# Parental Socioeconomic Status and Occupation in Relation to Childhood Obesity

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***Abstract:***
Background: Obesity is regarded as a substantial public health issue all around the world. The frequency of obesity has been differed potentially from country to country according to the socio-economic levels. Environmental approaches along with population-based social strategies should be considered as effective initiatives to reduce the increasing incidence of obesity. Objectives: To assess the association between parental socioeconomic status, occupation, and educational level in relation to childhood obesity. Methods: A cross sectional study was conducted including children in Jeddah city and they were all classified as obese. For this study, 384 children were recruited for this research. The sample was collected at various ambulatory endocrine clinics from May 2017 until August 2017.

Obese children between 3-18 years were included in the study while those who are more than 18 or less than 3 years old were excluded. Results: The "mean body mass index (BMI)" of male children (26.6 ± 3.93 kg/m2) is higher than BMI of female children (24.6 ± 4.02 kg/m2). The prevalence rate of obesity in males and females were 55.5% and 44.5% respectively. Taking into consideration the nationality of the children, 76.4% of the participants were Saudi nationals whereas 23.6% were had different nationalities. Approximately, 63.7% of the participants were with their fathers having college degree are overweight while 61.1% of them are obese, indicated as the p value=0.511. Moreover, among 50.7% of the participants whose mothers had a college degree are overweight while 54.4% of them are obese (p value = 0.081).

On the other hand, about 75.3% children of unemployed mothers are overweight, while 54.6% are obese (p value= 0.058). Around 89.7% children of employed fathers are overweight, while 84.7% are obese (p value= 0.205). Finally, approximately 47.4% children were more likely to be obese with families of high income, while 43.8% of them with medium family income are overweight (p value = 0.0001).

Conclusion: The rate of overweight and obesity among Saudi children are higher than non-Saudi children. The prevalence of overweight and obesity were higher with high educational levels of parents, high family income, and increases among children of employed fathers.

***Key words****: Children, Obesity, Socioeconomic-status, Occupation, parental education.*

## 1. INTRODUCTION

Obesity among children is one of most crucial health issues around the globe and it is now considered as a global public health issues by the World Health Organization [1]. Over the past couple of decades, an increasing body of evidence suggests a constantly elevating frequency of overweight and obesity, which is expected to further increase in the coming decades [2]. This increasing incidence of overweight and obesity is observed in almost all regions of the world. However, the developed countries are the major ones that are affected by this health issue [3]. The "National Health and Nutrition Examination Survey" (NHANES) in the United States indicated that the there is an increasing incidence of childhood as well as adult obesity among the populated countries [4].

Among the children aged between two to five years, the incidence of childhood obesity is reported to be increased from 5% to 18.8% [5, 6]. Moreover, in China, the childhood obesity is increased from 6.4% in 1991 to 7.7% in 1997 and India from 16% in 2002 to 24% in 2007 [7 – 9]. As reported in the region of Middle East, the national surveillance in the United Arab Emirates (UAE) indicated that the incidence of overweight and obesity among children has reached up to 21.5% and 13.7%, respectively. All children indicated in this report were aged between 5 to 17 years [10]. Another research among Lebanese children aged between 6 and 8 years indicated the frequency of obesity as 6.5% and overweight as 25.5% [11].

The main aim of this study was to explore the prevalence and the relationship between childhood obesity and its

relation to socio-economic status and parental occupation in Saudi Arabia. To our knowledge, no quantitative review has been undertaken previously to assess the relationship between SES and parental occupation and its association to childhood overweight and obesity.

## 2. LITERATURE REVIEW

Childhood obesity in Saudi Arabia is considered as an important public health issue that has been studied in terms of cross-sectional surveys covering several cities. Nevertheless, there is still a lack of case reporting on this public health issue. In 1998, a national survey was conducted which figured out that around 27.4% of Saudi children aged 1-18 years were overweight and 10.4% were obese [3]. In addition to this, the central and eastern regions also indicated a greater incidence of overweight and obesity. However, this incidence was found to be lowest in the southern regions [4]. Approximately, 42 million children under 5 years of age were overweight or obese according to the World Health Organization (WHO) estimates presented in the year 2010 [1]. In general, the overweight or obesity is a foremost risk factor for non-communicable diseases (NCDs), and it is predictable that three-quarter of all deaths in developing countries will be attributed to NCDs by the year 2020 [12].

