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Article

PROBLEM OF OBESITY AND THE PREDISPOSING FACTORS AMONG PRESCHOOL CHILDREN AT BURAIDAH REGION

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ABSTRACT: Background: Obesity is a worldwide problem and it poses a double burden of disease in developing countries including Saudi Arabia. The overweight and obesity among children in Saudi Arabia should be considered a serious public health problem. The prevalence is on the rise, and the need for interventions is becoming urgent.

Aim: To assess the prevalence and the predisposing factors of obesity among preschool children at Buraidah region.

Methods: A cross-sectional study was conducted on 142 preschool children and their mothers at 5 preparatory schools at Buraidah region. The nursery schools were as (Kgar 19, Athal Al Qassim, Anwar Almaalem, Excellent International School, and Rassial Alhoda). Data collection tool used in this study were Assessment sheet for the child consists of two parts: Child characteristic and BMI percentiles charts for children; socio-demographic data of parents, medical history of mother during pregnancy, Mother's knowledge regarding child's obesity and mother's nutritional habits.

Results: The results showed that (63.4%) of preschool children had normal BMI, (9.9%) of them were overweight while (26.8%) were obese . contributing factors related to overweight or obesity, those factors were found to be significant predictors of obesity or overweight; increase numbers of meals increase risk of obesity ($p<0.001$), eating during watching TV increase risk of obesity ($p<0.001$) and child hobbies whereas playing football decrease risk of obesity (($p<0.05$).

Conclusion: The study revealed that there were highly statistically significant relations between the studied children's feeding habits, feeding type, number of meals/day, favorite's activities, eating during watching TV and occurrence of obesity and overweight. About quarter of obese and overweight of studied children had a family history of obesity.

Keywords: Obesity, Body mass Index, predisposing factors, Preschool, Buraidah region.

INTRODUCTION

Obesity is often defined simply as a condition of abnormal or excessive fat accumulation in adipose tissue, to the extent that health may be impaired [1]. Obesity is measured by various methods such as body mass index (BMI), waist circumference, waist-hip ratio, skinfold, and percent body fat measurements [2]. The majority of studies in the EMR countries used BMI, with a few of them using waist circumference to measure obesity. Skinfold anthropometry is not commonly used. The WHO references is suitable for infants aged between 0 and 2 years to monitor growth and follow-up, whereas CDC standards are more suitable for monitoring the growth of children from 2 to 19 years.

Obesity has become an epidemic problem worldwide, and in the Eastern Mediterranean Region the status of overweight has reached an alarming level. A prevalence of 3%-9% overweight and obesity has been recorded among preschool children, while that among schoolchildren was 12%-25%. A marked increase in obesity generally has been noted among adolescents, ranging from 15% to 45% [3] . Towards the end of the 20th century, obesity was identified as a worldwide health care problem affecting the well-being of populations. Previously identified only as a problem of adult health, obesity among children is increasingly becoming a concern [4].

Childhood obesity is on the rise and considered as a serious health problem worldwide. [5],[6],[7],[8],[9],[10] In 2010, World Health Organization (WHO) estimated that 42 million children under 5 years of age were

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overweight or obese. [8] Obesity in general is a major risk factor for noncommunicable diseases (NCDs), and it is estimated that by the year 2020, three-quarter of all deaths in developing countries will be attributed to NCDs. [9] Many diseases and health-related abnormalities are associated with obesity such as metabolic, cardiovascular, and musculoskeletal disorders; [10] obese children are more prone to develop such diseases and abnormalities. Among children aged 2-19 in USA, 31.7% were overweight and 16.9% were obese [11].

In Saudi Arabia, many studies have been done to evaluate the magnitude of overweight and obesity among Saudi children [12,13,14,15] . It was found that overweight and obesity occurs in all provinces [12] . A recent study found that the Eastern province has the highest rates and the Southern province the lowest rates [13].

It was evident that Saudi children started developing overweight when they are 5–9 years of age by which 21% of children were overweight and 21% obese and their weight continued to increase into the adolescent years. This could be attributed to the fact that children start going to school at that age, and hence, there is a less control on their eating habits and nutrition at this stage. Moreover, children in our country have become less active; few or none walk to school, spending more time in sedentary entertainment activities, such as viewing TV, computer and video games [16] .

