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Prevalence and Risk Factors of Obesity in Children: Attending Al-Kindy Obesity Unit in Baghdad

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ABSTRACT

Childhood obesity is increasing in frequency worldwide with including developing countries, while it was considered previously as the disease of the first world or rich people. The aim is to assess the prevalence of overweight and obesity with associated risk factors in obese children visiting Al-Kindy Obesity Unit. Throughout a period started in December 1, 2019 to February 29, 2020 in Baghdad, 109 children were randomly involved, 69 (63.3%) girls and 40 (36.7%) boys. Body mass index was evaluated in front of standard tables. A questionnaire was built to gather suspected risk factors. Eight (7.3%) of our sample were overweight [1 (2.5%) boy and 7 (10.1%) girls] and 101 (92.7 %) of our sample were obese [39 (97.5%) boys and 62 (89.9%) girls]. Significant associations were found between overweight and health education, sleep, physical activity, snacks and TV watching. Obesity was more frequently encountered than overweight in children with (heavy weights) who seek help visiting obesity units. Unbalanced dietary habits, sedentary lifestyle and spending more hours on watching TV are important risk factors.

1. Introduction

Obesity could be identified as a condition of excessive fat deposition in adipose tissue, affecting body health (Akram et al., 2000). World Health Organization (WHO) depends on ≥ 30 body mass index (BMI) to indicate obesity (Swinburn et al., 2019). The problem of obesity becomes a major health issue throughout the world, leading to higher chances of non-communicable diseases (NCD) (Musaiger 2004; Sibai et al., 2010). Higher weight is linked to various disease status not limited to central nervous and cardiovascular systems, including breathing abnormalities during sleep, hypertension, malignancy, and diabetes (Ezzati et al., 2002; Jasim et al., 2019). Published papers in our part of the world (Middle East) rang the alarm of excessive weight in our population of different age groups with more than half of total mortality annually due to NCD (Musaiger 2004; Sibai et al., 2010). Globalization is well represented in obesity when both developed and developing countries are affected with

major public health threats (Malina & Katzmarzyk 1999; Cole et al., 2000). Owing to the already limited resources of developing world, NCD due to obesity in the community has a significant burden on whole health system which might be greatly improved with even mild to moderate weight modification (Ogden et al., 2007).

Obesity is increased significantly during CVID-19 pandemic and this problem (obesity) has so many risk factors which are started in the fetal life to continue through life later on with the support of environmental parameters (Al-Momen et al., 2020; Jasim et al., 2020). This study aims to assess the prevalence for childhood obesity types in obese patients and associated risk factors.

2. Materials & Methods

A cross sectional study was performed recruiting randomly selected 109 obese children whom visited Al-

Kindy Obesity Unit at Al-Kindy College of Medicine starting from December 1, 2019 to February 29, 2020.

Table 1
Variables used in the questionnaire

From patients	From files in obesity unit
1-name 2-age 3-gender 4-resident 5-physical activity (exercise, walk to school, playing) 6-time of watching (tv, internet, gaming) 7-time of sleeping 8-dietry habit (meals, snacks) 9-family education (healthy food)	1-weight (in kg) 2-height (in cm) 3-overweight in family (mother, father, brothers)

All patients or their care givers who couldn't answer one or more information in the table were excluded from our study. BMI was defined as weight (kg)/ height (m2). The following criteria for age- and gender-specific body mass index (BMI percentile) have been applied to diagnose childhood obesity (Kirk et al., 2005) Underweight: less than 5th percentile, overweight: 85th – 95th percentile, and obese: equals or greater than 95th percentile. Any child who failed to reach 85th percentile of BMI was excluded from this study. Ethical approval was obtained from Ethical and Scientific Committee at Al-Kindy College of Medicine. Also, informed consent was taken from the involved children or their caregivers.