The disturbing incidence in the predominance of overweight as well as obesity may destructively influence the strength of the children in their later lives, which may increase the likelihood of other associated diseases. For example, the increase in obesity may lead to tumors, risk of cardiovascular diseases, osteoarthritis, rest apnea, metabolic disorder, dyslipidemia, diabetes, and hypertension. Furthermore, the diabetes mellitus type II has progressively been accounted in the young children as well as teenagers to such an extent that in a few regions of the world this type of diabetes has turned into the most predominant kind of diabetes among younger children [13].

Along the development of these diseases, obesity may have a negative impact on the personality development of children. Overweight and obese children are at risk of increase in the danger of mortality of teenagers and adolescents. In addition to the chronic diseases, there are other metabolic, hereditary, natural, and behavioral influences and it is additionally linked with financial status; as people in the contemporary world are generally influenced by physical appearance.

In this regard, a number of researches have been conducted all over the world, in the course of recent decades recommend that the development of obesity as well as overweight influences self-esteem of school going children. The relationship changes by sexual orientation, age, race, background, family level, and parental occupation. Furthermore, it has also been reported that in the developed countries, such as the United States of America (USA) and the United Kingdom (UK), children with increased weight or obesity are less likely to take part in extracurricular activities and present low self-esteem during their academic career [14, 15]. Interestingly, weight in the developing countries has been related with higher self-esteem and urbanization. The researches conducted in Brazil, China, and India also support the association between Socioeconomic Status (SES) and obesity [16].

## 3. ETHICAL CLEARANCE

This study was performed after receiving ethical approval from the Institutional Review Board.

## 4. RESEARCH METHODOLOGY

This study was initiated with a survey on childhood obesity in relation to parental socioeconomic status, occupation, and educational level in Jeddah, Saudi Arabia. Jeddah is a city in western region of Saudi Arabia with a population of 3.4 million [17]. A cross sectional study was conducted on children in Jeddah city classified as obese. The sample was collected at various settings of endocrine clinics from May 2017 until August 2017. All obese children were aged between 3 to 18 years included in the study while those who were more than 18 or less than 3 years old were excluded. The children under study were approximately 384 that were chosen randomly.

## 5. DATA COLLECTION

The data were collected by conducting non-interventional clinical interviews with children and their parents after verbal consent been taken. The total time taken to complete the interview was 15 minutes. Parent and child demographic data were collected. Monthly household income, occupation, education level physical activity and food habit for the children were also reported.

## 6. DATA ANALYSIS

### Indicators of Socioeconomic Status (SES)

Monthly household income, occupation, and education level were used as indicators of SES. For income, participants were asked "What was your average monthly household income?" Moreover, answers were categorized into, less than 5000 SR, 5,000 SR to 10,000 SR, and more than 10,000 SR. Education level was divided into six groups, write and read, Elementary school Intermediate school, and High school and college. Occupation was classified into employed, unemployed, or retired.

### Measurements

The child's measurements, including weight and height were measured using weight/height scale and body mass index (BMI) calculated as weight/height2 (kg/m2). Standard deviation for height, weight and body mass index were calculated using the website, "www,

growthcalc.chip.org". Individuals were assessed for overweight and obesity according to recent international data, in which age and gender appropriate cutoffs are defined. According to World Health Organization, it was presented as "Overweight: >+1SD (equivalent to BMI 25 kg/m2 at 19 years), Obesity: >+2SD (equivalent to BMI 30 kg/m2 at 19 years)" O17].

