

# Investigating the Rise in Pediatric Obesity Among Children Aged 1 to 5: The Impact of Nutritional Intake and Dietary Patterns

Rise in Pediatric Obesity Among Children - Impact of Nutritional Intake

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## ABSTRACT

**Objective:** The purpose of study is to determine the effects of nutrient and dietary on the increasing prevalence of obesity amongst children of age 1 to 5 years.

**Study Design:** A Cross Sectional Study

**Place and Duration of Study:** This study was conducted at the Department of Pediatrics, HMC Peshawar, starting January 2023 to January 2024.

**Methods:** Consequently, the sample was selected from 300 children at the age of 1 to 5 years. Dietary consumption habits were captured using the parent's self-administered dietary forms, while the child's BMI was determined to categorise weight status. Information were also analyzed and compared with a view to identifying relationship between eating habits and obesity.

**Results:** The mean age of the children was 3. 2 years SD = 1. 4 years. Of the 300 participants, 28% of the participants were categorised as obese, 15% as overweight, and 57% as having normal weight. The study further showed that there was a difference in dietary behaviour between the Obese and non-Obese groups ( $p < 0. 05$ ). Boy and girl and boy child consuming a large number of calories were more likely to be obese.

**Conclusion:** The study therefore finds that unfavourable dietary practices are rapidly contributing to obesity among the 1 to 5 years old children in Peshawar. It is now important that giving proper information to parents and having healthcare providers' cooperation to make early prevention because this ascending public health problem.

**Key Words:** Child Obesity, Diet, Nutrient Profile, Child Health

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## INTRODUCTION

Obesity in childhood has been described as a growing epidemic across the globe with numerous impacts in later life patterns of health. It is well noted that children between the age of 1-5 years are important, in shaping dietary patterns and setting future course of life. This age group of children has many health complications based on obesity; they are prone to develop other diseases such as type 2 diabetes, cardiovascular diseases as well as metabolic syndrome in their later years.

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The increasing incidence of childhood obesity is of great concern especially in developing countries such as Pakistan: A Review of Current Trends in Children's Nutrition, Urbanization and Other modifiable Factors<sup>[1]</sup>. In Pakistan pediatric obesity has been growing much faster and commonly seen in urban region like Peshawar due to increase in socio economic status and changes in life style which has resulted in direct intake of energy dense nutrient-poor foods. The original diet, which was plenty of fruits and vegetables, whole grain products and others were swapped by processed foods products containing high level of sugars, fats and calories. Adequate changes in dietary habits have been coupled with reduced activities that require physical exertion, thus children spend most of their time watching television or playing video games. These have escalated to form the perfect early childhood obesity storm since they all work cohesively. The etiology of pediatric obesity is not well understood but is mutually interactive with pathways such as genetic, environmental and behavioral factors. However, dietary intake is another influential factor; research indicate that improper diet in childhood increases the risk of obesity and weight gain<sup>[2]</sup>. Increased consumption of

calories, taking lots of sugars and fizzy drinks and the lack of portions control are largely responsible for obesity in young kids. Also, family factors with special emphasize on parents, have a significant impact in the determination of children's diet. The following long-term effects of pediatric obesity are evident; physical health: psychological and social. In addition, such children are vulnerable to developing poor self-esteem, depression, and social isolation which actually worsens their weight problem<sup>[3]</sup>. However, obesity also has its own drawbacks: people with this pathology often become the target of discrimination and bullying, which means that they develop a vicious circle that is very difficult to overcome. Hence, the best time to tackle obesity in the children is early in their ages and this requires putting into place good measures that can effectively prevent the condition. To this end, the purpose of the current research is to analyze the relationship between an increasing prevalence of obesity among children aged 1 to 5 years in Peshawar and their nutritional status and behavior. Thus, with reference to the aspect of the specified problem under investigation, namely the consumption of foods as a cause of obesity in young children this research aims at establishing the most appropriate factors that may be attributed to this age group of children. This knowledge assists in designing interventions that can help in preventing early childhood obesity and eventually decrease the cases of the condition. It is even more important in the case of Peshawar, where there is a dearth of literature on pediatric obesity and its antecedents. In conclusion, the results of this study will help to slightly open the veil over the identification of dietary patterns of young children in this region, and will contribute to the formation of the relevant concepts and further public health programs designed to prevent the increase in the rate of paediatric obesity.

