Original research article

ASSESSMENT OF THE HEALTH AND NUTRITIONAL CONDITION OF SECONDARY SCHOOL STUDENTS IN RURAL AREAS OF INDIA

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Abstract

School health is a vital component of community health. Implementing school health services is a cost-effective and potent approach to improving community health. Children are susceptible to several infectious illnesses and dietary deficits. The aim of our study is to evaluate the health and nutritional condition of school-age children.

Keywords: Assessment, health, nutritional status, secondary school

Introduction

Approximately 1.2 billion individuals, constituting 1 out of every 6 persons in the globe, fall into the age range of 10 to 19 and are considered adolescents. The majority of adolescents are in good health, however, there is still a significant occurrence of early mortality, disease, and injury within this age group. Illnesses can impede their capacity to thrive and achieve their maximum potential for growth and development. Encouraging healthy habits in adolescence and implementing measures to safeguard young individuals from health hazards are crucial for preventing health issues in adulthood and for ensuring the long-term health and progress of nations [1].

Therefore, proper nutrition is the most crucial aspect in determining the health of a child, which in turn contributes to their overall health as an adult [2]. Childhood and adolescence are critical periods where being underweight, overweight, or obese can have long-lasting negative effects on health. Children and adolescents who are underweight have a greater likelihood of developing infectious diseases. In girls who are of childbearing age, being underweight is linked to negative pregnancy outcomes such as maternal death, problems during delivery, premature birth, and stunted foetal growth. Preventing and reversing excessive weight in children and adolescents is crucial for several reasons. Firstly, it is challenging to achieve weight loss and maintain it, making it likely that accumulating extra weight throughout childhood and adolescence will result in lifetime overweight and obesity. Furthermore, the presence of excess weight during childhood and adolescence is linked to an increased likelihood and earlier occurrence of chronic conditions, such as type 2 diabetes. Furthermore, childhood and adolescent obesity has detrimental psychological effects and diminishes

educational achievement [3]. According to the World Health Organisation (WHO), implementing a successful school health system can be a very cost-efficient investment for a country, as it can enhance both the educational outcomes and the overall health of children. The World Health Organisation (WHO) advocates for the implementation of school health programming as a strategic approach to effectively avert significant health issues. The aim is to address the hazards faced by young people and involve the school system in initiatives to modify the educational, social, economic, and political circumstances that impact children [4].

The Global School Health Initiative, initiated by the World Health Organisation (WHO) in 1995, aims to activate and enhance health promotion and education efforts at the local, national, regional, and global scales. The initiative aims to enhance the well-being of kids, school staff, families, and other community members by utilising schools as a platform [5].

The 2012 national health strategy of the Indian government places particular importance on addressing the health issues faced by teenagers and recognises the significant benefits of investing in their healthcare in the long run. The paper also highlights that malnutrition, particularly deficiencies in micronutrients, hampers the survival, growth, and development of children. It leads to illness and death in susceptible populations, causing a significant decrease in their ability to work and thus reducing the economic growth and well-being of the nation. Therefore, the domain of Reproductive and Sexual Health has been broadened to encompass concerns such as insufficient calorie consumption, nutritional status and psychological disorders, among others, that are associated with the misuse of technology [6].

Iron deficiency is the main cause of nutritional anaemia, which is a significant public health issue in India [7]. According to the statistics from the National Family Health Survey-4 (NFHS-4), anaemia is highly frequent across all age categories, with a particularly high occurrence among the most vulnerable individuals. Approximately 54 percent of adolescent girls (aged 15-19 years) and 29.1 percent of adolescent boys are anaemic [8]. The Government of India announced the Rashtriya Bal Suraksha Karyakram (RBSK) in February 2013 as a novel project. The programme incorporates measures for Child Health Screening and Early Intervention Services, aimed at promptly identifying and addressing four common conditions, known as the 4 "D"s, that are frequently observed in children. These are congenital anomalies, paediatric illnesses, nutritional deficiencies, and developmental delays, including disabilities. The programme entails the assessment of children aged 6 to 18 years in both Government and Government assisted schools, conducted at least once a year [9].

Emerging research has demonstrated that implementing school health programmes can effectively enhance the well-being of kids, school staff, families, and community members. However, it is important to note that the available evidence is still restricted, especially in places with little resources.

