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NUTRITIONAL STATUS OF TEENAGERS IN URBAN AREA IN BAGHPAT, U.P.

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Research Paper

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ABSTRACT

The active rising stage of childhood is referred to as school age. Children's malnutrition is one of India's most significant problems. This issue is still being addressed throughout the country. Malnutrition, which is caused by insufficient nutrition, weakens the immune system and causes significant developmental delays. The key metric for determining a child's nutritional and health condition, as well as an indirect indication of well-being for adults, is development assessment. We used a predesigned and pre-tested questionnaire, anthropometric assessments, and clinical analysis to conduct a cross-sectional study in urban slums of Baghpat, U.P. India, from August 2021 to October 2021 to investigate nutritional status in school-age slum children and examine factors associated with malnutrition. The mean height and weight of boys and girls in the sample population were lower below the CDC 2000 (Centers for Disease Control and Prevention) guidelines in all age groups. In terms of nutritional status, the age group 11 to 13 years had the highest incidence of stunting and underweight, whereas the age group 5 to 7 years had the highest prevalence of wasting. However, all illnesses are more common in children with refractive defects, although only anaemia and rickets have a statistically significant gender disparity. Malnutrition was shown to be substantially greater among children born in communal homes, infants whose mothers' training was [below or comparable to] 6th grade, and infants of working moms. The majority of our impoverished school-aged children were found malnourished. Food and nutrition knowledge based on skills, nutritional fortification, proactive infection prevention, public healthcare staff preparation, and delivery of comprehensive services are all encouraged.

Keywords: Nutrition status, Malnutrition, Urban area, School-aged children, Baghpat.

INTRODUCTION

The active rising stage of childhood is defined as school age (NebGuide Series, 2002). For the newborn, primary school age is a difficult period of physical and behavioural maturation. According to the study, one of the most common reasons for low school enrolment, excessive workloads, premature dropouts, and poor classroom outcomes is health concerns induced by insufficient nutritional intake of primary school kids. The current situation of Indian school-aged children's diet and health is appalling. According to the National Family Health Survey (NFHS), 53% of rural children are malnourished, however the percentage varies by region.

In 1992, 53.4 million children were undernourished worldwide, 45.8 million in 1998, 47 million in 2006 (IIPS, 2007), and 38 per cent were shocked and 35 per cent were underweight in 2015-16. (Singh *et al.,* 2019). One of the reasons of high child mortality rates in underdeveloped nations has been and continues to be childhood malnutrition. Chronic malnutrition in childhood is linked to eventual cognitive impairment and serious health issues, reducing people's quality of life. This constancy is mostly determined by nutritional status. Recognizing a child's nutritional intake has had far-reaching effects for future generations. Development surveillance is used to assess the nutritional status, well-being, and growth of individual

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children, as well as to forecast community nutrition health and development. Evaluation of child development is a low-cost, easy, and noninvasive process when compared to various other health measuring methods. Anthropometric assessment is frequently used in research to measure the fitness and nutritional health of youngsters. Physical measurements such as body weight, height, arm and calf circumference, and triceps skin fold of children have long been used to describe population health and nutrition. A number of indices based on age, body weight, and height, such as height-for-age and weight-for-height (Waterlow*et al.*, 1977) have been proposed. The kids are classified into three categories: 'underweight' (low weight for age),'stunting' (low height for age), and 'wasting' (low height for age) (low weight-for-height). Anthropometric readings that vary by more than two standard deviations from the CDC 2000 norm are considered low (Waterlow*et al.*, 1977; WHO, 1995; Kuczmarski*et al.*, 2000). Children's nutritional status reflects not just the family's financial situation and society's overall well-being, but also the efficacy of the healthcare system and the impact of the local environment. The purpose of this study is to look at the factors that lead to childhood malnutrition and the prevalence of underweight.

