Prevalence of Obesity and the Predisposing Factors among Preschool Children in Mansoura City

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Abstract:

Background: Obesity is widely recognized as a major health problem of the 20th century. It is defined as a state of imbalance between calories ingested versus calories expended which would lead to excessive or abnormal fat accumulation. **The study aimed** at health promotion of preschooler children's. **A descriptive design** was used to accomplish the aim of this study. **The study was conducted** at six nursery schools at Mansoura City. **The sample** consisted of 200 children and their mothers selected from nursery schools at Mansoura City. **The tools** used for data collection were assessment questionnaire sheet for the child personal data and anthropometric measurement, and interview questionnaire for mothers' nutritional knowledge and habits. **The results** of the present study revealed that the prevalence of overweight and obesity was about one third of the studied sample; there was a statistically significant relation between mother's knowledge, habits and occurrence of child obesity as well as there was a statistically significant relation between mother's knowledge and mother's habits. **The study concluded** that obesity constitutes one third of studied sample and there was a relationship between mother's knowledge, nutritional habits and the occurrence of obesity. **The study recommended** that health educational programs should be directed to caregivers including predisposing factors of obesity and healthy eating habits.

Key words: prevalence of Obesity, Predisposing factors, Preschool children

Introduction:

Childhood overweight and obesity, have become major public health problems both in westernized and more recently in developing countries. [(1)] The National Health and Nutrition Examination Survey (NHANES) indicates that the prevalence of obesity is increasing in all pediatric age groups, in both sexes, and in various ethnic and racial groups and another study indicates that the largest increases in the prevalence of obesity are seen in the most overweight classifications and in certain ethnic groups, such as African American and Mexican American children, of whom more than 30% are overweight. [(2)]

Obesity in preschool-aged children has doubled in the last 20 years. [(3)] The WHO estimated that the high prevalence of obesity in developing countries was in Egypt, and it was 20.5% in 2008. [(4)]

The preschool years are a critical period for the development of food preferences and lifelong eating habits. Between the ages of 3 and 6, children become increasingly responsive to external cues, such as television commercials that use popular cartoon characters to advertise foods. These environmental messages influence children's decisions about what and how much they should eat. [(5)]

Many factors, including genetics, environment, metabolism, lifestyle, race, ethnicity and eating habits, are believed to play a role in the development of obesity. However, more than 90% of cases are idiopathic;

less than 10% are associated with hormonal or genetic causes. [6]

Complications of obesity in children can affect virtually every major organ system. There are many complications as psychosocial that affect peer discrimination, teasing, isolation; growth complication as advance bone age, Pseudo motor cerebri, respiratory as sleep apnea; cardiovascular as hypertension, cardiac hypertrophy, ischemic heart disease, sudden death; orthopedic as slipped capital femoral epiphysis, Blount disease; and metabolic complications such as insulin resistance, type 2 diabetes mellitus, hypertriglycerdemia, gout, hepatic steatosis, and cholelithiasis. [7]

Community health nurses are in the perfect position to start searching for understanding of childhood obesity and the effective management of children who are, or who may be at risk of becoming obese to decrease and prevent obesity, nurses' role will create and bring the awareness needed, and the participation of families, communities, along with national efforts will bring the desired change and promote a healthier nation. [8]

Aim of the study:

The current study aimed at health promotion of preschooler children's through the following objectives:

1. Assess the prevalence of obesity in preschool children

2. Determine the knowledge of mothers regarding obesity in preschool.

3. Identify nutritional habits of mothers regarding obesity in preschool.

Research questions:

- What is the prevalence of obesity in preschool children at Mansoura City?
- Is the child obesity influenced by mother's knowledge?
- Is the child obesity influenced by mother's habits?

Significance of the study:

Obesity is a growing global health problem which is when children are so overweight that it is a threat to health, typically results from over-eating and lack of enough exercise. Obesity is very difficult to treat once developed and puts affected children at risk for lifelong health problems and reduced quality of life as well as social stigma and exclusion, it is no wonder that obesity has rapidly increased in the last few decades, around the world. [9]

The community health nurse plays an important role in early detection of children overweight through home visits, outpatient clinics, schools and nursery schools aimed to the prevention of childhood obesity. Nurses are likely to have a role in assessment of obesity through the measuring of height and weight, which is used to calculate, record, and plot the child's age and gender-specific body mass index (BMI).

