Original paper

Prevalence and Behavioral Risk Factors of Overweight and Obesity amongst Fifth and Sixth Grade Primary Schools' Children in AL-Najaf

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Abstract

Background: Childhood obesity describe as one of the major vital and difficult public health issues in developed as well as developing countries. The WHO graded overweight and obesity as the 5th leading international risk for mortality.
Aim: To assess the prevalence of obesity and overweight of the 5th and 6th grade in primary schools at age (10-12) in AL-Najaf Province and associated risk factors.
Methods: A cross sectional study was carried out in 24 primary schools in AL-Najaf Province between 1st of February to the 30th of May 2018.with a total number of (800) child aged (10-12) were included. The BMI was used as indicator for overweight/obesity
Results: The prevalence of obesity and overweight amongst primary school children in AL-Najaf Province were 39.4%. About 12.9% were overweight and 26.5% were obese. There was significant associated with child's age, obesity and education of parent's, fast food intake, physical inactivity, Transport method to school, Type of the school, sleep pattern, time spent in watching television. a short period of breastfeeding, skipping breakfast, a high consumption of sugary beverages, there was no statistically significant regarding gender, weekly fresh fruits consumption. The data was analyzed using the Statistical Package for the Social Sciences (SPSS) version 18 using Pearson Chi-Square ($\chi 2$) test with P-value of (<0.05).
Conclusion: The prevalence of overweight and obesity is relatively high among children in primary school in AL-Najaf Province
Key words: Overweight, Childhood obesity, BMI, prevalence.

Introduction

Overweight and obesity are described through the World Health Organization (WHO) as Condition of extreme body fatness that outstrip healthy limits which presents a risk to the health. and as major public health crisis across the country and internationally [1,2]
Childhood obesity and overweight are outlined by the Centers for Disease Control and Prevention (CDC) as a body mass index (BMI) at or on top of the 85th percentile and below the 95th percentile for overweight and at or on top of the 95th percentile for obesity in the children of the same age and gender [3]. The WHO graded overweight and obesity as the5th leading international risk factor for mortality, also considers childhood obesity as the greatest public-health problem of the twenty-first century [3,4].
Globally, the prevalence is higher in western and industrial countries, however; "still low in some developing countries." The WHO stated that Americas and Eastern Mediterranean regions had the highest prevalence of overweight and obesity (30–40%) than

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the European (20–30%), According to WHO survey in 2016 the prevalence among (5-19 year) in Iraq was 32%; 14.4% Respectively. "WHO estimated that by 2030 up to 57.8% of the world's adults would suffer from obesity". The obesity of childhood could be the most prevalent nutritional disorder between children and adolescents worldwide."[5, 6].

Childhood obesity will increase the chance of chronic disease in childhood as well as adulthood There are multiple etiologies for this imbalance. "more than 90% of cases are due to modifiable factors and only less than 10% are due to hormonal or genetic changes"[7]. so that; it's necessary to understand the causes and consequences to take preventive actions. hence, the rising prevalence of obesity could be due to environmental factors, genetic factors, lifestyle behavior, and cultural factors that play major roles in increasing the prevalence of obesity worldwide. In some cases, obesity is due to genes such as lepton deficiency or medical causes like glandular disorder or due to effects of drug like steroids [8], consumption of fast foods outside the house may be a serious conducive issue to increase in obesity among schools' children. So, that" inactivity, urbanization and socioeconomic transition, as well as the present of personal cars, put the people in less physical activity; skipping breakfast, a shorter period of breastfeeding, a rise of eating outside the house, a high intake of sugared beverages, time that spent on social networking, video games and Television [9,10].

childhood obesity will lead to high blood pressure and high cholesterol, which are risk factors for upset cardio vascular disease and type2 diabetes and it's complication like blindness and limp amputation, sleep apnea, asthma and obesity hypoventilation syndrome, musculoskeletal discomfort and joint problems, Fatty liver disease, and gastro-esophageal reflux i.e., heartburn and gallstones. Also, associated with Psychological issues like anxiety and depression; Social problems such as bullying and stigma. Renal disease. Eating disorders and Sleep disorders and breast cancer [7,9,11,12,13].