**Food Habits**

This study also concentrated on collecting information from participants about what they eat and what's their habits of their food consumption by asking them about the numbers of main meals per day. It includes whether the child eats with the rest of the family, breakfast usually prepared at home or school canteen, number of snacks per day, does the child prefer healthy snacks, type of snacks such as chips, chocolate, ice cream, fruits and vegetables or mixed kinds of snack. It also inquired about the number of times the child's eats fast food per week and asked the parents if they have any concern on their child's appetite and how often do they provide fruits and vegetables at home.

**Physical Activity and Sedentary Life**

The physical activity and type of life style has an important role as other causes of obesity. This study collected information about attitude and behavior related to healthy eating and was assisted through the survey. The data revealed about the children's habit while eating in front of TV, number of hours spent on different electrical devices such as TV, video-games and internet by categorizing the time (less than 2 hours, 2-4 hours or more than 4 hours and none). Furthermore, it also inquired if the child practices any sport. If the answer was yes, the researchers divided sports to three most common sports that available in most of schools such as football, swimming, basketball, and others.

## 7. STATISTICAL ANALYSIS

Data was entered, coded, cleaned, and analyzed using Statistical Package for Social Science (IBM SPSS), version 22. The sample size is equal 384 children at King Abdul-Aziz University Hospital (KAUH) in KSA, Makkah Region, Jeddah city. The analysis was done by testing the significance difference of BMI (sds and kg/m2) mean among many factors. Firstly, parental factor was emphasized, including parental socio-economic status, occupation, and education. Secondly, with other factors related to children such as child's eating habits, spending hours in front TV, frequency of exercising, age, current health status and issues such as Diabetes, and accessibility and frequency of use of Internet. Finally, the family history factor was considered. All the relations were tested by one-way ANOVA for nominal variable more than two categories and independent sample t-test for the nominal variables with two categories after we assumed that the data followed normal distribution depended on normal curve and excluded some outliers of continuous variable. Simple descriptive statistics are reported as proportions for qualitative variables such as frequencies and percentages of child's eating habits and grads also of prenatal information. In addition, statistics are reported as mean and standard deviation for quantitative variables, such as the mean of BMI ± SD (25.7 ± 4.1) kg/m2. The results were considered to significant with $P < 0.05$.

## 8. RESULTS

**Participants' Characteristics**

Table 1 represents the participants' socioeconomic status factors. The study included 384 children 204 (53.1%) were males, 180 (46.9%) were females, between 2 and 18 years of age. The Mean age was 11.4 ± 3.7 years for boys and 9.6 ± 3.9 years for girls.308 (80.2%) were Saudis, 76 (19.8%) were non-Saudis. According to age, the number of children less than 6 years was 37 (9.9%), age from 6-12 years old was 226 (60.3%), and more than 12 years old were 112 (29.9%). The mean height of the participants was 142.9 ± 25.5 cm and 131.7 ± 20.9 cm in males and females respectively. The Mean weight of males= 60.5 ± 22.7 kg and Mean weight of females= 46.7 ± 21.7 kg. Figure 1 shows the mean body mass index (BMI) of (males (26.6 ± 3.93 kg/m2) is higher than BMI mean of females (24.6 ± 4.02 kg/m2). The number of obese and overweight children for every age group of girls and boys are shown in Figures 2 and 3.

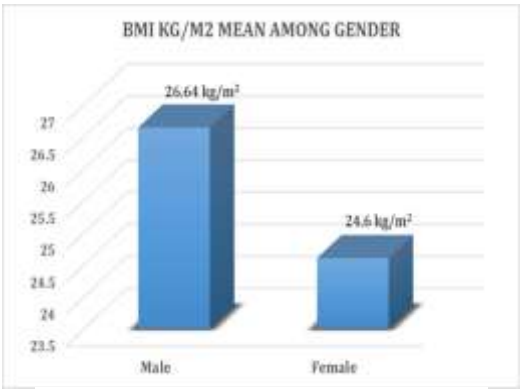


**Figure 1: Mean BMI of the participants**

About 239 (62.2%) of the fathers and 206 (53.8%) of the mothers had completed their college education. About 333 (86.7%) of the fathers are employed and 21 (5.5%) are unemployed and 107 (27.9%) of mothers are employed, 266 (69.3%) mothers are unemployed. Approximately, 59 (15.4%) of the families had low income (income is less than 5,000 SAR/ month), 154 (40.2%) families had an average income (income is 5,000-10,000 SAR/ month, and 170 (44.4%) families had a high income (income is more

than 10,000 SAR/month). About 229 (61.9%) participants had history of obesity in the family.

