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THE PREVALENCE, SOCIAL IMPACT, AND PRACTICAL SOLUTIONS FOR ANEMIA AMONG ADOLESCENT GIRLS IN SOUTH INDIA

Dr.Bindu I N[1], Dr.N. Karuppusamy[2], Dr.G. Gayathiri[3]*, Dr.T.Ravikumar[4]

[1]Professor Of O&G, Karuna Medical College ,Palakkad Chittor, Kerala
[2]Associate Professor Of Medicine , Government Medical College And Esi Hospital Coimbatore,
[3*]Associate Professor Of Pathology , Government Medical College And Esi Hospital Coimbatore,
[4]Professor Of Medicine , Government Medical College And Esi Hospital Coimbatore

***Corresponding Author:-** Dr.G. Gayathiri[3]
[*]Associate Professor Of Pathology , Government Medical College And Esi Hospital Coimbatore,

ABSTRACT

AIM OF THE STUDY

Anemia is the most common nutritional problem across globe especially among developing countries. The prevalance is much higher among females because of increased demand of iron during reproductive age group and low socioeconomic status mainly in developing countries. This study is to find out prevalence of anemia among adult females.

MATERIALS AND METHODS:

In this study a total number of 1500 adult female of age group 14 to 30 years were randomly selected in tertiary care medical college hospitals in Coimbatore Tamilnadu and palakkad, Kerala. Blood samples were collected and analyzed using automated hematology analyzer and peripheral smear of the same were made and examined under light microscope.

RESULTS :

This study shows overall prevalence of anemia was 84% of which majority were having moderate degree of anemia with 47 % followed by mild and severe with 24% and 23% respectively. Microcytic and hypochromic is the most common anemia by peripheral smear examination of the same which is mainly due to iron deficiency.

CONCLUSION:

There is a significant prevalence of iron deficiency anemia among female especially among women in child bearing age group. This indicates an urgent need for improving overall nutritional status among female and iron and folic acid and protein supplementation.

Keywords: Anemia, Hemoglobin , peripheral smear

INTRODUCTION

Anemia, a condition characterized by a deficiency in red blood cells or hemoglobin, is a significant public health concern, particularly among adolescent girls in India. With its immense population and diverse socio-economic landscape, India faces substantial challenges in addressing this issue. Anemia not only affects the overall health and well-being of these girls but also hampers their educational prospects and future productivity. Additionally, anemia among adolescent girls in India has profound social implications. This article aims to shed light on the prevalence, causes,

consequences, and potential practical solutions for anemia among adolescent girls in India, with a particular focus on its social impact.[1]

Prevalence of Anemia:
Anemia is alarmingly prevalent among adolescent girls in India. According to the National Family Health Survey (NFHS-4) conducted in 2015-16, nearly 53% of girls aged 15-19 suffer from anemia.[2] This high prevalence is attributed to several factors such as poor nutritional intake, inadequate iron absorption, and underlying health conditions like malaria, hookworm infections, and reproductive health disorders.

Causes of Anemia:
1. Nutritional Deficiencies: Insufficient intake of iron, folic acid, vitamin B12, protein and other essential nutrients contribute to anemia. Diets lacking in diversity, especially in rural areas, where staple food may not provide an adequate nutritional profile, are a major concern. The non stick cookware replaced conventional iron tawas also one of the reason .in one study the iron content food in villagers is only green chillies, not green leafy vegetables.

2. Poor Iron Absorption: Factors like low dietary diversity, high intake of phytates and tannins, and parasitic infections can inhibit iron absorption. Consuming iron-rich foods alongside vitamin C sources can enhance absorption, but such practices are not widespread. Consuming Tea before or after the food will considerably reduce the absorption of iron as per recent ICMR studies. many of them consuming only tea instead of food

3. Menstrual Blood Loss: Adolescent girls experience menstrual blood loss, which increases their iron requirements. Inadequate access to menstrual hygiene products, coupled with cultural taboos and limited knowledge about menstrual health, exacerbates the problem. They are not telling if there is heavy loss of blood or period lasting for more number of days to their parents to seek immediate medical help.