The services could be supplied for primary schools' children embrace health examinations throughout action in the school, regular physical examinations, follow up of development and growth, smart nutrition is thought as a cornerstone of survival, health issue; also increase physical activity and Promote, protect and support breastfeeding in health services and the community, throughout the Baby-friendly Hospital Initiative [14,15,16]. consumption of breakfast could be reduced risk of changing into obese or overweight [9]

The aim of the study is to estimate the prevalence of obesity and overweight in the 5th and 6th grad in primary school in AL-Najaf Province and associated risk factors, analyze the association of socioeconomic and demographic factors on the anthropometric measurement

Subjects and methods

A cross sectional study. A multistage stratified random sampling technique was used to select a sample. In AL-Najaf province the sample was taken from urban and rural areas, 16 governmental primary schools were selected from each stratum using simple random sampling technique (8 school from urban area and 8 school from rural area) and 8 private primary schools were selected by a convenient non random sampling method; The schools were classified According to gender (school for boys; girls and

mixed gender schools). Then in each school we selected (5th and 6th grad). and student from each class selected by systematic random sampling during the period from the first of February to the thirty of May2018. The age of the students ranging from 10 to 12 years

Due to difficulty in selected the requirement of the sample size according to the sample equation. So that more participants were included to accomplish the required sampling technique. The students in governmental primary schools are (293789). In urban area the total number are (198950), for rural area the total number (94839). For the private schools; total number are (24190) In urban area (22900) In rural area (1290). The total number of governmental primary schools in AL Najaf province is (635) schools and (99) private schools. The size of primary student population in the 5th and 6th grades and we select the children with age of (10 to 12) years is (94,148) students. For the 5th grade is (54916), for the 6th grade is (39227). The number of students were participated in a study from (24) schools were (3023) so; the sample size calculated was (906.9) selected to accomplish the study. 950 questionnaire papers were distributed to the students to answer them by their parents, 864 questionnaire papers returned back from the parents with a response rate of 90%, from them 64 questionnaire papers had a lot of missed information from parents. So, that accomplished sample was 800 students

Children who had other medical conditions that effect on their weight (hypothyroidism, chromosome abnormalities, steroid use), children aged < 10 years or > 12 years, children that did not complete the questionnaire paper were excluded.

For the purpose of the study, a written official letter was obtained from the University of Karbala-Collage of Medicine to the Directorate of Education in AL –Najaf city from which official facilitation letters were sent to the selected schools. A written informed consent was sent to the parents. In each school two - three teachers were trained to help us. In the beginning we interviewed the students to explain how the questionnaire would be filled by their parents. Then, interviewed each student to fill the first page of the questionnaire in the school. The weight and height were measured for each child, weight was measured with a suitable electronic balance [Kinlee] and we standardized the scale daily before use. All boys and girls were wearing minimal clothing and were barefooted. Weight was measured in kilograms with an accepted error of 0.1kg. Height was measured in centimeter using a fixed scale measure, with the subject standing upright and looking straight ahead, takes the height measurement on a floor that is not carpeted and against a flat surface such as a wall with no molding. With an accepted error of 0.1cm. In average each child takes about 4-5minutes. In the end; the students have been asked to take the questionnaire to home to be filled by one of their parents and to be collected again on the next day in average time from questionnaire sending and collection from children after return them back, take about 2-3 day. The pilot study was done in one of the governmental selected schools one week prior to the data collection and was revealed good acceptance, minor modifications on the questionnaires were done. The questionnaire was written in simple language to answer them easily, designed in English, after that translated to Arabic. For

confidentiality reasons, the names of the students were anonymity.

The questionnaires consist from Tow sections: -

The first section was filled by the students in the school including demographic characteristics, in addition anthropometric measurements (weight, height, BMI) were measured, also nutritional history and sleep pattern were investigated.

The second section was filled by one of the parents including their demographic characteristics. Also, questions about the type of the feeding in the first 6 months, information about the physical activity, and sedentary life habits. Questions about the time consumed in using smart devices.

Height, weight, gender, and age in months for each child were used and body mass index percentile (BMI%) was calculated by using WHO Anthro computer program [version 3.2.2, January 2011]. BMI was measured according to the Centers for Disease control and prevention (CDC) growth chart (BMI for age percentile), overweight was defined as BMI more than 85th and less than 95th percentile for age and gender and obesity was defined as BMI more than 95th percentile for age and gender.

The data were coded and analyzed using the Statistical Package for the Social Sciences (SPSS) version 18. So, the statistical significance was assessed by Pearson Chi-Square ($\chi 2$) test with P-value of (<0.05).