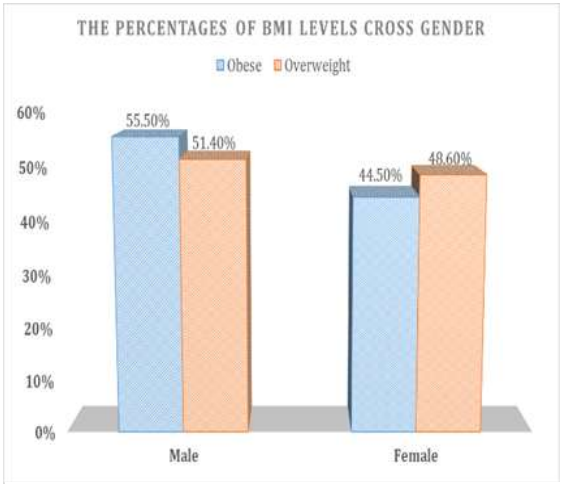


**Figure 2: Percentage of BMI Levels cross gender**

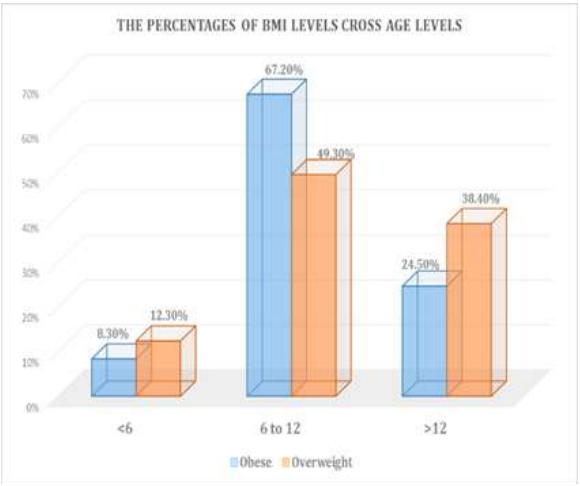


**Figure 3: Percentage of BMI levels cross age levels**

Table 2 shows association of body mass index with socioeconomic status factors of the study participants. Around 55.5% of males were obese and 44.5% of females were obese. Moreover, 51.4% of the females were overweight and 48.6% of females were overweight (p value = 0.0001). Around 175 (76.4%) of the participants were Saudis and 54 (23.6%) were non- Saudis and obese. While 126 (83.3%) of the participants were Saudis and 20 (13.7%) were non- Saudis and overweight (p value = 0.324).

**Table 1: Participants' socioeconomic-status factors**

| Characteristics | Groups | Percentage |
|---|---|---|
| **Gender** | female | 180 (46.9%) |
| | Male | 204 (46.9%) |
| **Nationality** | Saudi | 308 (80.2%) |
| | Non- Saudi | 76 (19.8%) |
| **Age** | <6 years | 37 (9.9%) |
| | 6-12 years | 226 (60.3%) |
| | 12> years | 112 (29.9%) |
| **Child Living status** | With Parents | 349 (90.9%) |
| | With Father or mother | 28 (7.3%) |
| | With others | 7 (1.8%) |
| **Mother's education** | Never studied | 11 (2.9%) |
| | Write and read | 9 (2.3%) |
| | Elementary school | 21 (5.5%) |
| | Intermediate school | 31 (8.1%) |
| | High school | 105 (27.4%) |
| | college | 206 (53.8%) |
| **Father's education** | Never studied | 4 (1%) |
| | Write and read | 13 (3.4%) |
| | Elementary school | 5 (1.3%) |
| | Intermediate school | 26 (6.8%) |
| | High school | 97 (25.3%) |
| | college | 239 (62.2%) |
| **Mother's occupation** | Employed | 107 (27.9%) |
| | Unemployed | 266 (69.3%) |
| | Retired | 11 (2.9%) |
| **Father's occupation** | Employed | 333 (86.7%) |
| | Unemployed | 21 (5.5%) |
| | Retired | 30 (7.8%) |
| **Family income** | less than 5,000 per month | 59 (15.4%) |
| | 5,000-10,000 per month | 154 (40.2%) |
| | more than 10,000 | 170 (44.4%) |
| **Family history of obesity** | Yes | 229 (61.9%) |
| | No | 141 (38.1%) |