4. Hookworm Infections: Soil-transmitted helminth infections, particularly hookworm, are common in rural areas. These parasites consume blood, leading to iron deficiency and anemia.not using footwear in the farmlands , barefoot walking are the main reason for this
5. Failure to take adequate amount of iron tablets prescribed by physicians due to mild side effects like gastritis, diarrhea, constipation,Blackish discoloration of tongue and stools

Consequences of Anemia:
The consequences of anemia among adolescent girls in India are far-reaching and multifaceted, extending beyond health-related issues and impacting society as a whole.

1. Health Implications: Anemia affects physical growth and development, weakens the immune system, and increases susceptibility to infections. Fatigue, weakness, and difficulty in concentration are common symptoms, which can adversely impact school performance.

2. Education and Empowerment: Anemic girls are more likely to drop out of school or have poor attendance due to chronic fatigue, reduced cognitive function, and compromised learning abilities. This hampers their overall educational attainment and limits their potential for future opportunities. Lack of education perpetuates the cycle of poverty and disempowerment, affecting not only the individual but also the society at large.

3. Maternal and Child Health: Adolescent girls who become anemic during their reproductive years face increased risks during pregnancy, such as preterm birth, low birth weight, and maternal mortality. Anemia perpetuates a vicious cycle, passing on health vulnerabilities to future

generations. Ensuring the health and well-being of adolescent girls is crucial for breaking this cycle and improving maternal and child health outcomes.

4. Economic Burden: Anemia contributes to reduced productivity and increased healthcare costs. The long-term consequences can impair economic development by hindering the full potential of a large portion of the population. Addressing anemia and promoting the overall well-being of adolescent girls can lead to increased productivity, economic empowerment, and poverty reduction.[3]

Social Impact and Implications:
1. Gender Equality and Women's Empowerment: Anemia among adolescent girls exacerbates existing gender inequalities and poses a barrier to women's empowerment. By addressing anemia and ensuring equal access to education, healthcare, and opportunities, society can take a significant step towards achieving gender equality. Empowering girls with knowledge and skills will enable them to become active participants in decision-making processes and contribute to societal progress.

2. Breaking Stigma and Cultural Taboos: Anemia related to menstrual blood loss highlights the need to break stigma and cultural taboos surrounding menstruation. By promoting menstrual health awareness, providing access to menstrual hygiene products, and fostering open conversations, society can challenge deeply ingrained beliefs and empower girls to manage their menstruation with dignity. Breaking the silence around menstruation will enable girls to confidently pursue their education and aspirations.

3. Community Development and Well-being: The prevalence of anemia impacts entire communities and societies. By prioritizing the health and well-being of adolescent girls, communities can enhance overall development, as healthy and empowered girls grow up to become active contributors to their communities. Investing in the well-being of adolescent girls will lead to stronger communities, improved social cohesion, and sustainable development.

4. Social and Healthcare Infrastructure: Addressing anemia requires an investment in social and healthcare infrastructure. By strengthening primary healthcare systems, providing access to quality healthcare services, and promoting health education, society can create a robust foundation for addressing anemia among adolescent girls and improving overall population health. Enhancing the availability and accessibility of healthcare facilities, especially in rural and marginalized areas, will ensure that girls receive timely diagnosis, treatment, and ongoing support for anemia.

Practical Solutions for Addressing Anemia:

1. Nutritional Interventions:
- Promote dietary diversification and educate adolescent girls and their families about the importance of consuming iron-rich foods, such as green leafy vegetables, pulses, nuts, and fortified foods.
- Implement school-based nutrition programs that offer balanced meals and snacks to address nutritional deficiencies among students.
- Enhance access to safe drinking water and improve sanitation and hygiene practices to prevent parasitic infections.

2. Iron and Folate Supplementation:
- Develop and implement comprehensive iron and folate supplementation programs targeting adolescent girls in schools, communities, and healthcare facilities.