Despite the government's commencement of the RBSK programme in 2013, we sought to assess the health condition of school-going children in rural areas. The primary objective of the study is to evaluate the health and nutritional well-being of school students.

Materials and Methods

The study was conducted within a school setting and followed a cross-sectional design.

This study was conducted as an undergraduate research project at the Department of Community Medicine.

Conducting a modest research project undertaken by a group of students.

The students' projects are undertaken during the clinical posting hours of Community Medicine in the 5th semester.

Every student must present a project report to meet the practical examination requirement for Community Medicine.

Students are required to present and justify their project in order to achieve a score of 4 in the project viva.

The criteria for nutritional assessment involved measuring height and weight using established methodologies, and calculating the body mass index (BMI) using a universally accepted algorithm. The assessment of nutritional status was conducted based on the criteria established by the World Health Organisation (WHO) in 2007. We employed the age and sex specific cut-off points for BMI as suggested by the World Health Organisation (WHO). These cut-off numbers are derived from the National Health and Nutrition Examination Survey (NHANES) and are applicable to school children aged 5-19 years [10].

Results

Table 1: Age distribution of study participants

Age (Years)	Total
9	3
10+	35
11+	112
12+	96
13+	5
14+	3
Total	254

Table 2: Overall health Status of the School Children

General Appearance	Percentage (%)
Normal Built	51.6
Thin Built	35.4
Sick Looking	0.7
Hair of the students	
Normal	96.3
Lack of Luster	2.5
Dyspigmentation & Easily Pluckable	0.4
Status of Conjunctiva	
Normal	93.9

Bitot's Spots	0.4
Pallor	5.7
Dental status	
Teeth Normal	61.5
Mottled	11.5
Carries	27
Gums	
Normal	91.29
Spongy	4.5
Bleeding	7
Ears	
Normal	53.3
Discharge	1.6
Wax	45.1
Condition of skin	
Normal	82.2
Dry and Scaly	3.2
Petechiae	0.5
Itchy Scaly Patch	3.1
Hypopigmented Patches	11.13
Hyperpigmented Patches	0.4
Oedema of feet	11.29
No Odema	98.8
Odema Present	1.2

Table 3: Nutrition status as per BMI

	Total students					
Years	-3SD	-2SD	Median ± 1SD	+2 SD	+3SD	
Age	Emaciated	Thinness	Normal	Overweight	Obesity	Total
9+			3			3
10+	0	3	14	2	1	20
11+	7	7	31	2	3	50
12+	3	7	22	3	0.00	35
13+	0.00	0.00	1	0.00	0.00	1
Total	10	17	70	7	4	107
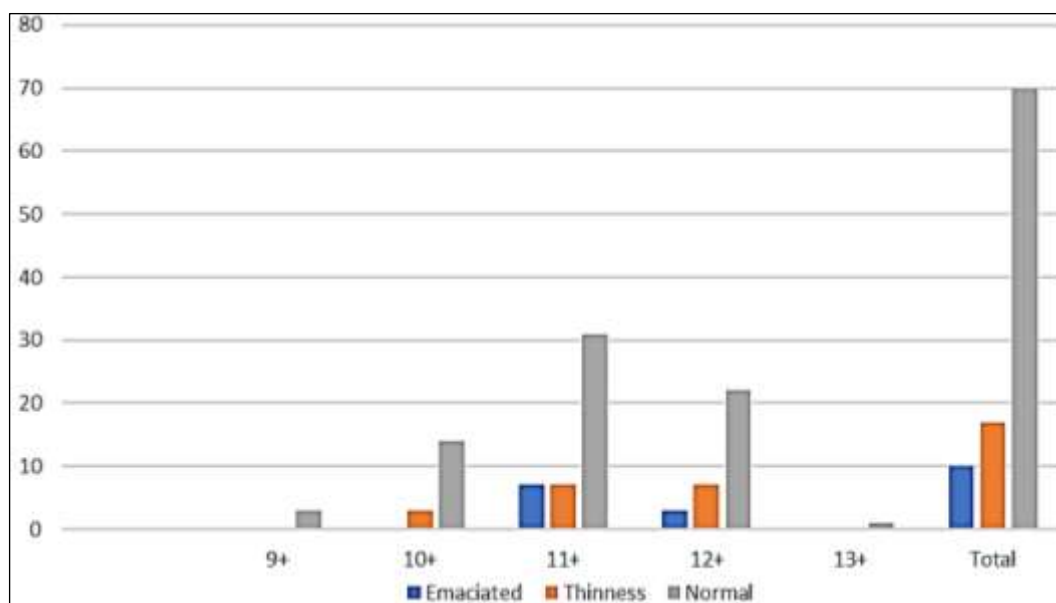
Graph 1: Nutrition status as per BMI

