

Assessment of Proportion of Overweight and Obesity among Under Five Children: A Cross Sectional Study in Burdwan Medical College Immunization Clinic, West Bengal

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Conflict of interest: Nil

Abstract:

Background: Obesity is a huge concern and a significant lifestyle-related public health issue worldwide. The objective of study was to calculate the percentage of overweight and obese children among under five who attended the Burdwan Medical College immunization clinic in the study period, as well as enumerate the risk factors associated with it.

Materials and Methods: An institution based descriptive type cross sectional study was conducted in the immunization clinic of Burdwan Medical College from 1st February to 1st March 2024. Final data was collected from 68 subjects. Interviews were taken from the parents or the primary attendants of those 68 children with an objective to estimate the proportion of childhood overweight and obesity and to determine its correlates. A pretested, pre designed questionnaire was used to collect the data regarding socio-demographic characteristics, physical activity, dietary intake pattern and anthropometric measurements. Analysis was done by collecting data in MS Excel and by using descriptive and statistical tools to represent the data.

Results: More than half of the study subjects are from the 0-2 year's age group and are male. Majority of the study subjects follow Hinduism, belong to upper and upper middle class family and nuclear family. One-third (36.20%) of the attendants are graduates. Most of the study subjects take meals more than four times a day. Greater parts of the study subjects were exclusively breastfed, delivered in cesarean section and were fully immunized. By plotting the data of height and weight of the study subjects on the WHO growth chart, the result was as follows: 7.35% (5 out of 68) of the children were in the category of overweight. Out of this, 3 out of 45 boys and 2 out of 23 girls were found to be overweight. No children among the study subjects were found to be obese.

Conclusion: The study results suggest that overweight children are present even at this early age with no significant gender disparity. The results point towards early dietary habits and socio-economic factors playing a role in childhood overweight status. This study underlines the importance of early monitoring and intervention to prevent further progression into obesity, which could lead to long-term health issues.

Keywords: Immunization clinic, overweight, obesity, under-five children, WHO growth chart.

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Introduction

Obesity is an important lifestyle related public health problem worldwide. According to WHO, for children under 5 years of age, overweight and obesity are considered weight for height greater than two and three standard deviations above the median of WHO child growth standards respectively. In 2019 an estimated 38.2 million Children under the age of 5 years were overweight or obese globally¹ and almost half of the children under 5 who were overweight or obese in 2019 lived in Asia. [1] The prevalence of childhood

obesity has escalated due to various lifestyle factors, including unhealthy dietary patterns and decreased physical activity, compounded by socio-economic influences. In India, the rising trend of overweight and obesity among young children is alarming, with studies indicating a significant increase in rates over the past few decades [2]. Factors such as urbanization, availability of processed foods, and changing family structures contribute to this public health crisis [3]. In West Bengal, particularly in regions

like Burdwan, the situation demands urgent attention. The Burdwan Medical College Immunization Clinic serves as a vital point of contact for health services among young children, making it an appropriate site for assessing the prevalence of overweight and obesity in this region. Understanding the extent of these conditions can inform local health policies and interventions aimed at combating childhood obesity. Moreover, identifying risk factors associated with overweight and obesity is essential for developing effective strategies. Previous research has linked factors such as parental education, socio-economic status, dietary habits, and physical activity levels to childhood obesity⁴. By conducting a cross-sectional study in the Burdwan Medical College Immunization Clinic, the current study aims to quantify the prevalence of overweight and obesity among children under five and explore the associated risk factors.

Objectives

General Objectives: To estimate the proportion of childhood overweight and obesity and to determine its risk factors among the under-five children attending the immunization clinic of Burdwan Medical College.

Specific Objectives: To estimate the proportion of childhood overweight and obesity among the under-five children attending the immunization clinic of Burdwan Medical College.

- To determine the risk factors associated with childhood overweight and obesity of the study population.
- To evaluate the physical activity of the study subjects.
- To assess the dietary intake pattern of the study subjects.
- To find out the association between childhood overweight and obesity and socio demographic characteristics of the study subjects if any.

Materials and Methods

Study Type and Design: Institution based descriptive type study Cross sectional in design.

Study Area: Immunization Clinic of Burdwan Medical College, Purba Bardhaman, West Bengal.

Study Population: The under-five children who were attending the Immunization Clinic of Burdwan Medical College during the study period.

Inclusion Criteria: The mothers/attendants who were willing to participate.

Sample Size and Technique: All mothers/primary attendants of the under five children attending immunization clinic, were approached for interview. Those who gave written consent to be a part of the study and can be available for at least 30

to 40 minutes for the whole interview process, were included in the current study. Interviews were taken from the mothers/primary attendants of a total 68 children. Final sample size was 68.

