



A study to assess the prevalence of malnutrition among school children in selected govt. schools of district Budgam, Kashmir, India

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Abstract

Background: Malnutrition is the most common childhood problem affecting children globally. It remains the primary driver of poor health and early death and illness among children. In the year 2020, on a global scale, approximately 149 million children aged below 5 experienced stunted growth, 45 million faced wasting due to being thin for their height, and 38.9 million were either overweight or obese. Malnutrition has been associated with about 45% of fatalities in this age group. Our research is focused on assessing the prevalence of malnutrition among school-aged children.

Methods: A descriptive Cross-sectional analytical study was conducted among school children in the age group of 6 -19 years studying in two selected government schools of district Budgam, Kashmir. The sampling method used was convenience sampling. A total of 150 students were assessed for their height and weight.

Results: The results of the study showed that out of the total children (n=150), 34.7 % of school children were underweight, 3.3% were overweight, 3.3% were obese and the rest 58.7 % were normal. Hence overall prevalence of malnutrition was found to be 41.3 %.

Conclusion: This study shows that malnutrition is widely prevalent in school children in rural areas. Around 41.3% of the study population is affected by malnutrition in the form of underweight, overweight and obesity. Given that the nutritional well-being of children serves as a crucial developmental benchmark and a prerequisite for societal advancement, it is imperative to direct the focus of leaders and policymakers toward interventions in these domains.

Keywords: malnutrition prevalence, school children, Kashmir, nutritional assessment, government schools, child health, underweight, obesity, India

Introduction

Malnutrition poses a significant public health challenge, especially among children in developing countries [1]. This condition arises when the body lacks sufficient nutrients for proper growth and development, potentially leading to enduring physical and cognitive impairments that hinder learning and success [2].

In government schools, malnutrition is pervasive, impacting children's academic performance profoundly. Inadequate nutrition contributes to poor attendance, reduced concentration, and diminished cognitive abilities [3]. Additionally, malnourished



Cite this Article

Mehvish M, Manzoor A, Amin U, A study to assess the prevalence of malnutrition among school children in selected govt. schools of district Budgam, Kashmir, India. *The Evi*. 2024;2(2):1-.

DOI:10.61505/evidence.2024.2.2.37

Available From

<https://the.evidencejournals.com/index.php/j/article/view/37>

Received: 2024-03-15
Accepted: 2024-04-25
Published: 2024-05-28

Evidence in Context

- Examined 150 children aged 6-19 in two government schools in Budgam, Kashmir.
- Found 41.3% malnutrition rate: 34.7% underweight, 3.3% overweight, 3.3% obese.
- The majority, 58.7%, were of normal weight.
- Employed convenience sampling in a cross-sectional study format.
- Calls for targeted nutritional interventions in rural educational settings

To view Article



Children are more prone to illnesses, resulting in increased absenteeism and decreased academic achievements. Several factors exacerbate malnutrition in government schools, including poverty, limited access to clean water, and inadequate healthcare, perpetuating a cycle of insufficient awareness about proper nutrition [4].

Data from the National Family Health Survey (NFHS) indicates improvements in nutrition indicators for children under 5 years compared to previous surveys. Stunting, wasting, and underweight prevalence rates have declined, reflecting some progress in addressing malnutrition [5]. However, global estimates from the UNICEF-WHO-World Bank Group Joint Malnutrition Estimates highlight ongoing challenges [6]. Despite a decline in stunting prevalence since 2000, millions of children worldwide still suffer from stunting and wasting, while overweight cases have increased. India, in particular, faces significant malnutrition issues, with high rates of stunting, wasting, and overweight among children [7]. NFHS 5 data reveals concerning levels of malnutrition in Kashmir, underscoring the need for targeted interventions in specific regions [8,9].

Addressing malnutrition requires comprehensive efforts, including policy initiatives, healthcare improvements, and community education. By prioritizing proper nutrition, especially in educational settings, societies can break the cycle of malnutrition and ensure healthier futures for children.

