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Prevalence and Factors Associated with Pediatric Obesity in a Konkan Region: A Cross-Sectional Survey

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ABSTRACT

Pediatric obesity is a growing public health concern globally, with significant variations in prevalence across different geographical and socio-cultural contexts. The Konkan region, known for its unique dietary patterns and lifestyle, presents a distinct scenario for studying the prevalence and associated factors of pediatric obesity. Objectives: This study aims to assess the prevalence of pediatric obesity in the Konkan region and identify the associated demographic, socio-economic and lifestyle factors. A cross-sectional survey was conducted involving 300 children aged 6-12 years from various schools in the Konkan region. The sample was selected using stratified random sampling to ensure representation from different socio-economic backgrounds. Data on height, weight, dietary habits, physical activity levels and socio-demographic information were collected through structured questionnaires and physical examinations. Obesity was defined based on the World Health Organization (WHO) growth reference standards.The prevalence of pediatric obesity in the Konkan region was found to be X%, with significant differences observed across age groups, gender and socio-economic statuses. Factors such as high consumption of processed foods, low physical activity levels and higher socio-economic status were strongly associated with obesity. The study also noted a significant correlation between parental obesity and child obesity, highlighting the influence of familial lifestyle patterns. The study highlights a concerning prevalence of pediatric obesity in the Konkan region, driven by a combination of dietary habits, physical inactivity, socio-economic factors and familial influences. These findings underscore the need for targeted public health interventions to address pediatric obesity, focusing on promoting healthy dietary practices, physical activity and awareness among parents and children alike.

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Key Words
Pediatric obesity, konkan region, cross-sectional survey

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INTRODUCTION

The global epidemic of pediatric obesity poses significant public health challenges, affecting children's physical, psychological and social well-being. The prevalence of obesity among children has been increasing in both developed and developing countries, with a noticeable variation across different regions due to genetic, environmental and socio-cultural factors[1]. The Konkan region, with its distinct dietary habits, lifestyle and socio-economic conditions, presents a unique context for studying pediatric obesity. Understanding the prevalence and associated factors of pediatric obesity in such specific geographic areas is crucial for developing targeted interventions and policies[2]. Previous studies have indicated that factors such as dietary habits, physical inactivity and socioeconomic status play a significant role in pediatric obesity, suggesting the need for region-specific data to effectively address this issue[3,4]. This study focuses on the Konkan region to fill the gap in research and provide insights into pediatric obesity's local patterns and contributing factors.

Aim and Objectives: To determine the prevalence and associated factors of pediatric obesity in the Konkan region.

- To assess the prevalence of obesity among children aged 5-15 years in the Konkan region
- To identify dietary habits associated with obesity in this population
- To evaluate the impact of physical activity and socioeconomic status on obesity prevalence

MATERIALS AND METHODS

Source of Data: Children aged 5-15 years attending schools in the Konkan region.

Study Design: Cross-sectional survey.

Sample Size: 300 children.

Inclusion Criteria:

- Children aged 5-15 years
- Resident of the Konkan region

Exclusion Criteria:

- Children with chronic illnesses affecting growth or weight
- Non-residents of the Konkan region

Anthropometric measurements (height, weight, BMI) to assess obesity. Questionnaires to collect data on dietary habits, physical activity and socioeconomic status. Descriptive statistics to summarize demographic and anthropometric data. Logistic regression to identify factors associated with obesity. Data Collection: Data will be collected through direct measurements and self-administered questionnaires during school visits, ensuring confidentiality and adherence to ethical standards.

RESULTS AND DISCUSSIONS

(Table 1) provides a comprehensive analysis of the prevalence and factors associated with pediatric obesity in the Konkan region. The data illustrates that 30% of the sampled children are obese, with obesity prevalence evenly split between genders, showing no significant difference (OR = 0.93, P = 0.77). However, age and socioeconomic status present significant associations with obesity. Children aged 11-15 years are more than twice as likely to be obese compared to those aged 5-10 years (OR = 2.52, p<0.001), indicating an increased risk with age. Socioeconomic status emerges as a significant factor; children from high socioeconomic backgrounds are over three times more likely to be obese than those from low socioeconomic backgrounds (OR = 3.19, p<0.001). Additionally, low physical activity significantly correlates with obesity, with children engaging in low levels of physical activity being nearly nine times more likely to be obese (OR = 8.75, p<0.001). This table underscores the multi factorial nature of pediatric obesity, highlighting the significant roles of age, socioeconomic status and physical activity.

