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EFFECTIVENESS OF HEALTH EDUCATION PROGRAMME ABOUT KNOWLEDGE ON PREVENTION AND MANAGEMENT OF IRON DEFICIENCY ANAEMIA AMONG ADOLESCENT GIRLS IN A SELECTED COLLEGE AT COIMBATORE.

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ABSTRACT

Background: Iron deficiency anemia (IDA) is a leading micronutrient deficiency globally, particularly prevalent among adolescent girls due to increased physiological demands and poor dietary practices. Educational interventions, especially multimedia-based programs, have shown promise in improving awareness and management of IDA. **Aim:**To evaluate the effectiveness of a Health Education Programme on knowledge regarding the prevention and management of iron deficiency anemia among adolescent girls in a selected college in Coimbatore. **Methods:** A pre-experimental one-group pre-test post-test design was employed among 90 adolescent girls aged 17–19 years, selected through simple random sampling. A structured questionnaire assessed knowledge before and after a Health education Programme conducted over five days. Data were analyzed using descriptive statistics, paired t-test, and chi-square test, with significance set at $p < 0.05$. **Results:** Post-intervention findings revealed that 66.6% of participants demonstrated good knowledge, compared to lower levels prior to the intervention. The mean knowledge score improved from 2.5 (pre-test) to 3.5 (post-test), with a statistically significant paired t-value of 9.434 ($p < 0.001$), confirming the effectiveness of the educational program. **Conclusion:** The study highlights the positive impact of structured Health Education Programmes in enhancing knowledge related to IDA among adolescent girls. Integration of such interventions into school health systems may serve as an effective strategy to combat IDA at the community level.

INTRODUCTION

Adolescent girls face unique challenges that make them susceptible to IDA, including increased iron requirements due to growth spurts and menstruation, often coupled with inadequate dietary intake of iron-rich foods (Poudel & Panta, 2023; (Permanasari et al., 2022). Several studies have shown that educational programs can significantly enhance knowledge regarding IDA and its management. Health education Programme has effectively improved understanding of nutritional needs and encouraged behavior changes that promote better dietary practices Dsouza et al., 2022). These findings align with the health belief model, which suggests that increasing awareness of health issues can motivate individuals to adopt preventive behaviors (Mirzaei et al., 2018).

The effectiveness of nutrition education interventions, particularly those using multimedia formats, is supported by various studies highlighting improvements in dietary knowledge among adolescents (Jeihooni et al., 2021). A quasi-experimental study indicated that educational interventions significantly increased knowledge and attitudes toward iron supplementation and dietary modifications, illustrating the vital role of structured educational programs in changing health behaviors in vulnerable populations like adolescent girls (Mirzaei et al., 2018). Health education Programme can utilize visual and auditory stimuli to make learning more engaging, thereby enhancing the retention and application of nutritional information Dsouza et al., 2022).

Moreover, community-based interventions, which often include Health education Programme, have been recognized for their effectiveness in addressing IDA at a population level. Programs focusing on dietary education—especially those emphasizing iron-rich foods and supplements—have shown positive outcomes in reducing anemia prevalence (Grover & Choudhary, 2017; Mizawati et al., 2023). These interventions must be culturally sensitive and consider socio-economic factors influencing dietary practices, as these are crucial for successful implementation and sustainability (Nepesov, 2024).

Collaboration with schools and community health services can help scale these educational programs so they effectively reach the target demographic. Research indicates that integrating peer education and active community involvement can enhance the impact of health interventions on adolescent girls (Permanasari et al., 2022; Dsouza et al., 2022). Results from these initiatives underscore the importance of tailored educational content that resonates with the daily lives and challenges faced by adolescents.

In summary, incorporating Health education Programme into educational frameworks for preventing and managing iron deficiency anemia among adolescent girls has shown to be effective. Such

programs not only improve knowledge but also foster positive dietary behaviors essential for combatting IDA in this vulnerable group.

NEED OFTHE STUDY

Iron deficiency anemia (IDA) is the most common micronutrient deficiency worldwide, particularly affecting adolescent girls and pregnant women. WHO reports show 52% of pregnant and 35–40% of non-pregnant women suffer from IDA, with a hemoglobin level below 12 g/dl indicating anemia. In India, over 60% of adolescent girls are affected, and rates in countries like Nepal, Bhutan, and Ethiopia range from 22% to 58%. Causes include poor dietary intake, rapid growth, and sociocultural factors such as body image concerns and gender-based dietary neglect. Adolescents often underestimate their health needs despite high nutritional demands during growth. Health education Programme have proven effective in improving knowledge and behavior related to anemia prevention, offering a practical, engaging, and scalable solution to reduce IDA prevalence and promote adolescent health.