Objective of the study

Nutrition stands as the fundamental cornerstone for ensuring the health of a child. The prevalence of malnutrition among children attending government schools poses a significant public health challenge with extensive ramifications [10]. Recognizing the urgent need for global action to tackle the widespread issue of malnutrition, the World Health Assembly Resolution 65.6 in 2012 endorsed a comprehensive plan for improving maternal, infant, and young child nutrition. This plan outlined six key global nutrition goals to achieve by 2025: reducing the prevalence of stunting in children under five by 40%, decreasing anaemia among women of reproductive age by 50%, lowering the incidence of low birth weight cases by 50%, maintaining childhood overweight rates, increasing breastfeeding rates to at least 50%, and reducing childhood wasting to less than 5% [9,11].

Childhood wasting, marked by swift weight reduction resulting from insufficient diets, increases the likelihood of stunted growth, compromised cognitive development, and non-communicable diseases later in adulthood [12]. Stunting, resulting from inadequate nutrition and frequent infections in the initial 1,000 days of life, results in enduring effects such as reduced cognitive and physical growth, decreased productivity, and compromised health. Additionally, stunted children face an increased likelihood of developing overweight or obesity in their later years [13].

Given these critical concerns, concerted efforts are required to raise awareness at national, state, and local levels. This study aims to provide insights for educators, policymakers, and healthcare providers to formulate effective strategies against malnutrition [14]. Considering the high prevalence of PEM in Jammu, a similar study is proposed for Kashmir to assess the prevalence of malnutrition among children. This endeavour seeks to generate valuable insights for various stakeholders, including policymakers, community influencers, advocacy organizations, academic researchers, and concerned citizens, to address and support nutrition-related initiatives effectively. Furthermore, this research aims to raise community awareness and empower individuals to play an active role in promoting the health and well-being of children.

Methods

Research approach: A quantitative research approach was employed in the study to achieve the objectives and assess the prevalence and risk factors linked to malnutrition among chosen government schools in Kashmir.

Research design: An analytical cross-sectional design was selected to assess the prevalence of Malnutrition and its relationship with associated risk factors among children in selected government schools of Kashmir.

Research setting: The study was conducted in the government Boys Middle School, Checki kawoosa and Government Primary School Gundkhalil Narabal, where the target population was identified. The setting was selected as per the feasibility and availability of subjects.

Target population

: All Children registered in Government Boys Middle School, Checki kawoosa and Government Primary School Gundkhalil Narabal, Budgam

Sampling technique: The study utilized a non-probability convenience sampling method to select the desired sample. This approach involves selecting units for inclusion in the sample based on their accessibility to the researcher.

Sample size: A total of 150 Children were selected from the government Boys Middle School, Checki kawoosa and Government Primary School Gundkhalil Narabal Budgam.

Sample size was determined by Fisher’s formula of; $N = Z^2 P (1-P) / D^2$. The calculated result was 138.

Sampling criteria

Inclusion criteria: Children who were:

- Present during the data collection period
- Willing to participate.

Exclusion criteria: children who were:

- Unwilling to participate.
- Unavailable during the data collection period.

Variables: The variable identified in this study is demographic variable (age, gender, standard, income, locality).

Data collection tools

A well-structured interview schedule was developed and used to obtain all the requisite information about all the subjects. The subjects (n=150) were assessed for their general anthropometric indices and BMI.

Description of the tool: The tool used consists of two sections. *Section 1:* It includes items on socio-demographic variables such as age, standard, Family type, income, Locality, gender. *Section 2:* it includes anthropometric measurements (height, weight), BMI.

Data collection procedure

Before collecting data, written permission was taken from the government Boys Middle School Checki Kawoosa and Government Primary School Gundkhalil Narbal. The researcher selected the subjects who were fulfilling the inclusion criteria. The process was made easy by introducing the investigator to the children and explaining to them the purpose of data collection. The study was conducted according to the convenience of children. During the process, privacy and confidentiality were maintained.

Data analysis and interpretation of data

The collected data underwent analysis based on the study’s objectives, employing both descriptive and inferential statistical methods.