According to the age group, children less than 6 years old 12.3% are overweight and 8.3% are obese. Around 49.3% of children aged between 6 - 12 years old are overweight and 67.2% are obese, while 38.4% of children more than 12 years old are overweight and 24.5% are obese (p value = 0.0001). Among 63.7% of the participants, with the fathers having college degree are overweight while 61.1% of them are obese (p value = 0.511). Furthermore, around 50.7% of the participants with mothers having college degree, are overweight while 54.4% of them are obese (p value = 0.081). As far as the children with unemployed mothers were concerned, it has been reported that 75.3% children of unemployed mothers are overweight, while 54.6% are obese (p value = 0.058).

In addition to this, about 89.7% children of employed fathers are overweight, while 84.7% are obese (p value =

0.205). Approximately, 47.4% Children were more to be obese with families of high income, whereas 43.8% of them with medium family income are overweight (p value = 0.0001). Furthermore, about 62.6% of the participants who had family history of obesity are obese (p value = 0.0001).

**Table 2: Association of body mass index with socioeconomic status factors of the study**

| Characteristics | Groups | Overweight | Obese | P value |
|---|---|---|---|---|
| **Gender** | male | 75 (51.4%) | 127 (55.5%) | 0.0001 |
| | female | 71 (48.6%) | 102 (44.5%) | |
| **Nationality** | Saudi | 126(83.3%) | 175(76.4%) | 0.324 |
| | Non- Saudi | 20(13.7%) | 54 (23.6%) | |
| **Age** | < 6 years | 18 (12.3%) | 19 (8.3%) | 0.0001 |
| | 6-12 years | 72 (49.3%) | 154 (67.2%) | |
| | >12 years | 56 (38.4%) | 56 (24.5%) | |
| **Child living status** | Child live with parents | 137 (93.8%) | 203 (88.6%) | 0.220 |
| | Child live with mother | 6 (4.6%) | 17 (7.4%) | |
| | Child live with father | 2 (1.4%) | 3 (1.3%) | |
| **Mother education** | Never studied | 5 (3.4%) | 6 (2.6%) | 0.081 |
| | Write and read | 3 (2.1%) | 6 (2.6%) | |
| | Elementary school | 9 (6.2%) | 12 (5.3%) | |
| | Intermediate school | 13 (8.9%) | 18 (7.9%) | |
| | High school | 42 (28.8%) | 62 (27.2%) | |
| | college | 74 (50.7%) | 124 (54.4%) | |
| **Mother occupation** | Employed | 33 (22.6%) | 73 (31.9%) | 0.058 |
| | Unemployed | 110 (75.3%) | 148 (64.6%) | |
| | Retired | 3 (2.1%) | 8 (3.5%) | |
| **Father education** | Never studied | 1 (0.7%) | 3 (1.3%) | 0.511 |
| | Write and read | 6 (4.1%) | 7 (3.1%) | |
| | Elementary school | 2 (1.4%) | 3 (1.3%) | |
| | Intermediate school | 10 (6.8%) | 16 (7%) | |
| | High school | 34 (23.3%) | 60 (26.2%) | |
| | college | 93 (63.7%) | 140 (61.1%) | |
| **Father occupation** | Employed | 131 (89.7%) | 194 (84.7%) | 0.205 |
| | Unemployed | 5 (3.4%) | 15 (6.6%) | |
| | Retired | 10 (6.8%) | 20 (8.7%) | |
| **Family income** | <5000 SAR | 22 (15.1%) | 35 (15.4%) | 0.0001 |
| | 5000-10000 SAR | 64 (43.8%) | 85(37.3%) | |
| | >10000 SAR | 60 (41.1) | 108 (47.4%) | |
| **Family history of obesity** | Yes | 91 (64.1%) | 137 (62.6%) | 0.0001 |
| | No | 51 (35.9%) | 82 (37.4%) | |

