

Nutritional Status in Rural Adolescent Girls through Nutrition Education Intervention

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Abstract

this abstract emphasizes the importance of addressing the nutritional challenges faced by adolescent girls in rural areas. These girls play a crucial role in community well-being, but often struggle with poor nutrition, impacting their health and development. To achieve sustainable development goals, the abstract suggests the need for targeted nutrition education programs designed specifically for these girls. Such initiatives can empower them with the knowledge to make better dietary choices, ultimately improving their health and creating opportunities for a better future. The research highlights the benefits of integrating nutrition education into rural development and public health strategies, aiming to enhance the overall well-being and empowerment of rural adolescent girls.

Keywords: Nutrition education, health disparities, dietary habits, community intervention, empowerment, malnutrition, public health.

Introduction:

Nutritional status plays a pivotal role in the overall well-being and development of adolescent girls, particularly in rural settings where access to proper nutrition and education may be limited. The transition from childhood to adolescence is a critical period marked by rapid physical, cognitive, and emotional changes, making it imperative to address the nutritional needs of this demographic. In many rural communities, adolescent girls face unique challenges, including inadequate dietary practices, limited awareness of nutritional requirements, and restricted access to diverse and nutrient-rich foods ⁽¹⁾.

This research aims to explore the impact of nutrition education interventions on the nutritional status of adolescent girls in rural areas studying in both private and government school. By existing synthesizing. research papers and studies, this comprehensive review seeks to identify key patterns, successes, and challenges associated with implementing nutrition education programs in these settings. Understanding the current state of nutritional knowledge and

practices among rural adolescent girls is crucial for designing effective interventions that can bridge existing gaps and promote sustainable improvements in their nutritional status.

Methodology:

Locale of the study: The study was conducted in Prayagraj (Allahabad) district, Uttar Pradesh, chosen for its distinct nutritional status and demographic characteristics.

Sample Selection: Government schools and private schools were thoughtfully selected within the district, forming the basis for the study's sample. A random sample size of 400 adolescent girls was meticulously drawn, ensuring a balanced representation with 50 participants from each school.

Development of tool: For the data collection process, comprehensive questionnaires were meticulously developed. These included a background information proforma, a nutritional assessment proforma, and a robust nutritional knowledge questionnaire. To assess dietary patterns, we adeptly integrated food frequency questionnaires and 24-hour dietary recall methods, which were further customized to suit the specific study objectives ⁽²⁾.

Reliability and Validation: To ensure the reliability and validity of our data collection instruments, rigorous measures were employed. A pilot study was thoughtfully executed to validate the questionnaire's effectiveness and suitability for the study's objectives.

Variable Measurement: Throughout the research process, meticulous categorization of variables was carried out, primarily encompassing background information, dietary assessment, and nutritional knowledge. This allowed for a structured and systematic analysis of the collected data.

Data Collection: The data collection process was executed both before and after the nutrition education intervention. During this phase, anthropometric measurements, dietary practices, and nutritional knowledge were systematically assessed, providing a comprehensive view of the participants' nutritional status.

Nutrition Intervention Package: The core of our intervention lay in a carefully designed 10-day nutrition education program. This program encompassed a range of instructional materials, including enlightening PowerPoint presentations, and engaging videos. These educational resources were meticulously crafted to cover a diverse array of topics related to nutrition and health, ensuring an effective and engaging learning experience.

Post-Intervention Data Collection: Subsequent to the intervention, we diligently conducted post-intervention data collection to evaluate the impact of our nutrition education program. We assessed changes in nutritional knowledge, dietary practices, and nutrient intake among the participants, providing valuable insights into the effectiveness of our intervention.

Data Analysis: The data analysis strategy was both robust and insightful. It encompassed various statistical techniques, including percentage and frequency calculations, descriptive analysis for key variables, paired t-tests to discern changes over time and cross-tabulation to identify associations between variables. The significance level was judiciously set at $p < 0.05$, ensuring the rigor of our findings.