Subjects and methods:

Research Design:

A descriptive design was utilized to achieve the aim of this study.

Setting:

The study was conducted at six nursery schools (three private and three governmental) at Mansoura City.

Subjects:

The subjects of this study consisted of 200 preschool children and their mothers from the previously mentioned nursery schools. Those were selected according to the following inclusion criteria:

* Age: ranged from 3 to less than 6 years.

* Sex: males and females.
* Free from chronic diseases.

Sample Size:

The total number of children at nursery schools in Mansoura City is 6737 children; assuming the least prevalence of preschool obesity is 14.6% in developing countries (5) the confidence interval is 95% and the power of test is 80% so the estimated sample size was estimated to be 200 children.

Sampling Technique:

The simple random sampling technique was used to select six nursery schools (3 private and 3 governmental) from Mansoura City represented the three educational Zones (the East, West and Directorate of Education administrations. Simple random sample was used to select six classes from the previous mentioned schools (the number of students in each class ranged from 32 to 35).

Tools of Data Collection:

Two tools were used to collect the data:

I- Assessment Sheet for the Children, included two parts:

(A) Personal Characteristics of child such as; age, sex, ranking and residence.

(B) Body Mass Index used to measure a child's weight and height to determine body mass index {(BMI) (weight (kg) /height (m^2)}. The child was considered obese if the BMI is equal or more than 95^{th} percentile, if the BMI is between 85^{th} and less than 95^{th} considered overweight, and if the child BMI is less than 85^{th} percentile child considered normal**.** (10)

II- Interview Questionnaire for Mothers: It was used to assess the following parts:

1. Mother's knowledge regarding the child's obesity. It consisted of 8 questions such as: meaning of obesity, risk factors of obesity, identifying the normal body weight of her child, health problems that result from this disorder, etc.

2. Mother's nutritional habits, consisted of 18 question, which include type of feeding to her child during infancy period , type of milk, use of additional fluids in bottle feeding, additional types of food, time of added additional foods, number of meals per day, eating between meals, daily intake of children's breakfast before going to nursery, frequency of consumption of special preferred types of foods, sleeping habits, the most preferred activities for the child, eating while watching television , etc.

Validity and reliability of the tools:

The tools of this study were distributed among a group of experts in the fields of pediatrics, community health nursing, and statistics who conducted face and content validity of all items. Some modifications were performed and the tools were tested through the pilot study. The internal consistency was tested using Cronbach's alpha coefficient, which proved to be high (0.76).

Pilot study:

The pilot study was carried out on 10% of a sample of preschool children to test the appropriateness clarity and applicability of the tools and to estimate the time needed to fill in the sheets. Those who shared in the pilot study were excluded from the main study sample.

Field work:

The actual fieldwork started after an approval was obtained to conduct the study from the directors of nursery schools in each zone of Mansoura City to facilitate data collection. Once the permission was granted to proceed in

the study, the investigator met each child and his / her caregiver individually. At the beginning, the purpose and nature of the study were explained. Each child with his/her mother was interviewed individually for about 20-30 minutes. Anthropometric assessment of the child was taken as measuring height and weight. Data collection was completed a 6 month period, from the beginning of October 2011 to end of March 2012.

Administrative and ethical considerations:

An official letter was issued from the Dean of the Faculty of Nursing, Zagazig University and delivered to the Directorate of Education at Mansoura City in order to obtain an approval for conduction of the research study. After the explanation of the purpose of study, a written permission was taken from it to the directors of each nursery school in each zone. At the time of data collection a verbal agreement was taken from every participant in the study after clear and proper explanation for the purpose of the study.

Ethical consideration was considered for ensuring children and mothers' privacy and confidentiality of the collected data during the study. The entire study sample agreed to participate in the study after being informed that each study subject is free to withdraw at any time throughout the study without giving any reason.