Scoring technique: To interpret the level of malnutrition, BMI percentile score was categorized into:

Score	Interpretation
< 5 th percentile	Under-weight
5 th to 85 th percentile	Healthy
85 th to 95 th percentile	Over-weight
> 95 th percentile	Obesity

Results

Of the 150 study participants, 39% of subjects are in the age group of 5-9 years, 56% of subjects are in the age group of 10-15 and 5% are in the age group of 16-18. 19% of subjects are from LPD class, 32% of subjects are from 1st-3rd standard, 25% are from 4th-6th standard, and 24% are from 7th-8th standard. The majority of subjects 55% are females and the rest 45% are males. The majority of subjects 55% are from nuclear families, rest 45% are from joint families. All the subjects have an income of 37325 - 62272. All the subjects belong to rural locality. Most of the subjects 89% weighed up to 30 pounds, 10% weighed 31-60 pounds and 1% weighed 61-90 pounds. The height of 7% of subjects is 2-4 ft, 55% of subjects is 5-6 ft and 38% of subjects is 7-8 ft. The BMI percentile of 67% of subjects is 0-25, 15% is 26-50, 11% is 51-75 and 7% is 76-10.

Table 1: Demographic profile (n=150)

Variables	Options	Percentage (%)
Age	5-9 years	39
	10 - 15 years	56
	16 - 18 years	5
	8 years above	0
Standard	Lower primary department	19
	1 st -3 rd standard	32
	4 th -6 th standard	25
	7 th - 8 th standard	24
Gender	Male	55
	Female	45
	Other	0
Family Type	Joint family	45
	Nuclear family	55
	Other	0
Monthly Income (Kupuswammy Scale)	Rs >249044	0
	Rs 124489 - 249043	0
	Rs 93381 - 124488	0
	Rs 62273 - 93380	0
	Rs 37325 - 62272	100
	Rs 12445 - 37324	0
	Rs 12444	0
Locality	Rural	100
	Urban	0
Weight (In Pounds)	Up to 30	89
	31-60	10
	61-90	1

91-120	0	
>120	0	
Height (Ft)	2-4 Ft	7
	5-6 Ft	55
	7-8 Ft	38
BMI percentile	0-25	67
	26-50	15
	51-75	11
	76-100	7

Table No. 2 shows 3.3% of subjects are obese, 3.3% are overweight, 58.7% are normal and 34.7% and underweight.

Table 2: Percentage distribution level of BMI percentile

Criteria Measure of BMI Percentile Score

Level of Scores (N= 150)	Percentage
Obesity	3.3
Overweight	3.3
Normal	58.7
Underweight	34.7

Table 3 illustrates the descriptive statistics for the BMI percentile. The analysis revealed a mean value of 23.30, a median score of 11.15, a maximum score of 99, a minimum score of 1, and a score range of 98. Table No 4: Table Showing Association of Scores and Demographic Variables

Table 3: Descriptive statistics of BMI percentile

Descriptive Statistics	Mean	Median	S.D.	Maximum	Minimum	Range
BMI percentile score	23.31	11.5	27.09	99	1	98

This section presents the findings regarding the relationship between scores and specific demographic factors. The chi-square test was employed to ascertain the correlation between score levels and the chosen demographic variables.

The Chi-square analysis indicates a significant association between score levels and certain demographic variables, specifically weight (in pounds) and BMI percentile. The computed chi-square values exceeded the critical table value at the 0.05 significance level. Conversely, there was no significant association observed between score levels and other demographic variables such as age, grade level, gender, family structure, and height (in feet), as the computed chi-square values were lower than the critical table value at the 0.05 significance level.

Table 4: Table showing the association of scores and demographic variables

Demographic Data		Levels of BMI percentile (N=150)			
Variables	Options	Obesity	Overweight	Normal	Underweight
Age	5-9 years	4	1	35	19
	10 - 15 years	1	4	47	32
	16 - 18 years	0	0	6	1
	8 years above	0	0	0	0
Standard	LPD	2	2	16	9
	First - Third Standard	2	2	30	14
	Fourth - sixth	0	0	23	14
	Sixth - eighth	1	1	19	15
Gender	Male	4	2	47	29
	Female	1	3	41	23
	Other	0	0	0	0
Family Type	Joint family	1	1	41	24
	Nuclear family	4	4	47	28
	Other	0	0	0	0
Monthly Income	Rs 249044	0	0	0	0
	Rs 124489 - 249043	0	0	0	0
	Rs 93381 - 124488	0	0	0	0
	Rs 62273 - 93380	0	0	0	0
	Rs 37325 - 62272	5	5	88	52
	Rs 12445 - 37324	0	0	0	0
	Rs 12444	0	0	0	0
Locality	Rural	5	5	88	52
	Urban	0	0	0	0
Weight (In Pounds)	Upto 30	5	5	80	44
	31-60	0	0	8	7
	61-90	0	0	0	1
	91-120	0	0	0	0
	>120	0	0	0	0
Height (Ft)	2-4 Ft	0	1	9	0
	5-6 Ft	2	3	44	34
	7-8 Ft	3	1	35	18