Towards the end of the 20th century, obesity was identified as a worldwide health care problem affecting the well-being of populations. Previously identified only as a problem of adult health, obesity among children is increasingly becoming a concern [17]. The Gulf region is not exempt. Surveys in a number of different areas and provinces have reported a high prevalence of overweight and obesity in Saudi children in all age groups [18,19] .

Recent research has begun to focus on effects of family and social influences on children's lifestyle and eating patterns [20]. Key components of pediatric lifestyle include starting with exclusive breast feeding, optimal nutrition, maintaining appropriate weight, moderate physical activity, optimum sleep duration, and avoidance of long hours of watching television (TV) [21,22].

There are many factors can be associated with overweight and obesity in preschool children. From this, factors which are on the maternal side were socioeconomic status, level of education, marital status and, maternal smoking during pregnancy. Sex of the child, birth weight and the child's birth rank, area of residence, BMI of parents and some nutritional factors have been also found as factors of childhood overweight and obesity [23, 24].

Parents actually have potential and powerful role in behavioral change strategies which aim to improve the lifestyle behaviors of young children [20]. Parental obesity, low parental educational level, low total family income, long hours of TV watching, absence of breastfeeding, and physical inactivity were significantly associated with childhood overweight/obesity [25]. Low maternal educational level and allowing children to watch TV more than 2 hours were also associated with unhealthy snaky pattern [21]. Overeating-type eating style and sedentary activities are observed frequently in the children from obese/overweight families [5]. This is associated with the fact that these children had a higher preference for fatty foods with a lower liking for vegetables [26].

Family income often affects accessibility to healthy food that is why the lower socioeconomic status acts as a barrier to the fruit and vegetables intake and makes the intake of fat higher compared to children in relatively higher socioeconomic groups [25]. Some day care centers play an important role in the development of children's eating habits by focusing on issues such as providing and making healthful food choices like fruit and vegetables [20]. Playing is very important for child development because it contributes to the cognitive, physical, social, and emotional well-being and should be included along with academic and social-enrichment opportunities [27].

Research Significance:

Obesity is a growing global health problem which is when children are so overweight that it is a threat to health, typically results from overeating and lack of enough exercise. Obesity is very difficult to treat once developed and puts affected children at risk for lifelong health problem and reduced quality of life as well as social stigma exclusion, it is no wonder that obesity has rapidly increased in the last few decades, around the world [28]. The overweight and obesity among children in Saudi Arabia should be considered a serious public health problem. The prevalence is on the rise, and the need for interventions is becoming urgent [29].

The obesity has affected both genders and need to design effective policies to control. 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 prevent obesity, and the participation

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of families, communities, along with national efforts will bring the desired change and promote a healthier nation.

Aim of this study

Assess the prevalence and the predisposing factors of obesity in preschool children through the following objectives:

1- Assess knowledge of mothers regarding obesity in preschool.
2- Assess nutritional habits of mothers regarding obesity in preschool

Research questions:

1- What is the prevalence and predisposing factor of obesity in preschool children at Buraidah city
2- Is the children obesity influenced by mother' knowledge?
3- Is the children obesity influenced by mother's habits?

METHODOLOGY

Study design

A cross-sectional study carried out from February 2019 to end of April 2019 to assess the prevalence and the predisposing factors of obesity among preschool children in Buraidah Region, Saudi Arabia.

Setting:

The study was carried out in 5 nursery schools at Buraidah region. The nursery schools were as (Kgar 19, Athal Al Qassim, Anwar Almalem, Excellent International School, and Rassial Alhoda).

Sample:

The participants included 142 child attending kindergarten schools on selected days from February 2019 to end of April 2019.

These were selected according to the following inclusions:

1- Age: 3 to less than 6 years old
2- Sex: males and females
3- Free from any chronic disease

Data collection and Procedure

1- Assessment sheet for the child consists of two parts:

a- Child characteristic (age, sex. ranking and residence…etc).

b- Body Mass Index: It was used to measure child's weight and height to determine body mass index Body mass index (BMI)(weight (kg)/height(m2).

