



Promoting Physical Growth Among Adolescent Students (Aged 18-25) In Remote Areas Of Odisha Through Health Drinks

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Abstract

This study targets to explore the potential of health drinks in promoting the physical growth of adolescent students aged 18-25 in the remote areas of Odisha. In these marginalized regions, access to proper nutrition is limited, which can adversely affect the overall well-being of the youth during this critical stage of life. The research investigates the effectiveness of health drinks as a supplement to their regular diets, examining the impact on factors such as stamina, energy levels, muscle development, bone health, and cognitive function. By introducing these specially formulated health drinks, the study aim to bridge nutritional gaps and encourage healthier dietary habits among the target population. The study also highlights the importance of using natural ingredients and adhering to stringent quality standards in the production of these beverages. Educational initiatives on nutrition accompany the introduction of health drinks, empowering the students and their communities with knowledge about maintaining a balanced and healthy lifestyle. The findings from this research can provide valuable insights for policymakers, healthcare professionals, and educators, to develop sustainable strategies for improving the physical growth and overall health of adolescent students in remote areas of Odisha.

Keywords: Education, Growth, Healthcare, Adolescent, Odisha

Introduction

This study in remote areas of Odisha, a significant portion of the adolescent student population, aged 18 to 25, faces unique challenges in their physical growth and development. The transition from adolescence to adulthood is a critical phase in an individual's life, where optimal nutrition plays a pivotal role in shaping their overall health and well-being. Unfortunately, remote regions often experience limited access to diverse and nutritious food sources, leading to potential nutritional deficiencies that can hinder the physical growth and

development of the young generation. Addressing the nutritional needs of these adolescents is of paramount importance, as it not only affects their immediate health but also has far-reaching implications for their future. One promising approach to tackle this concern is the introduction of health drinks specifically personalized to meet the relating to diet requirements of this age group. These health drinks are designed to complement their regular diet and provide essential nutrients essential for their growth, such as vitamins, minerals, proteins, and other vital components. The purpose of this initiative is to explore how promoting health drinks can positively impact the physical growth and overall health of adolescent students in remote areas of Odisha. By evaluating the potential benefits of incorporating health drinks into their daily routine, this study aim to shed light on the significance of adequate nutrition and its role in empowering this young generation to reach their full potential. The exceptional defies faced by remote areas in Odisha are multifaceted. The lack of infrastructure and difficult terrain often make it challenging to access a wide variety of fresh and nutritious food items. Additionally, socioeconomic constraints can restrict families from affording a well-rounded diet, leaving many adolescents with limited options for their meals. The convergence of these factors creates an environment where nutritional deficiencies are prevalent, potentially resulting in stunted growth and compromised overall health for the young inhabitants. Health drinks offer a promising solution to bridge the nutritional gap in these remote communities. Designed with a focus on delivering a balanced mix of essential nutrients, these beverages can serve as a convenient and accessible source of nourishment for adolescents. Moreover, the formulation of these health drinks can be customized to address specific nutritional requirements, considering the unique growth patterns and dietary preferences of this age group. In this research endeavour, it will explore existing scientific literature on the impact of nutrition on the physical growth and development of young individuals. By understanding the role of key nutrients during this critical stage of life, it can identify the most crucial elements that health drinks should incorporate to effectively promote growth and overall well-being. Furthermore, the study investigation will involve conducting surveys and interviews within the target population to gain insights into their dietary habits, awareness of nutrition, and willingness to embrace health drinks as part of their daily routine. Understanding the perspective of the adolescents and their families will be instrumental in designing a successful intervention that resonates with their needs and preferences. Additionally, we will collaborate with local healthcare professionals, nutritionists, and experts in food technology to develop health drink formulations that align with regional dietary habits and are feasible for production and distribution in remote areas. This collaborative effort will ensure that the health drinks are not only effective but also culturally appropriate and socially accepted within the target communities.