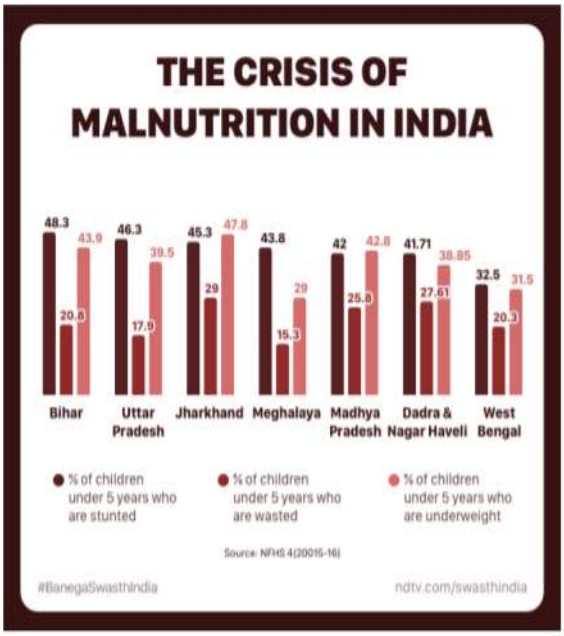

Fig.1: Crisis of malnutrition in India in 2015-16.

MATERIALS AND METHODS

Between August 2021 and October 2021, a partial study of nutritional status in school-age slum children aged 5 to 18 was undertaken in several Indian states. The sample size of 512 people was calculated based on a 50% prevalence of malnutrition and a relative precision of 10% at 95% confidence. For this study, several urban regions were chosen at random from the urbanised city of the U.P. district. Any kid between the ages of 5 and 15 in these slums is investigated. A total of 1700 children were polled and examined (975 boys and 625 girls). A pre-designed and pre-tested questionnaire was utilised to gather information regarding community features such as residency, background, community style, education, and parent profession, as well as individual information such as gender, age, and eating behaviours from research participants.

Anthropometric measures were taken and recorded by trained field personnel. A total of ten youngsters from each slum were used to test the questionnaire. The questionnaire had to be changed before the analysis could begin. Families were informed about the study aims and supplied with information prior to their participation in the project. In the metric system, each child's height and weight were calculated using Jelliffe's (Jellife, 1966) uniform approach. A stadiometer (measuring rod) was used to measure the individuals' height with an accuracy of 0.1 cm. The subject was instructed to stand with their toes, buttocks, elbows, and occiput touching the measuring rod and their hands dangling from their arms. The top of the head made firm contact with the horizontal head part, which allowed the head to remain upright. The weights of the participants were measured with a portable balance with an accuracy of 100 g. Young people were instructed to stand on the balancing beam wearing just light clothing and no footwear, with their toes apart and straight. The weight was calculated down to the tenth of a pound. The height for age (stunted), weight for age (wasted), and weight for age (underweight) of each kid were measured (Singh *et al.*, 2019)and compared to the CDC 2000 (Waterlow*et al.*, 1977).

The appearance of Bitot's spots and conjunctival erythema indicated malnutrition. Rickets was identified by abnormalities in skeleton anatomy, such as knock-knees and bent legs. Anaemia was identified based on clinical symptoms such as pallor of the conjunctiva/ tongues. Following information collected, all data was collected, processed, and

suitable statistical tools were used. P 0.05 was deemed systematically important. The odds ratio (OR) was used in multivariate regression to search for correlations among different social factors and nutritional intake.

Age (in years)	Nutritional status (No's)				Age (in years)
	Normal	Underweight (low weight for age)	Wasted (SDM) (low weight for height)	Stunted (LDM) (low weight for height)	
5-6	105	70	65	46	286
7-8	110	74	63	45	292
9-10	75	63	64	44	236
11-12	65	70	43	50	228
13-15	105	70	58	43	276
16-18	120	98	88	77	382
Gender					
Boys	330	215	180	198	975
Girls	250	230	201	107	725
Overall	580	445	381	305	1700

RESULTS

The average height of females was less than those of males in all age ranges save 13-14 years old, where females were longer than males. The height gap between males and females was not statistically important in either age group. The average height of the research group's males and females was less than the Center for disease control 2000 norm in all age ranges. (Figures 1 and 2). The average weight rose from 16.46 kg for males and 18kg for females in the 5-year age category to 56 kg and 50 kg in the 15 year age group. In many other age classes, the average weight of females was greater than that of male students. In each of the age classes, though, there has been no statistically relevant gap in the average weights of males and females. The average weight of males and females in the current sample was found to be significantly lower in all age groups as compared to the CDC 2000 norm. (Fig.3). In terms of nutrient status, the occurrence of stunted growth (long-term malnutrition) and undernourished was observed to be greatest in the age groups 5-6 yrs and 11-12 years , while the highest incidence of wasting (short-term malnutrition) was observed in the age range 7- 8 yrs.