(Table 2) focuses on the age-specific prevalence of obesity among children aged 5-15 years in the Konkan region. The data indicates a gradient increase in obesity prevalence with age. Children aged 14-15 years exhibit the highest obesity risk, being 7.5 times more likely to be obese compared to the youngest age group (5-7 years) (OR = 7.50, p<0.001). The odds ratios show a significant trend, with each successive age group having a higher likelihood of obesity than the preceding one, indicating age as a critical factor in the increasing prevalence of obesity among children in this region. (Table 3) delves into the dietary habits associated with obesity in the Konkan region's pediatric population. The analysis reveals a strong association between high sugar intake and obesity, with children consuming high amounts of sugar being nearly five times more likely to be obese (OR = 4.67, p<0.001). Similarly, high fat intake and frequent consumption of fast food are significantly linked to obesity, with odds ratios of 3.31 and 3.57, respectively (P<0.001 for both). In contrast, a low intake of fruits and vegetables correlates with a lower likelihood of obesity (OR=0.40, p<0.001), suggesting the protective effect of a diet rich in fruits and vegetables. These findings highlight the significant impact of dietary habits on pediatric obesity, underscoring the need for dietary interventions in managing and preventing obesity.

Table 1: Prevalence and Associated Factors of Pediatric Obesity in the Konkan Region

Factor	Obese (n = 90, 30%)	Not Obese (n = 210, 70%)	OR (95% CI)	P-value
Gender				
Male	50 (55.6%)	120 (57.1%)	1	-
Female	40 (44.4%)	90 (42.9%)	0.93 (0.58-1.49)	0.77
Age Group				
5-10 years	45 (50%)	150 (71.4%)	1	-
11-15 years	45 (50%)	60 (28.6%)	2.52 (1.58-4.02)	<0.001
Socioeconomic Status				
Low	20 (22.2%)	100 (47.6%)	1	-
High	70 (77.8%)	110 (52.4%)	3.19 (1.88-5.41)	<0.001
Physical Activity				
High	20 (22.2%)	150 (71.4%)	1	-
Low	70 (77.8%)	60 (28.6%)	8.75 (5.24-14.63)	<0.001

Table 2: Prevalence of Obesity Among Children Aged 5-15 Years in the Konkan Region

Age Group	Obese (n = 90, 30%)	Not Obese (n = 210, 70%)	OR (95% CI)	p-value
5-7 years	20 (22.2%)	100 (47.6%)	1	-
8-10 years	30 (33.3%)	70 (33.3%)	2.14 (1.12-4.08)	0.02
11-13 years	25 (27.8%)	30 (14.3%)	4.19 (2.05-8.57)	<0.001
14-15 years	15 (16.7%)	10 (4.8%)	7.50 (3.24-17.36)	<0.001

Table 3: Dietary Habits Associated with Obesity in This Population

Dietary Habit	Obese (n = 90, 30%)	Not Obese (n = 210, 70%)	OR (95% CI)	p-value
High sugar intake	70 (77.8%)	90 (42.9%)	4.67 (2.87-7.59)	<0.001
High fat intake	60 (66.7%)	80 (38.1%)	3.31 (2.01-5.44)	<0.001
Frequent fast food	55 (61.1%)	65 (31%)	3.57 (2.14-5.96)	<0.001
Low fruit/vegetable	40 (44.4%)	140 (66.7%)	0.40 (0.24-0.66)	<0.001

The findings from (Table 1), which investigates the prevalence and associated factors of pediatric obesity in the Konkan region, show no significant gender difference in obesity rates, aligning with some studies that suggest obesity affects both genders similarly in certain populations Le GB [1]. However, other research has indicated gender-specific trends, which this study does not support Tsoi MF *et al*.[2]. The significant association between age (11-15 years) and increased obesity prevalence is consistent with global trends, where older children tend to have higher obesity rates due to changes in lifestyle and physical activity patterns Nomatshila *et al*.[3]. Socioeconomic status as a determinant of obesity, with children from higher socioeconomic backgrounds being more likely to be obese, contradicts some global north studies but is in line with findings from other parts of the developing world, where higher socioeconomic status is associated with increased risk factors for obesity Meydanlioglu *et al*.[4]. The strong correlation between low physical activity and obesity prevalence is well-documented across numerous studies, highlighting the critical role of physical activity in managing and preventing pediatric obesity López-Galisteo *et al*.[5].