3. Results & Discussion

In this study, 109 patients including 69 (63.3%) girls and 40 (36.7%) boys were assessed. Mean age of the patients was 9.8±2.9 (3-15) years. Out of the studied patients 8 (7.3%) of them were overweight [1 (2.5%) boy and 7 (10.1%) girls] and 101 (92.7 %) of them were obese [39 (97.5%) boys and 62 (89.9%) girls] (Figure1). Females had higher overweight prevalence without touching significance (p= 0.143).
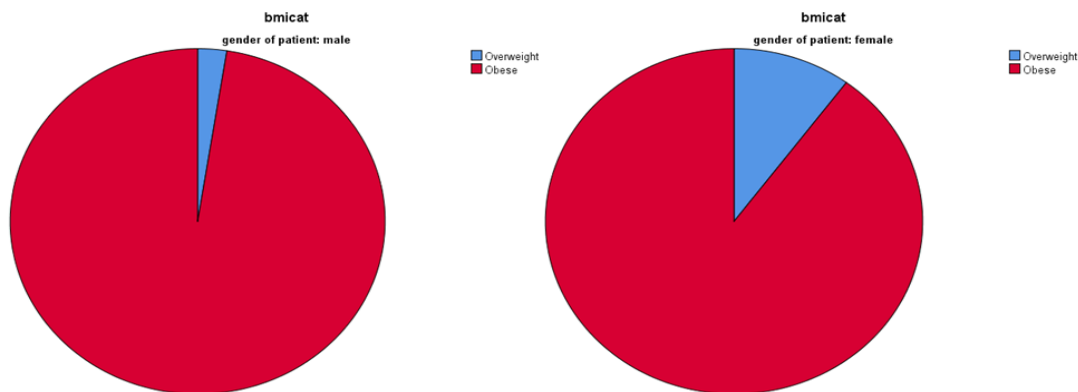

Fig. 1. prevalence of overweight and obesity in both male (in the left) and female (in the right)

Table (2) demonstrates the correlation between BMI and physical activity, watching TV, sleep hours and snack each day. The correlation test measures the strength of association between two variables and the direction of the relationship. For example, there is a strong association between BMI and sleep hours according to this test (p value=0.000) and the degree of association is (r=.521) which means that there is a strong positive linear association between BMI and sleep hours.

Table 2
Correlation between BMI and certain risk factors

Correlations

		BMI	physical activity	watching Tv	sleep hours	snacks each day
BMI	Pearson Correlation	1	-.618**	.521**	-.647**	.754**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	109	109	109	109	109

It is evident from figure 2 that with increasing physical activity, BMI is decreasing significantly, while the opposite is applied in figure 3, BMI is decreasing significantly with increasing sleeping ours. Increasing number of snacks is associated significantly with higher BMI measurements, as seen in figure 4. Also, BMI increases significantly with increasing watching hours of TV and other media.
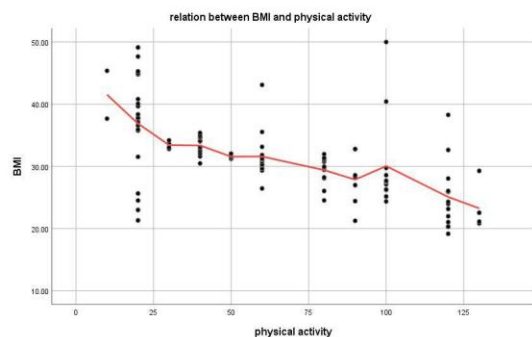
Fig. 2. The significant inverse association between BMI and physical activity according to the probability value in the correlation test (p=0.000) in table (2).
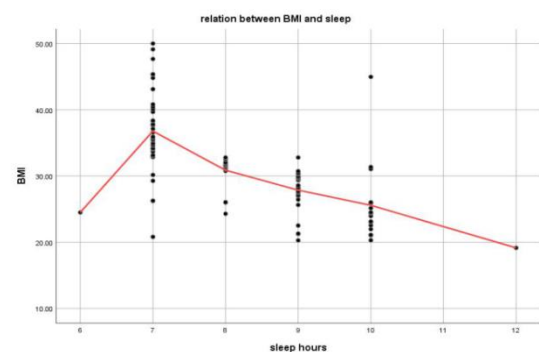