Results

The ages of students ranged between 10 to12 years with a mean age 11.25±0.63 years. The socio demographic characteristics of the study population are shown in (Table 1) which showed that the number of Male (398) and Female (402). Three quarters of the study sample were governmental school. More than two thirds were urban residence. Fathers had higher proportion of secondary and college education than mothers (71.6%, 52.4% respectively). The percent of employed fathers more than employed mothers (34.5%,20.1% respectively). More than the half was insufficient income.

Concerning Weight status of the study sample (Figure.1) Demonstrates that the total number of children were 800 children. The obesity alone accounts for one quarter of the study sample (26.5), overweight (12.9) while normal weight pupils represent about one half of study according to BMI results.

There was increase in the percentage of overweight and obesity in 6th grade more than those of 5th grade and this result was significant with (p=0.04), as shown in (Figure.2).

As shown in (Table.2) increased level of education of fathers or mothers associated with a higher proportion of obesity and overweight this association was statistically significant (p=0.03 and 0.05 respectively).Overweight or obesity of one or both parents significantly associated with increase the percentage of children obesity or overweight (p=0.001).Parents who care about their children weight had significantly decrease the percentage of obesity or overweight children than those who did not care (p=0.001). Obesity and Overweight had significantly increase with high family income(p=0.02).

Table-3 shows that fast food meals consumption per week was higher in obese and over weight than normal weight child, and this result was significant with (p value= 0.001). Similarly, Liking toward candy and chocolates, liking toward carbonated beverage and sugary juice consumption were more in overweight

and obese than normal weight child with a high statistical significant difference (p value= 0.001).

Table 1. Characteristics of study sample

Variable		No.(total 800)	%
Age (in years)	10	267	33.4
	11	411	51.4
	12	122	15.3
	Mean ±SD Range	11.25±0.63 10- 12	
BMI (Mean ±SD)	19.83±4.80		
Gender	Male	398	49.8
	Female	402	50.2
	Total	800	100.0
School type	Governmental	599	74.9
	Private	201	25.1
Grade	5th	403	50.4
	6th	397	49.6
Residence	Urban	578	72.2
	Rural	222	27.8
Father education	Read and write	81	10.1
	Primary school	147	18.4
	Secondary school	322	40.3
	College or higher	250	31.3
Mother education	Read and write	146	18.3
	Primary school	235	29.4
	Secondary school	272	34
	College or higher	147	18.4
Father occupation	Employed	276	34.5
	Retired	57	7.1
	Free work	420	52.5
	Non-employed	47	5.9
Mother occupation	Employed	161	20.1
	Housewife	639	79.9
Income	Insufficient	523	65.4
	Sufficient	197	24.6
	Sufficient and more	80	10

