



Vol. 6 Issue No. 2, April-June 2024

e-ISSN 2456-7701

Journal of Science and Technological Researches

A Peer Reviewed Journal

Origin of Innovation

Domain: www.jstr.org.in, Email: editor@jstr.org.in

A REVIEW ON PREVALENCE OF ANEMIA IN RURAL ADOLESCENTS

Tanu Jain*

Department of Home Science, Dr. B.R. Ambedkar Government Degree College, Audenya Padaria,
Mainpuri, U.P. 205001

Email: jain.tanu25@gmail.com



Date of Received

4 June, 2024



Date of Revised

21 June, 2024



Date of Acceptance

29 June, 2024



Date of Publication

30 June, 2024

DOI Link : <https://doi.org/10.51514/JSTR.6.2.2024.37-41>



JSTR

"together we can and we will make a difference"

P-104, Premier Tower, Premier Orchard Colony, Near Peoples Mall, Bhanpur Road, Bhopal (M.P.), India- 462037
Domain: www.jstr.org.in, Email: editor@jstr.org.in, Contact: 09713990647

© JSTR All rights reserved

A REVIEW ON PREVALENCE OF ANEMIA IN RURAL ADOLESCENTS

Tanu Jain*

Department of Home Science, Dr. B.R. Ambedkar Government Degree College, AudenyaPadaria,
Mainpuri, U.P. 205001

Email: jain.tanu25@gmail.com

ABSTRACT

The present review describes the demographic profile, living practices, sanitation and hygiene conditions and nutritional status in relation to prevalence of anemia of rural adolescent girls and highlights the challenges and scope of improvement in their nutritional status to combat anemia.

The research papers, scrutinized for the same purpose were based on Indian and undeveloped and developing countries. Search engine Viz. Science direct, Research Gate, Pubmed, Google Scholar, Science.gov were utilized for collection of research papers and required data was employed for tabulation and discussion. The data says that most of the rural adolescent girls were from weaker economic section, living in poor hygienic conditions. Scarcity of proper source of drinking water enhances this condition. Most of the girls were documented as literate but not graduated. Studies mentioned that poor food and nutrient intake is one of the main reasons of anemia and other supporting factors like unhygienic conditions, unawareness towards healthy eating habits and lack of nutrition education also enhance this condition which leads malnutrition and further infection and other diseased conditions and repeats this vicious cycle. Government along with NGOs in every country is striving to rectify or reduce the prevalence of anemia through many programmes. Availability and affordability of grains and other food commodities may help in this regard. Production and consumption of low cost nutritious foods may help to improve nutritional status. Also, local and traditional recipes, prepared using staple crops, grains and vegetables may be supplemented with high protein, iron rich foods. Increase in adolescent literacy rate and awareness about nutrition may also help the rural adolescent girls to overcome the state of anemia.

Keywords: Adolescent girl, Anemia, Hygiene, Malnutrition, Public health, Sanitation, etc.

INTRODUCTION

Anemia is major public health problem globally and major vulnerable groups include 6-59 months old children, pregnant women and menstruating adolescent girls. Under developed and developing countries have the greatest burden of anaemia, particularly affecting illiterate populations living in poor households of rural areas. It is estimated that 40% of all children aged 6–59 months, 37% of pregnant women and 30% of women 15–49 years of age are affected by anaemia globally [1].

Anaemia is diagnosed based on blood haemoglobin concentrations falling below specified thresholds established based on age, sex, and physiological status. It is considered as a symptom of some underlying conditions within body (WHO). Various factors viz. nutrients deficiencies, inadequate diet, inadequate absorption of nutrients, infections and chronic diseases. Most common among all is iron deficiency anemia (IDA) which is responsible for half of the anemic population globally. Many direct and indirect factors are associated with it. But root cause of IDA in India is poor consumption, absorption and

nutrient retention of iron rich foods. Vitamin A, folate, vitamin B12 and riboflavin also play important role in the synthesis of haemoglobin and erythrocyte production. Anemia is prevalent in adolescence which is a transition from childhood to adulthood marked with rapid and intense physiological, psychological and sexual growth [2]. As a result, adolescents need more nutrients compared to adults. Adolescents with nutrition deficiencies are likely to face short physique, cognitive impairment, mental functioning and reduced immunity. Adolescent girls are more susceptible to infections, face difficulties in recovering from illnesses and surviving child birth in future or more likely to deliver low birth weight babies creating a vicious cycle. The consequences of anaemia can vary.

