



## **Influence Of Dietary Patterns On Childhood Obesity: A Cross-Sectional Analysis In Urban And Rural Ganjam District, Odisha**

**Samapika Dehuri<sup>1</sup> & Dr. Shabana Anjum<sup>2</sup>**

*<sup>1</sup>Research Scholar, Department of Nursing,  
Shri JTT University, Rajasthan, India*

*<sup>2</sup>Professor & Research Guide, Department of Nursing,  
Shri JTT University, Rajasthan, India*

*Corresponding Author: Samapika Dehuri*

**DOI - 10.5281/zenodo.15517898**

### **ABSTRACT:**

*This study determines the association of dietary practice, exercise pattern, and overweightness in children in both urban and rural Ganjam district, Odisha. For this, 500 youngsters, selected randomly from the urban area and 250 from the rural area, between the age group of 6 to 12 years were taken. Data was collected using a standardized questionnaire to assess food habits, physical activity, and obesity status, with Body Mass Index calculated to determine the extent of obesity. The results show significant differences between the urban and rural youths. Obesity prevalence is higher for urban youths at 24.8 percent than that of their counterparts from the rural areas at 12.0 percent attributed to greater consumption of processed foods and a more sedentary lifestyle. Contrastingly, rural children have a higher level of physical activity and consume more processed foods less frequently. The results highlight the impact of urbanization, diet, and physical activity on obesity in children, and the programs should be implemented to promote healthy lifestyles, particularly in urban settings.*

**Keywords: Childhood Obesity, Dietary Patterns, Physical Activity, Urban Children, Rural Children, BMI, Sedentary Lifestyle, Processed Foods, Health Interventions.**

### **INTRODUCTION:**

Childhood obesity is one of the most acute public health concerns the world faces today, with millions of kids being affected from a wide array of socioeconomic and geographic backgrounds. Obesity is, according to the WHO, a complex problem that occurs from a disturbance in the balance between calorie intake and energy expenditure. In addition to putting children at risk for a range of physical

health conditions including heart disease, type 2 diabetes, and musculoskeletal disorders, the condition has significant negative impacts on their mental health and general well-being. In developing and transitional countries such as India, childhood obesity has risen sharply from a relatively low base in recent decades.

Modernization and urbanization have brought great changes in India's

conventional levels of physical activity and eating habits. Increasing availability of processed foods that are high in calories but low in nutrients, combined with rising sedentary behavior, have been the leading factors in the childhood obesity pandemic. Childhood obesity is more frequently found in urban regions compared to rural regions, especially in fast-paced lives where ready meals are easily available. However, rural communities are also not immune to the rising influence of bad eating habits and a reduction in physical activities brought about by the infiltration of urban practices and economic change.

With its peculiar mix of the urban and rural population, Ganjam district in the state of Odisha in the east presents an interesting scenario for study into childhood obesity. The children living in the cities of this district are becoming increasingly exposed to items like processed foods, fizzy drinks, and inactive lifestyles. While children in rural areas often have challenges with nutritional knowledge and availability of different food alternatives, they also tend to have a more active lifestyle and adhere to traditional eating habits. Ganjam region is the ideal place to compare how food practices and levels of physical activity impact juvenile obesity because of this paradox.

Assessing and comparing the children's eating habits, levels of physical activity,

and incidence of obesity in children between the ages of 6 and 12, residing in the Ganjam district urban and rural regions is what the study will be concerned with. More specifically, this study is aimed to know the prevalence of the consumption of processed foods, level of physical activity, and difference of obesity in children between urban and rural. These factors must be understood in terms of identifying the root cause of obesity and developing targeted solutions to reduce its adverse impact on the health of children.

This study collects detailed information about children's body mass index (BMI), physical activity levels, and food habits in both urban and rural areas by using a cross-sectional research approach. The results are intended to shed light on the disparate lifestyle choices made by kids in urban and rural areas and how these choices relate to childhood obesity. The study also seeks to inform healthcare workers, teachers, and politicians about the necessity of dealing with lifestyle and diet choices in keeping with the sociocultural context of that area.