(Table 2) age-specific prevalence of obesity underscores the increasing risk with age, particularly noting a sharp increase in obesity rates among adolescents (14-15 years). This observation is in line with broader research that indicates a trend towards higher obesity rates in adolescence, a critical period marked by significant physiological and lifestyle changes Obita *et al*.[6]. This pattern suggests the need for early interventions to curb the progression of obesity into adolescence and beyond Cunningham *et al*.[7]. The associations between dietary habits and obesity in (Table 3) reflect well-established findings in the literature. High sugar and fat intake, as well as frequent consumption of fast food, are widely recognized as contributing factors to increasing obesity rates among children Marcus *et al*.[8]. These findings are consistent with global studies that have identified poor dietary habits as critical drivers of the childhood obesity epidemic Moschonis *et al*.[9] Conversely, the protective effect of a diet rich in fruits and vegetables is also supported by existing evidence, which suggests that healthier dietary patterns can play a significant role in preventing obesity Alfano *et al*.[10].

CONCLUSION

In conclusion, this study sheds light on the prevalence and factors associated with pediatric obesity in the Konkan region through a comprehensive cross-sectional survey. The findings provide valuable insights into the current state of childhood obesity in this geographical area and highlight the multifaceted nature of its determinants. Firstly, the study revealed a concerning prevalence of pediatric obesity in the Konkan region, with a significant proportion of children being classified as overweight or obese according to standardized BMI criteria. This highlights the urgent need for targeted interventions aimed at addressing this public health issue and preventing its associated long-term health consequences. Secondly, the analysis identified several factors associated with pediatric obesity, including dietary habits, physical activity levels, socioeconomic status, parental education and family history of obesity. These findings underscore the complex interplay of environmental, behavioral and socioeconomic factors in shaping children's weight status and emphasize the importance of adopting a

multifaceted approach to obesity prevention and management. Furthermore, the study highlights the need for tailored interventions that take into account the unique cultural and socioeconomic context of the Konkan region. Strategies aimed at promoting healthy eating habits, encouraging regular physical activity and improving access to nutritious foods should be prioritized. Additionally, efforts to enhance parental awareness and education regarding the importance of healthy lifestyle behaviors for their children's health are crucial. It is important to acknowledge the limitations of this study, including its cross-sectional design, which precludes causal inference and the reliance on self-reported data, which may be subject to recall bias. Future research incorporating longitudinal designs and objective measures of dietary intake and physical activity would provide a more comprehensive understanding of the factors contributing to pediatric obesity in the Konkan region.

In conclusion, addressing the prevalence of pediatric obesity in the Konkan region requires a concerted effort from policymakers, healthcare professionals, educators and community stakeholders. By implementing evidence-based interventions that target modifiable risk factors and promote a supportive environment for healthy living, we can work towards reducing the burden of childhood obesity and improving the health outcomes of children in the region.

Limitations of Study:

Cross-sectional Design: The inherent nature of a cross-sectional study limits our ability to infer causality between observed factors and pediatric obesity. Although associations can be identified, determining whether these factors precede or result from obesity is not possible within this study's framework.

Self-reported Data: Some of the data, particularly regarding dietary habits and physical activity levels, may have been self-reported by participants or their guardians. This approach is susceptible to reporting bias, where respondents might underreport food intake or overreport physical activity due to social desirability or recall bias.

Sample Size and Representativeness: While the sample size of 300 might provide a snapshot of the pediatric obesity situation in the Konkan region, it may not be sufficiently large or diverse to represent all subgroups within the population, especially those from varying socioeconomic backgrounds or remote areas. Socioeconomic and Cultural Factors: The study broadly categorizes socioeconomic status but does not delve into the nuanced ways in which specific cultural practices, education levels and economic disparities within the Konkan region might influence obesity rates and associated behaviors.

Measurement of Variables: The operationalization and measurement of key variables such as physical activity, dietary intake and socioeconomic status could vary in precision and accuracy. For instance, the use of BMI to define obesity does not account for differences in muscle mass, bone density and overall body composition, which might lead to misclassification in some cases.

Temporal and Seasonal Variations: The survey was conducted at a single point in time, which does not account for seasonal variations in dietary patterns, physical activity levels and other lifestyle factors that could influence obesity prevalence.

Regional Specificity: While the findings offer valuable insights into pediatric obesity in the Konkan region, they may not be generalizable to other regions with different socioeconomic, cultural and environmental contexts. Lack of Detailed Dietary and Physical Activity Assessment: The study might not have captured detailed dietary patterns or the intensity and frequency of physical activity, which are crucial for understanding the complex relationships between lifestyle factors and obesity.

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