Of all age classes, the majority of malnourished people were undernourished. Wasted and hindered dietary intake is seen in 30.7 percent and 18.1 percent of boys, respectively. 16.1% of females had stunted nutrient intake, suggesting a higher incidence of long-term malnutrition in girls. In all, 33.3 percent of infants were wasted, 18.5 percent were stunted, and 46.8 percent had average nutritional status. There was no important relationship identified among children's gender and nutritional status. The findings revealed a higher prevalence of malnutrition in younger children; therefore, younger age ranges should be the primary focus of dietary observation and initiatives (Table 1). But for refractive errors, all other diseases are more frequent in girls than in boys, but only anaemia has a statistically meaningful gender gap. Anemia was found to be the most prevalent disease, with an incidence of 37.5 percent, followed by dental carries (18.5 percent) and throat infection (14.9 percent). Female infants, children living in joint households, children with birth order > 2, children who were never breastfed, children whose father and/or mother had a poor educational achievement (6th standard), and children whose mother had a service/business all had a substantially higher chance of malnutrition. The step-down multiple logistic regression approach with backward LR was used to identify the important correlates of malnutrition in the sample community. The final model revealed that joint family, birth order > 2, mother's education beyond 6th grade, and mother's

occupation were all substantially correlated with malnutrition in the sample community.

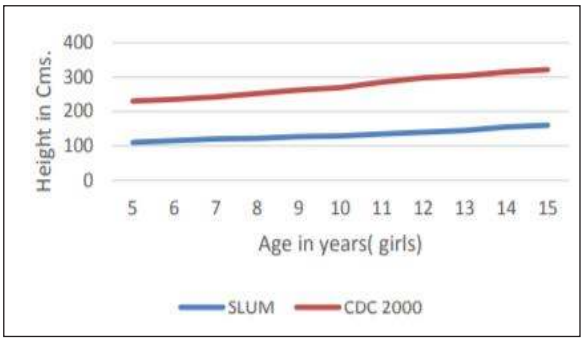

Fig. 2: Mean height in cm. of teenagers girls in urban slums of Bhagpat, U.P. India 2019 compared to CDC 2000.

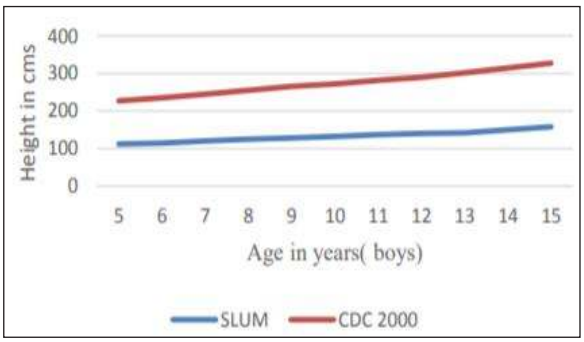

Fig. 3: Mean height in cm. of teenagers' boys in urban slums of Bhagpat, U.P. India 2019 compared to CDC 2000.

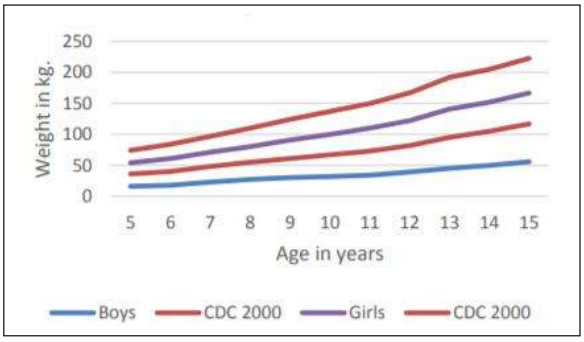

Fig. 4: Mean weight in kg. of teenagers (both girls and boys) in urban slums of Baghpat, India 2021 compared to CDC 2000.

