NOVATEUR PUBLICATIONS
JournalNX- A Multidisciplinary Peer Reviewed Journal
ISSN No: 2581 - 4230
VOLUME 7, ISSUE 4, Apr. -2021

NUTRITIONAL STATUS OF TEENAGERS IN URBAN AREA IN INDIA

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ABSTRACT:

Introduction:

School age is described as the active rising stage of childhood (1). Undernutrition in children is one of India's most serious issues. The country is still dealing with this problem. Malnourishment, which is caused by poor feeding, damages the immune system and causes severe development and developmental delay. Development appraisal is the main measure for defining child's nutritional and health status, as well as offering an indirect indicator of well-being for the adult population.

Methodology:

From jan.2019 to july 2019, we conducted a cross-sectional study in urban slums of Hisar, Haryana, India, to investigate nutritional status in school-age slum children and examine factors associated with malnutrition using a pre-designed and pre-tested questionnaire, anthropometric assessments, and clinical analysis.

Result:

In all age ranges, the mean height and weight of boys and girls in the sample population were smaller than the CDC 2000 (Centers for Disease Control and Prevention) standards. In terms of nutritional status, the prevalence of stunting and underweight was greatest in the age group 11 to 13 years, whilst the prevalence of wasting was highest in the age group 5 to 7 years. But for refractive errors, all diseases are more frequent in children, but only anaemia and rickets have a statistically meaningful gender gap. Children born in collective households, infants whose mom's schooling was [below than or equivalent to] 6th grade, and infants of working mothers were at a significantly higher risk of malnutrition.

Conclusion:

The majority of the school-age poor children in our sample were malnourished. Strategies including skills-based food and nutrition knowledge, nutritional fortification, proactive infection prevention, public healthcare staff preparation, and delivery of comprehensive services are encouraged.

Keywords: Nutrition status, malnutrition, urban area, School-aged child, India, Haryana, Hisar.

INTRODUCTION:

School age is described as the active rising stage of childhood [1]. Primary school age is a complex time of physical and behavioural maturity for the infant. According to study, health issues caused by poor nutrient intake of primary school students are one of the most prevalent reasons for the low school

enrolment, heavy workloads, premature drop - outs, and poor classroom results. The current state of nutrition and health condition of school-age Indian children is deplorable. According to data from the National Family Health Survey (NFHS), 53 percent of rural children are undernourished, though this differs by province. The number of undernourished children around the world was 53.4 in 1992, 45.8 in 1998, 47 in 2006 [2] and 38% stunned and 35% underweight in 2015-16 (3).