Fig. 3. The significant inverse association between BMI and hours of sleep according to the probability value in the correlation test (p=0.000) in table (2).
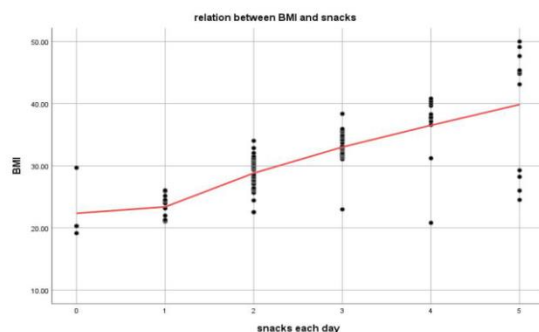

Fig. 4. The significant linear association between number of snacks each day and BMI according to the probability value in the correlation test (p=0.000) in table (2).
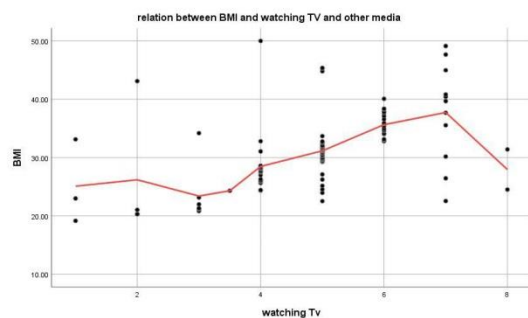

Fig. 5. The linear significant association between BMI and hours of watching TV and other media each day according to the probability value in the correlation test (p=0.000) in table (2).

In the statistical analysis, Pearson chi-square tests was applied to determine if there any association between the BMI and family health education. There was a strong association between them (p value=0.000) and (X=19.01) as the degree of association. The test also showed that there is no association between BMI and family obesity (p= 0.622). The population of Baghdad, as of 2014, is approximately 7,665,292 making it the largest city in Iraq (Chatelard 2012). This study showed an overweight prevalence of (7.3%) which was similar to what have been found by other scientists in England and Scotland (5.4%, and 6.4%, respectively) (Chinn et al., 2001).

Our results revealed that weight is increasing with increasing age, in line with other previous findings (Kinra et al., 2000). Prevalence of overweight in our sample had higher female: male ratio [1 (2.5%) of boys and 7 (10.1%) of girls] but the difference wasn't statistically significant. A similar result was found in Babil governorate in which 8300 students were chosen randomly from 20 primary schools (Lafta et al., 2005). Education status of parents of our patients had a significant link with BMI of their children. The higher parental education level the lower childhood weight. This may reflect the important role of community-awareness of parents to protect their children from higher weight gain and avoid possible risk factors. This is in line with (Fredriks et al., 2000), but opposed by (Tanasescu et al., 2000) who denied the importance of fathers education on childhood weight.

During recent years, a sedentary life style was evident worldwide and affecting various nations. The invasion of electronic materials has changed the world. The American Academy of Paediatrics suggests one or two hours' limit of television for children, and completely discourage that for children below two years (Takeuchi et al., 2015). A study done in United States showed that one hour of television watching was associated with lower obesity incidence, in contrast to four hours of watching (Takeuchi et al., 2015).

In our study, mean hours of watching TV and using of digital media (computers, video games) was 4.9±1.4 (1-8) hours daily which is in great agreement with the above findings in United States. According to WHO, individuals of 5 - 17 years` age should have at least one hour of moderate- to vigorous-intensity physical activity daily (Martins et al., 2017). Our study showed an average of 67.7±36.6 (10-130) minutes daily of physical activity during (sport, play, school). Sleep is important for growth of children and adolescents due to wonderful diurnal hormonal release which has a great impact on growth and maturation of body cells (MacLean et al., 2015).

Little sleeping time may affect levels of different growth hormones such as cortisol, ghrelin, leptin, growth hormone, leptin, and insulin leading to higher weight accumulation (Taheri et al., 2004). Our patients had 8.3±1.2 (6-12) hours of sleep as a mean, which was near to previous publishing (Paruthi et al., 2016). It is well-known that obesity results when an imbalance was evident between energy intake as calories and calories needed daily (Nielsen et al., 2002). As a recently noticed habit, snacks and food intake between major meals are a recognized factor of excessive weight gain (Jahns et al., 2001).

Involved patients had a mean of 2.62±1.3 (0-5) snacks daily. However; most of overweight childhood population

(93%) in a previous local study had the habit of snacks consumption.

4. Conclusion

Obesity prevalence and risk factors in the current study was similar to other parts of the world.

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