DISCUSSION

Children between the ages of 5 and 14 are often assumed to be of school age. After 1972, each U.n. Academic, Research, and Emerging Recognition has described primary school age as 6-11 years and high school age as 12-17 years. According to statistics, been among the indian population is made up of children aged 5 to 14, that involves those in elementary and high school. Learning age is regarded as a complex time of growth and development for children because they go through physically, behavioural, cognitive, and social changes. In the other words, the seeds of physical health and mental health are laid during the school years. As a result, the current research was designed with the aim of assessing and identifying the key social economic correlates of nutrient intake in children in schools. The current research found a development delay in the essential principles of age and build as comparison to the CDC 2000 reference criteria. Our results are consistent with those documented by the other Indian researchers (Panda, 2000; Banerjee, 2001). Best C. et al. also found that underweight or leanness were more prevalent in communities of Africa And asia, while in Western Europe, the incidence of morbidly obese or leanness was typically less than 10percent (Best, 2010). Despite the vast discrepancies in the incidence of low body weight (wt)/age and height (ht)/age among countries, children have difficulty to increase in height and width in a strikingly similar maturity trend in the global south (IIPS, 2007). We looked at the occurrence of stunting, malnutrition, and underweight as indicators of malnutrition, and our results were close to those in South Africa, where stunting and underweight are still a public health issue in youth, with an occurrence of 20% stunting and nearly 10% underweight (Labadarios, 2008). According to the psychometric findings of a survey conducted in QwaQwa, 2.8 percent of the overall number of participants were seriously stunted, and 11.3 percent have been stunted (Oldewage-Theron, 2010).Therefore, variations in the level of development loss in age and length have consequences for determining the actual prevalence and incidence deficiency. This is also useful for tracking patterns and assessing the effectiveness of initiatives (Gopalan, 1993). For evaluating starvation and recognising communities which might profit through intervention, the emphasis could move from wt/age to ht/age and wt/ht. The current survey's school kids were observed to be well fed and healthy then rural Punjab school kids in a study conducted (Panda, 1997)where the incidence of deficiency was 87.4 per cent.

However, dietary levels for kids in the current sample were weaker than those seen in kids in Delhi by Dhingra et al. (1977) and in Tirupati urban school-age children by Indirabai et al. (1976).Such variations in research results could be due to gaps in research environments. The current study's rate of undernourishment is very close to the results of Medhi et al. (2006), who found a higher prevalence of undernourishment of 53.9 percent among school kids in Assam, India. The data indicates the boys are most prone to be stunted and underweight than children, and in other countries, most likely to be wasted than females (Shahabuddin *et al*., 2000; Partnership for Child Development, 1998), but in the current research, undernutrition was slightly more common in females than males. A number of Black reports indicate that male deficiency rates are significantly higher than female deficiency rates. According to studies undertaken in Ecuador (Sebastion and Senti, 1999). and Tanzania (Lwambo *et al.,* 2000), boys were more frequently affected than females. Another of the major surveys (Smith and Haddad, 2000) of the psychometric condition of villages primary school children in low income countries discovered that the average disease burden and underweight was high in all 5 nations, varying from 48 to 56 percent for prevented from growth or development and 34 to 62 per cent for under nutrition. Boys were much more prevented from growing or developing than girls in several nations, and boys were much more underweight than girls in both nations. These discrepancies in results are attributable to inequalities in research design, family structures, gender discrimination, and parental expectations for young boys in Indian culture. Blood deficiency was found in 37.5 per cent of the students in the current sample that was higher than that of the 22.5 per cent found in rural school kids in Punjab (Gopalan, 1993).Girls had a slightly higher incidence of anaemia (42.8 per cent) than boys (33.7 per cent).