The centers for disease control and prevention (CDC) [30]. Reference uses BMI percentiles applied to charts for children .The child was considered obese if BMI is equal or more than 95th percentile , if the BMI is between 85th and less than 95th considered overweight, and if the child BMI is less than 85th percentile considered normal

II- Interview Questionnaire:

Close ended interview questionnaire was used to collect data related to this study; it was written in a simple Arabic language developed by researchers. It was consists of the following parts**:**

a- Socio-demographic characteristics of parents; such as age, education, occupation, residence, income level, number of family members and family history of obesity..etc.
b- Medical history regarding her pregnancy period such as weight, health problems, medications, and diet during this period.
c- Mother's knowledge regarding the child's obesity. It consisted of 8 questions such as: meaning of 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.
d- 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 fluid in bottle feeding, additional type 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.

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Scoring system of mother's Knowledge regarding preschooler obesity:
Scoring system is graded according to the items of interviewing questionnaire; and each correct answer scored as I point and zero for incorrect answers. Scores consider satisfactory if was 60% or more and unsatisfactory if less 60%

Scoring system of mother's nutritional habits regarding preschooler obesity:
Scoring system is graded according to the items of interviewing questionnaire; mother's answers were evaluated by key model prepared. Each correct one scored as 2 point, incomplete as 1 point and zero for incorrect. Scores consider acceptable if % score was 60% or more and unacceptable if less 60%.

Operational Design:
Preparation phase:
Extensive review of current and past studies, national and international references related to the research title was using text books, articles, magazines and internets. This was necessary for the researcher to be acquainted with, and oriented about aspects of the research problem to assist in the development of data collection tools

Pilot study:
The pilot study was carried out on 10 % of the total sample 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 director of preparatory school in each region of Buraidah City to facilitate data collection. Once the permission was granted to proceed in the study. The researchers met each child and his/her mother or caregiver individually. At the beginning, the purpose and nature the study were explained. Each child with his/her mother or caregiver was interviewed individually for about 20-30 minutes. Anthropometric measurement of the child was taken as measuring height and weight. Data collection was completed a 3 month period , from February 2019 to end of April 2019.

Administrative Design:
An official letter was issued from the Dean of the College of Nursing, Qassim University and delivered to the direction of education at Buraidah city in order to obtain an approval for conduction of research study. After the explanation of the purpose of the research study, a written permission was taken from it to the director of each preparatory 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.

Statistical analyses
Data were analyzed using SPSS version 20, percentages for qualitative variables, and mean ± standard deviation (SD) for quantitative variables, where indicated. During the questionnaire analysis, one point was attributed for each good answer given, and zero for any other answer. Appropriate statistical methods were applied (percentage, chi-square (X^2), logistic linear regressions model was performed to examine or assess the strength of relationship of the child obesity and to identify the factors influencing child obesity (eating habits, hobbies, and numbers of meals, feeding types and family overweight). Regarding P-value, it was considered that: non – significant (NS) if $P > 0.05$, Significant (S) if ($p<0.05$), Highly Significant (HS) if ($p<0.01$).

Validity and Reliability
The tools of this study were distributed among a group of experts in the field of pediatric, 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. Examining reliability of the suggested tools was done statistically by Cronbach's alpha test whereas the internal consistency of tool was 0.76.

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Ethical consideration:

Ethical consideration was considered for ensuring children and mother's 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.

RESULTS:

Regarding the effect of personal characteristic on risk factors of obesity, table 1 shows that (n=85, 59.2%) of preschool children from 3 to 5 years had normal BMI and (n=37, 26.1%) of them were obese. Female (n=20, 14.1%) were obese, the first child (n=19, 13.4%) suffered from obesity. The highest father's and mothers' educational level were contributing risk of obesity (n=27, 19% and n=26,18.3%) respectively, additionally working mother, low and moderate income level were considered risk factor of obesity among preschool children (n=26,18.3% and n=14, 9.9%) respectively. The difference of personal characteristic was statistically insignificant ($p>0.05$) except the difference of family overweight ($p<0.05$)

Table 1: Distribution of obesity of preschool child regarding personal characteristics

