Original Research Article

A STUDY OF DIETARY INTAKE OF ADOLESCENT GIRLS & PREVALENCE OF ANEMIA

Bhooshan Surjuse[1]

[1]*Professor, Department of Community Medicine, Smt. Sakhubai Narayanrao Katkade Medical College & Research Center, Kokamthan, Ahilyanagar, Maharashtra, India*

ABSTRACT

Background: Adolescence isthe time between childhood and maturity. There are times throughout adolescence when mental, physical, psychological, and cognitive growth happens quickly. The body's ability to operate physically, psychologically, and physiologically may be directly impacted by suboptimal nutritional status, which includes both excessive and insufficient calorie intake as well as micronutrient deficiencies. Adolescent female anaemia is thought to be mostly caused by nutrient deficits. The current study was organised. to investigate food history, demographic trends, and their effects on the incidence of anaemia in teenage females.

Materials and Methods: Present cross-sectional prospective study was carried out between 2023 and 2024. 50 teenage females between the ages of 10 and 19 were included in the current study. A questionnaire was used to collect their height, weight, BMI, and comprehensive food history. Hb values below 8 g/dL were categorised as severe anaemia, 8–10.99 g/dL as moderate anaemia, 11–11.9 g/dL as mild anaemia, and ≥12 g/dL as normal according to the WHO classification.

Results: Mean ± SD of Age (Years) amongst Hb ≥12 gm/dl group was found as 14.73 ± 2.81& amongst Hb <12 gm/dl group found as 14.88±3.29. Mean ± SD of BMI amongst Hb ≥12 gm/dl group is 21.02±1.40 & amongst Hb <12 gm/dl group is 21.42±0.45. amongst various dietary habits no significant correlation with occurrence of anemiafound.

Conclusion: In conclusion, to avoid anaemia, effective nutritional treatments such as food fortification and supplements should be offered.

Keywords: Adolescence, anaemia.

INTRODUCTION

Adolescenceisthe time between childhood and maturity. There are times throughout adolescence when mental, physical, psychological, and cognitive growth happens quickly. Adolescent productivity, problem-solving skills, and academic success are all improved by optimal cognitive development. These changes in development have an impact on teenagers' dietary requirements.[1] A person's health state as it is impacted by their food intake and utilisation is known as their nutritional status. Anthropometric measurements of body composition, biochemical measurements of serum protein, micronutrients, and metabolic markers, as well as evaluation of changing nutritional requirements and social factors that may impact sufficient nutrient intake, can all be used to evaluate nutritional status. The body's ability to operate physically, psychologically, and physiologically may be directly impacted by suboptimal nutritional status, which includes both excessive and insufficient calorie intake as well as micronutrient deficiencies.[2] Thus, nutritional status may be utilised to predict long-term quality of life, health, growth, and the risk of chronic illnesses. Adolescent female anaemia is thought to be mostly caused by nutrient deficits.[3] A low haemoglobin concentration brought on by deficits in haemopoietic nutrients such iron, folate, and vitamin B12 is known as nutritional anaemia.[4] In 2017, 1.9 billion people worldwide were impacted by this serious public health issue. With 58.2 million years lived with a handicap, it is also one of the main causes of impairment. Despite being widespread worldwide, it

is more noticeable in low- and middle-income nations. It mostly affects children, teenage girls, nursing women, and women of reproductive age in India5. There are 243 million teenagers in India, making up 21.4% of the total population. A distinct stage of life, adolescence (10–19 years) is characterised by rapid physical, cognitive, and psychosocial development6. Poor cognition, attention, memory, and academic performance, low immunity, recurrent infections, poor motor development outcomes, and irregular menstruation are the main health effects of anaemia in teenagers. Teenage females are given preference since they could be about to become mothers. Additionally, the onset of menstruation during the adolescent stage causes women's bodily iron reserves to be depleted.[7] In Asia, anemia is the second leading cause of maternal morbidity. In addition, pregnancy and delivery problems are the top cause of mortality for females between the ages of 15 and 19. Particularly disadvantaged on the social and economic fronts, tribal populations are frequently denied access to quality education. Undernutrition, including anaemia, is frequently caused by their normal sociocultural attitudes, cuisine, and dietary habits with insufficient nutrient consumption.[9] Numerous studies have shown that tribal adolescents have a high frequency of anaemia.[10-13] Fatigue, weakness, and shortness of breath are the most prevalent physical symptoms of anaemia. These symptoms can cause sadness, worry, and a worse quality of life, making it difficult for women to carry out daily tasks and job. Additionally, headaches, pale complexion, irritability, and a fast pulse can all be symptoms of anaemia. The current study was organised. to investigate food history, demographic trends, and their effects on the incidence of anaemia in teenage females.