Result and Discussion

This section presents a comprehensive overview of the background information of the adolescent girls participating in the study. This information encompasses key demographic factors such as age, religion, type of family, type of house, family income, and type of diet. These insights provide essential context for understanding the diverse characteristics of the study participants.

Table 1.1 Background information of the respondents

Variables	Categories	Respondents	
		f	%
Age	13-15 years	200	50.00
	16-17 years	200	50.00
Religion	Hindu	390	97.5
	Muslim	10	2.5
Type of family	Joint family	202	50.5
	Nuclear family	198	49.5
Type of house	Own	356	89.0
	Rented	44	11.0
Family income*	Upper lower income Group (\leq 25000)	265	66.3

	Middle Income Group (` 25001- (`1 lakh)	130	32.5
	High Income Group (<(`1 lakh)	5	1.3
Type of diet	Vegetarian	156	39.0
	Non-vegetarian	118	29.5
	Ovo-vegetarian	126	31.5

*Kuppuswamy socio-economic status scale (2022)

Age: The breakdown of the respondents' age group distribution is provided in Table 4.1. Fifty percent of the participants belonged to the 16–17 age range. 13 to 15 years old account for half of the total responders.

Religion: Majority of the respondents were Hindu (97.5%), followed by Muslim which accounted for only 2.5 per cent. It was also observed that none of the adolescent girls of other religions like Sikh, Jain etc. were found to be the part of the study.

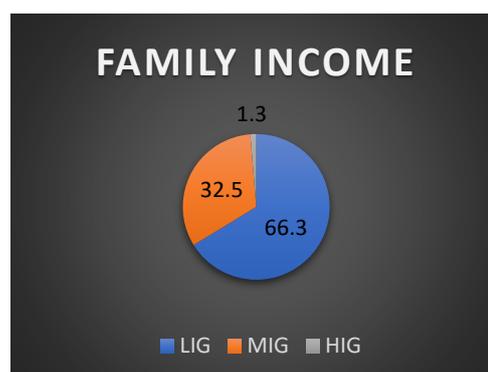
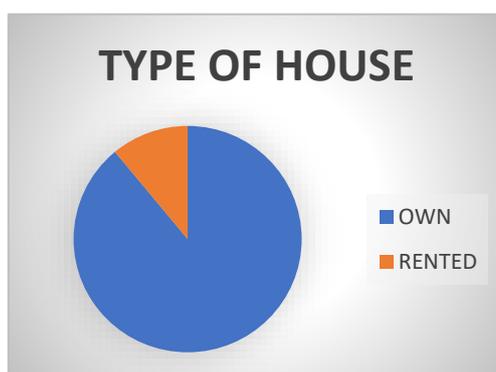
Type of family: Regarding type of family, majority (50.5%) of the subjects were from joint family and 49.5 per cent of them were from nuclear family (Table 4.1).

Type of house: The bulk of the teenage girls (89% of them) were found to be living in their own homes. Merely 11% of the participants were residing in rental housing. (Table 4.1).

Family income: According to Kuppuswamy scale (2022), economic status of the subjects was grouped into three categories. Majority of the subjects belonged to low-income group (66.3%). 32.5 per cent of the respondents were from middle-income group. Only 1.3 per cent were from high income families having a monthly income of >1 lakh.

Type of diet: Table 4.1 shows that 39% of the participants identified as vegetarians. Merely 29.5% of the teenage girls were non-vegetarians, while 31.5% were ovo-vegetarians. A study

on the food patterns of teenage females residing



in the Chiraigaon area of Varanasi. The results showed that among the subjects, 29.26% were egg eaters, 21.85% were non-vegetarians, and 48.89% were vegetarians. These results are relatively consistent with those of the present statistics, which indicate that vegetarians made up the majority of respondents, followed by ovo-vegetarians and non-vegetarians⁽³⁾.