Parameter	Normal BMI		Overweight		Obese		X^2	P value
	N	%	N	%	N	%		
Child age								
3-5	85	59.2	13	9.1	37	26.1	0.650	0.722
More than 5	5	3.5	1	0.7	1	0.7		
Child gender								
Male	47	33.1	10	7.0	18	12.7	2.411	0.299
Female	43	30.3	4	2.8	20	14.1		
Child order								
First	42	29.6	9	63	19	13.4		
Second	35	24.6	2	1.4	14	9.9	3.836	0.699
Third and more	13	9.1	3	2.1	5	3.5		
Father education								
Secondary	34	23.9	3	2.1	11	7.7	1.994	0.369
University	56	39.4	11	7.7	27	19		
Mother education								
Primary	6	4.2	2	1.4	1	0.7		
Secondary	26	18.3	1	0.7	11	7.7	4.847	0.303
University	58	40.8	11	7.7	26	18.3		
Mother job								
Working	59	41.5	12	8.5	26	18.3	2.275	0.320
not working	31	21.8	2	1.4	12	8.5		
Family Income								
5000 to less than 10000	30	21.1	5	3.5	14	9.9		
10000 to less than 15000	25	17.6	4	2.8	14	9.9	2.043	0.728
15000 and more	35	24.6	5	3.5	10	7.0		
Family overweight								
Yes	38	26.8	3	2.1	24	16.9	8.427	0.015
No	52	36.6	11	7.7	14	9.9		

Figure 1 shows that (n= 90, 63.4%) of preschool children had normal BMI, (n= 14, 9.9%) of them were overweight while (n= 38, 26.8%) were obese.

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Figure 1: percentage distribution of child obesity

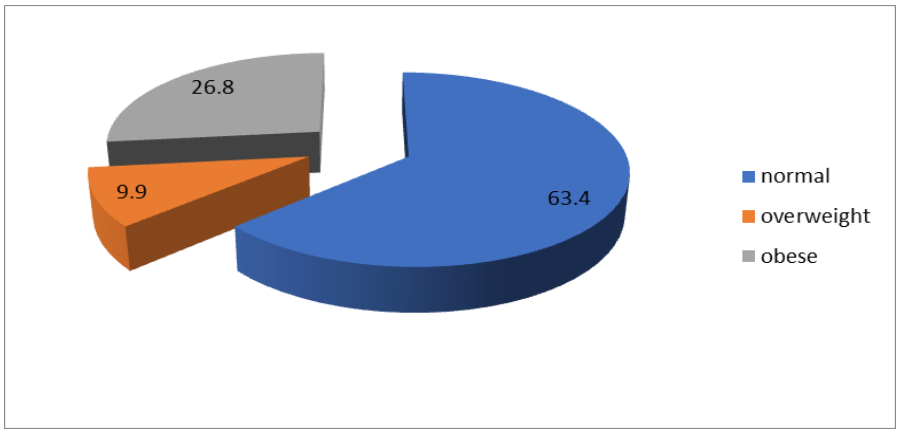

Table 2 shows that pregnancy characteristics did not relate to preschool children obesity whereas there was statistical insignificant difference among overweight during pregnancy (n= 5, 3.5%, p>0.05), healthy diet during pregnancy (n= 25, 17.6%, p>0.05) and obesity.

Table 2: Distribution of obesity of preschool child regarding pregnancy characteristics

Parameter	Normal BMI		Overweight		Obese		X^2	P value
	N	%	N	%	N	%		
Pregnancy problem								
Yes	31	21.8	2	1.4	12	8.5	2.275	0.321
No	59	41.5	12	8.5	26	18.3		
Pregnancy medication								
Yes	5	3.5	1	0.7	3	2.1	0.263	0.877
No	85	59.9	9.2	13	35	24.6		
Overweight during pregnancy								
Yes	13	9.2	1	0.7	5	3.5	0.560	0.756
No	77	54.2	13	9.2	33	23.2		
Healthy diet during pregnancy								
Yes	39	27.5	7	4.9	25	17.6	5.389	0.068
No	51	35.9	7	4.9	13	9.2		

Figure 2 shows that mother's knowledge of obesity not related to BMI of preschool children whereas (n=84, 59.2%, p>0.05) of them had normal BMI while their mother not knowledgeable about obesity

Figure 2: Distribution of obesity of preschool child regarding mother Knowledge

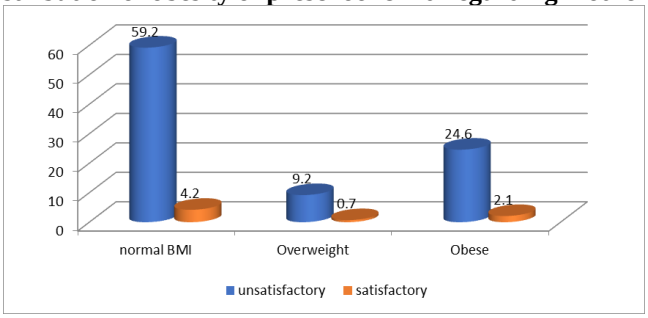

Table 3 shows that preschool children history of artificial feeding relates to child obesity. In this study (n=25, 17.6%) of them their feeding was artificial with statistical significant relation (p<0.05**).** Added other