Statistical Design:

Data entry and statistical analysis were done using the Statistical package for Social Science (SPSS) version 15.0. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, mean and standard deviation for quantitative variables. Qualitative categorical variables were compared using the Chi square test (P value). Quantitative variables were compared using one-way ANOVA (F test). P-value was also used to determine significance of results, P-value < 0.05 is a statistically significant difference.

Results:

Table (1) clarifies that the mean age of obese studied children was 4.49 ± 1.06 compared to overweight 4.80 ± 1.20 years. Highly statistically significant differences were found between BMI and children age, height and weight at a p value < 0.001. In relation to gender, more than half of obese and overweight children (51.2% & 52.6%) respectively were females compared to more than two fifths (44.2%) of non obese children. Regarding birth order, 67.4% of obese and 57.9% of overweight children were in the middle order. Additionally 67.4% of obese children and 63.2% of overweight lived with their fathers and mothers.

Table (2) reveals that slightly less than three quarters of children (69%) were non obese; while the 9.5% was overweight and about one fifth (21.5%) was obese.

Table (3) reveals that more than two fifths (41.9%) of mothers of obese children's reported incomplete answer regarding meaning of obesity compared to 63.2% of mothers of overweight children. The majority of mothers of obese children (88.4%) mentioned that the cause of obesity was due to increased caloric intake compared to 57.9% of mothers of the overweight studied sample. As regards to mother's knowledge about how they identify normal weight of their children , 88.4% of mothers of obese children reported comparing the child with another child in the same age while 73.7% of mothers of overweight

children mentioned from the general appearance.

Concerning the problems of obesity, more than half (58.1%) of mothers of obese children mentioned physical problems compared to 63.2% of mothers of overweight children. Highly statistically significant difference was found between body mass index and mother's knowledge.

Table (4) demonstrates highly statistically significant relation between mother's knowledge and the occurrence of obesity at a p value < 0.001.

Table (5) shows that less than half (48.8%) of obese children took artificial feeding only compared to 52.6% of overweight studied children. In relation to additional foods, 97.7% of obese children took mashed potato, while 57.9% of overweight children took rice. As for starting the additional foods, more than three quarters (79.1%) of the obese children started additional foods after 6 months compared to 89.5% of overweight children. As regards types of snakes, most of the obese children (97.7%) took the juice while 57.9% of overweight took sandwich and junk foods.

Table (6) clarifies the statistically significant relation was found between mother's habits and the occurrence of children's obesity at a p value < 0.001.

Concerning taking breakfast, study results revealed that slightly less than one third (30.2%) of the obese children were taking breakfast compared to 47.4% of overweight children. As regards to sleeping after eating, 18.6% of the obese children were sleeping after eating compared to 21.1% of overweight children. More than three quarters (79.1%) of the obese children were eating in front of television compared to 63.2% of overweight children. Highly statistically significant relations were found between body mass index of the children and taking breakfast, sleeping after eating and increasing eating in front of television **(table 7)**.

Table (8) illustrates highly statistically significant relation was found between mother's knowledge and mother's habits at a p value < 0.001.

Discussion:

Regarding the prevalence of obesity, the results of the current study revealed that about one third of the studied sample was obese and overweight. This might be attributed to, that children at this age deal with the external world through nursery school by buying the junk foods and then increased exposure to the advertisements through watching TV. On the same way, WHO [4] supported the results of the current study and reported that the prevalence of obesity among preschool children in Egypt was 20.5%.

Additionally, the current study results showed that more than half of the obese studied children were girls. This result might due to those girls spend more time at home compared to boys, where they had many activities to do outside home. On the same way, Stojannovic, and Belojevic [11], supported the result of the current study and found that the prevalence of obesity was more among girls than boys. On the contrary, Mohsen et al.,[12] found that there was no significant difference of body mass index between boys and girls.

As regards the birth order, the current study result showed that the highest percentages of obesity were found in the first and middle born child i.e., the obesity in children decreased as birth order increased, it might be attributed to that the mothers usually give the optimum level of attention and care including nutrition for the first

and middle born child. On the same way Atef, [13] finding coincided with the current result and found that, the highest percentages of obese children were common among the first and middle born child.