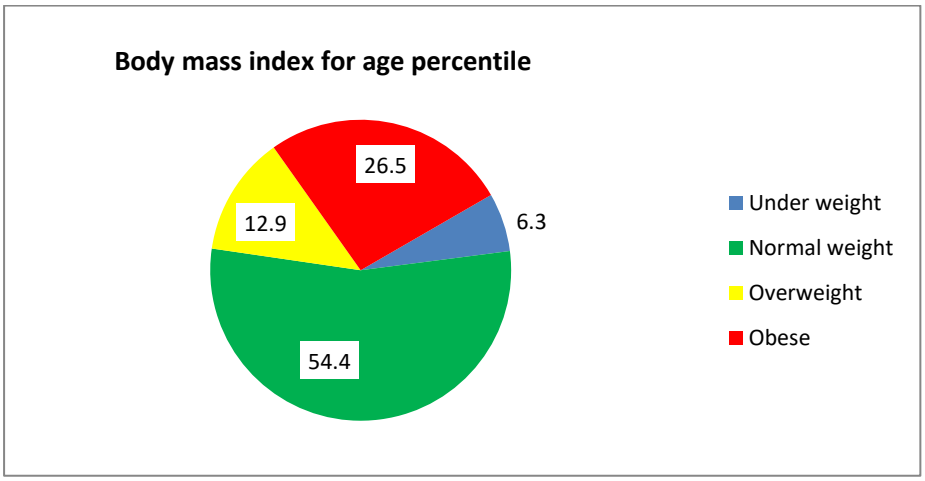

Figure 1. weight status of the study sample

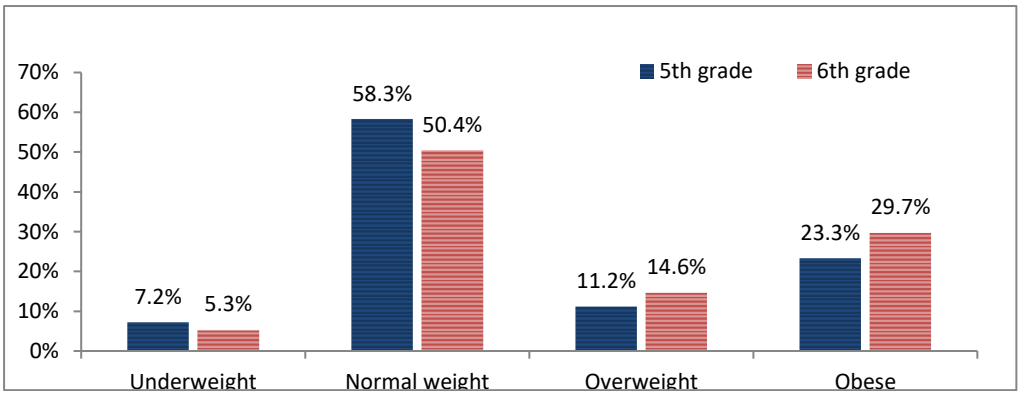

Figure 2. Relationship between grade and obesity status of school children

There was no statistical significant difference regarding weekly fresh fruits consumption between normal weight child and overweight/obese one (p= 0.09).Small percent of breast fed in the first 6 months of life had overweight or obesity(5.6% and 10.9% respectively), while bottle fed child had higher proportion of overweight and obesity (15.6% and 60.9% respectively) with a high statistical significant difference (p value= 0.001).Association between breakfast consumption and obesity reveals that those of irregular breakfast consumption had significantly increase percentage of obesity and overweight more than those consumed breakfast regularly (p=0.001). Significant association between overweight or obesity and those shopping foods and drinks outside home or at school (p=0.001). Significant association between overweight or obesity and those taken Lunch Bag (p=0.001).

Table-4 demonstrates that children with enough sleeping hours, early bed time and sleeping time had lower percentage of overweight and obesity than others and this result was highly significant (p=0.001). Half of children of absent sport lesson were obese compared to only 15.8% of children with the presence of sport lesson and this result was statistically highly significant (p=0.001). Also the presence of sport activities in the school had significantly lower proportion of obesity and overweight than those with absent sport activities (p=0.02). More than half of children with no sports outside the schools (53.3%) had obesity compared to only 1.9% who always had sports activities outside the school and this result was statistically highly significant (p=0.001). Transportation method to school revealed that children who reached their schools through walking or biking had significantly a lower proportion of overweight and obesity (7.1% and 10.5% respectively) than those reached their schools by bus or private cars (18.9% and 43.2% respectively). About two thirds of children who spent more than two hours on TV, mobile, tablet or Laptop were obese compared to only 2.2% of those did not used it and this difference was statistically highly significant (p=0.001).

Figure-3 shows that children of private schools had increase percentage of obesity and overweight than children of governmental schools and this difference was statistically highly significant (p=0.001).

Discussion

Childhood obesity has become a serious public health problem because of its strong association with adulthood obesity and the related adverse health consequences [17]. In Iraq, according to the WHO survey in 2016 the prevalence of overweigh/obesity among (5-19 year) was (23.8- 40.7)"32%"; (7.4- 23.1) "14.4% respectively. The prevalence of overall obesity and overweight in the current study (39.4%) 12.9%, 26.5% respectively. which is higher than study from Basra city 24.1%, Baghdad city study 32.9%, Kirkuk city 24.2%, Diyala city 35.1, Iran (Islamic Republic) 35.4% [18,19,20,21,22]. Although the prevalence of obesity /overweight among primary school students in AL Najaf Province was relatively high, It is still lower than a study from Kingdom Saudi Arabia 53.1%. Two Kuwaiti studies found the overall prevalence of obesity and overweight as 45.3% [12,13]. Egypt 54.3%, Syrian Arab Republic 39.8%, Turkey 41%, and from United states of America 63.2% These differences seen in the overall prevalence of obesity and overweight among primary school students in the current study and other studies might be attributed partially to the differences in age groups, sample size, environmental, cultural, genetic factors, life style, definition of the obesity and overweight across the studies.