Fig 4.1: Family income and type of family of the respondents

Impact of nutrition education

Table 4.2 Knowledge about general health and diet (Government school)

n=200

Questions	13-15 years			16-17 years		
	Pre f (%)	Post f (%)	Gain in knowledge f (%)	Pre f (%)	Post f (%)	Gain in knowledge f (%)
General health and diet	29 (29.00)	59 (59.00)	30 (30.00)	33 (33.00)	74 (74.00)	41 (41.00)
Nutritional guidelines to prevent malnutrition	35 (35.00)	85 (85.00)	50 (50.00)	29 (29.00)	83 (83.00)	54 (54.00)
Importance of physical activity	5 (5.00)	76 (76.00)	71 (71.00)	33 (33.00)	86 (86.00)	53 (53.00)
Knowledge regarding exercises to decrease over-nutrition problems	6 (6.00)	59 (59.00)	53 (53)	16 (16.00)	73 (73.00)	57 (57.00)
Nutritional deficiency disorders	12 (12.00)	58 (58.00)	46 (46.00)	13 (13.00)	71 (71.00)	58 (58.00)

According to WHO (2011^a), health is defined as a complete state of well-being whether physically, mentally, socially, and emotionally. Table 4.2 (a) highlighted the gain in knowledge post nutrition education intervention. It was observed that regarding the general health and diet, the gain in knowledge was 30 per cent in the age group of 13- 15 years while 41 per cent of the respondents of age group 16-17 years were aware about the meaning of being healthy post intervention. A study also stated that adolescent girls view health in many ways, and for the majority of them, a comprehensive understanding of wellness is still unclear. Since they learn best when they are taught in basic simple concepts, the word "health" is the easiest for them to understand⁽⁴⁾.

India is nowadays battling with triple burden of malnutrition i.e., obesity, malnutrition, and micronutrient deficiencies. Major gaps in our understanding of the different nutrition concerns

affecting adolescents continue, despite significant steps to reduce undernutrition and overweight, including a renewed focus on anemia among adolescent girls⁽⁵⁾. It was observed that prior to intervention only 35 per cent of the respondents belonging to the age of 13-15 years were aware about the concepts of malnutrition and the guidelines they should follow while in the age of 16-17 years, only 25 per cent were aware. Table 4.2 (a) indicated that post intervention 85 per cent respondents of age group 13-15 years and 54 per cent of the respondents of 16-17 years shows a gain in knowledge.

Staying active and independent can help you remain strong, healthy, and independent. The prevention of health problems and strokes is greatly aided by exercise. Exercise and physical activity can strengthen our muscles and bones while lowering stress and anxiety levels and boosting happy hormones, self-esteem, and mental power. As per WHO (2011^a), adolescents aged between 13-19 years should do at least 60 minutes per day of moderate-to-vigorous intensity, physical activity, across the week. The pre intervention knowledge regarding importance of physical activity of age group 13-15 and 16-17 years was 5 and 33 per cent respectively. An increase in the knowledge regarding this was observed post intervention. Good habits, such as exercise, a healthy diet, knowledge regarding rich food sources, consumption of healthy foods is likely to bring many benefits & reducing risks for various later life diseases⁽⁶⁾.

The pre knowledge level regarding nutritional deficiency disorders shows that in the age group of 16-17 years the gain in knowledge is high when compared to 13-15 years. The pre and post knowledge in the age group of 13-15 years is 12 per cent and 58 per cent respectively. Likewise, the pre and post intervention knowledge in the age group of 16-17 years is 13 per cent and 71 per cent respectively. The gain in knowledge of 13-15 years and 16-17 years is 46 per cent and 58 per cent respectively.

In 2006, a study to evaluate the impact of nutrition education on the knowledge, food consumption patterns, and serum retinol concentrations of 229 teenage schoolgirls, aged 15-19. At baseline, a baseline assessment of nutrition, food consumption patterns, and serum retinol concentration was conducted. Four distinct methods of reinforcement, interactive group discussions, and lectures on nutrition education were all included in the intervention. Following a ten-week intervention, knowledge, food consumption patterns, and serum retinol concentrations were evaluated again. A significant increase in knowledge ($P < 0.001$) and consumption of local foods rich in vitamin A was the outcome of the educational intervention.