Research Objectives

To assess the nutritional needs and dietary patterns of adolescent students aged 18-25 in remote areas of Odisha.

To identify challenges and barriers in implementing health drink programs in remote areas of Odisha.

Review of Literature

Shroff, H., & Shokeen, D. (2019). This section systematically evaluations the recent nutritious status of adolescents and youth in India, including the prevalence of underweight, overweight, and obesity. It identifies areas lacking adequate data and briefly discusses the prevalence of micronutrient deficiencies among these populations. Detailed descriptions of policies and programs impacting nutrition are provided, along with evidence of their effectiveness where available. Vulnerable populations are highlighted, and factors affecting dietary intake and nutrition, such as knowledge levels among adolescents and youth, are discussed. Recommendations for policy, programs, communities, and research are proposed to address gaps in nutrition research and interventions for this demographic subgroup in India.

Jeena, B. P. et, al (2024). The study investigates aerated drink consumption among Indian adolescents (15–19 years). Applied binary logistic regression, calculated adjusted odds ratio (AOR) at 95% confidence interval. Boys: Daily (4.4%), Weekly (22.7%), Occasionally (63%); Girls: Daily (2.9%), Weekly (14%), Occasionally (70.8%). Observed shift to occasional consumption from weekly and daily. Suggests gender and region-specific health-promotion interventions for further decrease. Advocates research on sugar-sweetened beverage taxation as per WHO recommendations. Recommends promotion of traditional, locally available healthy beverages.

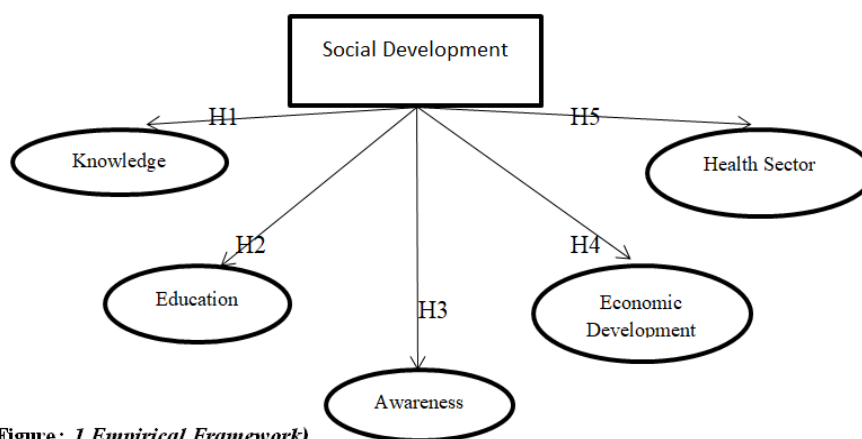
Patel, K., Palo, S. K., Kanungo, S., Mishra, B. K., & Pati, S. (2022). This study on promote health literacy among school children for health, hygiene, and nutrition behaviours. School learning influenced by peers, teachers, domestic, and social conditions. Socio-demographic features affect health literacy levels. Qualitative study: 17 focus group discussions in six rural secondary schools in Cuttack, Odisha. Audio-recorded, transcribed, and analysed using Atlas. Identified gaps and challenges in health literacy and practices: hygiene, sanitation, nutrition, and diseases. Major factors: low socio-economic status, lack of clean water, toilet facilities, and nutritious food. Effective measures: poster presentations, practical teaching, demonstrations, school plays, and community competitions. Recommendations: improve infrastructure, ensure availability of essentials, and increase health-promotional activities. Urgent need to enhance health literacy and practice among rural school children. Innovative, practical-oriented education in schools and increased awareness among parents and community members can lead to better adherence to healthy practices.