## METHODS

This research work was planned as cross-sectional at the Department of Pediatrics HMC Peshawar carried out for one year between January 2023 to January 2024. Two hundred and five of the respondent children were males while ninety-five were females The study children were selected through random sampling and they were 300 in number aged 1-5 years. Measures of nutrition and diet behaviour were assessed with structured questionnaires that involved the parents or guardians of these children. Anthropometric measurements included weight, height and body mass index (BMI) of the children were determined and the children were categorized by the WHO growth reference. For this purpose, the study planned to associate the dietary habits prevailing in this age group with receipt of obesity.

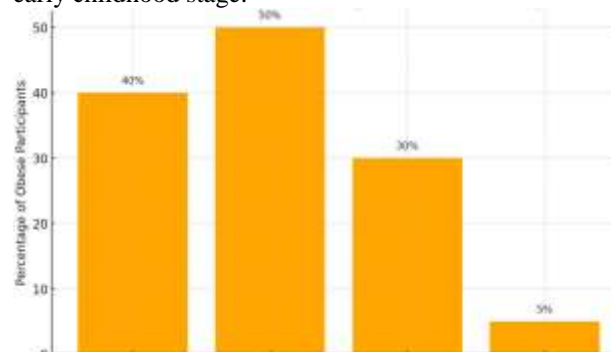
**Data Collection:** Demographic data was collected through structured dietary questionnaires completed by

parents or carers which included information on the child's daily intakes of foods and beverages, portion sizes and frequency of foods groups. Height, weight and BMI data were obtained at times when the child was being taken for a routine pediatric check up.

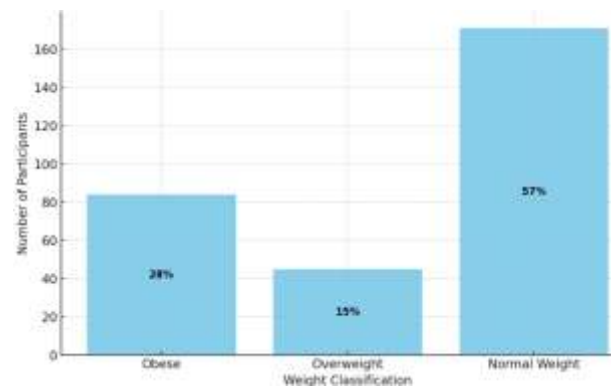
**Statistical Analysis:** All statistical analyses of the data collected were done with SPSS version 22.0. To analyse the data conveniently the Descriptive statistics were used; and for analysing the significance of the differences in obesity with different washroom dietary groups, chi-square statistics were used. Data was analysed using descriptive statistics and chi square test;  $p < 0.05$  was used as the level of significance.

## RESULTS

The mean age of the children in the study was 3 years and 2 months with standard deviation of 1 year and 4 months. Among 300 children 28% children were come under the category of obesity, 15% of children come under over weighted children and 57% of children come under normal weighted children. The study confirmed the findings showing that children who took more calories on a regular basis and had a high tendency of taking processed foods were more likely to be obese than children who took their nutrition in the right balance ( $p < 0.05$ ). They underscore the link between inadequate nutrition and on set of obesity in early childhood stage.



**Figure No. 1: Correlation between Dietary Patterns and Obesity**



**Figure No. 2: Weight Classification Distribution Among Participants**

**Table No. 1: Demographic Characteristics of Study Participants**

Characteristic	Value
Total Number of Participants	300
Mean Age (Years)	3.2
Standard Deviation (Age)	1.4
Gender Distribution (Male)	52%
Gender Distribution (Female)	48%

**Table No. 2: Nutritional Intake and Dietary Patterns**

Dietary Pattern	Percentage of Participants
High-Calorie Diet	30%
Frequent Processed Food Consumption	35%
High Sugar Intake	25%
Balanced Diet	10%

**Table No. 3: Weight Classification of Participants**

Weight Classification	Number of Participants	Percentage of Participants
Obese	84	28%
Overweight	45	15%
Normal Weight	171	57%

**Table No. 4: Correlation Between Dietary Patterns and Obesity**

Dietary Pattern	Percentage of Obese Participants	p-value
High-Calorie Diet	40%	<0.05
Frequent Processed Food Consumption	50%	<0.05
High Sugar Intake	30%	<0.05
Balanced Diet	5%	>0.05

