ORIGINAL RESEARCH

An Epidemiological Study on Malnutrition among Primary School-going Children of Rural Area of Bareilly District, Uttar Pradesh, India

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ABSTRACT

Introduction: Lack of healthy sustenance is one of the real general well-being concerns influencing a critical number of school youngsters affecting their well-being, development and improvement, and school scholarly execution. Malnutrition is the biggest medical issue of youngsters in creating nations. Roughly, 60 million children are underweight in India and youngster malnutrition is in charge of 22% of the nation's weight of sickness. One in each three malnourished youngsters on the planet lives in India. So, this epidemiological study is conducted among schoolchildren of Bareilly district.

Aims and objectives: To estimate the prevalence and risk factors of malnutrition among school-going children of provincial region of Bareilly locale, Uttar Pradesh, India.

Materials and methods: A cross-sectional study was conducted in Bareilly district, using multistage sampling technique. Pretested and prevalidated schedule is used for data collection, which was then compiled and analyzed using EpiInfo software version 7.2.

Results: Totally, 150 children from primary schools of rural area were examined for malnutrition. Overall prevalence of malnutrition was 35.4%; among them severe thinness, thinness, overweight, and obesity were reported as 6, 14, 10.7, and 4.7%, respectively, whereas in majority of students, nutritional status was found normal, i.e., 64.6%.

Conclusion: Health education should be used as a vehicle for promotion of healthy practices and healthy attitudes among children. Parents should be encouraged for healthy eating practices.

Keywords: Malnutrition, School, Students.

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INTRODUCTION

As per the World Health Organization (WHO), the term malnutrition alludes to both undernourishment and in addition overnutrition (Graph 1).[1] Malnutrition is one of the real general well-being concerns influencing a noteworthy number of school youngsters impacting their well-being, development and advancement, and school scholastic execution. Lack of healthy sustenance is the biggest medical issue of children in creating nations. Roughly, 60 million children are underweight in India, and kid hunger is in charge of 22% of the nation's weight of infection. One in each three malnourished youngsters on the planet lives in India. Lack of healthy sustenance is more typical in India than in sub-Saharan Africa.[2]

Free and obligatory education till the age of 14 years is established as right and institutional duty in India. Regardless of these measures, around 40% children drop out amid their essential tutoring.[3] Grade school age is a dynamic time of physical development and mental advancement of the youngster. Research shows that dietary lacks and weakness in grade school age youngsters are among the reasons for low school enrolment, high truancy, early dropout, and poor classroom
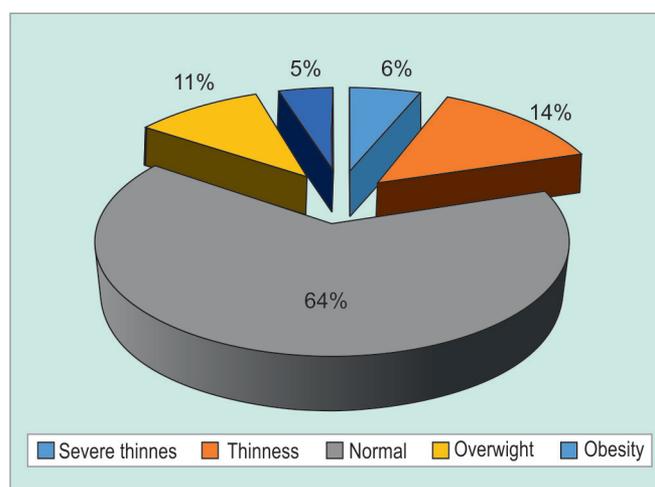
Graph 1: Prevalence of malnutrition according to WHO classification 2007

execution. The present position as to the well-being and healthful status of the kids in our nation is extremely inadmissible. Aside from midday meal program which is controlled by the Government of India in government schools, there are no different endeavors for youngsters in age 5 to 14 years. The National Family Health Survey (NFHS) data show that 53% of children in rural areas are underweight in India and this varies across states.[4] Keeping this in view, the present study was undertaken in rural area of Bareilly district, Uttar Pradesh, India.

OBJECTIVES

To estimate the prevalence and risk factors of malnutrition among primary school-going children of provincial region of Bareilly locale, Uttar Pradesh.

MATERIALS AND METHODS

This cross-sectional study was conducted among primary school-going children of rural areas of Bareilly district for the period of 3 months (November 2016 to January 2017). Multistage sampling technique was used for selection of tehsils, blocks, schools, and students by applying 10% rule. After taking the institutional ethical committee clearance, pretested and prevalidated schedule was used for data collection by obtaining informed consent from the parents of selected students. Data were compiled and analyzed using EpiInfo software version 7.2. Body mass index (BMI) of students was calculated using the formula:

$$BMI = \frac{Weight\ (kg)}{Height\ (m^2)}$$

Sample Size Calculation

Sample size was calculated taking the prevalence of malnutrition (p = 48%). According to NFHS-3 survey:[5]

$$Sample\ size\ (n) = \frac{4\ PQ}{L^2}$$

(P:48%, Q:52%, L:20% of P, nonresponse rate 10%)

Final sample size = 120

Inclusion Criteria

- Primary school-going children from class I to V
- Parents of those students who gave consent to participate in the study

Exclusion Criteria

- Students with known acute and/or chronic illness
- Students absent on the day of survey due to any reason

RESULTS

Graph 1 shows the pervasiveness of lack of healthy sustenance among 150 primary school going children of rural area Bareilly district. Revealing the prevalence of malnutrition 35.4% in the form of severe thinness, thinness, overweight, obesity, i.e. 6%, 14%, 10.7%, 4.7% respectively. Whereas in majority of students nutritional status was found normal i.e. 64.6%.