**Table 3: Food habits and Physical Activity and sedentary life according to the studied variables**

| Characteristics | Groups | Overweight | Obese | Total |
|---|---|---|---|---|
| **Number of meal** | <3 | 76 (72.1%) | 99 (43.2%) | 175 (46.7%) |
| | 3-6 | 69 (47.3%) | 121 (72.8) | 190 (50.7%) |
| | >6 | 1 (0.7%) | 9 (3.9%) | 10 (2.7%) |
| **Eat with family** | yes | 120 (82.2%) | 195 (85.2%) | 315 (84.0%) |
| | no | 26 (17.8%) | 34 (14.8%) | 60 (16.0%) |
| **Number of times the child eats fast food/week** | none | 8 (5.6%) | 17 (7.4%) | 25 (6.7%) |
| | <2 | 81 (56.6%) | 114 (49.8%) | 195 (52.4%) |
| | 3-5 | 46 (32.2%) | 72 (31.4%) | 118 (31.7%) |
| | >5 | 8 (5.6%) | 26 (11.4%) | 34 (9.1%) |
| **Dose child has habits of eating while watching TV** | yes | 93 (65.0%) | 162 (70.7%) | 255 (68.5%) |
| | no | 50 (35.0%) | 67 (29.3%) | 117 (31.5%) |
| **Number of hours the child spent** | none | 25 (17.1%) | 32 (14.0%) | 57 (15.2%) |
| | <4 | 24 (16.4%) | 41 | 65 |

| | | | | |
|---|---|---|---|---|
| **in internet** | | | (17.9%) | (17.3%) |
| | 2-4 | 36 (24.7%) | 57 (24.9%) | 93 (24.8%) |
| | >4 | 61 (41.8%) | 99 (43.2%) | 160 (42.7%) |

## 9. DISCUSSION

Saudi Arabia has a generally high rate of obesity and overweight, which are essentially expanding throughout the years. This cross-sectional examination was consisted of children in Jeddah city and they were regarded as obese or overweight. A survey of 384 children, including 204 (53.1%) boys, and 180 (46.9%) girls, aged between 3 to 18 years has been conducted. The occurrence of overweight and obesity was 75 (51.4%) of male children were overweight and 71 (48.6%) of female children were overweight, while 127 (55.5%) of male children were obese and 102 (44.5%) of female children were obese. While in Riyadh city, it was 12.7% (17.4% for male children and 9.3% for female children [3].

The indications of other studies identified that incidence of overweight among male children aged between 6 - 12 years was 7.3% while that of obesity was 17.4%. This predominance rate is higher than the estimations presented by El-Hazmi and Warsy [18], who led a cross-sectional national epidemiological family unit review in various regions of Saudi Arabia from 1994 to 1998. Their study included 12,071 children (male children 6,281; female children 6,420), with ages ranging from 1 to 18 years. The predominance of overweight among male children aged between 6 to 12 years was 8.6% while the frequency of obesity was 4.9percent. This clear addition could reflect more degeneration in the public health status in Saudi Arabia with respect to childhood obesity, which demonstrates a requirement for a strong and influential policy reinforcement to solve this health issue [19]. Furthermore, in 2008, a disseminated research was done in Al-Hassa, which demonstrated that the predominance of overweight in elementary school male children were 14.2% while that of obesity was 9.7%. Nevertheless, the age range in the age range in that review was 10 - 12 years [20].