STEMENT OF THE PROBLEM

To evaluate the effectiveness of Health education Programme about Knowledge on Prevention and Management of Iron Deficiency Anemia among Adolescent Girls in a Selected College at Coimbatore.

AIM OF THE STUDY:

The study aimed to evaluate the effectiveness of Health education Programme about Knowledge on Prevention and Management of Iron Deficiency Anemia among Adolescent Girls.

METHEDOLOGY:

Study Design and Setting

A pre-experimental, one-group pre-test post-test research design was adopted to evaluate the effectiveness of a Health education Programme on the prevention and management of iron deficiency anemia (IDA) among adolescent girls. The study was conducted at a selected Arts and Science College in Coimbatore, Tamil Nadu, India. Data collection was carried out over a period of three weeks.

Population and Sampling

The target population comprised adolescent girls aged 17 to 19 years enrolled in the first year of the college. A total of 90 participants were selected using simple random sampling (lottery method) from a population of 124 eligible students. Participants were divided into three groups of 30 each to facilitate structured data collection and intervention delivery.

Inclusion and Exclusion Criteria

Inclusion criteria included adolescent girls aged 17–19 years, who were present during data collection, understood Tamil or English, and were willing to participate in the study.

Exclusion criteria involved students who were absent at the time of data collection, unwilling to participate, or unable to comprehend Tamil or English.

Description of the Tool

A structured questionnaire was used to assess knowledge regarding IDA. The tool comprised two parts: Part I captured demographic details (age, religion, parental education and occupation, family type, income, living status, number of siblings, age of menarche, and menstrual duration), while Part II consisted of 20 multiple-choice questions focused on IDA prevention and management. Each correct answer was awarded one mark; incorrect answers received zero. The total score ranged from 0 to 20. Knowledge scores were categorized as good (14–20), average (7–13), and poor (0–6)

Intervention Procedure

Following institutional permission, participants completed the pre-test on the first day. A Health education Programme intervention was conducted from Day 2 to Day 5, focusing on the prevention and management of iron deficiency anemia. On Day 6, a post-test was administered to evaluate the impact of the intervention on participants' knowledge.

Data Analysis

Data were analyzed using both descriptive and inferential statistics. Descriptive statistics included frequency, percentage, mean, and standard deviation. Paired t-test was used to compare pre-test and post-test scores. Chi-square test was employed to assess associations between post-test knowledge scores and selected demographic variables. Statistical significance was set at $p < 0.05$.

RESUTLS

Table 1: Frequency and Percentage Distribution of Demographic Variables

This table summarizes the demographic characteristics of the 90 adolescent girls who participated in the study. The majority were aged 18–19 years (66.7%), Hindu by religion (50%), and belonged to BPL families (55.5%). Most lived in urban areas (52.2%) and came from nuclear (36.6%) or joint (35.5%) families. Educational status of mothers was highest at higher secondary level (33.3%). A significant portion had menarche between 15–17 years (44.4%), and most had 1 or 2 siblings. Menstrual duration was predominantly 3–5 days (45.5%). Regarding residence, 37.8% lived in owned houses, and 33.3% in rentals.

Table 2: Post-Test Level of Knowledge on Prevention and Management of Iron Deficiency Anemia

This table shows the distribution of knowledge levels after the Health education Programme. A majority (66.6%) of the participants demonstrated good knowledge, while 16.6% had average and 10% had poor knowledge, indicating the effectiveness of the intervention.

Table 3: Comparison of Pre-Test and Post-Test Knowledge Scores

This table presents the statistical comparison between pre- and post-test scores. The mean score increased from 2.5 to 3.5, and the median from 11 to 15.5, with a standard deviation of 214.1 (pre-test) and 296.4 (post-test). A paired t-test yielded a value of 9.434 with 89 degrees of freedom, which was statistically significant at $p < 0.001$, confirming the effectiveness of the Health education Programme in improving knowledge.