The proportion of participants exhibiting low levels of serum retinol ($<20\mu\text{g/dL}$) declined from 17% to 4.8%. The effect of nutrition education on serum retinol concentration was highly significant ($P<0.001$) in subjects with baseline serum retinol concentrations below $20\mu\text{g/L}$ ^(7,8).

In order to educate teenage girls about nutrition, a video film was created as part of a study. It was discovered to be highly successful in instructing and altering their nutritional knowledge about vitamin deficiencies, their prevention, and their treatment⁽⁹⁾.

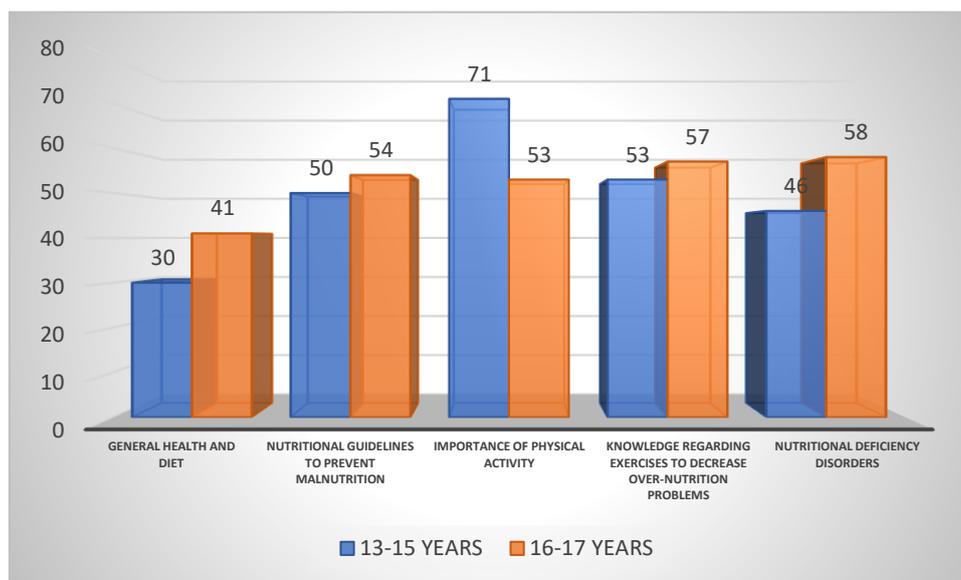


Fig 4.2: Gain in knowledge about general health and diet (Government school)

Table 4.2 (b): Knowledge about general health and diet (Private school)

n=200

Questions	13-15 years			16-17 years		
	Pre f (%)	Post f (%)	Gain in knowledge f (%)	Pre f (%)	Post f (%)	Gain in knowledge f (%)
General health and diet	39 (39.00)	79 (79.00)	40 (40.00)	38 (38.00)	84 (84.00)	46 (46.00)
Nutritional guidelines to prevent malnutrition	36 (36.00)	92 (92.00)	56 (56.00)	31 (31.00)	93 (93.00)	62 (62.00)
Importance of physical activity	15 (15.00)	76 (76.00)	71 (71.00)	33 (33.00)	86 (86.00)	53 (53.00)
Knowledge regarding exercises to decrease over-nutrition problems	6 (6.00)	39 (39.00)	33 (33)	26 (26.00)	93 (93.00)	67 (67.00)

Questions	13-15 years			16-17 years		
	Pre f (%)	Post f (%)	Gain in knowledge f (%)	Pre f (%)	Post f (%)	Gain in knowledge f (%)
Nutritional deficiency disorders	8 (8.00)	48 (48.00)	40 (40.00)	18 (18.00)	81 (81.00)	63 (63.00)

It was observed that regarding the general health and diet, the gain in knowledge was 40 per cent in the age group of 13- 15 years while 46 per cent of the respondents of age group 16-17 years were aware about the meaning of being healthy post intervention. It was also inferred that prior to intervention only 36 per cent of the respondents belonging to the age of 13-15 years were aware about the concepts of malnutrition and the guidelines they should follow while in the age of 16-17 years, only 33 per cent were aware. Table 4.2 (b) indicated that post intervention 92 per cent respondents of age group 13-15 years and 93 per cent of the respondents of 16-17 years shows a gain in knowledge. The pre knowledge level regarding nutritional deficiency disorders shows that in the age group of 16-17 years the gain in knowledge is high when compared to 13-15 years. The pre and post knowledge in the age group of 13-15 years is 8 per cent and 48 per cent respectively. Likewise, the pre and post intervention knowledge in the age group of 16-17 years is 18 per cent and 81 per cent respectively. The gain in knowledge of 13-15 years and 16-17 years is 40 per cent and 63 per cent respectively.