### Socioeconomic Status

A lack of predictable factors in different investigations leads to critical evaluation of status of childhood weight and its connection to SES and parental occupation. As far as the results are concerned, this research is the primary endeavor and investigates the significance of parental occupation and its relationship with SES in connection to childhood weight. However, the quantity of studies that has been conducted in most of the developing countries that concentrated on the association between obesity and socioeconomic status is insignificant [21]. However, a few investigations conducted in the US indicated that low SES is associated with increased incidence of overweight and obesity. In Russia, a transitional society that has encountered financial challenges since the mid-1990s, both low-wage and high-wage families were at an increased risk of weight contrasted with the medium-wage families. In China, the families with increases SES have better access to meat and other vitality sustenance, which are significantly more costly than different nutrients, for example, vegetables, than the poor are. While in the US, higher-SES families normally consume more vegetables and natural products, which are less nutritious, than low-SES groups [22].

Furthermore, it has been indicated that the relationship among obesity and SES is evident, which is also observed according to the pat studies as mention in this research [22 – 24]. Similarly, the results from this research demonstrate that the childhood obesity is identified with SES, despite the fact that the connections vary among families. We utilized family pay as an essential marker of SES, while parental occupation and training may be included as an additional indicator. Keeping in mind the goal to build up autonomously related variables for the outline that measures SES for overweight in children, a different strategic relapse was led. For example, it included sexual orientation, age, training level of parents, and parental occupation, living space per individual and single parenthood and others.

Therefore, it can be affirmed that the obesity and SES are associated factors. This research indicated that families with a higher SES will probably be obese than those with low SES, that may be on the grounds that parents are less associated with the lives of their children. Moreover, this research also indicated that the increased SES is involved in influencing their way of life, including their entrance to nourishment age, and thus interferes with their balanced diet.

### Family Income

A cross-sectional study was led among school children in Riyadh, Saudi Arabia demonstrated the connection of SES pays and childhood obesity. A delegate test of 1243 (542 male and 701 female) children aged between 6 - 16 years will probably be overweight if their families had higher wage (P value < 0.01), contrasted with families with low pay [17]. Another examination was done on 1072 children in Saudi Arabia, 14.9% out of them were obese, 95% of the children having high family income [25]. A few investigations have concentrated on the relationship amongst SES and obesity, this is the primary examination to indicate that this affiliation.

Further examination has discovered that half (48.7%) of the country families had a low salary (under SR5000 every month) contrasted and one quarter (24.2%) of urban families. Alternately, fundamentally more urban families had a high family salary (more than SR12000 every month) than rustic families (41.4% versus 18.6%). In less

industrialized nations, for example, Brazil and China, the predominance of overweight and obesity is particularly more noteworthy in families that have high wages [26]. Wang et al. proposes this may be on account of such families with more balanced diets and have more relaxation time to spend on physical exercises.

No significant association was found between family wage and overweight or obesity among either provincial or urban families in this examination. Comparative discoveries were accounted for by Al-Saeed et al. who overviewed urban children [27]. The connection between financial variables of parents and BMI of children is not identical to the past discoveries. Our present outcomes demonstrate that a higher risk of overweight is related with high family wage. It is presumably because of access of children to vitality rich eating habits. We assess the commonness of obesity in Saudi children, and we found that most children had an inactive way of life. However, there was a noteworthy connection in our examination among obesity and higher SES. It is believed that high-salary families can bear the cost of a few dinners for each day, have sustenance conveyed to the home effectively, and have more regular meals and different nourishments with high caloric substance [28]. Conversely, low pay families tend to spare cash by eating monetary dinners at home maybe a couple times on daily basis.

**Parental level of education**

It has been indicated that children typically invest more energy with their mothers than their fathers [29]. It indicates that maternal training in the development of children influenced adolescence weight. The mothers are likewise in charge of eating routine of their children as compared to the fathers [30]. Therefore, the children with independently employed mothers who work more hours outside their homes may presumably invest less energy with their children [31]. Urban individuals in Saudi Arabia have prepared access to all levels of instruction. In addition, individuals in country zones tend to leave school early, the men generally looking for work in the military and the women wed early. Regardless of clear contrasts in level of training and accomplishments among these indicators, this investigation found no independent relationship between parental influence and overweight or obesity, among children [32].