Kumari, A. (2020). This study on psycho-social factors, lifestyle choices, and nutritional status significantly impact various sports and games. This study aims to evaluate these aspects among female students at Panjab University, comparing residential and non-residential groups. The sample comprises 200 undergraduate and postgraduate female students aged 17-23, selected using random sampling. Significant differences were found between residential and non-residential students in health style sub-variables, including total health style, spiritual health, and occupational health. These findings can inform efforts to enhance the health style and nutritional status of residential students, as well as contribute to the psycho-social development of all students at the institution.

Mishra, A. K., & Acharya, H. P. (2017). Overweight and obesity result from excessive calorie intake and insufficient calorie utilization, leading to fat accumulation in the body. Obesity can adversely affect health, increasing the risk of various non-communicable diseases such as diabetes, coronary heart disease, cancers, and osteoarthritis, and may shorten life expectancy. The study aimed to estimate the prevalence and determinants of overweight and obesity among 10–12-year-old schoolchildren in the year 2012–2013. It employed a cross-sectional design involving 300 schoolchildren selected using a stratified multistage random sampling method. Data were collected using a pretested predesigned questionnaire. The prevalence of overweight and obesity was found to be 6.3% and 3.3%, respectively. Among boys, the prevalence of overweight and obesity was 5.6% and 3.4%, respectively, while among girls, it was 7.4% and 3.3%, respectively. Outdoor activities, cycling, after-school activities, mode of transportation to school, and hours of television viewing or computer use were all significantly associated with the body mass index status of schoolchildren.

Jena, S et.al (2023). This study on unhealthy food behaviours significantly contribute to the increasing burden of non-communicable diseases (NCDs) among adolescents in India. Knowledge and practices related to unhealthy eating play a crucial role in shaping adolescents' food behaviour. In this scoping review, we aimed to map evidence and identify gaps on knowledge, practices, and influencing factors associated with unhealthy food behaviour among Indian adolescents by examining existing literature. The review utilized Arksey and O'Malley's scoping review framework and the Joanna Briggs Institute Reviewers' manual. After screening, 33 articles meeting the inclusion criteria were identified. Data extraction was performed according to the study objectives, followed by narrative summarization. The studies included a total of 20,566 adolescents. Most studies reported inadequate knowledge about healthy food choices among adolescents. Dietary intake patterns among adolescents revealed a lower consumption of fruits and vegetables and an increased consumption of fried items, sugar-sweetened beverages, packaged food, and fast food, with various factors influencing these behaviours including peer influence (21.2%), parental unhealthy food behaviour (15.1%), place of residence (6.06%), emotional status (6.06%), and mass media exposure (18.1%). The scoping review underscores the necessity for targeted interventions aimed at enhancing the knowledge and practices of Indian adolescents regarding healthy food choices and raising awareness about the risks of non-communicable diseases. Analysis of evidence on adolescent dietary behaviour in India indicates a limited and narrow scope, highlighting the ongoing need for further research.

3. Empirical Framework



(Figure: 1 Empirical Framework)

4. Evaluation Factorsa) Knowledge

- Knowledge of healthy food choices
- Understanding of nutritional content
- Awareness of portion control
- Familiarity with food labels and ingredients

b) Education

- Education structure can lift the capable of individuals
- The percentage of individuals within a inhabitants who can read and write at a specified age group or above.
- the proportion of eligible individuals within a specific age group who are enrolled in formal education institutions

c) Awareness

- This variable evaluates individuals' awareness of various risk factors contributing to common health condition.
- This variable measures individuals' knowledge of the recommended amount and intensity of physical activity needed for maintaining overall health.
- This variable assesses individuals' overall understanding of health-related information

d) Economic Development

- This variable refers to the total amount of money spent on healthcare goods and services within a specific time frame.
- This variable measures the ease with which individuals can obtain healthcare services when needed.
- This variable refers to the extent to which individuals use healthcare services.

e) Health Sector

- This variable measures the amount of physical activity an individual engages in daily or weekly.
- Nutritional intake refers to the types and amounts of food and beverages consumed by an individual over a specific period.
- Stress level is a measure of the psychological and emotional stress experienced by an individual due to various life circumstances

