.8%	8	33.3%	1	4.2%	19	79.2%
Chocolate	0	0%	12	50%	4	16.7%	2	8.3%	18	75%
Juice	1	4.2%	7	29.1%	4	16.7%	0	0%	12	50%
Potato Chips	0	0%	5	20.8%	4	16.7%	1	4.2%	10	41.7%
Bakery	1	4.2%	1	4.2%	1	4.2%	0	0%	3	12.5%
Milk	0	0%	2	8.3%	1	4.2%	0	0%	3	12.5%
candy	0	0%	1	4.2%	0	0%	0	0%	1	4.2%
soda	0	0%	1	4.2%	0	0%	0	0%	1	4.2%

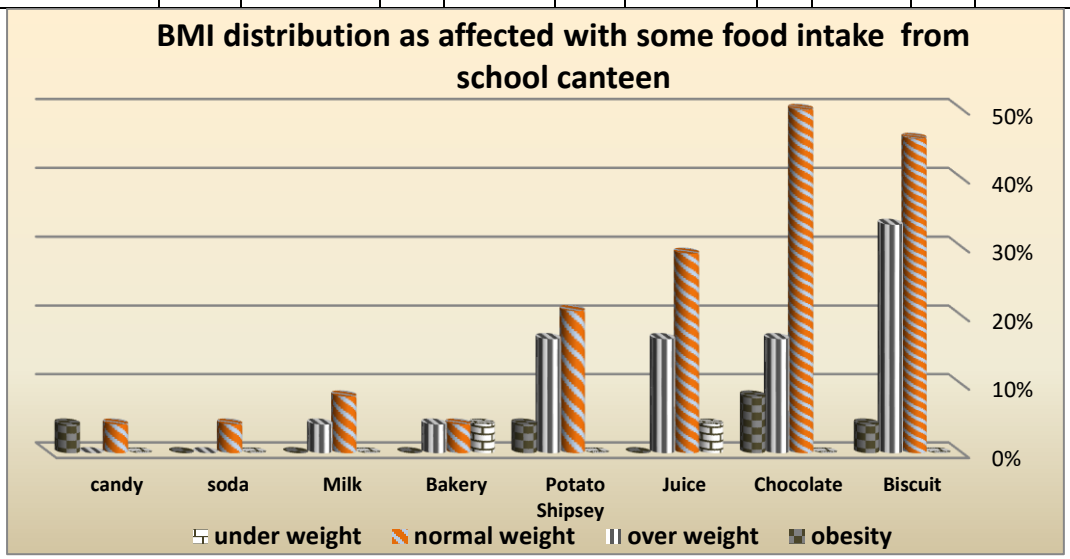

fig. (9) BMI distribution as affected with some food intake from school canteen.

N: number of boys

Table 11Showed the distribution of the foods that preferred to boys.

The result revealed that most of boys requested pasta, chicken, juice, pizza, the food least preferred included Shawarma, jam, Halvah, egg, liver, Rice, Cakes, jelly, Vegetables, tuna, Koushari, rice with milk, Koftaand cucumber.

Table (11): Distribution of the foods that preferred to boys.

	Food	N	%
Mostpreferred food	**Pasta**	9	37.5%
	Chicken	5	20.8%
	Juice	4	16.7%
	Pizza	4	16.7%
Mild preferredfood	**Milk**	3	12.5%
	Fish	3	12.5%
	Sandwiches	2	8.3%
	Kofta	2	8.3%
	meat	2	8.3%
Leastpreferred food	**Shawarma**	1	4.2%
	jam	1	4.2%
	Halvah	1	4.2%
	egg	1	4.2%
	liver	1	4.2%
	Rice	1	4.2%
	Cakes	1	4.2%
	jelly	1	4.2%
	Vegetables	1	4.2%
	tuna	1	4.2%
	Koushari	1	4.2%
	rice with milk	1	4.2%
	Cucumber	1	4.2%
	Kofta	1	4.2%

N: number of boys

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دراسة مدى انتشار السمنة بين الأطفال الذكور برياض الأطفال والوعي الغذائي للأمهاتهم

علا طلعت سحلول

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اجريت هذه الدراسه لتقييم مدى انتشار زيادة الوزن والبدانة وعلاقته بالوعي الغذائي للامهات بين الأطفال الذكور في مرحلة الروضة في محافظة دمياط. فقد تم دراسة الحالة الاجتماعية للأطفال وقياس كلا من الطول والوزن والتعرف على كتلة الجسم, لعدد 41 طفل في المرحلة العمرية من 4-6 سنوات وذلك خلال عام 2015,كما تم عمل استبيانات لمعرفة الوعي الغذائي لأمهاتهم, واستبيانات لتتبع تناول الطفل للوجبات الغذائية سواء بالمنزل أو المدرسة. وأظهرت النتائج أن 4,9% من الأطفال كانوا أقل من الوزن الطبيعي ,63,4% من الأطفال كان وزنهم طبيعي ,22% من الأطفال كان وزنهم أعلى من الطبيعي,9,8% من الأطفال يعانون من السمنة, كما أثبتت الدراسة عدم وجود علاقة بين الوعي الغذائي لدى الأمهات والحاله الغذائية للاطفال على عكس المتوقع, وبالتالي يجب تفعيل دور المدارس ,عن طريق عمل ندوات لزيادة الوعي الغذائي للأمهات.