Table 2. Relationship between parent's characteristics and obesity status of school children

Risk factors		Normal and underweight: No. (%)	Overweight: No. (%)	Obese: No. (%)	p-value
Father education	Read and write	54(66.7)	6(7.4)	21(25.9)	0.03*
	Primary school	93(63.3)	18(12.2)	36(24.5)	
	Secondary school	209(64.9)	37(11.5)	76(23.6)	
	College or higher	129(51.6)	42(16.8)	79(31.6)	
Mother education	Read and write	100(68.5)	15(10.3)	31(21.2)	0.005*
	Primary school	159(67.7)	22(9.4)	54(23)	
	Secondary school	142(52.2)	46(16.9)	84(30.9)	
	College or higher	84(57.1)	20(13.6)	43(29.3)	
Father Occupation	Employed	425(61.1)	85(12.2)	186(26.7)	0.4
	Non-employed	60(57.7)	18(17.3)	26(25)	
Mother Occupation	Employed	92(57.1)	22(13.7)	47(29.2)	0.6
	Housewife	393(61.5)	81(12.7)	165(25.8)	
Family size	< 6	89(58.2)	28(18.3)	36(23.5)	0.05
	6	116(63.7)	26(14.3)	40(22)	
	>6	280(60.2)	49(10.5)	136(29.2)	
Income	Insufficient	325(62.1)	70(13.4)	128(24.5)	0.02*
	Sufficient	124(62.9)	22(11.2)	51(25.9)	
	Sufficient and more	36(45)	11(13.8)	33(41.3)	
Parents overweight or obese	No	383(77.8)	47(9.6)	62(12.6)	0.001*
	One parent	51(33.3)	28(18.3)	74(48.4)	
	Both parents	51(32.9)	28(18.1)	76(49)	
Parents wish their child had obesity	Yes	81(32.5)	40(16.1)	128(51.4)	0.001*
	No	404(73.3)	63(11.4)	84(15.2)	

*Chi square test was used. Significant level considered with a p value < 0.05.

Table 3. Relationship between dietary habit and behavior and obesity status of school children.

Risk factors	Frequency	Normal and underweight: No. (%)	Overweight: No. (%)	Obese: No. (%)	p-value *
Fast food meals/week	Do not eat	174(87.9)	6(3)	18(9.1)	0.001 *
	Once	237(70.1)	47(13.9)	54(16)	
	Twice	62(31.2)	39(19.6)	98(49.2)	
	More than twice	12(18.5)	11(16.9)	42(64.6)	
preferred candy and chocolates**	Do not eat	56(100)	0	0	0.001 *
	Occasional	250(85.6)	18(6.2)	24(8.2)	
	Once daily	140(40.9)	73(21.3)	129(37.7)	
	Twice daily	22(26.2)	12(14.3)	50(59.5)	
	More than twice	17(65.4)	0	9(34.6)	
preferred carbonated beverage**	Do not eat	216(82.1)	22(8.4)	25(9.5)	0.001 *
	Occasional	178(69.5)	34(13.3)	44(17.2)	
	Once daily	61(27.7)	42(19.1)	117(53.2)	
	Twice daily	23(47.9)	5(10.4)	20(41.7)	
	More than twice	7(53.8)	0	6(46.2)	
Sugary juice consumption	Do not eat	170(87.2)	8(4.1)	17(8.7)	0.001*
	Occasional	233(59.4)	59(15.1)	100(25.5)	
	Once daily	55(35.7)	26(16.9)	73(47.4)	
	Twice daily	22(50)	7(15.9)	15(34.1)	
	More than twice	5(33.3)	3(20)	7(46.7)	
Weekly fresh fruits	Do not eat	34(66.7)	4(7.8)	13(25.5)	0.09
	Once	97(60.2)	13(8.1)	51(31.7)	
	Twice	151(56.6)	45(16.9)	71(26.6)	
	More than twice	203(63.2)	41(12.8)	77(24)	
Feeding in the first 6 months of life	Breast fed	374(83.5)	25(5.6)	49(10.9)	0.001*
	Bottle fed	41(23.7)	27(15.6)	105(60.7)	
	Mixed feeding	70(39.1)	51(28.5)	58(32.4)	
Breakfast consumption	Always	320(82.1)	31(7.9)	39(10)	0.001*
	Often	60(48)	30(24)	35(28)	
	Sometimes	65(37.8)	25(14.5)	82(47.7)	
	Not eat regularly	40(35.4)	17(15)	56(49.6)	
Buying foods or drinks at school or outside home	Yes	184(41.1)	83(18.5)	181(40.4)	0.001*
	No	301(72.6)	20(5.7)	31(8.8)	
Lunch Bag	Yes	264(49.3)	88(16.4)	184(34.3)	0.001*
	No	221(83.7)	15(5.7)	28(10.6)	

*Chi square test was used. Significant level considered with a p value < 0.05.
** Re- grouping of variables was used for statistical purposes.

