

Relationship Between the Family Environment and Childhood Obesity

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ABSTRACT

Objective: To determine the association of family environment with childhood obesity. **Methodology:** This case control study was conducted in Public and Private schools of Lahore city and was analyzed in Department of Community Medicine, Allama Iqbal Medical College Lahore from November 2015 to May 2016. Students having age 8 to 10 years studying in grade 4 and 5 were selected for this study. **Results:** After compiling the results, it was noted that childhood obesity was associated with parental BMI, eating between regular meals, TV viewing >4hours/day and physical activity <20min/day. **Conclusion:** Results of this study revealed that childhood obesity is associated with risk factors of family environment (parental BMI, eating between regular meals, TV viewing >4hours/day and physical activity <20min/day). **Keywords:** Obesity, family environment, BMI, TV viewing, physical activity.

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INTRODUCTION

Childhood obesity is a condition where excess body fat negatively affects a child's health or well-being. As methods to determine body fat directly are difficult, the diagnosis of obesity is often based on BMI.¹ Due to the rising prevalence of obesity in children and its many adverse health effects it is being recognized as a serious public health concern. The term overweight rather than obese is often used in children as it is less stigmatizing.²⁻³

Approximately 15% of children age 12-19 years are currently overweight obese and 1/3 increase has been observed since late 1970s. Their trends may be attributed in part to decline in physical activity, sedentary life style and family environment.⁴ Children are found spending more time on sedentary activities like television and computer. This when coupled with food create a whole generation of couch potato children.⁵⁻⁶

There are a variety of environmental factors that determine whether or not children and their parents choose healthy diet. According to a study conducted by (CDC) center for diseases control and prevention, 55 million school age children have access to sugar drink and less healthy food throughout the day.⁷ According to physical activity guideline for Americans recommendation 2007, only 18% of students in grade 8 to 12 do less than 16 minutes of aerobic physical activity each day.⁸ A study in United

States showed that breast feeding against childhood overweightness and obesity. 75% of mothers start out breast feeding, only 13% of babies are exclusively breast feed at the end of the 6 months.⁹ A study by CDC showed that children of age 8-18 years spend an average of 7.5' hours a day using entertainment media including TV, Computer and Video games. Out of 7.5 hours, 4.5 hours is dedicated to viewing TV.¹⁰ TV viewing is a contributing factor to childhood obesity, may take away from the time children spend in physical activity.¹¹

As global awareness and social mobilization has increased against childhood obesity in recent years, it has been realized that there are variety of family environmental factors which determine whether the children choose healthy life style or not. So, such studies which intend to describe the role of family.

METHODOLOGY

This case control study was conducted in Public and Private schools of Lahore city and was analyzed in Department of Community Medicine, Allama Iqbal Medical College Lahore from November 2015 to May 2016. Total 331 cases and 331 controls were selected through (multistage) stratified random sampling technique for this study.

Students of age 8-10 years studying in grade 4 and 5 with BMI for age > 95 percentile were labeled as obese (cases) and students of same age and gender

8-10 year in grade 4 and 5 with BMI < 95 percentile were labeled as eutrophic (controls). Unwilling students and parents were excluded from study.

Independent study variable was inadequate family environment (Parental BMI (either), Eating habits between 3 regular meals daily, Watching TV / Computer use daily, Physical activity / outdoor games daily) and dependent study variable was childhood obesity.

Height and weight of all children of age 8-10 year studying in grade 4 & 5 in public and private schools were taken. BMI was calculated. Children with BMI for age > 95 percentile were labeled as obese. Then the children were selected randomly according to sample size.

Addresses and telephone numbers were taken from the selected children. Their parents were telephonically called and after taking consent form from them, their child was included in the study. Those who refused, the next child was taken. After taking time from the parent's, home visit was made. A pre-designed and pre-tested questionnaire was used to collect information regarding the family history. The cases and controls were interviewed regarding history of exposure according to the specific variables i.e: Parental BMI (either), eating habits between 3 regular meals daily, Watching TV / Computer use daily, Physical activity / outdoor games daily. Height and weight of the parents were taken to calculate BMI. Pre-designed and pre-tested Questionnaires was used to collect.

Weighing machine was used to measure weight in kgs. Children were weighed without shoes and the pockets emptied. After weighing every child, the machine was made zero to avoid error in weighing. Anthropometric tape was used to take height (in cm) of children in vertical position, erect with parallel feet and ankles and with shoulders and bottom touching the wall.

All the collected data was entered in SPSS version 17 and analyzed. Mean and SD was calculated for numerical data and frequencies and percentages were calculated for categorical variables.

RESULTS

Results of present study revealed that childhood obesity is positively associated (OR=2.15) with maternal obesity. Table 1 There is an association (OR= 2.24) between childhood obesity and paternal obesity. Table 2. This study also proved that childhood obesity is strongly associated with eating between regular meals (OR= 4.65). Table 3. It was also proved in our study that childhood obesity is associated with daily TV viewing for more than 4 hours (OR = 3.33). Table 4. Our study also showed

that there is an association between childhood obesity and physical activity of <20 minutes daily (OR = 2.3). Table 5.