The treatment and prevention of anaemia depend on the underlying cause of the condition. Inclusion of iron and other nutrients like folic acid, vitamin B12, vitamin A rich food in daily diet and taking supplements can prevent anaemia. Consumption of diet rich in iron like lean red meats, fish, poultry, legumes, beans, fortified cereals and green leafy

vegetables can reduce anemia and help in improving blood in the body. Anaemia reduction is included as one of six World Health Assembly Global Nutrition Targets within the “Comprehensive implementation plan on maternal, infant and young child nutrition” [1]. The present review describes the demographic profile, living practices, sanitation and hygiene conditions, socioeconomic status, clinical and medical history and nutritional status in relation to prevalence of anemia of rural adolescent girls and highlights the challenges and scope of improvement in their nutritional status to combat anemia.

Table 1: Classification of anemia on the basis of severity (anemia cut-off levels)*

Age Group	Severity of Anemia (g/dl)		
	Mild	Moderate	Severe
10-11 years	11-11.4	8-10.9	<8
12-14 years	11-11.9	8-10.9	<8
Non Pregnant (≥15 years)	11-11.9	8-10.9	<8
Pregnant	10-10.9	7-09.9	<7
*WHO (2011) Classification of anemia			

METHODOLOGY

Various search engines like Science direct, Research Gate, Pubmed, Google Scholar, Science.gov were employed to select the research articles on prevalence of anemia among poor adolescent girls. Research papers based on national and international studies were collected and reviewed. All studies followed WHO (2011) guidelines (Table 1) to define severity of anemia..

Review based on national studies:

The studies were reviewed and tabulated highlighting the main factors associated with anemia in the Table 2.

A cross sectional comparative study conducted by Reddy and Chand [3] on prevalence of anemia and menstrual health problems among urban and rural adolescent girls of Siddipet district of Andhra Pradesh, India. The age group of adolescent girls was taken as 10 to 19 years old. The results stated that out of 180 rural adolescent girls, 158 (87.78%) girls were found anemic. Prevalence of anemia was found more in rural area (87.78%) as compared to urban area (67.78%). Significant association was found between anemia and the place of stay. Also the percentage of anemic adolescents was found high in 10 to 14 years of age group (46%) as compared to 15 to 19 years of age group (24%). Half of the rural anemic population was found to be underweight (50.41%) and interestingly one third (33.33%) of the rural anemic

population was found to be overweight. Most of the rural anaemic population started their menarche at the age of 12 followed by 13 years. Ironically indifference has been seen with the anemia and irregularity of menstrual cycles, as most of the anemic population was having their menstrual regularity but the length of the cycle was 21 to 35 days.

In another descriptive cross sectional study [4], conducted on adolescent girls (11 to 16 years) of rural area of Osmanabad, Maharashtra, prevalence of anemia was assessed and sociodemographic factors associated with anemia was enlisted. Prevalence of anemia was recorded as 67.36% and it was found significantly associated with mother's education and occupation. Surprisingly, dietary habits were not found associated with the prevalence of anemia.

Another study on prevalence, knowledge and related factors of anemia among school going 625 adolescent girls aged 11 to 19 years was conducted in the remote area of Western Rajasthan [5]. More than half of the population of adolescent girls was found anemic (56.32%). Out of which cases of mild, moderate and severe anemia were 29.12%, 22.24% and 4.96% respectively. Adolescent girls with lower socioeconomic status and aged between 11-14 years were found to be anemic as compared to other adolescent girls. Anemia was also found more in those girls who had their menstrual cycle less than 25 days. Improper diet and low iron levels were documented as the main causes of anemia. Most of the anemic adolescent girls faced weakness as one of the symptoms of anemia.