5. Demographic Content

Demographic	Arrangement	No. Of Respondents	Measurement (%)
Gender	Male	69	69.00
	Female	31	31.00
	Total	100	100
Age	18-20	25	25.00
	21-22	35	35.00
	23-25	40	40.00
	Total	100	100
Educational Qualification	Illiterate	27	27.00
	1-5th	19	19.00
	6-10th	23	23.00
	+2	17	17.00
	+3	14	14.00
	Total	100	100

Source: Survey Data

The socioeconomic status of adolescent students in the remote area is depicted in Table 2 above, categorized according to essential foundational elements.

6. Formulation of Hypotheses

Hypotheses related to the important factors for hypothesis testing in the study on Promoting Physical Growth among Adolescent Students (Aged 18-25) in Remote Areas of Odisha through Health Drinks.

6.1 Knowledge

The adolescent stage marks a critical period of development characterized by significant physical, cognitive, emotional, and social changes. During this transitional phase, individuals undergo rapid growth and maturation, making it imperative to prioritize strategies that promote physical well-being. Among these strategies, fostering optimal physical growth stands as a cornerstone for ensuring the overall health and development of adolescent students. Understanding the factors that contribute to and influence physical growth

becomes essential. From nutritional intake and physical activity to environmental influences and healthcare access, a myriad of variables play a crucial role in shaping the physical development of adolescents. Therefore, exploring and implementing effective interventions geared towards promoting physical growth is paramount in addressing the unique needs of this demographic group.

H1: Effectively report the specific needs of this demographic group, it is important to have knowledge of the implementation of treatments aimed at fostering physical growth.

6.2 Education

Education plays a multifaceted role in the holistic development of adolescents, encompassing not only cognitive advancement but also physical growth and well-being. Particularly during the formative years of adolescence, education serves as a crucial catalyst for nurturing not just academic prowess but also promoting physical health and fitness. This intersection between education and physical growth underscores the importance of understanding how educational environments, policies, and practices can positively influence the physical development of adolescent students. As adolescents undergo rapid physical changes, including growth spurts, hormonal fluctuations, and the development of bodily systems, it becomes paramount to recognize the significant impact that educational settings can have on their overall health outcomes. Schools and educational institutions serve as key arenas where adolescents spend a substantial portion of their time, providing unparalleled opportunities to integrate physical activity, health education, and nutrition into their daily routines.

H2: An important setting for adolescents to spend a significant amount of their time is in school, where they have the best opportunity to integrate diet, exercise, and health education into their daily lives.

6.3 Awareness

Promoting physical growth and well-being among adolescent students is paramount in ensuring their overall development and future success. Adolescence marks a crucial period of transition, characterized by rapid physical, cognitive, and emotional changes. During this phase, adolescents undergo significant growth spurts and maturation, making it imperative to foster awareness and provide appropriate interventions to support their physical health. Awareness initiatives aimed at promoting physical growth among adolescent students play a pivotal role in addressing various health-related issues and fostering healthy habits that can last a lifetime. By equipping adolescents with the knowledge and tools to make informed decisions about their health, we can empower them to lead active, fulfilling lives and mitigate the risk of health problems later in adulthood.

H3: Initiatives focused on raising awareness and promoting physical growth among adolescent students play a pivotal role in tackling diverse health-related challenges and nurturing healthy habits that can endure throughout a lifetime.

6.4 Economic Development

In the developmental trajectory of adolescents, physical growth stands as a pivotal marker of overall well-being and future potential. While genetic factors play a significant role in determining an individual's physical stature, the influence of socioeconomic status cannot be overlooked. This introduction delves into the intricate relationship between economic circumstances and the physical growth of adolescent students, particularly in remote areas. Adolescence marks a critical phase characterized by rapid physical, cognitive, and emotional changes. During this period, proper nutrition, access to healthcare, and conducive environmental conditions are paramount for fostering optimal growth and development. However, in remote areas, where resources may be limited and infrastructure lacking, adolescents often face unique challenges that can hinder their physical growth trajectories.