Parental educational level was the most habitually utilized technique as a measure of SES among the included examinations. The most imperative freely related factor for a high BMI in the study population was maternal training since mothers are more in charge of eating routine. Obesity was especially predominant in children whose parents had high educational level. Therefore, it has been affirmed that the parental training and sort of parental occupation were the most powerful free factors in a stepwise incidence for childhood obesity.

Generally, there is a potentially direct association between obesity incidence and educational levels of parents. Further, it was found that parents of 61% of obese children had advanced education when compared to the 26% of the parents of obese children who did not had secondary school degree. In this regard, it is imperative to deduce that there is a limited control and coordinated supervision by the parent of children who had higher degree of education that subsequently lead to the increased risk of obesity.

**Parental Occupation**

In the present examination, a noteworthy association was identified between the obesity and overweight of children and high parental occupation. These outcomes demonstrated that the risk of childhood obesity was altogether higher in children with rich financial background. Furthermore, the children with mothers who do not work or are unemployed will probably have a decreased risk of obesity among their children [33 – 35]. Children of employed fathers are 40% more prone to be obese than the children of fathers who are not employed.

In light of these findings, a higher family salary would not clarify an advanced education level of the mother. The mother's training stays noteworthy even subsequent to altering for different variables, for example, wage and the mother's business status and occupation. The researchers also observed that there is no critical connection between working mothers and having obese or overweight children. With that supposition, it appears that exceedingly educated mothers in Saudi Arabia invest more energy far from their kids either in school, considering, or in social exercises [36, 37]. Therefore, the majority of those moms rely upon outside parental figures or housemaids to watch over their children which clarify the stationary lifestyles of the children. The researchers could not further analyze the aspects of parental occupation on childhood obesity. Since it is a cross-sectional examination, a potential relationship could not be presented. However, the results identified so far are indicative of important factors associated with the over-weight and obesity among Saudi children.

**Other Factors**

Furthermore, this analysis stratified by sex and age to further indicate that social economic, and environmental factors may operate through complex pathways to influence childhood obesity [38]. Saudi Arabia has a relatively high rate of overall obesity and overweight, which are significantly increasing over the years [39]. It has resulted from less regular exercise or physical activities, increased consumption of fast food, and spending a lot of times at watching TV, internet and etc. the limitations of this research include some important risk factors of overweight and obesity such as physical activity and dietary factors are among limitation of reported cases [40]. However, the main objective of the present study is providing evidence for

associations but not causation of the relation of childhood obesity and parental occupation and SES.

This study has some limitations. Firstly, the study design is cross-sectional. A longitudinal study would be best to assess causal relationships. Secondly, the study is limited to one city and its urban population mainly. This study demonstrates that overweight and obesity are serious public health problems among children in Saudi Arabia. Boys are affected more than girls, children of families with a higher income are more likely to be overweight, and children of educated parents and employed fathers are more likely to be obese. Indeed, high socioeconomic status may lead to risky behaviors poor diet, lack of physical activity, and sedentary lifestyle and can result in obesity and overweight. Further studies are needed to assess the effect of other contributing factors to prevalence of overweight and obesity.

## 10. CONCLUSION

The increasing incidence of overweight and obesity has become a global epidemic, and in Saudi Arabia, they now represent a national health crisis threatening the welfare of the entire community. The results of this study present the association of socioeconomic status of the parents with overweight and obesity among Saudi children aged from 2 to18 years. Obesity and overweight were more prevalent in male 55.5% and 51.4% respectively. Obesity and overweight were more prevalent in Saudi children 76.4% and 83.3% respectively. The prevalence of obesity and overweight is higher in children of parents with high educational levels and in children of employed fathers and in unemployed mothers. Children in families of high income have high prevalence of obesity. Studies that are more detailed are needed to assess the effect of parental socioeconomic status factors to prevalence of overweight and obesity among Saudi children in different region of the kingdom.

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