Data Collection Tool: A pretested pre designed questionnaire was used to collect the data. It consists of: 1.Socio demographic characteristics. 2. Dietary habits of the under five children.3.Physical-Activity 4. Anthropometric Measurement

Data Collection Technique: 1. Interview of the mothers/attendants of the children.

2. Review of records/register.

Data Analysis: The collected data was entered and organized in MS EXCEL 2024.It was analyzed by using principles of descriptive statistics and represented by bar diagrams, pie charts, tables etc.

Ethical Consideration: 1.Informed consent was taken from the mothers/attendants of the study subjects prior to interview. 2. Confidentiality and anonymity was maintained.

Results

The study was conducted to assess the prevalence of overweight and obesity among under five children attending the immunization clinic of Burdwan Medical College. The socio-demographic profile of the study subjects revealed that more than half (52.94%) of the study subjects are from age group 0-2 years (Table No: 01) and 55.10% of the study subjects are male. In terms of religion, the majority (79.7%) of the study subjects follow Hinduism. More than half (52.2%) of the study subjects are from urban residence. One third (36.20%) of the mothers / attendants are graduates (Figure No:01). Majority (86.9%) of the study subjects belong to the upper and upper middle class (Table No: 02). Most (72.5%) of the study subjects belong to the nuclear family. More than three-fourths of the study subjects (79.7%) of the study subjects take meals more than 4 times a day. Around half of the study subjects (47.8%) of the study subjects had never taken fruits and vegetables in the 7 days prior to data collection. Majority (94.2%) of the study subjects were exclusively breastfed (Figure no: 02). Greater part (89.9%) of the study subjects were delivered by cesarean section. Around three-fourths of the study subjects (76.10%) were fully immunized. After plotting the data of height and weight of the study subjects on the WHO growth chart, result is as following:

1. Proportion of children who are in the category of overweight: 5/68 (7.35%) (Boys: 3/45; Girls: 2/23)
2. No children were found to be obese among the study subjects.

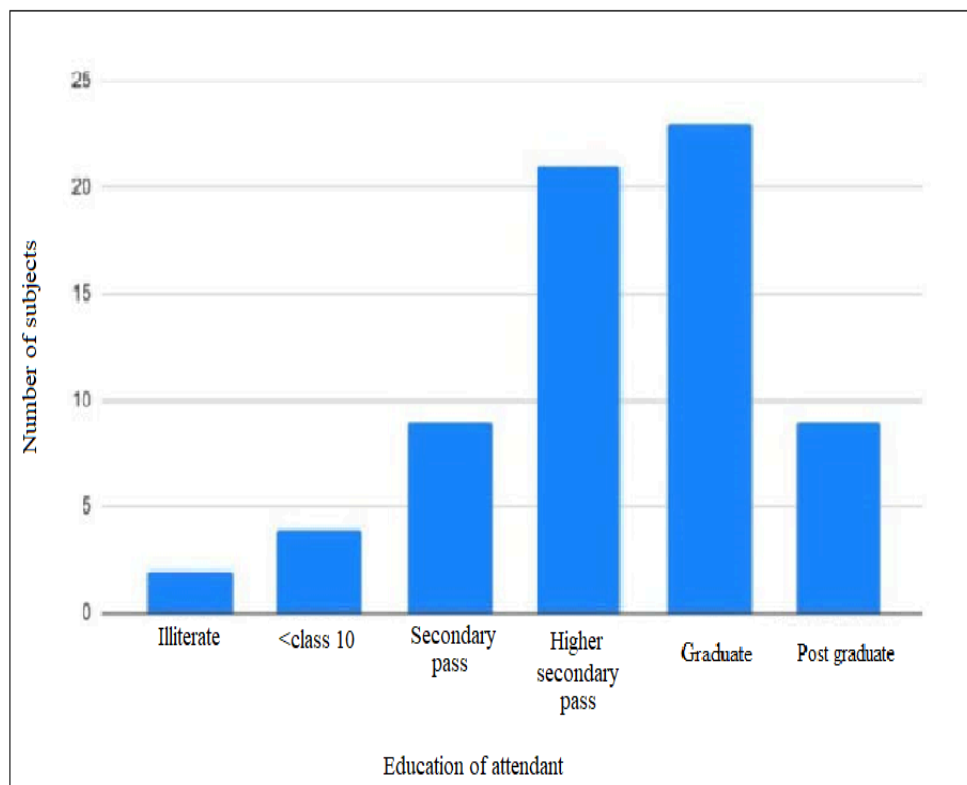
Table 1: Distribution of the study subjects by age (n=68):

Age	Frequency	Percentage (%)
0-1 year	19	27.94
1-2 year	17	25.00
2-3 year	13	19.12
3-4 year	12	17.65
4-5 year	7	10.29
Total	68	100