H4: Economic development is an essential factor in promoting physical health among adolescents and stands as a pivotal determinant of future potential.

6.5 Health Sector

In contemporary society, the promotion of physical growth among adolescent students stands as a crucial imperative within the health sector. Adolescence marks a critical period of development characterized by rapid physical, cognitive, emotional, and social changes. Among these, physical growth holds particular significance as it lays the foundation for overall well-being and health throughout one's lifespan. Recognizing the intricate interplay between physical health and various facets of adolescent development, efforts within the health sector are directed towards fostering optimal physical growth among adolescent students. This introductory exploration delves into the multifaceted dimensions of promoting physical growth among adolescent students within the educational context. It aims to underscore the importance of initiatives aimed at enhancing physical health and well-being during this pivotal stage of life. By examining the diverse strategies, challenges, and outcomes associated with promoting physical growth, this discourse seeks to shed light on the holistic approach required to nurture healthy adolescent development.

H5: Knowing the complex interplay between physical health and various facets of adolescent development, the health sector directs efforts towards fostering optimal physical growth among adolescent students.

7. Methodology

Conduct a comprehensive review of existing literature on adolescent nutrition, physical growth, and the efficacy of health drink interventions. Develop a structured questionnaire to gather data on the nutritional habits, health status, and awareness of health drinks among adolescent students aged 18-25 in remote areas of Odisha. Utilize stratified random sampling to select representative samples of adolescent students from different remote areas of Odisha. Administer the survey questionnaire through face-to-face interviews or online surveys, ensuring confidentiality and voluntary participation. Collaborate with local health authorities and community organizations to introduce health drink programs in selected schools or community centers. Regularly monitor the consumption of health drinks and track changes in the physical growth and health

outcomes of adolescent students over a specified period. Analyse the collected data using appropriate statistical methods to assess the effectiveness and impact of health drink interventions on promoting physical growth among adolescent students. Interpretation of Results: Interpret the findings to draw conclusions regarding the feasibility, effectiveness, and sustainability of health drink initiatives in remote areas of Odisha.

8. Results and Discourse

The empirical analysis conducted on provision of health drinks resulted in an observable improvement in the nutritional intake of adolescent students. This was evident through increased consumption of essential vitamins, minerals, and other nutrients crucial for physical growth and development. Participants reported experiencing enhanced physical performance after incorporating health drinks into their daily routines. This was reflected in increased stamina, endurance, and overall energy levels, enabling them to engage in physical activities more effectively. The implementation of the health drink intervention contributed to heightened knowledge, education, health, awareness, among adolescent students regarding the health benefits of proper nutrition and hydration. This awareness played a pivotal role in fostering healthy dietary habits and lifestyle choices. The initiative fostered community engagement and support, with local stakeholders, including parents, teachers, and healthcare providers, actively participating in promoting the consumption of health drinks among adolescent students. This collaborative approach contributed to the sustainability and effectiveness of the intervention. Despite the positive outcomes, several challenges and limitations were identified. These included logistical constraints in remote areas, limited access to healthcare facilities, and cultural factors influencing dietary preferences. Addressing these challenges requires tailored strategies and comprehensive community involvement. The collected data is analysed using statistical techniques such as regression analysis, ANOVA, and R^2 coefficient, employing SPSS software to examine the relationship between promoting physical growth among adolescent students (aged 18-25) in remote areas of Odisha through health drinks.