Aims & Objectives

To studydemographic pattern, dietary history & its impact on prevalence of anaemia amongst adolescent girls

MATERIALS AND METHODS

Present cross-sectional prospective study was carried out between 2023 and 2024. Permission from the institutional ethics committee was obtained before the current study started. Fifty teenage females who met the requirements for inclusion and exclusion were enrolled. Every participant received an explanation of the study, and their signed informed permission was acquired

Study participants

Participants from tribal villages Zari, Navapada, Beherpada, Kohalpada, Umburne, Vadpada, Ambas, Khobale, Kondurpada, Sagpada, Khairipada of Peth, Taluka, Nasik.

Inclusion Criteria

The following criteria were used for eligibility of study

1. population/community-based study
2. conducted among adolescent girls (10–19 years)
3. the prevalence of anemia can be estimated & estimation of hemoglobin should be based on an objective method
4. data obtained in India.

Exclusion Criteria

1. Participants on any medication &not willing to participate
2. adolescents withspecific conditions such as HIV/tuberculosis, chronic kidney disease, etc. because they might showhigher than expected prevalence and thus, selection bias

Procedure

For every participant, demographic information such as age, height, weight, and BMI was recorded. All participants were asked to complete a questionnaire about their detailed food history,and a complete blood count (CBC) was recommended for the measurement of haemoglobin (Hb). Hb values below 8 g/dL were categorised as severe anaemia, 8–10.99 g/dL as moderate anaemia, 11–11.9 g/dL as mild anaemia, and ≥12 g/dL as normal according to the WHO classification14.

Statistical analysis

SPSS software, version 20, was used to conduct the statistical analysis. The data are presented as frequency in percentages N (%) and mean ± SD. The data was evaluated using the χ^2-test and the unpaired t test. If the P value was less than 0.05, statistical significance was presumed.

RESULTS

As shown in [Table 1], Mean ± SDof Age (Years) amongst Hb ≥12 gm/dl group was found as 14.73 ± 2.81& amongst Hb <12 gm/dl group found as 14.88±3.29. Mean ± SD of BMI amongst Hb ≥12 gm/dl group is 21.02±1.40 & amongst Hb <12 gm/dl group is21.42±0.45.

Table 1: Demographic & clinical history

Sr No	Variables	Hb ≥12 gm/dl n=41 (82 %)	Hb <12 gm/dl n=9 (18 %)	t value	P value
1	Age (Years)Mean ± SD	14.73± 2.81	14.88±3.29	0.14	0.88 (NS)
2	Height (cm)Mean ± SD	148.41±7.79	140.94±4.23	-2.77	0.007 (S)
3	Weight (kg)Mean ± SD	46.35±5.17	42.61±3.00	-2.08	0.04 (S)
4	BMIMean ± SD	21.02±1.40	21.42±0.45	0.84	0.40 (NS)

Table 2: Dietary habits

Sr No	Variables	Hb ≥12 gm/dl n=41 (82 %)	Hb <12 gm/dl n=9 (18 %)	OR	P value
1	Vegetarians	8 (16 %)	3 (6 %)	2.06	0.37 (NS)
2	Non-vegetarians	33 (66 %)	6 (12 %)	0.48	0.37 (NS)
3	Green leafy vegetableintake	41 (82 %)	9 (18 %)	-	-
4	Fruits intake	7 (14 %)	2 (4 %)	1.38	0.71 (NS)
5	Junk foods intake	8 (16 %)	2 (4 %)	1.17	0.85 (NS)
6	Tea/coffee intake	36 (72 %)	8 (16 %)	1.11	0.92 (NS)

As found in [Table 2], amongst various dietary habits no diet showed significant correlation with occurrence of anemia.