Table 2: Distribution of the study subjects by socioeconomic status (n=68):

Economical Class	Range (Per capita income) (Rupees per month)	Frequency	Percentage (%)
Upper class	9098 and above	38	55.8
Upper middle class	4551-9097	21	30.8
Middle class	2729-4550	6	8.8
Lower middle class	1365-2728	2	2.9
Lower class	Below 1365	1	1.4

*as per modified BG Prasad scale, October 2023

**Figure 1: Bar diagram representing the distribution of mothers / attendants by education (n=68)**

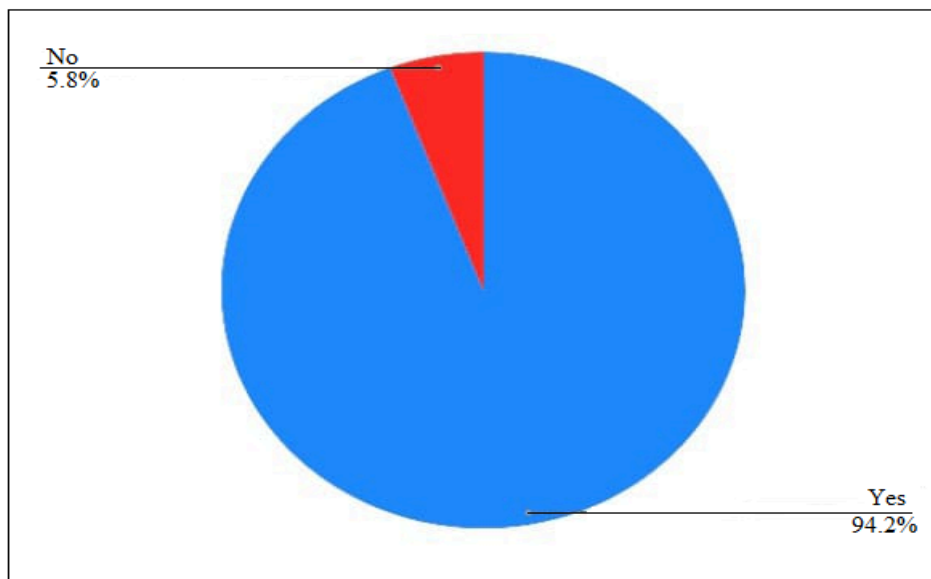


Figure 2: Pie chart showing the distribution of the study subjects whether they are exclusively breastfed up to 6 months (n=59)

Discussion

The findings from this cross-sectional study conducted at the Burdwan Medical College Immunization Clinic reveal critical insights into the prevalence of overweight and obesity among children under five years of age. With a reported prevalence of 7.35% for overweight children, the current results align with global trends, indicating a rising concern regarding childhood obesity in developing countries, particularly in urban settings like Burdwan.

The socio-demographic characteristics of the study population show a predominance of younger children, with over half (52.94%) under two years of age. This age group is particularly vulnerable, as early childhood is a critical period for growth and development. The majority of subjects (55.10%) being male could suggest a gender-based difference in dietary habits or physical activity patterns, which warrants further exploration [5].

Interestingly, a substantial portion of the study subjects (79.7%) belongs to the upper and upper-middle socioeconomic classes, raising questions about the influence of affluence on dietary choices. Increased access to processed and calorie-dense foods, often favored in wealthier households, may contribute to the observed overweight prevalence [3]. Moreover, the finding that 47.8% of children did not consume fruits and vegetables in the week prior to data collection highlights a concerning dietary pattern that may predispose them to obesity and related health issues

[6]. Breastfeeding practices in our cohort were promising, with 94.2% of children being exclusively breastfed. This aligns with WHO recommendations and suggests that breastfeeding may be a protective factor against obesity in early childhood [7]. However, the high rate of cesarean deliveries (89.9%) among the participants raises concerns, as some studies indicate a potential association between cesarean births and increased obesity risk later in life [8]. Despite a high percentage of fully immunized children (76.10%), addressing the dietary and lifestyle habits in this population is crucial. The finding that most children (79.7%) consume meals more than four times a day could indicate a tendency toward overeating, especially in contexts where meal frequency does not correspond with nutritional quality.

In conclusion, our study highlights a significant prevalence of overweight among children under five in Burdwan, underscoring the need for targeted public health interventions. Strategies should focus on promoting healthier dietary practices, increasing physical activity, and educating parents about the importance of balanced nutrition from an early age. Addressing these factors is essential to mitigate the risk of obesity and its long-term health consequences.

Limitations

The study is done in a single medical college of West Bengal. The duration of the project was one month and the data collection was done in the

immunization clinic of Burdwan Medical College .So generalisability of the study is limited. A community based multicentric study involving rural and urban areas may be done for further research

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