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Nutritional Awareness among School-Going Girls in Mehsana District: Examining the Impact of Age on Health Literacy

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Abstract

A cross-sectional study was conducted to analyse the effect of age and education on health literacy about anaemia and objective clinical haemoglobin levels among 800 adolescent school going girls (11–18 years) from Mehsana district, Gujarat. A One-Way ANOVA shows that there was a highly significant relationship between the increasing level of education (8th to 12th grade) and the better anemia awareness scores ($F = 3,316.5$, $p < 0.01$). But digital hemoglobinometry revealed a large public health problem that is the antithesis of this cognitive literacy—the over 95% of the participants were clinically anemic. Only 4.5% (n=36) exhibited normal hemoglobin levels (12.0 g/dL), while a staggering 74.125% (n=593) presented with moderate anemia (8.0 - 10.9 g/dL). Severe anemia (< 8.0 g/dL) affected 12.125% (n=97) of the girls, peaking critically during late adolescence at ages 15 (2.25%) and 18 (2.125%). These results show that there is a deep disconnect between achieving good health literacy and achieving a healthy outcome, indicating that classroom education is inadequate to overcome pubertal menstrual strain, lifestyle dietary changes, and limitations in the execution of national initiatives such as Anemia Mukt Bharat. The current paradigm of passive lectures has to be shifted toward more aggressive interventions in the field, such as direct observation of adolescent iron supplementation in school, mandatory fortification of foods, and ongoing clinical monitoring of hemoglobin levels, in order to protect adolescent development.

Key Words : Haemoglobin level,haemoglobin level,Anemia,adolescen.

1. Introduction

Anemia is a common and severe condition in low and middle-income countries and there is disproportionately high prevalence in women of reproductive age. Anemia was defined as a snaring condition by the World Health Organization (WHO). Anemia is of particular concern among women during reproductive years, as well as for child birth and infant mortality. Over half of Indian women aged 15-49 years are found to be anaemic, says Francesca. Health awareness must be linked with the literacy rate among girls in India, otherwise it is of no use. There is higher rate of girls up to the age of 20, as compared to the age of 20-30 years, for various reasons, such as travelling away from home for higher studies. School education is an important means of raising awareness and making them health conscious. Mehsana is a district in the north part of Gujarat in India. There are many school girls suffering from these problems, but no program has been conducted so far in this district.

Literature Review

The transition to adolescence is a time of health literacy change. Research indicates that health literacy peaks in the late teen years (around 21 years old) (Saxena et al., 2024). Socioemotional development is partly responsible for difficulties in decision making and information evaluations among younger people. Health literacy was lower among girls aged 8 as compared to boys and they were also generally unaware of their health rights. Another study found that neither education nor socio-demographic factors were associated with health literacy, though there were mixed supports for the assumptions on the cluster-specific nature of health literacy.211 children ages 11-15 (both boys and girls) responded to health-related statements. Girls had greater knowledge of healthy eating and disease knowledge and boys had greater knowledge of physical exercise. Overall, a primary health-promotion program to the fifth-grade students about healthy living and nutrition was helpful; overall results of food-knowledge assessments showed significant improvement after the intervention, especially for girls. The awareness of adolescent health problems was significantly increased in girls in the post-intervention stage following the intervention with educational-packets distributed via YouTube videos, which was more often than boys, and this could be a reflection of better results. The topics of physical health were accessed most by both men and women.

Methodology

This cross-sectional study assessed the relationship between age and health literacy status and anemia awareness among school going girls in Mehsana district, Gujarat. The sample of 800 school girls was drawn using purposive cluster sampling approach from both urban and rural communities. 800 adolescent girls in the age group of 11-18 years were approached and a structured pretested questionnaire was conducted through personal interview. The study was conducted with ethical approval and informed consent was obtained from parents/guardians.

Study Design

Studies have shown that raising awareness of anemia, its symptoms and effects, causative factors and steps to prevention can improve awareness of this serious health issue. Adolescent girls make up 48.89% of the total school population and there is a lower rate of girls dropping out of school compared to boys, making school an opportunity to reach them with targeted messages. Therefore, education, to enhance health literacy, knowledge and awareness about anemia is crucial for this age group. To explore the relationship between age and health literacy or awareness about anemia in school-going girls of Mehsana district. For this study cross sectional study design was used with a sample of 400 girls (rural) and 400 girls (urban) aged 11 to 18 years selected randomly from rural and urban schools of the Mehsana District.