Table 4. Relationship between physical activity and obesity status of school children.

Risk factors	Frequency	Normal and underweight: No. (%)	Overweight: No. (%)	Obese: No. (%)	p-value*
Bed time	Before 9 pm	366(88.2)	17(4.1)	32(7.7)	0.001*
	After 9 pm	119(30.9)	86(22.3)	180(46.8)	
Sleeping hours	Less than 8 hours	111(33.8)	66(20.1)	151(46)	0.001*
	More than 8 hours	374(79.2)	37(7.8)	61(12.9)	
Wake-up time	Before 7 am	353(84)	21(5)	46(11)	0.001*
	After 7 am	132(34.7)	82(21.6)	166(43.7)	
Sport lesson at school	Yes	394(66.7)	63(11.6)	86(15.8)	0.001*
	No	91(35.4)	40(15.6)	126(49)	
Sport activities	Yes	110(70.1)	14(8.9)	33(21)	0.024*
	No	375(58.3)	89(13.8)	179(27.8)	
Sports outside school	Always	289(93.2)	15(4.8)	6(1.9)	0.001*
	Often	70(58.8)	25(21)	24(20.2)	
	Sometimes	67(33.2)	43(21.3)	92(45.5)	
	Never	59(34.9)	20(11.8)	90(53.3)	
Transportation to school	Walking or biking	337(82.4)	29(7.1)	43(10.5)	0.001*
	By bus or private car	148(37.9)	74(18.9)	169(43.2)	
Time consumed on TV, mobile, tablet or Laptop	Do not use	88(94.6)	3(3.2)	2(2.2)	0.001*
	Less than 1 h/day	255(89.2)	12(4.2)	19(6.6)	
	1–2 h/day	101(52.3)	58(30.1)	34(17.6)	
	More than 2 h/day	41(18)	30(13.2)	157(68.9)	

*Chi square test was used. Significant level considered with a p value < 0.05.

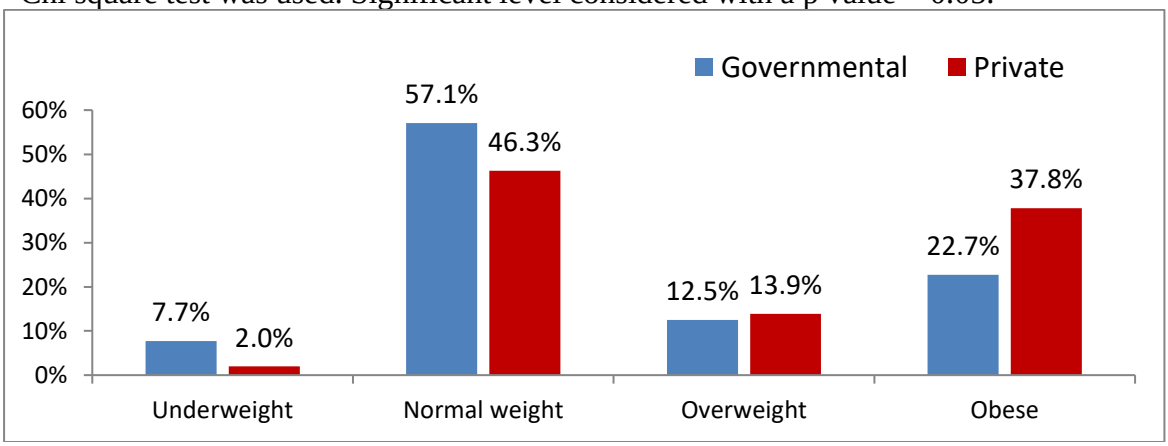

Figure 3. Relationship between school type and obesity status of school children

The higher prevalence of overweight /obesity compared to that of underweight, may suggest that AL-Najaf City is in a transitional state of increasing childhood overweight and obesity. This refer to that, the prevalence of childhood obesity is very high in Iraq which is a serious problem. In present study there was no significant statistical association between gender and weight status of school children of the study sample (p=0.2) although the percentage of