#### **LITERATURE REVIEW:**

**Bhagat, A. (2024)** evaluated the prevalence of adolescent obesity in rural Wardha. A cross-sectional review will be conducted in the rural region of the Wardha District. Members between the ages of 10 and 19 will participate in a face-to-face interview using a survey. Finding characteristics related to age

groups, genetic factors, family types, guardians' educational backgrounds, vocations, financial situation, active work levels, and various food consumption patterns was the goal of this research. The findings of this research might have a significant impact on how plans, strategies, and initiatives are carried out in terms of highlighting the links between young adult obesity and risk factors for lifestyle diseases. This message's main priorities include maintaining a healthy diet and engaging in regular, vigorous labor. This lifestyle disease reduces the prevalence of obesity.

**Umekar, S. (2024)** provided an overview of childhood obesity, including its origins, effects, and possible remedies. Youth obesity is the result of a complex interplay of social, genetic, and environmental factors. Relationship complexities, societal norms, and financial standing are some of the elements that impact a child's risk of obesity. Obesity in adolescents has far-reaching effects since it increases the risk of developing chronic illnesses including diabetes, heart disease, and mental health problems. Furthermore, children who struggle academically and face social defamation are often the ones that struggle with fat. Efforts to prevent and manage childhood obesity should include a comprehensive and multi-layered approach. This entails enacting laws meant to promote more prominent real employment (Dad),

improve neighborhood and school nutrition, and suppress latent lifestyles. The prevalence of childhood obesity has increased over the last several years, which has caused grave concerns about global health.

**Akob, F. A. (2024)** investigated the nutritional and dietary status of children aged 1 to 5 and adults aged 18 to 65 in four urban (Mankon and Nkwen) and rural areas. Using cross-sectional and multistage inspection, the selection of research sites and members was completed. A total of 1248 people were surveyed. While level for age, weight for level, and MUAC were used to evaluate children's nutritional health, BMI and midsection outline (WC) were used to examine the nutritional state of adults. To evaluate the dietary diversity (DD) of adults and children, several surveys were used. The information was broken down using SPSS 25. In Nkwen, 43.6% of the overweight (n = 74; 47.4%) or fat (n = 44; 28.2%) population were adults from metropolitan Mankon. In rural Mankon, Mendakwe had 49.4% ordinary weight adults (n = 77), 64.1% normal weight adults (n = 100), and 2.6% underweight adults (n = 4). While children in rural regions were significantly underweight (n = 45; 14.4%), children in urban areas were either normal (n = 158; 50.6%) or overweight (n = 43; 13.8%). According to MUAC data, the majority of children in both urban and rural regions were not really malnourished. Grain, roots

and tubers, fats, and oils were the most preferred dietary sources, according to people of all ages and places.

**Sharma, N. (2024)** provided a new and insightful evaluation of the comprehensive test administered at Indian schools located in a few metropolitan areas. Using PEDro, Google Researcher, PubMed, and Scopus, a thorough search was conducted. The evaluation included tests that provided information on childhood obesity and overweight in Indian cities. 21 distributions totaling 71,466 people were included in the survey for analysis. Obesity throughout adolescence and youth is clearly linked to coronary heart disease, stroke, and later cancerous development (prostate in males, bosom and ovary in women). However, in India, rural regions continue to suffer from malnutrition despite the increased prevalence of overweight and obesity among the country's urban population.

## RESEARCH METHODOLOGY:

### 1. Research Design:

A cross-sectional research methodology was adopted by the study to investigate the association between food patterns, obesity status, and levels of physical activity among children in Ganjam district, Odisha, both in urban and rural regions. In a cross-sectional method, where data is collected at one moment, it best gives a broad picture of the food patterns, levels of physical

activity, and prevalence of obesity in these groups.

### 2. Study Population:

The research targets kids between the ages of 6 and 12 years old residing in Ganjam district, Odisha, both in the urban and rural setting. The research population comprised five hundred youngsters, two hundred from rural and two hundred from the urban regions. This age bracket was chosen since this is a good age where one can test since childhood obesity often occurs at this time.

### 3. Sampling Technique:

Participants were randomly selected from various urban and rural neighborhoods and schools. This method ensures a representative sample that minimizes selection bias because it ensures every kid in the target population has an equal chance of being selected.

### 4. Inclusion and Exclusion Criteria:

The study involved children aged 6–12 years from the rural and urban districts of Ganjam district. With parental consent, the children were selected. Children with disabilities or specific health conditions that could skew the outcome of the study, and those suffering from chronic diseases that affect diet or physical activity, were excluded.