Table 1: Association of childhood obesity with maternal obesity

Childhood obesity	Maternal Obesity	
	Yes	No
Yes	214	117
No	152	179

OR = 2.15

Table 2: Association of childhood obesity with paternal obesity

Childhood obesity	Paternal Obesity	
	Yes	No
Yes	198	133
No	132	199

OR = 2.24

Table 3: Association of childhood obesity with eating between regular meals

Childhood obesity	Eating between regular meals	
	Yes	No
Yes	250	81
No	132	199

OR = 4.65

Table 4: Association of childhood obesity with TV viewing daily

Childhood obesity	TV viewing daily	
	>4 Hrs	<4 Hrs
Yes	274	57
No	198	133

OR = 3.33

Table 5: Association of childhood obesity with physical activity daily

Childhood obesity	Physical activity daily	
	<20 Minutes	>20 Minutes
Yes	232	99
No	148	183

OR = 2.3

DISCUSSION

To determine the association of family environment with childhood obesity. The Findings of this study showed that childhood obesity is positively associated with maternal obesity (OR =2.15) which was similar to another study conducted in SAU PAULO Brazil¹² where childhood obesity is associated with maternal obesity (OR 2.5), probably because of strong influence or role of mother in maintaining the family environment. Moreover, children of obese mother are more likely to be overweight themselves.

Results of our study also revealed that childhood obesity is strongly associated with maternal obesity were also similar to another study conducted in Kiel Germany¹³ where there was strong association between childhood overweightness and maternal over weight (OR = 9.06).

It was concluded in our study that childhood obesity is strongly associated with paternal obesity (OR 2.24) which was similar to another study in SAUO PAULO Brazil¹⁴ where paternal overweight was positively associated with childhood obesity (OR = 2.5). Association of childhood overweightness with paternal overweightness was also showed in another study conducted in UK⁷ where paternal obesity was significantly associated with childhood obesity (OR = 3.06) because parents have a strong influence over children and it's not just gene that they pass on. When children grown up in families with poor eating habits and either parent obese they are more likely to develop obesity.

Our study concluded that childhood obesity is positively associated with eating between regular meals (OR =4.65) which was similar to another study conducted in SAUO PAULO Brazil¹² where there was strong association between childhood obesity and eating between the three regular meals (OR= 3.8). This observed similarity is probably because of similar eating patterns and behaviors found in children irrespective of geographical area and race. Parents with poor nutritional habits and sedentary lifestyles become role model for their children and this obesogenic home environment favors child to eat more and irregularly. Moreover, there is role of advertised food products and ofcourse the availability of junk food or high caloric diet at home or nearby.

Our study showed that there was strong positive association between TV viewing for >4 hours/day and child hood obesity (OR 3.33) which was similar to another study in SAUO PAULO Brazil¹² where TV viewing for >4 hours/day was most important predictor of childhood obesity (OR= 2.07). This similarity proved that high levels of TV viewing in

children leads to sedentary life styles. Most of the TV viewing occurs at home and among children the family environment is critical source of influence on children eating habits and behaviors.

Association of childhood obesity with TV viewing >4 hours per day found in my study was also similar to another study conducted in Melbourne Australia¹⁴ where TV viewing >4 hours/day was strong predictor of obesity in children (Boys OR 2.6 and girls OR 2.8). TV viewing >4 hours/day in causing childhood overweightness was also proved in another study conducted in city of Zwolle, Netherlands¹⁵ where Odd's ratio of being overweight was 1.7 for viewing TV >2 hours among 4 to 8 years children. This association between TV viewing might be explained by factors in the home environment that influence TV viewing. Parents have a central role as they determine the number of TV viewing hours, rules and the children's bed time. The scientific statement addresses the parents and adult care givers "as agents of change" for obese children as they regulate their eating behaviors, TV viewing/computer use patterns and life styles.

Our study proved that there is strong association between childhood obesity and reduced physical activities of <20 minute/day (OR=2.3) which was similar to another study conducted in SAUO POLO Brazil¹² where reduced physical activity for <20 minutes/day was a strong factor in causing obesity. Strong association of childhood overweightness with reduced daily physical activity was also found in another study in Melbourne Australia¹⁴ where low level of physical activity was associated with obesity in children (OR 1.7 for boys and 2.3 for Girls). This low level of physical activity is attributed to TV viewing irrespective of area and race. Children age 4 to 8 year are much interested in electronic games and TV viewing. These behavioral patterns were also observed in Southern European countries i.e. Spain and Greece where positive association between sedentary behaviors and overweight indices were found.

Association of low physical activity and childhood obesity (OR 2.3) in my study was also similar to another study in city of Zwolle Netherland¹⁵ where decreased physical was most important agent of childhood overweightness (OR 2.38). As increased TV viewing is a source of sedentary life style and behavior, its the home environment and family practices which cause childhood obesity.

CONCLUSION

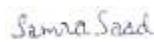
Results of this study revealed that childhood obesity is associated with risk factors of family environment (parental BMI, eating between regular meals, TV

viewing >4hours/day and physical activity <20min/day).

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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