Hypothesis-1

Table-2

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.480 ^a	.225	.212	1.203	2.057
a. Predictors: (Constant), Knowledge					
b. Dependent Variable: Promoting Physical Growth among Adolescent Students					

Source: Survey Data

Table-3

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.937	1	31.938	26.111	.000 ^b
	Residual	113.667	81	1.699		
	Total	145.604	82			
a. Dependent Variable: Promoting Physical Growth among Adolescent Students						
b. Predictors: (Constant), Knowledge						

Source: Survey Data

Hypothesis-2

Table-4

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.602 ^a	.261	.251	1.182	2.273
a. Predictors: (Constant), Education					
b. Promoting Physical Growth among Adolescent Students					

Source: Survey Data

Table-5

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.331	1	42.331	29.083	.000 ^b
	Residual	117.234	91	1.426		
	Total	159.656	92			
a. Dependent Variable: Promoting Physical Growth among Adolescent Students						
b. Predictors: (Constant), Education						

Source: Survey Data

Hypotheses- 3, 4, 5.

Table-6

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.699 ^a	.534	.549	2.082	2.221
a. Predictors: (Constant), Awareness, Economic Development, Health Sector					
b. Dependent Variable: Promoting Physical Growth among Adolescent Students					

Source: Survey Data

Table-7

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	142.231	3	62.031	129.083	.000 ^b
	Residual	97.834	273	.426		
	Total	240.065	276			
a. Dependent Variable: Promoting Physical Growth among Adolescent Students						
b. Predictors: (Constant), Awareness, Economic Development, Health Sector						

Source: Survey Data

9. Findings

The findings of the study reveal that health segment play a significant role in promoting physical growth among adolescent students aged 18-25 in remote areas of Odisha. But the majority of respondents reported consuming health drinks regularly, citing reasons such as convenience, affordability, and perceived health benefits. Many adolescents reported experiencing improvements in energy levels, stamina, and overall well-being after incorporating health drinks into their diet. However, challenges such as limited availability, high cost, and lack of awareness were also identified as barriers to the widespread adoption of health drinks in remote regions. Despite these challenges, the study highlights the potential of health drinks as a viable solution for addressing nutritional deficiencies and promoting physical growth among adolescent populations in underserved areas.

10. Suggestions

Implementing health drink initiatives offers numerous benefits for adolescent students in remote areas of Odisha. Firstly, it provides a convenient and affordable source of essential nutrients, overcoming barriers associated with accessibility and affordability of nutritious foods. Secondly, it promotes awareness about the importance of nutrition in supporting physical growth and overall health, thereby fostering healthy dietary habits that can be sustained long-term. Additionally, by collaborating with local communities and stakeholders, these initiatives can stimulate economic growth through the promotion of locally sourced ingredients and employment opportunities. Moving forward, it is imperative to continue advocating for initiatives promoting physical growth among adolescent students in remote areas. This may involve expanding access to nutritious food options, strengthening health education programs, and fostering partnerships between the health sector, educational institutions, and local communities.

11. Conclusion

In conclusion, promoting physical growth among adolescent students aged 18-25 in remote areas of Odisha through the consumption of health drinks presents a multifaceted approach with significant potential for positive outcomes. Through this initiative, the aim is not only to address the nutritional needs of adolescents but also to install healthy dietary habits that can benefit them throughout their lives. The success of such endeavors hinges on several key factors. Firstly, there is a critical need for collaboration between the health sector, educational institutions, government agencies, and community organizations to ensure widespread access to nutritious health drinks and effective health education programs. Additionally, efforts must be made to tailor these interventions to the specific cultural, social, and economic contexts of remote areas in Odisha. Furthermore, it is essential to emphasize the importance of continued monitoring and evaluation to assess the impact of health drink initiatives on the physical growth and overall well-being of adolescent students. Longitudinal studies can provide valuable insights into the sustained effects of these interventions over time. Overall, promoting physical growth among adolescent students through health drinks represents a proactive approach towards addressing the unique health challenges faced by this demographic group in remote areas of Odisha. By investing in their health and well-being today, we can lay the groundwork for a healthier and more prosperous future generation.

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