### 5. Data Collection Tools:

A systematic questionnaire formulated especially to assess several aspects regarding children's eating

habits, as well as their physical activities and obesity status, is used in this study to collate data. To assemble comprehensive data, the questionnaire was split into many parts. The section on dietary habits included questions about how often processed foods, sugary drinks, fruits and vegetables, and home-cooked meals were consumed, as well as how often kids missed breakfast. Children were categorized into three categories in the physical activity levels section based on how often they were active: very active, moderately active, and low activity. Finally, the BMI for each child was calculated according to the WHO's criteria on children as a means of establishing their level of obesity. This approach facilitated a better understanding of the interrelationship between food practices, physical activity, and obesity in the research population through its comprehensive picture on the lifestyle choices of the kids regarding obesity.

**6. Data Collection Process:**

There were three steps of the data collection process. First, parents or guardians provided their consent. Then, BMI was calculated after that weight and height measurements had been taken in a controlled environment. Finally, parents or guardians were handed the standardized questionnaire to assess their children's eating habits and physical activity levels.

**DATA ANALYSIS:**

Children in urban and rural areas vary significantly in their obesity condition, according to the research. In cities, 75.2% of youngsters were not fat, compared to 24.8% who were. On the other hand, 88.0% of children in rural areas were not fat, whereas just 12.0% were. The sample's overall obesity rate was 18.4%, suggesting that children in urban areas are more likely than those in rural areas to be obese.

**Table 1: Frequency and Percentage Distribution of Obesity Status Among Children in Urban and Rural Areas**

| <b>Obesity Status</b> | <b>Urban Children (n=250)</b> | <b>Rural Children (n=250)</b> | <b>Total (n=500)</b> |
|-----------------------|-------------------------------|-------------------------------|----------------------|
| <b>Obese</b>          | 62 (24.8%)                    | 30 (12.0%)                    | 92 (18.4%)           |
| <b>Not Obese</b>      | 188 (75.2%)                   | 220 (88.0%)                   | 408 (81.6%)          |
| <b>Total</b>          | 250 (100%)                    | 250 (100%)                    | 500 (100%)           |

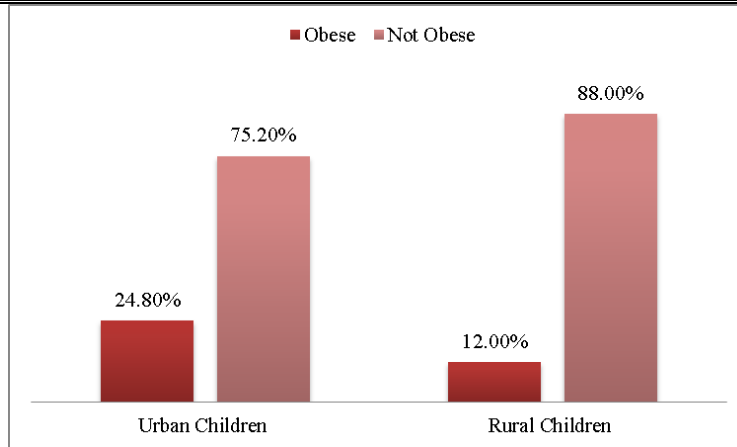


Figure 1: Distribution of Obesity Status among Children in Urban and Rural Areas

This implies that sedentary lives, unhealthy eating habits, and little physical exercise are some of the variables that contribute to obesity that urban youngsters may be more exposed to. In contrast, children in rural areas

have a lower incidence of obesity due to their greater levels of physical activity and perhaps better diets. The results show a significant difference in childhood obesity rates between urban and rural areas.

Table 2: Frequency of Consumption of Processed Foods in Urban and Rural Children

| Dietary Pattern                           | Urban Children (n=250) | Rural Children (n=250) | Total (n=500) |
|---|------------------------|------------------------|---------------|
| Consumed Regularly ( $\geq 3$ times/week) | 120 (48.0%)            | 80 (32.0%)             | 200 (40.0%)   |
| Consumed Occasionally (1-2 times/week)    | 90 (36.0%)             | 110 (44.0%)            | 200 (40.0%)   |
| Never Consumed                            | 40 (16.0%)             | 60 (24.0%)             | 100 (20.0%)   |