The study results revealed that, mothers of the studied children had unsatisfactory knowledge regarding meaning, causes and problems of obesity. These results reflect lower socioeconomic and educational level of the studied sample. Additionally results emphasized the important role of the community health nurse in educating mothers toward prevention and early detection of obesity.

On the same way, these results clarified that the highest percentage of the obese studied children's mothers had unsatisfactory knowledge and there was a highly statistically significant relation between mother's knowledge and the occurrence of obesity. Additionally, Ledikwe et al., [14] found a statistically significant relation between mother's knowledge and the occurrence of obesity. On the contrary, a study done by Hudson et al.,[15] revealed no statistically significant relation between total mother's knowledge and the occurrence of obesity.

As regards treating child during eating; the present study result revealed that more than two fifths of the obese studied children, their mothers were encouraging them to eat. This might be attributed to lack of mother's knowledge about the appropriate eating pattern, and they believe in the more the child eats the more he will be healthy. On the contrary, Binns and Ariza [16] found that more than 15% of the obese children, their parents were pressuring them to eat.

The majority of the obese children and less than three fifths of overweight children took sandwich and junk foods as a snake. This kind of snake might accelerate the risk of obesity. Similarly, Mohammed [17] found that increasing intake of snakes, high in calories easily increases the weight.

Additionally, these results clarified that the highest percentage of mothers' obese children's had unacceptable habits and there was highly statistically significant relationship between mother's habits and the occurrence of obesity. Similar results were found by, Jansen et al. [18] who found that there was an association between parental habits and the occurrence of obesity.

Regarding to the children's habits, the present study showed that the majority of the obese and overweight children skipped their breakfast. This might be attributed to lack of mother's knowledge about the importance of breakfast meal.

At the same line, Maddah et al.,[19] found that the prevalence of obesity and overweight significantly higher in those who usually skipped their breakfast that leads to consuming a huge meal later on, which will stimulate the secretion of too much insulin hormone, leading to hyperinsulinaemia, and subsequently reactive hypoglycemia occurs. On the contrary, AbdelKafi et al., [20] found no statistical relation between eating breakfast and the occurrence of obesity.

The important role of the breakfast and mentioned that breakfast is the most important meal of the day, provides an opportunity for kids to get several nutrients that may not be abundant in their diet the rest of the day, such as iron, calcium and fiber. Breakfast is important for young children for a variety of reasons. Eating breakfast regularly helps kids develop healthy eating habits, improves concentration and memory,

reduces hyperactivity and provides numerous other benefits as reducing risk of childhood obesity. [21]

As regards the sleeping pattern, the result of this study revealed that slightly less than three quarters of the obese studied children did not take enough hours of sleeping. Similarly, Sarah et al. [22] found that inadequate hours of sleep are associated with obesity because lower hours of sleep are usually associated with night eating which coincide with increased BMI, short sleeping hours may cause obesity through increased sympathetic activity, elevated cholesterol secretion and ghrelin levels, decreased Leptin and glucose tolerance.

The majority of the obese and overweight studied children were eating in watching television. This might be attributed to pleasure feeling, loss of attention to the amount of food during this time and it decreases energy expenditure.

In a study carried out by Scully et al., [23] found that heavier television use was associated with lower consumption of fruit and higher consumption of high caloric foods, in addition to longer duration of TV watching might lead to more frequent exposure to advertising programs which influence the frequency of consumption of fast foods which act as predisposing factors for overweight and obesity.

In a recent study, Padilla et al. [24] found that watching TV more than hours/day leads to childhood obesity, and that eating in front of the TV is one of the causes of obesity. On the contrary, Vandewater et al., [25] found that there was no relation between children's weight and television viewing.

Conclusion:

From the findings of the current study conclusions can be deduced the following:

More than one third of the studied children were obese and overweight. There were highly statistically significant relations between the studied children's age, birth order, residence, and occurrence of obesity. More than three fifths of obese and overweight children had a family history of obesity. The majority of mothers had unsatisfactory knowledge and unacceptable habits. There was a highly statistically significant relation between mother's knowledge, nutritional habits and the occurrence of obesity.