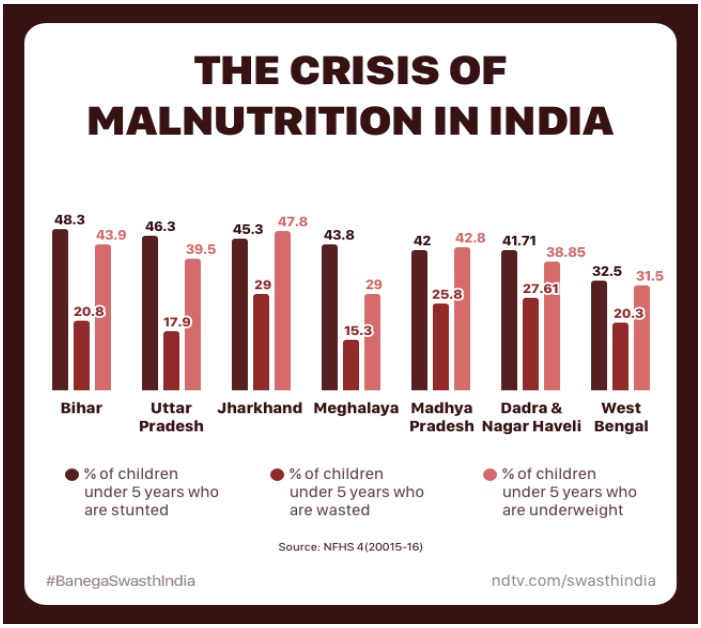

Fig.1. crisis of malnutrition in India in 2015-16

Childhood malnutrition was and continues to be one of the causes of high child mortality rates in developing countries. Chronic malnutrition in childhood is related to delayed cognitive performance and severe health impairments later in life, lowering people's quality of life. Nutritional status is a key indicator of this consistency. In this regard, recognising child's nutrient intake has had far consequences for the growth of posterity. Development surveillance is utilized to measure individual children's nutritional status, wellbeing, and growth, as well as to determine the expected nutrition health and development of communities. When comparison to several other health measurement methods, evaluating infant development is a low-cost, simple, and non-invasive procedure. Anthropometric testing is nearly often used in studies to determine children's fitness and nutritional status. Physical metrics such as body weight, height, arm and calf circumference, and triceps skin fold of children have been widely used to describe the health and nutritional status of populations. A variety of indexes, such as height-for-age and weight-for-height, have been proposed based on age, body weight, and height [4]. The children are divided into three groups: 'underweight' (low weight for age), 'stunting' (low height for age), and 'wasting' (low weight-for-height). Low anthropometric values are those that differ by more than 2 standard deviations from the CDC 2000 standard (4-6). Children's nutritional condition reflects not just the financial status of the family and the general well-being of the society, but also the effectiveness of the health-care system and the impact of the local setting. The aim of the present research is to investigate the causes that contribute to childhood malnutrition and incidence of underweight etc.

METHODOLOGY:

This partial research, that examined nutritional status in school-age slum children aged 5 to 18, was conducted between January 2019 and July 2019 in different states of india. The sample size of 512 was estimated assuming a 50% prevalence of malnutrition, with a relative precision of 10% at 95% reliability. Three urban areas(Azad nagar, gangwa, shastri nagar) were picked at random from the urbanized city of the Hisar district for this analysis. Any of these slums' children aged 5 to 15 years is investigated. A total of 1000 youngsters were surveyed and tested (600 boys and 400 girls). To interview research participants, a pre-designed and pre-tested

questionnaire was used to obtain information about community attributes such as residency, background, style of community, education, and profession of parent, as well as individual information such as gender, age, and food behaviors. Trained field workers took and documented anthropometric measurements. The questionnaire was piloted on ten children from each slum. Before the analysis began, necessary changes were made to the questionnaire. The Institution Review Board of BMU, Rohtak granted ethical clearance. Prior to project participants' involvement, families were notified well about research objectives and provided written informed consent. Jelliffe's [7] uniform technique was used to calculate each child's height and weight in the metric system. The subjects' height was measured using a stadiometer (measuring rod) with an accuracy of 0.1 cm. The topic was asked to stand without shoes, with toes, buttocks, elbows, and occiput touching the measuring rod and hands dangling on the arms. The top of the head made solid contact with the horizontal head portion, allowing the head to be left securely upright. The subjects' weights were recorded using a portable balance with a precision of 100 g. Youngsters were asked to stand on the balanced carrying only light clothing, without boots, with their toes apart which facing straight. The weigh was measured to the nearest tenth of a pound. Every child's height for age (stunted), weigh for height (wasted), and weight for age (underweight) were measured [3] and related to the CDC 2000 [4].

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.

Table 1. The nutrition condition of teenagers in the urban slums of Hisar(Haryana), India, by age and gender, 2019.

Age (in years)	**Nutritional Status (No's.)**				**Total**
	Normal	**Underweight (low weight for age)**	**Wasted (SDM) (low weight for height)**	**Stunted (LDM) (low height for age)**	
5-6	80	**45**	**40**	**21**	**186**
7-8	**85**	**49**	**38**	**20**	**192**
9-10	**50**	**38**	**29**	**19**	**136**
11-12	**40**	**45**	**18**	**25**	**128**
13-15	**80**	**45**	**33**	**18**	**176**
16-18	**70**	**48**	**37**	**27**	**182**
Gender					
Boys	**250**	**175**	**113**	**62**	**600**
Girls	**150**	**110**	**85**	**55**	**400**
overall	**400**	**285**	**198**	**117**	**1000**

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.

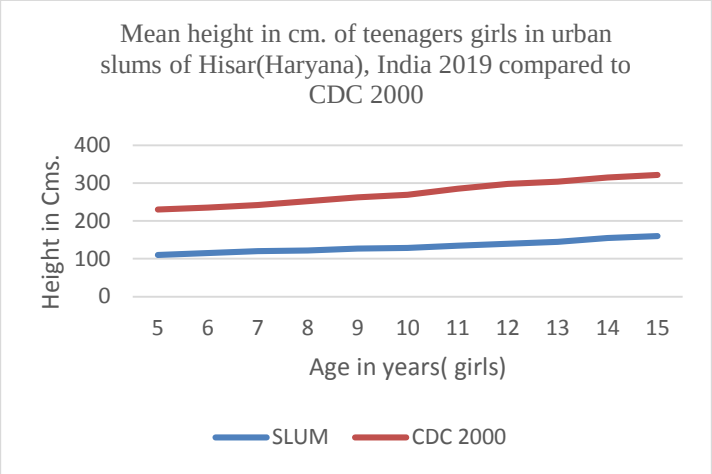

Fig.1. Mean height in cm. of teenagers girls in urban slums of Hisar(Haryana), India 2019 compared to CDC 2000.