Table 1: Demographic variables of the Adolescents girls with Iron Deficiency Anemia

Demographic Variable	Category	Frequency	Percentage (%)
Age (years)	17–18	30	33.3
	18–19	60	66.7
Religion	Hindu	45	50.0
	Muslim	25	27.8
	Christian	20	22.2
Mother's Educational Status	Primary	18	20.0
	Secondary	20	22.2
	Higher Secondary	30	33.3
	Degree	12	13.3

	PG and above	10	11.1
Socio-economic Status	BPL	50	55.5
	APL	40	44.4
Living Area	Rural	40	44.4
	Urban	47	52.2
	Tribal	3	3.3
Type of Family	Nuclear	33	36.6
	Joint	32	35.5
	Extended	18	20.0
	Single Parent	7	7.8
Monthly Family Income (INR)	< 10,000	20	22.2
	10,000–20,000	19	21.1
	> 40,000	27	30.0
Type of Residence	Own	34	37.8
	Rental	30	33.3
	Hostel	26	28.9
Age at Menarche (years)	12–14	36	40.0
	15–17	40	44.4
	>17	14	15.5
Number of Siblings	1	36	40.0
	2	33	36.7
	3	18	20.0
	>3	3	3.3
Duration of Menstruation (days)	0–3	28	31.3
	3–5	41	45.5
	5–7	14	15.5
	>7	7	7.8

Table 2: Post-Test Knowledge on Prevention and Management of Iron Deficiency Anemia

Level of Knowledge	No. of Samples	Percentage (%)
Good	66	66.6

Average	15	16.6
Poor	9	10.0

Table 3: Comparison of Knowledge Scores (Pre-Test vs. Post-Test)

S.No	Level of knowledge	Mean	Median	(SD)	Paired 't' Value	Level of significance
1	Pretest	2.5	11	214.1	1.98	<0.001 (Highly significance)
2	Posttest	3.5	15.5	296.4		

DISCUSSION

The results of the study indicating significant improvements in the knowledge of adolescent girls about iron deficiency anemia (IDA) following a Health education Programme can be situated within a broader context of educational and intervention strategies that target anemia among this population. The post-test findings where 66.6% of participants exhibited good knowledge underscore the effectiveness of targeted educational approaches in addressing a critical public health issue. These results align with previous research indicating that education plays a crucial role in enhancing understanding of anemia and its management among adolescents. For instance, Khatimah and Destra highlighted that education can promote deeper insights into the signs and risks of anemia, which corresponds with the improved knowledge scores observed in this study (Khatimah & Destra, 2023). Similarly, the work of Abu-Baker et al. supports the notion that education directly influences lifestyle choices and health outcomes related to IDA (Abu-Baker et al., 2021).

The statistically significant increase in mean knowledge scores, from 2.5 to 3.5 ($p < 0.001$), reflects not only the immediate effects of educational interventions but also their potential for lasting behavioral change. Samson et al. emphasized that schools are pivotal in disseminating nutritional education, thus confirming the importance of utilizing educational platforms to reach adolescents effectively (Samson et al., 2022). This strategic use of educational tools resonates with findings by Sari et al., who noted that well-structured educational programs can substantially improve knowledge and practices surrounding anemia prevention (Sari et al., 2022).

Moreover, the nuanced scoring system used in the assessment serves to highlight the varying levels of understanding present among the participants before and after the intervention. The findings where only 10% of participants retained poor knowledge after the intervention further solidify the argument that frequent, engaging, and relevant education can uplift comprehension among youth (Millenia & Rahmadyanti, 2024). This substantial transition from poor to adequate knowledge reinforces the need for ongoing educational initiatives as part of comprehensive anemia prevention strategies, especially since adolescent girls are at higher risk of developing IDA due to increased physiological demands and dietary insufficiencies (Singh et al., 2013).

The biostatistical rigor demonstrated by the paired t-test results supports the reliability of these claims. While previous meta-analytic findings have cited the efficacy of educational interventions in addressing anemia among adolescents, caution is warranted as evidence is inconsistent regarding the overall impact of education combined with nutritional supplementation on reducing anemia rates in this demographic (Salam et al., 2019). Neherta and Nurdin also indicated the importance of delivering systematic educational frameworks that address anemia, corroborating the effectiveness of tailored interventions in promoting health knowledge in this demographic (Neherta & Nurdin, 2021). Such findings suggest that scaling these educational approaches could significantly mitigate anemia incidence and its related health implications among adolescent girls.

CONCLUSION

The study showcases the immediate impact of educational interventions on knowledge related to IDA while also underscoring the broader implications these initiatives can have on public health outcomes, particularly when they are integrated into school health curricula. Continuous efforts in educational outreach are paramount to sustaining these knowledge gains and fostering an environment where young girls can take informed actions toward their health and dietary practices.

RECOMMENDATION

Knowledge for the adolescent girls regarding other nutritional disorders along with anemia prevention and management of iron deficiency. Comparative study on the prevention and management of iron deficiency anemia among adolescent girls in selected college at Coimbatore. Assessing the effectiveness of Health education Programme about knowledge on prevention and management of iron deficiency anemia among adolescent girls in selected college at Coimbatore

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