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fluid (n=11, 9.3%) or other nutrients (n=34 , 23.9%) and night feeding (n=34 , 18%) did not relate to obesity in this study (p>0.05

Table 3: Distribution of obesity of preschool child regarding feeding types and weaning characteristics

Parameter	Normal BMI		Overweight		Obese		X^2	P value
	N	%	N	%	N	%		
Kind of feeding breastfeeding	34	23.9	3	2.1	7	4.9	11.660	0.020*
breast and artificial	25	17.6	3	2.1	6	4.2		
Artificial	31	21.8	8	5.6	25	17.6		
Night feeding yes	49	36.8	7	5.3	24	18.0	0.602	0.740
No	34	25.6	6	4.5	13	9.8		
Other fluid Yes	32	27.1	5	4.2	11	9.3	0.120	0.942
No	45	38.1	7	5.9	18	15.3		
Type of fluid Tea	2	4.1	0	0	3	6.1	5.969	0.427
Glucose	20	40.8	5	10.2	8	16.3		
Rice water	5	10.2	0	0	1	2.0		
Juice	4	8.2	0	0	1	2.0		
Other nutrient Yes	86	60.6	14	9.9	34	23.9	2.786	0.248
No	4	2.8	0	0.0	4	2.8		
Type nutrition Mashed potato	25	17.6	2	1.4	7	4.9	3.490	0.745
Rice	31	21.8	4	2.8	14	9.9		
vegetable and fruits	32	22.5	8	5.6	15	10.6		
Other	2	1.4	0	0.0	2	1.4		

Table 4 shows that Numbers of daily meals child eat was a contributing factors for obesity, the 4 and 5 meals (n=11,7.7% and n=13, 9.2%) respectively with highly statistically significant difference (p<0.001). Additionally computer and video games as a child's favorite activities, child eat while watching TV, eating high fat and carbohydrate were contributing factors for obesity in this study (n=34, 23.9%, n=35,24.6% and n=33, 23.2%) respectively with highly statistically significant difference (p<0.001).

Table 4: Distribution of obesity of preschool child regarding mother and child attitude

Parameter	Normal BMI		Overweight		Obese		X^2	P value
	N	%	N	%	N	%		
the way you deal with your child during eating encourage	49	34.5	8	5.6	22	15.5	3.490	0.745
Punished	3	2.1	0	0	3	2.1		
no attention	2	1.4	0	0	0	0		
Leave	36	25.4	6	4.2	13	9.2		
use food as a reward for your child yes	58	40.8	12	8.5	20	14.1	4.944	0.084
No	32	22.5	2	1.4	18	12.7		
Numbers of daily meals child eat 2	28	19.7	0	0	0	0	51.205	0.000
3	34	23.9	3	2.1	14	9.9		
4	28	19.7	9	6.3	11	7.7		

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5	0	0	2	1.4	13	9.2		
child eat between meals								
Yes	62	43.7	7	4.9	22	15.5	2.742	0.254
No	28	19.7	7	4.9	16	11.3		
breakfast before going to nursery								
Yes	35	24.6	5	3.5	9	6.3	2.743	0.254
No	55	38.7	6.3	9	29	20.4		
child take sandwiches to the nursery								
yes	89	62.7	14	9.9	36	25.4	2.563	0.278
No	1	0.7	0	0	2	1.4		
child get enough sleep every day								
yes	82	57.7	12	8.5	35	24.6	0.523	0.770
No	8	5.6	2	1.4	3	2.1		
child sleep after eating directly								
yes	65	45.8	11	7.7	31	21.8	1.346	0.510
No	25	17.6	3	2.1	7	4.9		
child's favorite activities								
football	49	34.5	1	0.7	1	0.7		
com puter and video	33	23.2	7	4.9	34	23.9	50.259	0.000
does not like play	8	5.6	6	4.2	3	2.1		
child eat while watching TV								
yes	38	26.8	8	5.6	35	24.6	27.132	0.000
No	52	36.6	6	4.2	3	2.1		
Eating habit of child								
Low fat and carbohydrate	31	21.8	0	0	0	0	29.517	0.000
Moderate fat and carbohydrate	21	14.8	4	2.8	5	3.5		
High fat and carbohydrate	38	26.8	10	7.0	33	23.2		