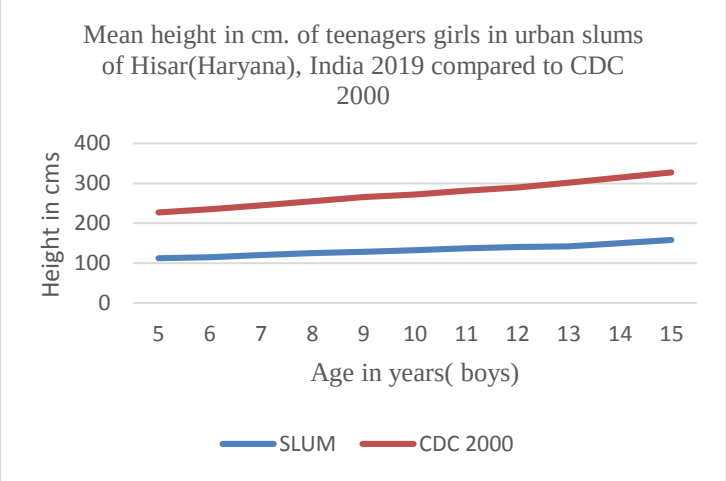

Fig.2- Mean height in cm. of teenagers girls in urban slums of Hisar(Haryana), India 2019 compared to CDC 2000.

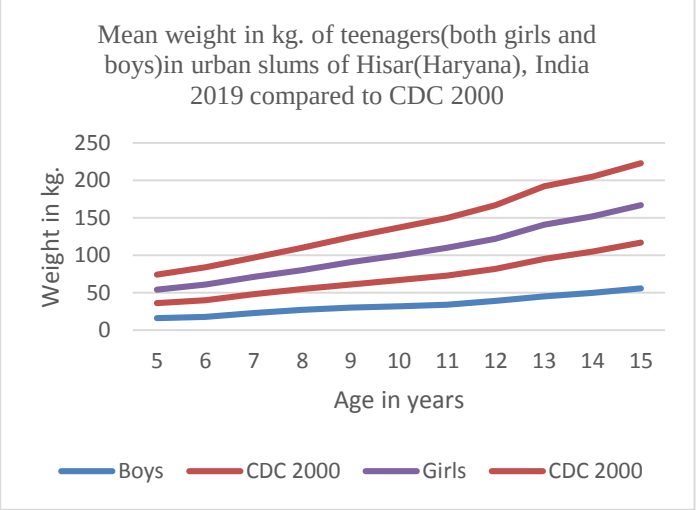

Fig.3. Mean weight in kg. of teenagers (both girls and boys) in urban slums of Hisar (Haryana), India 2019 compared to CDC 2000.

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 [8,9]. 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 [10]. 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 [2]. 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 [11]. According to the psychometric findings of a survey conducted in Qwa Qwa, 2.8 percent of the overall number of participants were seriously stunted, and 11.3 percent have been stunted [12].

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 [13]. 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 [14], where the incidence of deficiency was 87.4 percent. However, dietary levels for kids in the current sample were weaker than those seen in kids in Delhi by Dhingra et al. [15] and in Tirupati urban school-age children by Indirabai et al. [16]. 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. [17], who found a higher prevalence of undernourishment of 53.9 percent among schoolkids 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 [18,19], 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 [20] and Tanzania [21], boys were more frequently affected than females.

Another of the major surveys [22] 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 percent for undernutrition. 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 percent of the students in the current sample that was higher than that of the 22.5 percent found in rural schoolkids in Punjab [13]. Girls had a slightly higher incidence of anaemia (42.8 percent) than boys (33.7 percent). 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 underrepresentation 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 malnurishment [23]. 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 [24].

Previous research analyzing domestic data showed that mom's training was favourably correlated with a variety of indicators of infant wellbeing and nutrient intake [25-30]. The observations of Yip et al. [31] 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 [32-35] 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 [36]. The wasting trend supports claims made in many other studies [37,38] 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 research has indicated that parent involvement, especially maternal knowledge, is an important factor in enhancing children's nutrient intake [39,40].

In the current research, household type was found to be positively related to everyone three indicators of deficiency. Gopaldas et al. [33] 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 [41]'s 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 [35,36]. 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 schoolchildren.

CONCLUSION:

It is obvious that either India's malnourishment crisis is not only of troubling nature, but of considerable complexity. Underweight occurrence is one of the largest in the world, almost double that of Sub-Saharan Africa, according to Srivastava et al. 70:8 (Archives of Public Health, 2012). 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 schoolkids.

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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