Recommendations:

Based upon the result of the current study, the following recommendations can be suggested:

- Health educational programs should be directed to care givers including predisposing factors of obesity, healthy eating habits, and limitation of television and video time to a maximum of 2 hours per day.
- Surveys on a wide scale are needed to be conducted to assess the knowledge and dietary habits of families.
- Health promoting behaviors should be directed to children such as physical activity for obesity prevention.

Table (1): Distribution of studied children according to their characteristics according to their BMI (n=200)

Children Characteristics	BMI						Test of significance	P-value
	Obese (n=43)		Overweight (n=19)		Non obese (n=138)			
	No.	%	No.	%	No.	%		
Age Mean±SD	4.49±1.06		4.80±1.20		3.94±1.17		F test= 7.130	0.001*
Height Mean±SD	23.01±5.06		18.89±2.35		15.31±2.45		F test = 98.010	0.001*
Weight Mean±SD	100.19±6.23		103.21±7.17		98.59±6.48		F test = 4.641	0.011*
Gender :								
▪ Male	21	48.8	9	47.4	77	55.8	X^2 0.956	0.620
▪ Female	22	51.2	10	52.6	61	44.2		
Birth order:								
▪ First	12	27.9	3	15.8	24	17.4	X^2 7.176	0.127
▪ Middle	29	67.7	11	57.9	94	86.1		
▪ Last	2	4.7	5	26.3	20	14.5		
Child living with:								
▪ Father only	0	0	0	0	3	202	X^2 7.299	0.294
▪ Mother only	11	25.6	5	26.3	37	26.8		
▪ Father & mother	29	67.4	12	63.2	96	69.6		
▪ Grandmother	3	7	2	10.5	2	1.4		

** P value < 0.001*

Table (2): Prevalence of obesity among study children (n= 200)

BMI	No.	%
Obese	19	9.5
Overweight	43	21.5
Non obese	138	69

Table (3): Relationship between mothers' knowledge and children's BMI (n=200)

Mothers' knowledge	BMI						X^2	P-value
	Obese (n=43)		Overweight (n=19)		Non obese (n=138)			
	No.	%	No.	%	No.	%		
Meaning of obesity:								
▪ Correct answer	10	23.2	2	10.5	61	44.2		
▪ Incomplete answer	18	41.9	12	63.2	47	34.1	13.936	0.008*
▪ Incorrect answer	15	34.9	5	26.3	30	21.7		
Causes of obesity:								
▪ Increases high caloric diet	38	88.4	11	57.9	60	43.5	26.744	<0.001*
▪ Genetic factors	29	67.4	3	15.8	5	3.6	88.662	<0.001*
▪ Limited physical activity	13	30.2	7	36.8	9	6.5	23.320	<0.001*
▪ All of above	16	37.2	5	26.3	61	44.2	2.534	0.282
▪ Don't know	14	32.6	8	42.1	21	15.2	11.123	0.004
Identifying the normal weight from:								
▪ General appearance	34	79.1	14	73.7	78	56.5	8.179	0.017*
▪ Comparing the child with another child in the same group	38	88.4	4	21.1	33	23.9	60.543	<0.001*
▪ Identifying ideal weight	21	48.8	9	47.4	55	39.9	1.286	0.526
▪ Don't know	7	16.3	3	15.8	8	5.8	5.580	0.061
Problems of obesity:								
▪ Physical problems	25	58.1	12	63.2	18	13	46.830	<0.001*
▪ psychological problems	11	25.6	6	31.6	20	14.5	5.055	0.080
▪ Social problems	7	16.3	3	15.8	8	5.8	5.80	0.061
▪ All of above	19	44.2	10	52.6	76	55.1	1.558	0.459

**P value < 0.001 responses are not mutually exclusive*

Table (4): Relationship between mothers' knowledge and occurrence of obesity (n=200)

Mothers' Total Knowledge	BMI						X^2	P-value
	Obese		Overweight		Non obese			
	No.	%	No.	%	No.	%		
Satisfactory	8	9.6	4	4.8	71	85.6		
Unsatisfactory	35	29.9	15	12.8	67	57.3	18.183	<0.001*
Total(200)	43	21.5	19	9.5	138	69		