Table 1 indicates the gender and religious distribution of study subjects included in the study. Among 150 primary schoolchildren, 78 were males (52%) and the rest were females (48%). Among 150 schoolchildren, composition of Hindu, Muslim, and other religion students was 67 (44.7%), 76 (50.7%), and 7 (4.7%) respectively.

Table 2 shows the pervasiveness of lack of healthy sustenance among 150 primary school-going children of rural Bareilly district, revealing the prevalence of malnutrition (35.4%) in the form of severe thinness, thinness, overweight, and obesity, i.e., 6, 14, 10.7, and 4.7% respectively. In the majority of students, nutritional status was found normal, i.e., 64.6%.

Table 2 shows the association between various types of malnutrition (i.e., severe thinness, thinness, overweight, and obesity) with gender, mother's education, type of house, and type of family.

Table 2 shows the association between prevalence of malnutrition and gender of students. In this association study, it was found that maximum participants who were suffering from malnutrition were female students (i.e., 47.22%). This association was found to be statistically significant (p-value < 0.05).

Table 2 also shows the association between prevalence of malnutrition and mother's education. In this

Table 1: Distribution of subjects according to sociodemographic variables

Variables		Frequency	Percent	Cumulative percent
Gender	Male	78	52	52
	Female	72	48	100
	Total	150	100	
Religion	Hindu	67	44.7	44.7
	Muslim	76	50.7	95.3
	Others	7	4.7	100
	Total	150	100	

Table 2: Relationship of malnutrition with following characteristics

Characteristics	Chi-square test	Degrees of freedom	p-value
(A) Gender of students	9.572	4	0.04*
(B) Mother's education	23.951	12	0.21*
(C) Type of house	30.669	1	0*
(D) Type of family	16.256	6	0.03*
*p-value <0.05 is significant			

association study, it was found that maximum students who were suffering from malnutrition were child from illiterate mothers (i.e., 41.77%). This association was found to be statistically significant (p-value < 0.05).

Table 2 shows the association between prevalence of malnutrition and type of house. In this association study, it was found that out of 150 participants, 40 students (i.e., 26.66%) belong to kuchha house. Among these, 24 students (i.e., 60%) were suffering various type of malnutrition. This association was found to be statistically significant (p-value < 0.05).

Table 2 demonstrates the relationship between predominance of ailing health and kind of family. In affiliation examination, it was discovered that greater part of understudies who were experiencing lack of healthy sustenance were from a joint family (i.e., 38.33%). This affiliation was observed to be factually huge (p-value < 0.05).

DISCUSSION

India is a rural nation where the majority of population lives in villages, and Uttar Pradesh ranks among the highest states reporting the prevalence of malnutrition. Keeping this in view, the present study was directed with an endeavor to discover the predominance of ailing health and horribleness design among school-going children of provincial territory of Bareilly locale of Uttar Pradesh.

In the present investigation, general commonness of lack of healthy sustenance was 35.4%; among that serious slenderness, slimness, overweight, and stoutness were accounted for 6, 14, 10.7, and 4.7% individually. Our discoveries harmonize with another investigation done in Maharashtra by Patil and Wasnik[6] that additionally announced lower commonness of hindering, i.e., 30.3%.

Burden of malnutrition was found higher in females (i.e., 47.22%) when contrasted with male members (i.e., 24.36%). Comparable pattern has been accounted for by Srivastava et al.[7] These incongruities in discoveries are because of contrasts in considered outline, family setups, sex inclination, and parental inclinations for male youngsters in the Indian culture.

Our investigation discovered examination commonness of ailing health was higher (i.e., 36.84%) in Muslims when contrasted with Hindus (i.e., 31.34%), which is similar to the discoveries of Sharma et al[8] who likewise watched higher grimness because of lack of healthy sustenance among Muslims (68.09%) when contrasted with Hindus (50.29%). Also, Chandra et al[9] watched that nourishment-related disarranges were more common among the Muslim and Christian group (75 and 73.3% separately) when contrasted with the retrogressive Hindu and the forward Hindu group (64.1 > 43.4%).

Ladies' instructive and economic well-being, sustenance accessibility, and access to safe water are all around detailed critical fundamental determinants that specifically are in a roundabout way causes for lack of healthy sustenance among kids.[10]

In our examination, mother's instruction was observed to be a solid indicator of wholesome status. Information examination of NFHS-1 likewise demonstrated that mother's training has a solid free impact on a youngster's nourishing status even in the wake of controlling for the possibly puzzling impacts of other statistic and financial factors.[11] Different examinations have reasoned that parental training, particularly moms' instruction, is a key component in enhancing kids' dietary status.[12,13]

This investigation demonstrates that maternal instructive status, mother's working status, and family composition are essential determinants of the healthful status of the kid. Endeavors coordinated toward change of female proficiency, ladies' strengthening, and confining family size will positively affect the healthful status of school kids.

CONCLUSION

Malnutrition is a burning topic in current scenario and the children are considered to be the most important natural resource and biggest human investment for development in every community. Our study has conducted the prevalence of malnutrition which was less (i.e., 35.4%) as compared with previous studies. Malnutrition was found to be associated with gender, mother's education, head of the family, type of family, and their house. Thus, tackling malnutrition requires a holistic approach through health education, and screening should be continued among school-going children for prevention of malnutrition.

Recommendation for Interventions

- Fortification of food item
- Impediment of gender discrimination
- Skills-based nutritional education of the family
- Encouragement of women's empowerment and their education
- Deliver integrated programs for screening and health education at school level

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