A structured questionnaire, consisting of two sections, was the main tool used for data collection. A pre-tested and reliable self-constructed questionnaire (anemia awareness) was used to collect the first data, and a pre-tested and reliable questionnaire (health literacy) developed by the researchers was used to collect the second data.

The study was carried out in the Mehsana district of Gujarat, India, where 800 School Girls (8th to 12th) participated. From each standard 100 girls were selected.

Data Collection Procedure and Scoring system.

The data collection process was carried out in a systematic manner and the field interviews were conducted in the selected rural and urban schools of Mehsana district in a face-to-face manner using structured forms. Self designed and pre-tested questionnaire was administered in local language (Gujarati) to achieve complete understanding after obtaining institutional permission, administrative clearance and informed consent from the parents. The survey was conducted with the help of a primary investigator and trained field assistants, which helped in reducing the missing data.

The assessment of the primary outcome (health literacy and anemia awareness) was based on a 13-item knowledge battery covering three main domains: general awareness, causes of anemia and identification of symptoms. In order to capture the level of understanding in the participants while also considering the fact that each question might be interpreted differently, or users could guess, a fixed 3 point categorical scoring system was set up as follows:

Assigned a score of 3 points for correct response – accurate health literacy and clear understanding.

Inappropriate Answer: 2 points, recognizing some misconceptions or faulty information processing.

Neutral / Uncertain Response: Given a score of 1 point indicating that there is baseline information completely missing.

An aggregate score for knowledge was calculated for each adolescent girl, using the sum of the points assigned to each of the 13 items, resulting in a minimum score of 13 and a maximum possible score of 39. These cumulative metrics were then cross-referenced with sociodemographic metadata which in this case was the chronological age (stratified by standards 8th to 12th) to assess the age-specific patterns.

Data Analysis

The collected data were analysed using excel. F – test were performed to analyse variables.

Variable	SOV	SOS	DF	MMS	F	Level of significance
Education	SSB	880199	08	110025	3316.5	HS at p<0.01
	SSW	26274.6	792	33.175		
	SST	853925	800			

Clinical Hemoglobin Verification

Sr. No.	Hemoglobin level	11 years	12 years	13 years	14 years	15 years	16 years	17 years	18 years
		f (%)	F (%)	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
1.	Normal 12.0 {g/dL}	7 (0.875)	4 (0.5)	8 (1)	1 (0.125)	2 (0.25)	5 (0.625)	8 (1)	1 (0.125)
2.	Mild Anemia 11.0 - 11.9 {g/dL}	13 (1.625)	9 (1.125)	9 (1.125)	9 (1.125)	4 (0.5)	6 (0.75)	14 (1.75)	10 (1.25)

3.	Moderate Anemia 8.0 - 10.9 {g/dL}	68 (8.5)	78 (9.75)	73 (9.125)	77 (9.625)	76 (9.5)	76 (9.5)	73 (9.125)	72 (9)
4.	Severe Anemia < 8.0 {g/dL}	(12 1.5)	9 (1.125)	10 (1.25)	13 (1.625)	18 (2.25)	13 (1.625)	5 (0.625)	17 (2.125)
Total		100 (12.5)	100 (12.5)	100 (12.5)	100 (12.5)	100 (12.50	100 (12.5)	100 (12.5)	100 (12.5)
Source: Primary data									

