



Assessment of Prevalence and Risk Factors of Obesity in Pediatric Age Group Between (5-15) years.

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Abstract:

Background.

Obesity is defined as age- and sex-specific body mass index (BMI) at or above 95th percentile, it is one of the more pressing public health problems today. The common classification of weight is based on body mass index (BMI), calculated as the weight in kilograms divided by the square of the height in meters (kg/m²). We try to explain and limit the serious sequelae of this problem. Aim of study, determine the risk factors for obesity and its prevalence in childhood (5-15 years).

Patients and Methods:

Cross sectional study, from 1st of April 2017 to end of January 2018. Clusters of 1044 children aged 5 -15 years from primary and secondary schools, kindergarten and children admitted to the ward in Al-Diwaniya were surveyed, excluding endocrine diseases and those using medications like steroid. Data on age, gender, height and weight, to determine BMI, has been measured in this study.

Results:

The overall prevalence of obesity in the current study is 16.57 %, also we determined some of risk factors of obesity and we found that obesity has significant association with family history, residence and dietary habit of the child.

Conclusion:

The study determined the overall prevalence of obesity which is 16.57%, also we determined family history, residence and dietary habit as significant risk factor for obesity in childhood.

Key words:

Prevalence, Risk, Obesity. Pediatric

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دراسة معدل انتشار البدانة والعوامل المسببة لها للفئة العمرية بين (5-15) سنة

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الخلاصة

خلفية البحث : البدانة تعرف كمقياس كتلة الجسم بالنسبة للعمر والجنس وتساوي او اكثر من 95% وتعتبر واحده من اكثر المشاكل الصحية العامة في الوقت الحالي .التصنيف الشائع والمقبول بالنسبة للوزن يعتمد على مقياس كتلة الجسم . حساب كتلة الجسم يساوي الوزن بالكيلوغرام تقسيم الطول بالنتر المربع .

الاهداف : تقييم عوامل الخطورة للبدانة لدى الاطفال الذين تتراوح اعمارهم بين (5-15) سنة ولتحديد انتشار البدانة .

تصميم البحث : دراسة مقطع عرضي للفترة من واحد نيسان 2017 ولغاية نهاية كانون الثاني 2018 . الدراسة شملت 1044 طفل تتراوح اعمارهم بين 5- الى 15 سنة الذي تم فيها فحص صحي في مدارس الابتدائية ورياض الاطفال لكلا الجنسين وقد تم استثناء الاطفال المصابين بأمراض الغدد الصماء والاطفال الذين يستخدمون علاجات الستيرويد ومضادات الاختلاجات ومضادات الاضطرابات العقلية وكل البيانات اعتمدت على الوزن والطول والجنس لتحديد مؤشر الكتلة.

النتائج : ان نسبة انتشار البدانة في هذه الدراسة هي 16.57% وكذلك حدد بعض العوامل المسببة للبدانة وحددت بشكل هام علاقة العامل الوراثي والسكن وطريقة الغذاء لدى الاطفال .

الاستنتاجات : البدانة عند الطفل تعتبر مشكله صحيه في تزايد في الدول التطوره والناميه . البدانه عند الاطفال تؤدي الى امراض غير انتقاليه ومشاكل نفسيه , وهذا بسبب انها مشكله مهمه تحتاج الى تحل بالسرعه الممكنه . بشكل عام وزن الوالدين محدد رئيسي لوزن الاطفال . تشجيع الغذاء الصحي وتثقيف الاهل حول تبعات البدانه على صحة الاطفال عند النضوج واتباع استراتيجيات فعالة للسيطره على البدانه .

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Introduction

Obesity defined as age- and sex-specific body mass index (BMI) at or above 95th percentile ^(1,2) is described by the WHO as “abnormal or excessive fat accumulation that presents a risk to an individual's health ⁽³⁾. It is one of the more pressing public health problems today. ⁽⁴⁾ Towards the end of the 20th century, obesity was identified as a worldwide health care problem affecting the wellbeing of populations. Previously identified only as a problem of adult health, obesity among children is increasingly becoming a concern. ⁽⁵⁾ The BMI percentile is a more accurate index of body mass in the pediatric age group. ⁽⁶⁾ The common and accepted classification of weight is based on body mass index (BMI), calculated as the weight in kilograms divided by the square of the height in meters (kg/m²). The standard categories of BMI in adults and adolescences are underweight (BMI below 18.5), normal (BMI from 18.5 to 24.9), overweight (BMI from 25 to 29.9, also called pre-obese) and obese (BMI 30 and above). ⁽⁷⁾ Approximately 1 in 5 children are overweight and 1 in 10 children are obese. ⁽⁸⁾ The National Health and Nutrition Examination Survey, 2009-2010, found 32% of children, 2-19 years old to be overweight or obese. Children's risk varies significantly by race/ethnicity. ⁽⁹⁾ Obesity is the result of a chronic caloric imbalance, with more calories being consumed than expended each day ⁽¹⁰⁾. History of obesity, hereditary factors, physical activity environment, metabolism, behavior, culture, and socioeconomic status all play a role in obesity ⁽¹¹⁾. Studies have shown that obesity during childhood and adolescence is a determinant of a number of cardiovascular (e.g. hypertension, atherosclerosis) ⁽¹²⁾, psychosocial (e.g. depression) ⁽¹³⁾ and endocrine comorbidities ⁽¹⁴⁾.