overweight /obese girls was greater than that of the overweight/obese boys, this can explain by modernization, sedentary life style of both genders. This result agreed with four Iraqi studies. And study in Egypt [18-21, 23]. By contrast, the incidence of overweight in girls was slightly higher than that in boys in Saudi Arabia, and Kuwait [1, 13]. overweight and obesity was significantly higher among children in 6th grade than 5th grade. This may give the impression that obesity is a progressing phenomenon that tend to increase with time and this may be explained by the effect of introduction of technology in our life so make us lazier also might be attributed to less physical activity and more access to unhealthy foods among older compared to younger children. This result was consistent with the results of Studies in Basra, Diayla, Kirkuk studies, Al-Ahsa District of Saudi Arabia. [18,21,20,1] and in consistent with study in Baghdad [19].

increase level of education of fathers or mothers was associated with a higher proportion of overweight and obesity and this association was statistically significant. This result might be explained by the parents with higher levels of education are likely to get higher income. The latter has been linked with adverse effects on dietary and/or physical activity habits through the easier accessibility of energy-dense foods and electronic devices that promote sedentary lifestyles. Thus, the relationship between parenteral education and over nutrition among children may be modified by other factors and therefore need further investigations. This result consistent with the Basra study. Najah National University, Nablus, Palestine [18,11]. While study in Kirkuk showed a significant association between the prevalence of obesity and overweight and the educational level for the mother, while there was no significant association between the BMI categories and the father's educational level. study in Al-Ahsa District of Saudi Arabia showed that there was no significant association between the prevalence of overweight / obesity and the parental educational levels [1], A study in Eastern Mediterranean Region show Decreased prevalence of overweight / obesity with increasing education levels [10]

Family income is one of the most important socioeconomic indicators, which may be associated with obesity that is inversely proportional to child's BMI in developed countries and directly proportional in developing ones [24]. The current study showed significant statistical association between the prevalence of obesity and overweight and Higher economic status. This could be due to the fact that as income increases, the tendency to shift life style toward sedentary life style. This result was consistent with the result of Basra, Al-Ahsa District of Saudi Arabia, port Said City [18,1,23] .and in consistent with two studies conducted in United States and in Riyadh show that the prevalence of childhood obesity was inversely associated with the family per capita income [1]. otherwise a study in Kirkuk CITY [20] showed no significant association between obesity and overweight and the socio-economic status.

There was no relation between parent's occupation and the prevalence of obesity and overweight. and this result was consistent with a result from Kirkuk and inconsistent with Kuwait studies, Basra City and in Nablus City. [20,12,13,18,11] A study in Al-Ahsa District of Saudi Arabia showed that childhood obesity was not affected by the father's work status. [1]

There was a highly significant relationship between weight status of both fathers and mothers and weight

status of their children. This association indicates that overweight and obesity in children are influenced by genes and by the environment, including eating patterns of their families and their habitual activities. This result is consistent with. a study in Al-Ahsa District of Saudi Arabia [1].

Family size seemed to have no association with children's overweight and obesity. In present study although there's increase in overweight and obesity with increase in family size but there's no significant associated and these results inconsistent to study in Kirkuk, Bole Sub-City, Addis Ababa, Ethiopia [20,25]. a study conducted by (Al-Isa, et al, 2010) in Kuwait which found that the prevalence of obesity and overweight increased significantly with increase family size.

Fast food meals consumption per week was higher in obese and over weight than normal weight child, and this difference was statistically significant. also, the meals eaten outside home are more likely to be high in total energy, total fat, saturated fat, cholesterol, and sodium but contain less fiber and calcium. The increasing frequency of eating at restaurants and eating food prepared away from home may be attributed to several factors: more women are involved in the workforce and thus they have less time available for food preparation at home, the lack of places to spend leisure time for many families. Also, because of the cheap prices and palatable taste of such fast foods, make them more desirable for children and adolescents. Similarly, eating candy and chocolates, consuming carbonated beverage and sugary juice were more in overweight and obese than normal weight child with a high statistically significant This finding is consistent with several national and international studies. For instance, studies carried out in Addis Ababa, Ethiopia, Saudi Arabia and Kuwait [25,1,12,13]. but inconsistent with a study in urban Ghana [26].