Table 5 presents the logistic regression analysis of contributing factors related to overweight or obesity, those factors were found to be significant predictors of obesity or overweight; increase numbers of meals increase risk of obesity ($p<0.001$), eating during watching TV increase risk of obesity ($p<0.001$) and child hobbies whereas playing football decrease risk of obesity (($p<0.05$).

Table 5: logistic regression of child obesity and eating habits, hobbies, numbers of meals, feeding types and Family overweight

Variables	B	S.E.	Wald	Sig.	Exp(B)
Eating habit.			3.628	.163	
Low fat (1)	-21.567	5733.627	.000	.997	.000
Moderate fat (2)	-1.571	.825	3.628	.057	.208
Eating during watching TV	-2.187	.690	10.042	.002	.112
hobbies			14.915	.001	
Football	-2.650	1.107	5.734	.017	.071
Computer and video	1.381	.827	2.787	.095	3.980
Numbers of meals	1.762	.500	12.418	.000	5.823
Feeding type	-.009	.373	.001	.980	.991
Family overweight	-.122	.601	.041	.839	.885
Constant	-3.033	2.603	1.358	.244	.048

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DISCUSSION

Regarding to distribution of obesity of preschool child regarding personal characteristics (table 1), the result revealed that more than one third of studied children were obese and overweight. It was evident that Saudi children started developing overweight when they are 5–9 years of age—by which age 21% of children were overweight and 21% obese and their weight continued to increase into the adolescent years [16]. Also Al Shehri etal, [29] reported that the rates of overweight and obesity among preschool children were as approximately 15% and 6%, respectively.

Current study results revealed that more than quarter of obese and overweight studied children were boys (table 1) . Studies supporting these findings have been conducted in Riyadh [31]. In the opposite way , El-Mouzan et al, [32] reported that there was no significant difference of body mass index between boys and girls. As regard the birth order, the current study result showed that the highest percentage of obesity were found in the first born child i.e., the obesity in children decreased as birth order increased (table1), it might be attributed to that the mothers usually give the optimum level of attention and care including nutrition for the first born child. On the same way, Al-Qaoud etal, [33] found that, the highest percentage of obese and overweight children were common among the first and middle born. On the other hand Al Shehri et al , [29] stated that Saudi Arabia has a high incidence of obesity among both the genders.

As regards parental education, the result of the current study showed that obesity was common among highly educated mother and father this might be attributed to lack of mother's knowledge about balanced diet and healthy dietary habits, which was reflected on their family. In a similar study, Abdelkafi et al , [34] supported the result of this study and found that the father's and mother's education were positively related to obesity in their children. Regarding to the mother's occupation, the present study result revealed that, more than of obese and overweight children were of working mothers. This might be related to that worked mother have no time to prepared healthy foods and depend on delivery food. Similarly, Daabis [35] confirmed the result of the current study and found that the children of working mothers had the higher level of overweight and obesity than those of unoccupied mothers; it might be due to that working mothers always overfeed their offsprings at home to compensate the time of their absence at work so their offsprings have amore liability to be overweight or obese.

Consequently, as regards the family history of obesity, the present study estimated that slightly more than quarter of the obese and overweight children had family history of obesity and there was statistically significant ($p>0.05$) (table 1). This might be due to the role of genetic factors in weight gain. On the same way, Moss & Yeaton [36] found that 80 % of offspring of two obese parents were obese in contrast to less than 10% of the offspring of two parents who were of normal weight.

As regards the income level of the obese and overweight studied children, the present study finding revealed that the highest level of the obese and overweight studied children had low and moderate income level. This might be due to greater difficulty in buying the less energy foods with dependence on facts, cheap and subsidized food which have high caloric value and low nutrient energy ratio and there is trend toward less leisure time and fewer opportunities for recreational exercises. This result coincide with American Obesity Association (AOA) [37] which found that the highest level of obese children was in low income level.