Similarly, community based cross sectional study on the prevalence of anemia among adolescent girls who had attained menarche was conducted in rural Haryana [6]. A total of 363 adolescent girls were selected through random sampling method and all the girls who had attained menarche (272) were included in the study. Most of the adolescent girls (67%) belonged to late adolescence (15-19 years) and middle and lower middle class. Most of the Mothers of the adolescent girls passed middle school (15%), followed by high school (11%). Only a few (3%) completed their graduation degree. 70% prevalence of anemia was found in age group of 10 to 14 years of adolescent girls while 72.5% prevalence of anemia was found in the age group of 15 to 19 years of adolescent girls. Overall 71.7 % of prevalence of anemia was recorded in rural Haryana. Out of them, cases of severe, moderate and mild anemia were observed as 4.8% 41.2% and 27.5% respectively. Mother's education was found to be significantly

associated with anemia present in adolescent girls. The study concluded that the prevalence of anemia was found high in adolescent girls who had attained menarche and mother's educational status may play a protective role on anemia among adolescent girls.

Status of International Studies:

A cross sectional study on prevalence of anemia among adolescent girls in rural and urban area of North Sumatera Indonesia [7] was conducted. Total samples of 300 girls aged 12 to 19 years were taken. Results mentioned that 30% of respondents were found anemic among them 13% adolescence was suffering from mild, 15% adolescence were suffering from moderate and almost 2% adolescent girls were suffering from severe anemia. Also study tabulated age wise severity of anemia among adolescent girls. It was found that more than 20% anemic adolescent girls belonged to the 13 to 15 years age group, followed by a 10 to 12 years of age group (4.6%). The study found that adolescent girls from rural backgrounds, experienced more anemia (17.3%) as compared to that of urban adolescent girls.

A cross sectional study by Regasa and Haidar [8] was conducted on anemia and its determinants in rural adolescent girls of Ethiopia. For the same purpose a total of 448 adolescent girls of age 10 to 19 years were selected through three stage random sampling technique. The overall prevalence of anemia was found to be 27% out of which 23% and 4% of adolescent girls had a mild and moderate degree of anemia respectively. Adolescent girls of 15 to 19 years of age were more likely to be anemic as compared to early adolescent girls of age 10 to 14 years.

A community based cross sectional study was conducted on prevalence of anemia among adolescent girls in three districts of Ethiopia by Gebreyesus et al. [9] to evaluate the magnitude of anemia among 10-19 years aged adolescents girls and guide the intervention modalities. The overall prevalence of anemia was found to be 31.6%. 27.2% of adolescent girls were suffering from mild anemia, followed by moderate anemia (4%). The study also found that the risk of anemia is higher among adolescent girls in their early adolescence period (10 to 14 years) and who lived in moderately food secured houses.

Another cross sectional study on prevalence of anemia and influencing factors with knowledge attitude and practice towards anemia among school going adolescent girls was conducted in rural Bangladesh [10]. A total of 422 adolescent, aged 10-19 years girls were randomly selected to find out the prevalence. Near about 40% of prevalence of anemia

was found out in the study which consisted approximately 34% of mild and 4% of moderate cases of anemia.

DISCUSSION

Anemia is a global public health problem. Not only developing and undeveloped but developed countries also struggling with the problem of anemia in every age group. Most vulnerable groups like children 5-59 months old, adolescent girls and pregnant women of urban and rural areas are facing the issues. Factors associated with anemia are age, living place, sanitation and hygiene practices, nutrition education, dietary practices, episodes of infections, socioeconomic status, education of mothers and their employment status, family members etc. Prevalence and higher degree of severity of anemia is found less in other countries as compared to India. Prevalence of anemia in various rural places of India is found more than 50% while these data is quite low in case of rural places of other countries. Factors associated with anemia also vary for India and other countries. Dietary habits, and average food intake are the two main causes of anemia among adolescent girls in India while in other countries lower education level of mothers, mothers' employment and lack of knowledge about anemia are the main causes along with poor sanitation and hygiene practices. Animal foods viz. flesh foods, fish, eggs are consumed by people on a regular basis in other countries. Micronutrient intake is also average. Quantity as well as quality of food is good as compared to Indian diet. Therefore, low intake of food is not main cause of anemia. In other countries, awareness among girls' mothers, education and personal hygiene and health are more important issues to be tackled. While, in India, malnutrition along with sanitation, recurrent cases of infection and parasitic infestation and loss of iron through menstrual flow are documented as main causes [11, 12]. Dual burden of malnutrition is seen in under developed and developed countries too along with India.