**P value < 0.001*

Table (5): Relationship between mothers' nutritional habits and children's BMI

Mothers' Nutritional Habits	BMI							
	Obese (n=43)		Overweight (n=19)		Non obese(n=138)		X^2	P-value
	No.	%	No.	%	No.	%		
Methods of dealing with the child during eating:								
▪ Encourage him for eating	19	44.1	7	36.8	3	2.2	65.533	<0.001*
▪ Punish him if doesn't eat	2	4.7	3	15.8	14	10.2		
▪ Not being alert during eating	4	9.3	3	15.8	6	4.3		
▪ Leave him as he wants	18	41.9	6	31.6	115	83.3		
Number of meals per day:								
▪ 1-<3	7	16.3	2	10.5	30	21.7	16.111	0.003
▪ 3-<5	28	65.1	15	79	105	79.1		
▪ As desired	8	18.6	2	10.5	3	2.2		
Types of snakes:								
▪ Sandwich & junk foods	38	88.4	11	57.9	34	24.6	57.179	<0.001*
▪ Vegetables	21	48.8	8	42.1	77	55.8	1.638	0.441
▪ Juice	42	97.7	10	52.6	43	31.2	58.386	<0.001*

**P value < 0.001* *responses are not mutually exclusive*

Table (6): Relationship between mothers' nutritional habits and occurrence of child obesity (n=200)

Mothers' Nutritional Habits	BMI							
	Obese		Overweight		Non obese		X^2	P-value
	No.	%	No.	%	No.	%		
Acceptable	3	5.7	6	6.9	76	87.4	26.391	<0.001*
Unacceptable	38	33.6	13	11.5	62	54.9		
Total(200)	43	21.5	19	9.5	138	69		

**P value < 0.001*

Table (7): Relationship between children's nutritional habits and their BMI (n=200)

Children's Habits	BMI							
	Obese (n=43)		Overweight (n=19)		Non obese(n=138)		X^2	P-value
	No.	%	No.	%	No.	%		
Taking breakfast before going to the nursery school:								
▪ Yes	13	30.2	9	47.4	17	12.3	17.089	<0.001*
▪ No	30	69.8	10	52.6	121	87.7		
Taking sandwish to the nursery school:								
▪ Yes	43	100	19	100	136	98.6	0.908	0.635
▪ No	0	0	0	0	2	1.4		
A child taking enough sleeping hours:								<0.001*
▪ Yes	12	27.9	12	63.2	128	92.8	19.741	
▪ No	31	72.1	7	36.8	10	7.2		
Sleeping after eating:								
▪ Yes	8	18.6	4	21.1	0	0	28.555	<0.001*
▪ No	35	81.4	15	78.9	138	100		
Increasing amount of foods infront of television:								
▪ Yes	34	79.1	12	63.2	38	27.5	39.599	<0.001*
▪ No	9	20.9	7	36.8	100	72.5		

Table (8): Relationship between mothers' knowledge about obesity and their habits towards their children's nutrition (n=200)

Total knowledge	Mothers' Nutritional habits						
	Acceptable		Unacceptable		Total	X^2	P-value
	No.	%	No.	%			
▪ **Satisfactory**	58	66.7	25	22.1	83	40.172	<0.001*
▪ **Unsatisfactory**	29	33.3	88	77.9	117		
Total	87	43.5	113	56.5			

**P value < 0.001*

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معدل انتشار السمنة والعوامل المساعدة بين الأطفال فى سن ما قبل المدرسة فى مدينة المنصورة

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مقدمـــــــة:
السمنة هى اضطراب غذائى عام فى كل الأعمار ويواجه موضوع السمنة صعوبة بالغة فى العلاج كما أن له عواقب صحية عديدة. ولأن التغذية تعد من النواحى الأساسية التى تتضمن تفاعلات قوية بين الوالدين خاصة الأم وطفلها، فالأمهات هن المؤثرات فى تشكيل التغذية المبكرة والتحكم فى الغذاء المتاح وأنماط الانشطة للأطفال.

الهـــدف مـــن الدراســـة:
هدفت الرسالة إلى تقييم معدل انتشار السمنة والعوامل المساعدة لها فى مرحلة ما قبل المدرسة.