	0-25	0	0	49	52
BMI percentile	26-50	0	0	22	0
	51-75	0	0	16	0
	76-100	5	5	1	0

Discussion

This study revealed that 100% of subjects were in the age group of 5-18 years. Of most of the subjects 32% were from 1st to 3rd standard, 25% were subjects from fourth to sixth standard, 24% were subjects from sixth to eighth standards, and 19% were subjects from LPD. Most of the subjects 52% were male and the rest 45% female. The majority of the subjects 55% have a nuclear family and the rest 45% have a joint family, All the subjects 100% have a family monthly income in between 37325-62272. All the subjects 100% reside in rural areas. Most of the subjects 55% weight between 31-60 pounds,38% subjects in between 61-90 pound,5% subjects in between 91-120 pound,1% subjects having 30 pounds, 1% subjects have >120 found, and majority of the subjects 89% have height in between 2-4 ft, 10% subjects in between 5-6 ft,1% in between 7-8 ft majority of the subjects 67% have BMI percentile in between 0-25,15% have in between 26-50,11% in between 51-55, 7% in between (76 -100). This research is similar to a study carried out by Nazia Zahoor, et. al on undernutrition among children under five in the rural and hilly area of Khag - Budgam, Kashmir [15]. They included a sample of 300 children, with 167 (55.6%) being male and the remaining 133 (44.3%) female. The results showed that 141 (47%) children suffered from malnutrition in the form of underweight, 130 (43.3%) experienced wasting, and 101 (33.7%) faced stunting, indicating significant overlap in many cases.

The current study found that 3.3% of subjects were obese, 3.3% were overweight, 34.7% were underweight, and 58.7% were normal, with a mean and standard deviation of 23.31 ± 27.09 . These findings align with a study carried out by Om Raj Katoch and Aroon Sharma, which involved an initial exploration into socioeconomic factors, living conditions, and child malnutrition among 100 school children residing in rural regions of district Doda, Jammu & Kashmir. India[16] ¹⁶. Their findings indicated that 36% of children were stunted, 9% were underweight, and 2% were wasted.

Chi-square values were computed to determine the association between demographic variables (age, gender, grade level, family type) and malnutrition. The results of this study indicate that there is no significant association between malnutrition and demographic variables such as age ($p = 0.328$), gender ($p = 0.613$), grade level ($p = 0.613$), and family type ($p = 0.45$).

Conclusion

The study offers an in-depth examination of the nutritional wellbeing of school children residing in the Budgam district, emphasizing the incidence of malnutrition within this age group. It encompasses children aged 5-18 years and categorizes them based on educational grade, gender, family structure, income, and rural residency. The weight, height, and BMI percentiles are examined, revealing a varied distribution across these physical health indicators. This study shows that malnutrition is widely prevalent in school children in rural areas. Around 42% of the study population is affected by malnutrition in the form of underweight, overweight and obesity. For a comprehensive understanding of malnutrition's impact on child growth and development, it is advisable for future research to undertake periodic studies in this field. Exploring various settings and employing diverse research methodologies will enhance the robustness of the findings. Extending these studies to larger samples incorporating a wider range of demographic variables could provide a more expansive view of the issue. Additionally, replicating this study within community contexts would offer valuable insights into the nutritional status of children in everyday environments. In parallel, it is essential for school authorities to integrate health, personal hygiene, and nutrition education into the curriculum and ensure the effective execution of the mid-day meal program to combat malnutrition proactively.

Supporting information

None

Ethical Considerations

Permission was obtained from the Institutional Ethical Committee of IUST. **(IEC no: IEC-IUST Protocol # RP/ 042/2023)**. Informed consent was obtained from the children. Permission was obtained from the government Boys Middle School, Checki Kawoosa and Government Primary School Gundkhalil Narbal Budgam.

Acknowledgments

None

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Author contribution statement

All authors contributed equally and attest that they meet the ICMJE criteria for authorship and gave final approval for submission.

Data availability statement

Data included in article/supp. material/referenced in article.

Additional information

No additional information is available for this paper.

Declaration of competing interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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