Table 3: Severity of anemia

Sr No	Severity	Number of cases n	Percentage %
1	Mild (Hb 11 to 11.99)	4	10 %
2	Moderate (Hb 8 to 10.99)	31	75 %
3	Severe (Hb <8)	6	15 %

4 (10 %) cases were having mild, 31 (75 %) moderate & 6 (15 %) as severe anemia.

Table 4: Different Variables associated with anaemia

Sr No	Variables	Hb ≥12 gm/dl n=41 (82 %)	Hb <12 gm/dl n=9 (18 %)	RR	P value
1	Consumption of IFA	0 (0 %)	0 (0 %)	-	-
2	Deworming in last 6 months	0 (0 %)	0 (0 %)	-	-
3	Required hospitalization in last 6 months	3 (6 %)	0 (0 %)	-	-
4	Suffered from malaria in last 6 months	1 (2 %)	0 (0 %)	-	-
5	Suffered from bloody diarrhea in last 6 months	1 (2 %)	0 (0 %)	-	-
6	Previously diagnosed sickle cell disease	2 (4 %)	0 (0 %)	-	-
7	Use footwear during outdoor activities	33 (66 %)	6 (12 %)	0.56	0.35 (NS)
8	Hand washing before food and after toilet	37 (74 %)	5 (10 %)	0.23	0.008 (S)
9	Having sign and symptoms of worminfestation	8 (16 %)	0 (0 %)	-	-
10	Suffering from menstrual irregularities	4 (8 %)	0 (0 %)	-	-

As shown in [Table 4], Hand washing before food and after toilet was the commonest practice followed by majority.
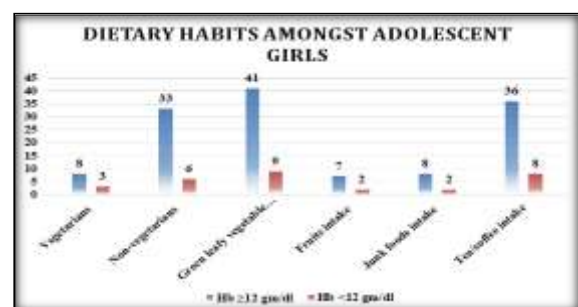
Figure 1: Dietary habits

DISCUSSION

Anaemia, The most common nutritional condition in the world, disproportionately affects people in underdeveloped countries and is more common in teens. Children have a window of opportunity during adolescence to improve their nutritional health. 50 teenage females between the ages of 10 and 19 were included in the current study. A questionnaire was used to collect their height, weight, BMI, and comprehensive food history. Every piece of information gathered was collated and evaluated for the presence of anaemia. The current study revealed that the Mean ± SD of Age (Years) amongst Hb ≥12 gm/dl group was found as 14.73 ± 2.81 & amongst Hb <12 gm/dl group found as 14.88±3.29. Mean ± SD of BMI amongst Hb ≥12 gm/dl group is 21.02±1.40 &amongst Hb <12 gm/dl group is 21.42±0.45. The majority of participants (82.1%) in related research by Marina Aferiba Tandoh et al. (2021) had a normal body mass index (BMI). The current study found no significant link between the prevalence of anaemia and the dietary habits. In present study 4 (10 %) cases were having mild, 31 (75 %) moderate & 6 (15 %) as severe anemia. More over half (50.3%) of the teenage girls in related research by Marina Aferiba Tandoh et al. (2021) were anaemic. Of the 76 individuals who were anaemic, 13.1% were severely anaemic, 39.5% were moderately anaemic, and 47.4% were mildly anaemic. In their study, Chaturvedi D et al. (2017) discovered that 32% of individuals often drank tea or coffee after meals, 36% regularly ate fruits or fruit juices, 39% regularly ate green leafy vegetables, and, shockingly, 78% regularly consumed junk food.