مكـان البحـث:
أجريت الدراسة فى ست حضانات من مدينة المنصورة ثلاثة حضانات خاصة وهى (مجمع الإيمان مدارس الهدى والنور والمنصورة كولوج) و ثلاثة حضانات حكومية وهى الحرية ، خالد بن الوليد و فخر الدقهلية)

عينة البحث:
اشتملت عينة البحث على ٢٠٠ طفل من أطفال حضانات مدينة المنصورة وأمهاتهم فى الأماكن السابق ذكرها و المتاحين وقتإجراء الدراسة و تم الاختيار وفقا للمعايير التالية:

- السن يتراوح بين ٣ إلى أقل من ٦ سنوات
- الجنس الذكور والإناث
- أطفال لا يعانون من الأمراض المزمنة

أدوات البحـــــــث:
١. استمارة استبيان خاصة بالطفل وتتكون من جـــــــزئيين:
أ. بيانات شخصية مثل السن، النوع، ترتيب الطفل بالنسبة لإخوته و نمط الحياة.
ب- قياس الوزن والطول لتحديد معامل كتلة الجسم.
٢. استمارة استبيان خاصة بالأم لتقييم الآتى:
أ. معلومات الأم عن السمنة فى الأطفال مثل تعريف السمنة والعوامل المساعدة والمشكلات الصحية الناتجة عنها.....الخ
ب- العادات الغذائية للأم بالنسبة لأطفالها وتشمل نوع الرضاعة أثناء فترة الطفولة، طرق الرضاعة، نوع اللبن، الأغذية الاضافية للطفل ، عدد الوجبات فى اليوم وتناول الطعام بين الوجبات...الخ.

النتائج: أسفرت نتائج الدراسة عن الآتى:

- إن متوسط عمر الأطفال البد ناء (٤,٤٩±١,٢٠) مقارنة بالأطفال المعرضة للسمنة (٤,٨٠±١,٢٠).
- إن ٥١,٢% و٥٢,٦% من الأطفال البد ناء والمعرضة للسمنة على التوالى من الاناث مقارنة ٤٤,٢% من الأطفال غير البد ناء.
- أما بالنسبة للإقامة فان ٧٤,٤% من عينة الدراسة من الأطفال البد ناء من الحضر مقارنة ب ٨٤,٢ % من الأطفال العرضة للسمنة.
- كان معدل انتشار السمنة فى العينة ٣١%.
- وجود نسبة متقاربة بين معلومات الأمهات الغير كافية ٥٨,٥% والعادات الغذائية الغير سليمة ٥٦,٥% .بالاضافة إلى وجود علاقة إيجابية ذات دلالة احصائية بين معلومات الأمهات الغير كافية والعادات الغذائية الغير سليمة وبين حدوث السمنة.
- وجود علاقة إيجابية ذات دلالة احصائية بين معدل انتشار السمنة وتناول وجبة الافطار،النوم بعد الوجبات ومدة مشاهدة التليفزيون.
- أن ٤٨,٨%و ٤٧,٤% من الأطفال البد ناء والمعرضين للسمنة على التوالي أكثر استخداما لألعاب الكمبيوتر مقارنة ٣٦,٢% من الأطفال الغير بدناء.
- وجود علاقة إحصائية إيجابية ذات دلالة إحصائية بين معلومات الأمهات الغير كافية والعادات الغذائية الغير سليمة بحدوث السمنة.

الخلاصـــــــة:

وجد أن معدل انتشار السمنة و زيادة الوزن فى العينة حوالى ٣١ %. و أثبتت الدراسة وجود علاقة ذات دلالــة إحـصائية بـين عمـر وترتيـب الطفـل و حدوث السمنة و أيضا أكدت النتـائج وجود علاقة ذات دلالـة إحـصائية بـين معلومـات الأمهـات الغيـر كافية والعادات الغذائية الغير سليمة بحدوث السمنة.

التوصـــــــيات:

أوصت الدراسة بإعداد برامج تثقيفية للأمهات عن العوامل المساعدة للسمنة والعادات الغذائية الصحية السليمة للوقايـة مـن الـسمنة، وأيـضا عمـل مـسح صحى على مدى واسع لتقييم النظام الغذائى للأسر.