Discussion

In a research conducted in Peshawar, Pakistan, involving 420 school aged children (aged 5 to 12), the prevalence of anaemia was determined to be 34.0%. Nevertheless, there are regional disparities in the prevalence of anaemia. The proportion was greater in females (38.9%) compared to males (31.0%). The prevalence of anaemia was higher (55.8%) among children from lower socioeconomic families compared to those from middle class (32.2%) and upper class (17%).

In the age category of 10-12 years, there was a high prevalence of anaemia, with 40% of children affected. 12 years, there was a high prevalence of anaemia, with 40% of children affected. Anaemia was primarily characterised by the prevalence of pale skin [11].

A study conducted in the urban slums of Punjab Ludhiana revealed that almost 19 percent of the youngsters were diagnosed with severe malnutrition, as per the Gomez classification.

In this investigation, the prevalence of severe malnutrition was found to be 19% in both males and females. This prevalence closely aligns with the prevalence of severe undernutrition (18.2%) observed specifically among boys in our study [12].

A study conducted by Dambhare DG *et al*. in Maharashtra in 2018 yielded a comparable result.

Male children exhibited a higher prevalence of stunting compared to female children. Nevertheless, the occurrence of various health indicators such as anaemia (28%), dental caries (35.34%), refractive error (13.79%), worm infestation (7.76%), skin issues (6.9%), tonsillitis (2.59%), and earwax (2.59%) was more prevalent compared to our study [13]. In a research conducted by Navaneethan et al. in Tamil Nadu in 2011, it was found that 83% of the 806 school children surveyed were classified as underweight according to the international standards set by the World Health Organisation, which defines underweight as having a body mass index (BMI) of less than 18.5 Kg/M2.

Out of all the students, only 16% had a BMI within the normal range of 18.5-24.9. The remaining students had BMIs that fell into the overweight range (25-24.9). The

remaining students had BMIs that fell into the overweight range (25-29.9) and the obese range (30-35.9) at percentages of 0.39% and 0.06% respectively [14]. This study compared the adult BMI with the BMI-for age of children according to the World Health Organisation (WHO) guidelines.

A study conducted in rural Maharashtra including a sample of 400 children revealed that 61 individuals (15.25%) were classified as underweight, 82 individuals (20.5%) were classified as stunted, and 8 individuals (2.0%) were classified as obese. The most prevalent morbidity was dental caries, accounting for 55.25% of cases. The user's text is "[15]". The prevalence of dental caries in our study was 27%, which was lower than the prevalence observed in the study conducted in Maharashtra. Nevertheless, the frequency of obesity aligns with our study findings.

In a study conducted in coastal Karnataka, 773 children were examined and it was discovered that Dental caries was the prevailing ailment in 29.6% of the children, whereas refractive errors were observed in 10.7% of the children. Approximately 13% of the individuals were classified as underweight, whereas 2% were classified as overweight for their age [16]. In our study, we found that the rates of dental caries and obesity were comparable to previous research. However, we observed a significant prevalence of undernutrition and a reduced incidence of refractive error in our study population.

In a study conducted by Kulkarni *et al*. in coastal Karnataka, it was found that dental caries was the prevailing condition among 31.86% of the 797 children surveyed. Additionally, 43.32% of the children were classified as underweight, 53.03% were considered to have a normal weight, and 3.65% were categorised as overweight for their age. The prevalence of obesity closely aligns with our results. The prevalence of overweight and obesity in school children is a growing issue that requires proactive and educational interventions focused on promoting healthy eating habits in order to prevent health problems in adulthood [17].

A study conducted among rural school pupils aged 11-18 in the Paschim Medinipur region of West Bengal revealed that the prevalence of undernutrition was greater in males (41.8%) than in girls (25.2%) [18]. Our study's findings are nearly identical.

Conclusion

The prevalent health conditions observed were dental caries, hypopigmented patches, bleeding gums, and pallor.

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