The nutrition education intervention leads to the conclusion that effective knowledge education plays a significant role in promoting nutritional knowledge. This study demonstrates how educational initiatives can raise people's understanding of nutrition. Since these teenage girls will eventually become mothers, it is crucial for them to understand nutrition and health. The findings indicate that prior to the implementation of the nutrition education intervention, adolescents lacked a basic understanding of nutrition. Adolescent girls' knowledge of nutrition and health showed improvement after the intervention. Thus, by implementing different nutrition programmes at the school level, we can improve the teenage girls' understanding of nutrition and provide them with a perspective that will enable them to raise a healthy future generation without endangering their own physical well-being⁽¹⁰⁾. Educational institutions are an effective and efficient medium for delivering nutrition education courses because they can reach a large number of adolescents at once and provide a great learning environment⁽¹²⁾.

To sum up, nutrition-based education interventions are essential for improving the knowledge of adolescent girls living in rural areas. These interventions have a positive effect on the lives of these girls and their communities by enabling them to make informed decisions, encouraging healthy eating habits, preventing nutritional deficiencies, and enhancing general well-being^(11,14).

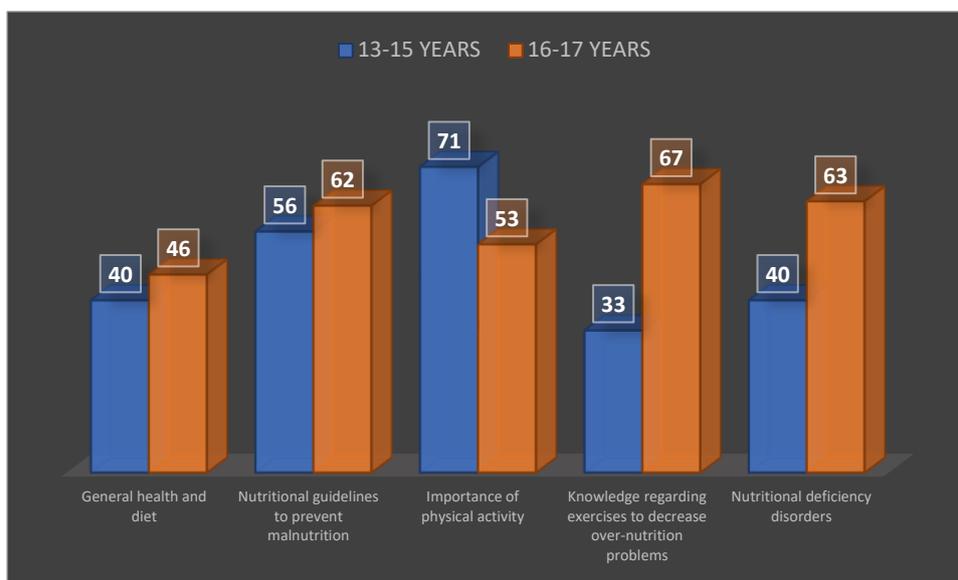


Fig 4.3: Gain in Knowledge about general health and diet (Private school)

Conclusion

By shedding light on the existing state of nutritional knowledge and practices among rural adolescent girls and the impact of nutrition education interventions, this research aims to contribute to the development of targeted strategies that can effectively address the nutritional challenges faced by this vulnerable demographic⁽¹³⁾. Ultimately, the goal is to empower these young girls with the knowledge and skills necessary to make informed dietary choices, promoting not only their immediate well-being but also laying the foundation for a healthier and more prosperous future.

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