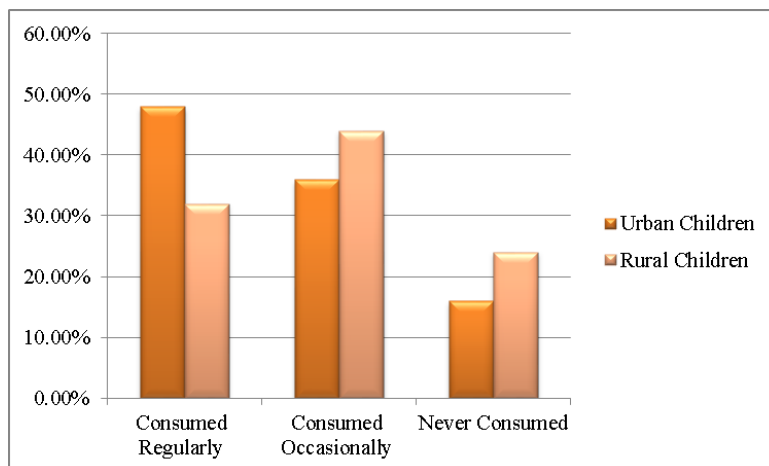


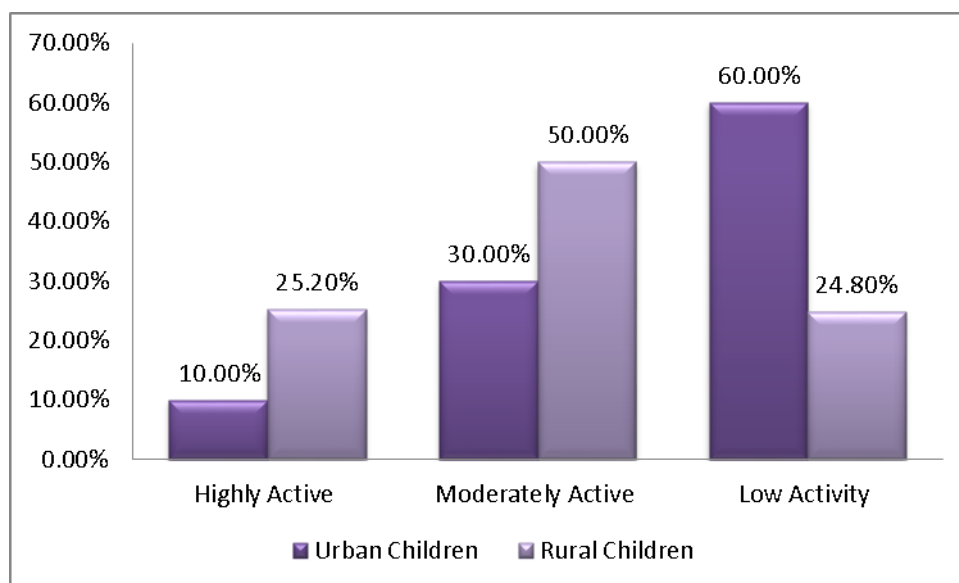
Figure 2: Consumption of Processed Foods in Urban and Rural Children

Findings reveal that the proportion of processed meal intake varies between children from urban and rural settings. A significant proportion of youth living in urban areas (48.0%) frequently consumes processed foods, whereas 36.0% consume them at times, and 16.0% never consume them. Children in rural areas tend to consume

processed foods less often—32.0% do so regularly, 44.0% do so occasionally, and 24.0% never do. That means children in metropolitan cities eat more processed foods often but children in rural areas might enjoy more home-cooked food and the consumption of processed foods should not be excessive.

**Table 3: Frequency and Percentage Distribution of Physical Activity Levels in Urban and Rural Children**

| Physical Activity Level | Urban Children (n=250) | Rural Children (n=250) | Total (n=500) |
|-------------------------|------------------------|------------------------|---------------|
| Highly Active           | 25 (10.0%)             | 63 (25.2%)             | 88 (17.6%)    |
| Moderately Active       | 75 (30.0%)             | 125 (50.0%)            | 200 (40.0%)   |
| Low Activity            | 150 (60.0%)            | 62 (24.8%)             | 212 (42.4%)   |



**Figure 3: Distribution of Physical Activity Levels in Urban and Rural Children**

As shown by statistics in Table 3, children in urban and rural areas differ in their level of physical activity. Physical activities of urban youngsters are often low and a large percentage of them fall into the low activity category. On the other hand, children in rural

areas would be more likely to be physical active, with a higher percent of them engaging in moderate to high levels of physical exercise. That means that while urban children are likely to have relatively sedentary lives on account of things like screen time or

lack of outdoor space, it is possible that rural children may have greater options to play outdoors and engage in physical activities. All things considered, the results show a pronounced difference in activity levels, with children in rural areas enjoying more active lives than those in cities.