Aims of study

1. Determine the risk factors for obesity in childhood
2. To determine the prevalence of obesity .

Patients and Methods

Study design and setting: Data used in this study was collected using a cross sectional study on (1044) children who were enrolled in primary and intermediate schools, also children who attend emergency unit or admitted in Al-Diwaniya Teaching Hospital from the 1st of April 2017 till the end of January 2018 after taking permission from Directorate of Education/Diwaniyah, and written consent from the parents about the participation in the study. The study Sample involve , one thousand and forty four children were involved in the study with different weight (under ,normal, over weight and obese).



The Inclusion criteria was children from 5-15years and the exclusion criteria were children with genetic, endocrine, CNS or psychical disorders, steroid drugs, and 87 children and adolescence who did not answer on questionnaire paper. The questionnaire was composed of patients' socio- demographic characteristics including: age, gender, residence, weight and height, presence of obesity in the first degree relatives ,type of feeding ,maternal education, habit of feeding as fast-food restaurant and salty and calorie-dense foods and physical activity. To determine BMI of each student all class students were asked to take off their shoes and try to keep their clothes as light as possible so weight measurement would be more precise, their weight measured by an electric scale.

Data was collected and included in a data based system and analyzed by statistical package of social sciences ((SPSS, Inc., Chicago, IL, USA)) version 17. Parametric data were expressed as mean \pm standard deviation (SD). It was analyzed statistically using student t-test, while non-parametric data were expressed as percentages and were analyzed using chi square. p-value < 0.05 was considered statistically significant.

Results

A total of one thousands and forty four children aged (5-15) were enrolled in study, (58) (5.50%) children were under weight, (610)(58.50%)children were normal, (203)(19.5%)children were overweight and (173)(16.50%) children obese . The demographic characteristics of them are summarized in following figure. Males children were (487) (46.6%) and females children (557) (53.4%). Regarding maternal education (297)(28.4%) children were of primary education mothers, (520)(49.8%) of secondary education and (227)(21.8%) of higher education. Positive family history of obesity was detected in (210)(20%)children and (834)(80%) children have negative family history. We have (332)((31.8%) children from rural area and (712)(68.2%)children from urban area . Children who had taken extra food were (609)(58.3%) while not (435)(41.7%). According to type of feeding ,(190)(18%) children have history of breast feeding , is (234)(22.5%)children have history of artificial feeding and (620) (59.5%)children of mixed type . Most of children (712)(68%) have sedentary activity less than 5 hours and (332)(32%) have more than 5 hours sedentary activity. In physical activity, children divided into two groups moderate (MVPA) (379)(36%) children and sever (VPA) (665)(64%)children.



Table(1): Age and sex distribution

<u>Age</u>	<u>No</u>	<u>Male</u>	<u>%</u>	<u>Female</u>	<u>%</u>
preadolescences	533	233	43.714%	300	56.285%
Adolescences	511	254	49.706%	257	50.293%
Total	1044	487	46.6%	557	53.4%

Table (2): Distribution of sampled children according to status of BMI at each age

Age	Total	Under weight	Normal	Over weight	Obese
5	52	6	24	15	7
6	94	7	57	19	11
s7	97	3	74	14	6
8	101	1	70	18	11
9	97	4	58	15	20
10	92	5	42	19	26
11	99	6	45	21	27
12	105	8	51	23	23
13	99	5	53	24	17
14	103	6	67	21	9
15	105	7	69	14	15
Total	1044	58	610	203	173

Table (3): distribution of normal and obese children regard residence

		Obese	Normal	Total	p-value
Residence	Urban	123(27.5%)	323(72.5%)	446	0.001
	Rural	50(15%)	287 (85%)	337	
Total		173	610	783	



Table (4): distribution of normal and obese regard extra food

		Obese	Normal	Total	p-value
Extra food	Positive	125(39%)	197(61%)	322	0.002
	Negative	48(11%)	413 (89%)	461	
Total		173	610	783	

Table (5): distribution of normal and obese children regard gender

Gender					Total	p-value
	Normal		Obese			
	No.	%	No.	%		
Male	258	76.7%	78	23.3%	336	0.71
Female	352	78.7%	95	21.3%	447	
Total	610		173		783	