Conceptual framework for factors associated with anaemia among adolescentwomen in India.
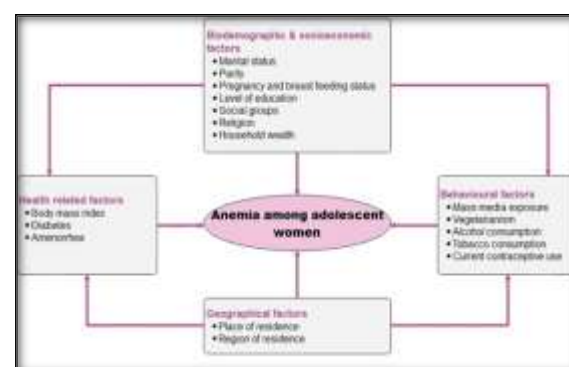
CONCLUSION

In conclusion, the frequency of anaemia in teenage girls is a public health concern since it affects their development, productivity, and academic achievement. To avoid anaemia, effective nutritional treatments such as food fortification and supplements should be offered.

REFERENCES

1. M. Massey-stokes, "Adolescent nutrition: needs and recommendations for practice," /e Clearing House: A Journal of Educational Strategies, Issues and Ideas, vol. 75, no. 6, p. 286, 2002.
2. FAO, Nutritional Status Assessment and Analysis: Nutritional Status and Food Security, Food and Agriculture Organization, Rome, Italy, 2007
3. D. Nelima, "Prevalence and determinants of anaemia among adolescent girls in secondary schools in yala division Siaya district, Kenya," Universal Journal of Food and Nutrition Science, vol. 3, no. 1, pp. 1–9, 2015
4. H. A. Alaliwi, G. A. Abukashba, H. M. Alhussain et al., "Nutritional anaemia types and management," /e Egyptian Journal of Hospital Medicine, vol. 70, no. 6, pp. 906–911, 2018.
5. Assessing the iron status of populations: including literature reviews. Report of a Joint World Health Organization/Centers for Disease Control and Prevention Technical Consultation on the Assessment of Iron Status at the Population Level, Geneva, Switzerland, 6-8 April 2004. World Health Organization 2007 Available at https://apps.who.int/iris/handle/10665/75368 (accessed on 20 Jul 2021)[Google Scholar]
6. Stoltzfus RJ. Iron deficiency: Global prevalence and consequences. Food Nutr Bull. 2003;24 (4 Suppl):S99-S103.
7. Adolescent and young adult health. Available at www.who.int/news-room/fact-sheets/det ail/adolescents-health-risks-and-solutions (accessed on 11 Jul 2021)[Google Scholar]
8. Anaemia. Available at www.who.int/westernpacific/health-topics/anaemia (accessed on 20 Jul 2021)
9. Bhatia V, Sahoo DP, Parida SP. India steps ahead to curb anemia: Anemia Mukt Bharat. Indian J Community Health. 2018;30:312–6.
10. Rokade S, Mog M, Mondal NA. Nutritional status among tribal women in Maharashtra, India: Spatial variations and determinants. Clin Epidemiol Glob Health. 2020;8:1360–5.
11. Chauhan S, Kumar P, Marbaniang SP, Srivast S, Patel R. Prevalence and predictors of anaemia among adolescents in India: An exploration from Understanding the lives of adolescents and young adults survey. Res Square. 2021
12. Bhise RM, Wadekar KB, Tarpe VC. Prevalence of anemia in the children of tribal ashram schools in Ahmednagar district of Maharashtra. Int J Dev Sustain. 2013;2:298–305.
13. Rao V, Aggrawal M, Yadav R, Das S, Sahare L, Bondley M, et al. Intestinal parasitic infections, anaemia and undernutrition among tribal adolescents of Madhya Pradesh. Indian J Community Med. 2003;28:26–9.
14. WHO, Nutrition anaemia: Tools for E9ective Prevention and Control, World Health Organization, Geneva, Switzerland, 2017.
15. Marina Aferiba Tandoh, Abigail Owusuaa Appiah and Anthony Kwaku Edusei. Prevalence of Anemia and Undernutrition of AdolescentFemales in Selected Schools in Ghana. Journal of Nutrition and Metabolism Volume 2021, Article ID 6684839, 5 pages
16. Chaturvedi D, Chaudhuri PK, Priyanka, Chaudhary AK. Study of correlation between dietary habits and anemia among adolescent girls in Ranchi and its surronding area. Int J Contemp Pediatr 2017;4:1165-8.