#### CONCLUSION:

This study concludes that children in Ganjam district, Odisha, differ significantly in their eating habits, levels of physical activity, and obesity status in urban and rural areas. Children in the urban areas are more likely to be obese at 24.8% compared to children in rural areas at 12.0%. A higher percentage of the young falls into this category of low activity groups and the urban population as well tends to lead more sedate lives and eats more processed meals frequently. In contrast, kids growing in rural areas are highly active and eat less number of processed foods, implying they have better lifestyles. These findings imply that the growing prevalence of obesity among urban children may be mainly because of urbanization and lifestyle factors such as nutrition and exercise. This study shows that targeted interventions for healthier dietary habits and physical activity are needed to prevent childhood obesity and improve the health of children in both urban and rural areas.

#### REFERENCES:

1. Acharya, A., Pradhan, M. R., & Das, A. K. (2021). Determinants of minimum acceptable diet feeding among children aged 6–23 months in Odisha, India. *Public health nutrition*, 24(12), 3834-3844.
2. Aggarwal, V., Gupta, P., Garg, M., & Bahety, P. (2018). Abstract Submission FMPC 2015. *Journal of Family Medicine and Primary Care*, 7(Suppl 1), S1-S68.
3. Akob, F. A., Pillay, K., Wiles, N., & Siwela, M. (2024). Association between dietary diversity and nutritional status of adults (18-65 years) and children (1-5 years) in urban and rural communities of the northwest region of Cameroon. *African Journal of Food, Agriculture, Nutrition and Development*, 24(1), 25101-25125.
4. Alasqah, I., Mahmud, I., East, L., & Usher, K. (2021). Patterns of physical activity and dietary habits among adolescents in Saudi Arabia: A systematic review. *International journal of health sciences*, 15(2), 39.
5. Al-Jawaldeh, A., Taktouk, M., & Nasreddine, L. (2020). Food consumption patterns and nutrient intakes of children and adolescents in the Eastern Mediterranean Region: A call for policy action. *Nutrients*, 12(11), 3345.
6. Bhagat, A., Mehendale, A., & Muneshwar, K. (2024). Study of obesity among adolescents in rural

- Wardha district. F1000Research, 13, 527.
7. Jayaprakash, R., & Manjulatha, C. (2020). Prevalence of anaemia among adolescent girls in rural mandals of Srikakulam district, India. *Journal of Bio-Pharma Research*, 9(9), 2691-2698.
  8. Kumar, S., & Ehrenkranz, J. (2018). Abstract submission FMPC 2015. *Journal of Family Medicine and Primary Care*, 7(Suppl 1), S1-S68.
  9. Kumar, T. V., Panda, D. R., Pradhan, S. K., & Kuanr, S. S. (2023). Balancing Academics and Play: Exploring the Impact of Leisure Activities on Childhood Obesity in Southern Odisha Schools. *European Journal of Cardiovascular Medicine*, 13(4).
  10. Minnu, A., Idomeh, J. E., Obohwe, K. O., Yakpir, G. M., Owusuaa-Asante, A. M., Abayomi, G. O., ... & Soyobi, V. Y. (2024). Childhood Obesity in Urban and Rural India: A Systematic Review and Meta-Analyses of Prevalence Studies. *The American Journal of Interdisciplinary Innovations and Research*, 6(11), 15-63.
  11. Nikumbh, S. S., & Thakur, P. Y. (2018). Abstract Submission FMPC 2015. *Journal of Family Medicine and Primary Care*, 7(Suppl 1), S1-S68.
  12. Rathore, S., Neil, J., & Pilakkadavath, Z. (2018). Abstract Submission FMPC 2015. *Journal of Family Medicine and Primary Care*, 7(Suppl 1), S1-S68.
  13. Sharma, L. K., & Majumder, J. (2014). Variation in Anthropometric Characteristics of Body Composition with Aging, Among Adult Rural Population of Odisha, India.
  14. Sharma, N., Sanjeevi, R. R., Balasubramanian, K., Chahal, A., Sharma, A., & Sidiq, M. (2024). A Systematic Review on Prevalence of Overweight and Obesity among School Children and Adolescents in Indian Population. *Indian Journal of Endocrinology and Metabolism*, 28(2), 104-116.
  15. Umekar, S., & Joshi, A. (2024). Obesity and Preventive Intervention Among Children: A Narrative Review. *Cureus*, 16(2).