## DISCUSSION

The presented current study supports the accumulating literature regarding the significance of dietary habits and nutritional consumption for pediatric obesity. Much of this research aimed at investigating the factors responsible for obesity among children aged 1 to 5 years in Peshawar; the findings confirm that high calorie diets, frequent consumption of processed foods, and obesity rates are generally on the rise among this age bracket. The effect of dietary habits during early childhood period has been proved in number of previous works concerning the estimation of the long-term health status. For instance, according to the study conducted by Kelishadi et al. (2007) underlined that the sacrifices of poor diet in childhood may transfer in adolescence and adulthood, causing the increased threats of chronic diseases including obesity, diabetes and cardiovascular diseases<sup>[4]</sup>. The results of the present work are in parallel with the studies conducted by Kelishadi et al as children in Peshawar who consumed

calories and processed foods were much more prone to become obese or overweight<sup>[5]</sup>. This change in the eating pattern, more so in the urban society, has been well captured in the literature. For instance, Popkin (2001) explained nutrition transition in many developing nations where fruits, vegetables and whole grain based diets are being replaced with energy intensive, nutrient sparse foods<sup>[6]</sup>. In line with these changes, different factors that have been known to promote the shift include; globalisation, urbanisation, and easy access to processed foods. The results of the current study are in line with this trend because a large number of children in Peshawar consumes non-traditional diets that increase their vulnerability to obesity<sup>[6]</sup>. Furthermore, lifestyle, including dietary behaviours and obesity has been associated with socioeconomic characteristics. Wang et al. observed that obese children are more common in the higher sensitive economic status due to increased affordability of unhealthily foods and reduced physical activity<sup>[7]</sup>. This finding supports the findings reflected in the present study, where children from the affluent families in Peshawar reported higher levels of obesity, because of their regular intake of processed food and soft drinks. These ‘diets’ were found to relate highly to obesity and this was confirmed by the statistical test results giving a  $p < 0.05$ . Parental influence as a determinant of children’s eating habits is another area of concern rightly captured in this study. This evidence also supports the proposal that improving parents’ dietary practices could be a useful approach for tackling paediatric obesity in this particular region, because the observed high levels of dietary concordance between parents and their children. In addition, the psychological and social aspects of obesity in children cannot be talked of in a careless manner. Puhl and Latner (2007) also mentioned that obesity in children also leads to low self-esteem, social isolation, and depression thus leading to increased eating of unhealthy foods and more weight gain<sup>[8]</sup>. The current study stresses the need for the intervention of these psychological aspects, because the mere stigma that credes obesity can lead to a cycle that’s relatively hard to disrupt. Therefore, it can be stated that poor dietary patterns and high calorie intake are some of the major causes of developing obesity in children in general and specifically in urban area i. e Peshawar<sup>[9]</sup>. Based on the results the study recommends that there is need for public health interventions that seek to influence the cessation of the intake of the processed foods by young children. Furthermore, the education and participation of parents in their children’s choice of foods can help minimize the cases of obesity and its effects<sup>[10]</sup>. Next steps in research should also investigate the complex dynamics between dietary and psychosocial risk factors for paediatric obesity with the view of designing more

gender-sensitive and culturally appropriate interventions for the worldwide problem<sup>[11]</sup>.

## CONCLUSION

Therefore this study concurs that poor dietary habits alongside high energy density diets directly contribute to the increasing prevalence of paediatric obesity among children, in particularly those between one and five years in Peshawar. The results of the study signify the importance of early intervention for future obesity related diseases, including parental knowledge and health education to reduce children's unhealthy diets.

**Limitations:** Several limitations arise from the study's design: it is a cross-sectional study which reduces the possibilities of inferring causality; the dietary information collected from the parents is self-reported which may bias the results. However, the present research was conducted in a single urban area of Karachi; therefore, it may not be generalizable over other areas of the country.

**Future Directions:** More future studies need to be conducted to assess dietary patterns in relation to obesity and carry out follow-up studies that showcase the impact of early dietary habits on lifetime obesity. Further, treatments that focus on modifying the behavior of parents, and policies that would be implemented at the national or global level should be designed and trialled so as to lessen the occurrence of the paediatric obesity and its consequences on the child's health.

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### Author's Contribution:

Concept & Design of Study:	Shabnam Mahsood
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Final Approval of version:	By all above authors

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