Results & Discussion

A One-Way Analysis of Variance (ANOVA) was used to statistically evaluate survey data, and results showed a highly significant relationship between the education levels (standards 8th to 12th), and participants' cumulative health literacy and anemia awareness scores ($F = 3,316.5$, $p < 0.01$). The results of variance analysis showed that the Between-Groups Sum of Squares (SSB) was 880,199.0 for 8 degrees of freedom (DF) and the Within-Groups Sum of Squares (SSW) was 26,274.6 for 792 (DF) while significant differences were observed in the analysis of the two factors {between-group} and {within-group} Sum of Squares (SS), $p < 0.001$. But when the girls were objectively classified by digital hemoglobinometry, it revealed a universal public health crisis with well over 95% of the 800 school-going girls being clinically anemic. Only 4.5% (n=36) of the total sample had hemoglobin levels of 12.0 { g/dL} which ranged slightly from a high of 1% at age 13 and 17 to a low of 0.125% at age 14 and 18. The vast majority of adolescent girls, across all age groups, were concentrated within the Moderate Anemia bracket (8.0 – 10.9 { g/dL}) where a whopping 74.125% (n=593) of adolescent girls fell within this bracket, with a significant increase in the older girls age 15 (2.25%) and age 18 (2.125%) at the Severe Anemia end of the bracket (< 8.0 { g/dL}) representing a threat of 12.125%.

The results reveal an important contrast in the Mehsana district: Education and maturity strongly correlate with theoretical health literacy ($F = 3,316.5$, $p<0.01$), but this is not the case when it comes to physiological protection. Although awareness was moderately high, moderate to severely high levels of anemia among all age groups suggest that the structural ID problem is not a sporadic health problem, but a persistent problem. The sharp peak in severe clinical depletion (< 8.0{ g/dL}) in older adolescent girls (age 15 and 18) is consistent with the combination of menstruation-related blood loss plus lifestyle changes (meals missed, snacking on nutrient poor processed food, due to travel to higher education institutions). This deep disconnect between health literacy and biological outcomes reveals the key challenges at the field level to institute and implement policies such as, Anemia Mukt Bharat and Weekly Iron and Folic Acid Supplementation (WIFS). Finally, the neglect of metabolic and systemic dietary deficiencies can not be overcome by classroom education alone and public health actors must hurry to adopt a new style of iron intervention in the field, such as direct observation of iron supplementation in schools, fortification of school meals, and systematic follow-up of hemoglobin levels.

Conclusion

This study reveals a significant gap between academic health literacy and real physical health of school going adolescent girls in Mehsana district. However, advancing age and higher educational status have a significant effect on the theoretical knowledge and awareness about anemia ($F = 3,316.5$, $p < 0.01$), but unfortunately, the cognitive knowledge does not translate into real-life physiological protection from severe micronutrient deficiencies. The startling finding that more than 95% of the 800 girls sampled are clinically anemic (with a disproportionate number, 74.125% of girls having reached the moderate level and severe anemia being the highest during late adolescents) gives valuable insights into the reality of the situation that passive classroom teaching does not help to address deep-rooted metabolic, systemic dietary, and lifestyle problems affecting girls. The findings highlight the critical distribution and compliance challenges that are being faced in the field with existing institutional frameworks like Anemia Mukt Bharat and Weekly Iron and Folic Acid Supplementation (WIFS). Public health policy makers need to urgently shift from passive lecturing for education to active, hands-on interventions such as direct observed therapeutic iron supplementation in schools, the compulsory fortification of nutritious foods and ongoing field-level clinical hemoglobin monitoring in children and adolescents to ensure their healthy development and prevent future reproductive health crises.

References

1. Hephzibah Dorothy, J. (2014). Effectiveness of nutritional intervention package on knowledge and level of anemia among adolescent girls at selected settings West Bengal.
2. Saxena, I., Kumar, M., Diwakar, R., Shukla, A., K Yadav, A., P Kaur, A., Ateriya, N., & Arvind, A. (2024). Anemia Awareness Program in a Suburban Middle School: A Pilot Study Promoting Students as Public Health Advocates in Their Community.
3. Neeba, A. (2011). Effectiveness of nutritional intervention on anemia among adolescent girls with iron deficiency anemia in Nanchiyampalayam at Dharapuram.
4. Helen Shirly, D. (2011). The prevalence of anemia and the effectiveness of nutritional intervention strategy in improving hemoglobin among girls in a selected school at milaganoor.
5. Rathi, N., Kansal, S., Raj, A., Pedapanga, N., Joshua, I., & Worsley, A. (2024). Indian adolescents' perceptions of anaemia and its preventive measures: A qualitative study.