Table (6): distribution of normal and obese children regard education

Education					Total	p-value
	Normal		Obese			
	No.	%	No.	%		
Primary	185	77.7%	53	22.3%	238	0.14
Secondary	280	82.3%	60	17.7%	340	
Higher	145	70.8%	60	29.2%	205	
Total	610		173		783	



Table (7): distribution of normal and obese children sedentary activity

Sedentary activity	Normal		Obese		Total	p-value
	No.	%	No.	%		
	< 5 hr	311	79.1%	82	20.9%	
≥5 hr	299	76.6%	91	23.4%	390	
Total	610		173		783	

Table (8): distribution of normal and obese children regards physical activity

Physical activity	Normal		Obese		Total	p-value
	No.	%	No.	%		
	Moderate	286	79%	91	21%	
Sever	324	80%	82	20%	406	
Total	610		173		783	

Table (9): distribution of normal and obese children regard type of feeding

Type of feeding	Normal		Obese		Total	p-value
	No.	%	No.	%		
	Breast	176	76.5%	54	23.5%	
Artificial	150	71.7%	59	28.3%	209	
Mixed	284	82.5%	60	17.5%	344	
	610		173		783	



There were no statistical difference between male and female as shown in table (5) with p -value 0.71. Regarding education of mother were primary, secondary level and higher level with p -value 0.14 no significant. The difference in residence of children were significant in urban with p -value 0.001. In children taken extra food and in other children not taken extra food these difference were statistically difference as shown in table (4) The difference between type of feeding (breast, artificial and mixed) were not significant, also this seen in sedentary activity and physical activity.

Discussion

The prevalence of obesity was found to be 16.57% among those age group, compared to prevalence in Jordan which was 5.5%.⁽¹⁵⁾ 13.5% in Egypt.⁽¹⁶⁾ ,6.3% in Saudi Arabia.⁽¹⁷⁾ 7.8% in Iran.⁽¹⁸⁾

During our studying to the risk factors we found that there is positive association between obesity in the child and the presence of obese person in the first degree relatives. This support the genetic cause of obesity, this result is similar to a study in Hartford in 2004.⁽¹⁹⁾

No significant differences was found between male and female ,this is similar to a study in East central Illinois in 2013.⁽²⁰⁾

In contrast to a study in Brazil in 2004 which found that obesity is more common in male.⁽²¹⁾, this due the authors suggest that such difference between gender may due to great concern among girl in the society where the esthetic standard set forth slender human being. This behavior is more frequently observed as the girls grow older while in our study there's no differences in incidences of obesity between male and female. Whereas a study in Tehran shows that female is a risk factor for obesity.⁽²²⁾

This may be explain by large number of female included in Tehran study. Regarding the residence also we found that obesity is more in urban than rural children, this may be due to lower income of families lived in rural area with less fast food and rural children are more likely to have physical activated due to living along distance form there schools, in contrast to a study in Portugal which found that obesity is more common in rural area.⁽²³⁾ Whereas a study in Iran shows no significant difference between rural and urban area.⁽²⁴⁾ No significant differences was found regarding maternal education (primary ,secondary or higher),this is similar to what was found by Abdulaziz Mansor Binsheed in his study in Saudi Arabia.⁽²⁵⁾ Whereas significant association was found by Anastase Tehicaya and Nathalia Lorentz in 2007.⁽²⁶⁾



In this study we found that there is no statistically significant differences were found between types of feeding whether breast, artificial or mixed ,in contrast to a study in Ohio that shows exclusive breast feeding reduce the risk of obesity. ⁽²⁷⁾ This may be explain by low number of child received breast feeding in our study. In this study we found significant association between obesity and diet taken especially fat and sugar which is similar to a study in Brazil. ⁽²¹⁾ In contrast to a study in east central Illinois which found no association with the diet. ⁽²⁰⁾ Regarding activity we divided our patients into two groups: inactive (moderate activity group) and active (severe activity group) and found no significant difference between the two groups, this is similar to a study in Brazil in 2007. ⁽²¹⁾ Whereas a study in Europe shows that increasing physical activity reduce the risk of obesity. ⁽²⁸⁾

Sedentary activity in our study also has no association with the obesity, this is similar to a study in Saudi Arabia. ⁽²⁵⁾ , may be explain relatively small sample size and in contrast to a study in New York that found significant association between sedentary activity of more than 5 hours and risk of obesity .⁽²⁹⁾ This goes with some studies have indicated that excessive television and video game consumption could result in obesity.⁽³⁰⁾

Conclusion

This current study determined the overall prevalence of obesity which is 16.57% ,also we determined genetic ,residence and dietary habit as significant risk factor for obesity in childhood

Recommendations

Considering Obesity as a non- communicable disease and the likelihood for the need of long-term treatment is important in lowering its morbidity. Encouraging healthy diet. Educate parents about the likely consequences of overweight and obesity on children's health in adulthood. Further studies are needed to clarify other possible risk factors for obesity.



Conflict of interests.

There are non-conflicts of interest.

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