As regards distribution of obesity of preschool child regarding mother Knowledge (Fig. 2). The study revealed that mothers of studied children had unsatisfactory knowledge regarding to normal body mass index, obesity, and overweight and there were no statistically significant. These results reflect that the importance role of community health nurse in educating mothers toward prevention and early detection of obesity. On contrary a study done by Hudson et al, [38] revealed no statistically significant relation between total mother's knowledge and occurrence of obesity.

In relation to mother's feeding habits during infancy period ,the study results showed that the obese and overweight studied children took bottle feeding with statistical significant relation ($p<0.05$) (table 3).This might due to that the bottle feeding is containing fats, sugar, water, and protein more than breast feeding. On the same way, Abdelkafi et al, [34] mentioned that exclusive breast feeding for the first 6 months protect against obesity.

Distribution of obesity of preschool children regarding mother and child attitude(table 4) the study showed that number of daily meals child eat was a contributing factors for obesity the 4 and 5 meals with highly statistically significant difference ($p<0.001$). This might be attributed to lack of mother's knowledge about the appropriate eating pattern that make their behavior the more the child eats the more will be healthy. Similar results were found by Daabis [35] that there was an association between parental habits and occurrence of obesity.

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Concerning the preferred type of food consumption for studied children, the current study result revealed that an increase in intake of high energy foods as fats, carbohydrates and high sweetened foods which increase the prevalence of obesity and overweight (table 4). Similar results by Kliegman et al , [39] who found that increase intake of slices of bread, high sugar foods as ice cream, jam and honey foods lead to increase incidence of overweight and obesity in children

Regarding to the children's habits, the present study showed that the majority of the obese and overweight children do not take their breakfast (Table 4). This might be attributed to lack of mother's knowledge about the importance of breakfast. In the same line, Maddah et al, [40] found that the prevalence of obesity and overweight significantly high in those who usually skipped their breakfast that lead to consume a huge meal later on, which will stimulate the secretion of too much insulin hormone leading to hyperinsulinemia, and subsequently reactive hypoglycemia occurs. On the contrary, Abdelkafi et al , [34] found no statistical relation between eating breakfast and occurrence of obesity. Ellis [41] emphasized the importance role of the breakfast and mentioned that breakfast is the most important meal of the day and reduces risk of childhood obesity.

Majority of the obese and overweight studied children eat in watching television (table 4). This might be attributed to pleasure feeling, loss of attention to the amount of food during this time and it decreases energy expenditure. In the same line Padills et al, [42] reported that watching television more than 2 hours /day lead to childhood obesity, and that eating in front of TV is one of the causes of obesity. Also the present study result is similar with another study done in Kenya [43, 44, 45] Iraq and Iran. who found that the preschool children whose watched TV more than 2 h/day had 4 times more likely chance of being overweight /obese comparing to watch less 2 h/ day which could assumed to reduction of physical activity, consuming foods, soft drink and processed food marketing. On the contrary, Vandwater et at, [46] who found that there was no relation between children's weight and television viewing

preferred playing video and computer games (table 5). This might be attributed to that these types of activities available at any time anywhere; it also contains sounds, photos and animations. In the study done by Moss & Yeaton [36] agreed with the result of this study and found that, the highest percentages of the obese and overweight studied children who preferred computer game. On contrary Al Dhaifallah et al, [47] mentioned that children should be encouraged to practice healthy lifestyles including physical activity programs to from overweight and obesity

CONCLUSION

From the finding of the current study conclusions can be deducted the following:

(63.4%) of preschool children had normal BMI, (9.9%) of them were overweight while (26.8%) were obese. There were highly statistically significant relations between the studied children's feeding habits, feeding type, number of meals/day, favorite's activities, eating during watching TV and occurrence of obesity and overweight. About quarter of obese and overweight of studied children had a family history of obesity. The studied mothers had unsatisfactory knowledge and there was statistical insignificant relation between mother's knowledge and obesity in studied children.

RECOMMENDATIONS

- Health educational programs should be directed to mothers including predisposing factors of obesity and healthy eating habits
- Survey on a wide scale are needed to be conducted to assess the dietary habits of families
- Health promoting behaviors should be directed toward children such as physical activity, healthy diet …etc for obesity prevention
- Health education programs should be directed to mothers to encourage ,support, and protect breast feeding
- Health education programs should be directed to mothers for limitation of television and video games time to a maximum of 2 hours per day

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Conflict of interest
The authors declare no conflict of interest

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