In the current study, there was no statistically significant difference regarding weekly fresh fruits consumption between normal weight child and overweight/obese one .and this is agreement with a study in10-to 16-year-old children from 34 countries [22] and in consist with studies in Eastern Mediterranean Region [10]. and study in South-eastern Turkey [4]. Association between breakfast consumption and obesity reveals that those of irregular breakfast consumption had significantly higher percentage of overweight and obesity than those consumed breakfasts regularly this is because breakfast meal is rich with nutritional value and decrease the chance of buying foods or drinks in the school or outside home. This result is in agreement with study in Saudi Arabia [1]. Likewise, the present study found that there's significant association between overweight or obesity and those buying foods or drinks at school or outside home and with those take lunch bag, and this may be due to presence of fast food available at school tuck shops and unhealthy items from school tuck shops and not stander (chips, Pepsi, cub cake)So, this is the same result in in Mashonaland West Province, Zimbabwe[5]. Regarding the breast feeding, small percent of breast fed in the first 6 months of life had overweight or obesity, while bottle fed child had higher proportion of overweight and obesity with a high statistically significant difference. Breastfeeding has been reported as being a potentially protective factor against weight gain in child-hood. This is an important because overweight children are at risk of becoming overweight adults. And this consistent with Iran study, Egypt, Bahrain , otherwise a study conducted in Kuwait reported that neither breastfeeding nor

duration of breastfeeding was associated with childhood obesity .introduction of solid foods to the infants before two months was significantly associated with obesity, as children received solid foods before 2 months of age were two times at risk of being overweight than those who received solid foods between 4 and 6 month [10]

The study results demonstrate that children with enough sleeping hours, early bed time and sleeping time had lower percentage of overweight and obesity than others and this difference was statistically highly significant. However, the mechanism of the relationship between short sleeping hours and obesity is unclear. short sleeping hours can reduce energy expenditure and cause fatigue, contributing to physical inactivity. associated with television viewing, computer use and late bedtime and increased food intake. and the result in this study is consistent with the findings in Indonesia, in Madurai in India [7]. about half of the children who did not practice sport at the sport lesson and physical education classes were obese compared to only 15.8% of children with the presence of sport lesson and this difference was statistically highly significant. Also the presence of sport activities in the school had significantly lower proportion of obesity and overweight than those with absent sport activities. More than half of children with no sports outside the schools 53.3% had obesity compared to only 1.9% who always had sports activities outside the school and this difference was statistically highly significant and these explain by that the time for sport lesson it used for another lessons. Also because the parents tend to prohibit children from playing outdoors because of security concerns, the prevalence of overweight is lower in children who regularly play outdoor games. This result consistent with a study in Diyala Governorate, Kashmir, also a study in Al-Ahsa District of Saudi Arabia [21,27,1]. otherwise inconsistent with a study in Bangladesh and this difference because of Geographical heterogeneity. likewise, the present study show that transportation method to school revealed that children who reached their schools through walking or biking had a significantly lower proportion of overweight and obesity than those reached their schools by bus or private cars frequently walking or cycling to school makes children more active and spent more energy than the using school buses or private cars and this result is consistent with study in Eastern Mediterranean Region[10]. Furthermore, in this study about two thirds of children who spent more than two hours on TV, mobile, or Laptop were obese compared to only 2.2% of those who did not use them and this difference was statistically highly significant. The possible explanation could be that the screen time may displace more activities, snacking increases while watching TV or movies, and late-night screen time may interfere with getting un adequate amounts of sleep, which is a known risk factor for obesity. This finding was agreement with a study in Saudi Arabia [1]

The children of private schools had higher proportion of overweight and obesity than children in governmental schools and this difference was statistically highly significant. It was also noticed that the major cause of obesity in private school children was because of high socioeconomic status of the family and the change lifestyle. From this study we found that in government schools 62.1% children go to school on foot and only 37.9% children go by bus, while as in private schools 81.6% children go to school by bus and only 18.4% reach the school on

foot. These together factors cause the overweight and obesity more in private than governmental school and this result agreement with a study Addis Ababa, Ethiopia [25].

Conclusion

Based on the results of the present study, the prevalence of overweight and obesity was relatively high among school children in AL-Najaf AL-Province

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