In India, many programmes based on anemia are being run by government at ground level. However, prevalence of anemia is still a major health problem. In India, nutrition education intervention programme along with demonstration of low cost recipes, prepared from easily available local and seasonal foods are run frequently for rural low socioeconomic status adolescent girls, pregnant women and mothers to combat anemia. Sanitation and hygiene program to reduce recurrent chances of infection and awareness programme are also conducted through many NGOs

and government organization. Grains, rice and other raw commodities are also provided on subsidized rates to lower section of society under many government programmes to uplift food and nutrient intake of people [13]. However, target is still way far and our efforts continue to eradicate anemia from India.

CONCLUSION AND RECOMMENDATION

Anemia is still a major health problem in many developing and underdeveloped countries including India. It is more prevalent in rural place as compared to urban place. Unemployment, poor educational level, low economic status, lack of resources, big family size, poor hygiene and unawareness are various factors associated with it. Apart from these factors, monthly blood loss and sometimes physiological conditions like pregnancy add in case of adolescent

REFERENCES

- [1]. World Health Organization. Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity (2011).
- [2]. Casey BJ, Duhoux S and Cohen MM. Adolescence: What do Transmission, Transition, and Translation have to do with it? *Neuron*. **67**(5):749-60 (2010).
- [3]. Reddy PL and Chand AA. Comparative study on prevalence of anemia and menstrual health problems among urban and rural adolescent girls. *International Journal of Advanced Community Medicine*. **3**(2): 14-21(2020).
- [4]. Mitkari K, Wadgave HV, Haralkar SJ. Anemia in school-going adolescent girls of age between 11 and 16 years in rural area – A cross-sectional study. *International Journal of Medical Science and Public Health*. **9**(9):508-513 (2020).
- [5]. Verma K, Baniya GC. Prevalence, knowledge, and related factor of anemia among school-going adolescent girls in a remote area of western Rajasthan. *J Family Med Prim Care*. **11**:1474-81 (2022).
- [6]. Subramanian M, Malhotra S, Kant S, et al. Prevalence of Anemia Among Adolescent Girls Residing in Rural Haryana: A Community-Based Cross-Sectional Study. *Cureus***14**(1): e21091 (2022).
- [7]. Lestari S, Fujiati II, Martina SJ et al. A Study of Anemia Prevalence and Dietary Habits among Adolescent Girls in Rural and Urban Area in North Sumatera, Indonesia. *Proceedings of the International Conference of Science, Technology, Engineering, Environmental and Ramification Researches (ICOSTEERR 2018) - Research in Industry* **4**: 652-665 (2018).
- [8]. Regasa RT and Haidar JH. Anemia and its determinant of in-school adolescent girls from rural Ethiopia: a school based cross-sectional study. *BMC Women's Health*. **19**:98 (2019).
- [9]. Gebreyesus SH, Endris BS, Beyene GT, Farah AM, Elias F and Bekele HN. Anaemia among adolescent girls in three districts in Ethiopia. *BMC Public Health*. **19**:92 (2019).
- [10]. Rahman MJ, Rahman MM, Sarker MHR, Kakehashi M, Tsunematsu M, Ali M, et al. Prevalence and influencing factors with knowledge, attitude, and practice toward anemia among school-going adolescent girls in rural Bangladesh. *PLoS ONE***19**(11): e0313071(2024).
- [11]. Anand T, Rahi M, Sharma P, Ingle GK. Issues in prevention of iron deficiency anemia in India, *Nutrition*, **30**(7-8):764-770 (2014).
- [12]. Natekar P, Deshmukh C, Limaye D, Ramanathan V, Pawar A. A micro review of a nutritional public health challenge: Iron deficiency anemia in India. *Clinical Epidemiology and Global Health*. **14**:100992 (2022).
- [13]. Sreedevi A. An overview of the development and status of national nutritional programs in India. *Journal of Medical Nutrition and Nutraceuticals*, **4** (1):5-13 (2015).