In our research, anaemia was diagnosed solely by pathological evaluation; no lab testing was performed. As a result, there is a risk of underestimation of anaemia prevalence in this sample community, and this under representation could be greater in boys. Women's academic and social status, nutritional supply, and access to clean drinking water are all well-documented significant root determining factors of infant malnourishment(Mishra and Retherford, 2000).Mom's schooling was found to be a strong indicator of kid's nutritional status in our research. Data review of the National Family Health Survey (NFHS) 1 revealed that, even after correcting for the potentially confounding impact of many other demographic and socioeconomic factors, a mom's training has a significant independent impact on the a kid's nutrient intake (Bicego and Boerma, 1993). Previous research analyzing domestic data showed that mom's training was favourably correlated with a variety of indicators of infant wellbeing and nutrient intake (Thomas *et al.*,1991; Hobcraft, 1993; Miller andKorenman, 1994; Desai and Alva, 1998; Waters *et al.*, 2004; Boyle, 2006). The observations of Yip *et al.*(1992)that show the relevance of socio economic factors like mom's literacy to child's nutrient intake are consistent with the results of this study. Other scholars (Gopaldas*et al.*, 1998; Ray *et al.*, 2000; Shah *et al.*, 2003; Bishnoi*et al.*, 2004) have identified more improvements in nutrient intake as a result of parental schooling. In Cambodia, the trend of decreasing prevalence of impaired growth and development due to mom's schooling is associated with trends found in several other developed countries (Mukuria *et al.*, 2005)The wasting trend supports claims made in many other studies (Katahoire *et al.*, 2004; Frost *et al.*, 2005) that wasting is affected less by maternal characteristics than stunting. One theory is that since there are many causes of disease, mom's training has a small impact on avoiding disease such as diarrhoea. Several researches have indicated that parent involvement, especially maternal knowledge, is an important factor in enhancing children's nutrient intake (Moen, 1993; Christiaensen and Alderman, 2004). In the current research, household type was found to be positively related to everyone three indicators of deficiency. Gopaldas *et al.* (1998) obtained comparable findings. According to the NFHS 1 study, children from joint family system were much more likely to experience from child malnutrition than children from small families. The findings vary from those of Singh's (1996)research on kids from urban slums, in which more than 70% of the families were small. It was specifically demonstrated that infants who've never been breastfed it was at a far greater risk of nutrient deficiencies. Thus, feeding a child is a healthy behaviour that should be promoted in this demographic. The maternal employment status has been one of the major causes of malnourishment in this

study. Children of non - working mother have greater nutrient intake than children of employed women, presumably because they have more time to provide for their children (Ray *et al.,* 2000; Shah *et al.,* 2003). As a result, working mothers' hectic schedules have a negative impact on their children's nutrient intake. The National family health II has discovered a high incidence of these three hunger factors in kids of employed moms. According to the findings of this report, maternal academic achievement, mom's employment status, and family form are all significant determinants of a children's nourishment status. Efforts to increase women education, educate mothers, and limit family size will have a positive effect on the nutrient intake of school children.

CONCLUSION

It is obvious that either India's malnourishment crisis is not only of troubling nature, but of considerable complexity. The rate of change is slower than would be predicted considering India's economic development. The slum population contributes significantly to this crisis. Combating starvation in slums necessitates a multifaceted strategy, particularly while addressing school kids.

1. **Skills-based nutrition education for the family:** Nourishment education should target the entire family, not even just the women. Nutrition education should emphasise coordination in order to effect behavioural improvement. Nutrition-related efforts must be based on empirical analysis that identifies structural and institutional barriers to healthy nutrition, as well as harmful beliefs and habits about cooking and nutrition conduct. Food and hygiene practises may be integrated into group activities through inventive thought, but they must be viewed as important to their lifestyle rather than forced.

2. **Fortification of food items:** Sugar, dairy, pulses, potatoes, and spices can all be supplemented with essential nutrients.
3. **Effective infection control:** Children in slums are particularly vulnerable to a variety of disease and pathogens that compromise their health and immune, and hence their nutrient intake. Malnutrition and adolescent disorders are inextricably linked and mutually strengthen each other. It is also essential that infant disorders are diagnosed and treated properly in order to limit the disease's effect on child health.

4. **Training public healthcare workers:** To successfully execute a diet policy, service providers should be trained with abilities and knowledge. To educate service providers, proper training methods and tools must be created. Trained neighbourhood connect staff not only improve social access to hospitals, they also provide health and nutrition to women and infants in areas where the universal healthcare infrastructure does not exist.

5. **Deliver integrated knowledge:** Intersect oral cooperation is recognised as being one of the mechanisms for addressing malnutrition issues. Public health can help to promote healthier food choices, and educators can help to minimise nutrition-related issues by incorporating nutrition programmes into an integrated school health curriculum.

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