- Ensure regular distribution of iron and folate supplements, accompanied by monitoring and evaluation mechanisms to track compliance and effectiveness.
- Utilize existing platforms such as the Weekly Iron and Folic Acid Supplementation (WIFS) program to scale up coverage and reach a larger number of adolescent girls.

3. Menstrual Health Awareness and Support:
- Conduct comprehensive menstrual health education programs in schools, addressing menstrual hygiene practices, debunking myths, and promoting access to menstrual hygiene products.
- Establish menstrual hygiene management facilities in schools and public spaces, ensuring the availability of clean toilets, water, and affordable sanitary products.
- Learn from successful initiatives like the Puthygam Napkin Programme in Tamil Nadu to implement sustainable and culturally appropriate solutions for menstrual health.

4. Health Services Strengthening:
- Strengthen primary healthcare facilities, especially in rural areas, to provide timely diagnosis, treatment, and management of anemia among adolescent girls.
- Conduct regular health camps in schools and communities to facilitate early detection of anemia and provide necessary medical interventions.
- Collaborate with local healthcare providers and community health workers to ensure regular follow-up and support for girls with anemia.

5. Collaborative Efforts:
- Foster collaboration among government bodies, non-governmental organizations, healthcare providers, schools, parents, and community organizations to address anemia comprehensively.
- Encourage partnerships with international organizations, NGOs, and corporate entities to mobilize resources, expertise, and support for anemia prevention and control programs.
- Involve adolescent girls in the design and implementation of interventions, ensuring their voices

are heard and their needs are addressed. Empowering girls as agents of change will contribute to the sustainability and effectiveness of interventions.

WIFS and NDD Programmes in India

The Weekly Iron and Folic Acid Supplementation (WIFS) programme[4], implemented by the Government of India, has made significant progress in addressing anemia among adolescent girls. The program provides weekly iron and folic acid supplements to girls in schools and anganwadi centers. Through regular distribution and monitoring, WIFS has played a crucial role in increasing iron and folic acid intake, reducing anemia prevalence, and improving the overall health of adolescent girls. However, efforts should be made to further expand the coverage of the program, especially in remote and marginalized areas, to reach more girls in need.

The National Deworming Day (NDD) programme[5] is another important initiative that tackles the issue of parasitic worm infections, a leading cause of anemia. NDD involves the administration of deworming medication (albendazole) to school-aged children and adolescents. By conducting biannual deworming campaigns and raising awareness about the importance of deworming, the program has made significant strides in reducing the burden of worm infections and preventing anemia among adolescent girls. Continuous monitoring and evaluation, along with targeted interventions, are crucial to sustaining the impact of the NDD programme.

Puthygam Napkin Programme in Tamil Nadu [6]

Tamil Nadu has implemented a pioneering initiative called the Puthygam Napkin Programme to address menstrual health and hygiene among adolescent girls. The program focuses on promoting the use of affordable and eco-friendly menstrual hygiene products, primarily reusable cloth napkins. The initiative was launched by the Tamil Nadu government and has been implemented through schools, community centers, and self-help groups.

The Puthygam Napkin Programme provides training on menstrual hygiene management, production of cloth napkins, and distribution channels. By promoting the use of cloth napkins, the program addresses the lack of access to affordable menstrual products and reduces the stigma associated with menstruation. The program empowers girls by providing them with knowledge and skills related to menstrual hygiene and creating livelihood opportunities for women through the production and sale of cloth napkins. The Puthygam Napkin Programme serves as a successful model for other states in India to replicate and adapt according to their local contexts.

Table 1 Demographic features

S.No	Age	Weight			Education		Married		Children		Employed		Co morbidity	
		Normal	Underweight	Obese	>SSLC	<SSLC	yes	No	Yes	No	Yes	No	Yes	No
1	14-20	335	230	145	520	190	406	304	296	110	538	172	220	490
2	21-30	420	110	260	416	374	426	364	340	450	502	288	340	450
3														
	Total	755	340	405	936	564	832	668	636	560	1040	460	560	940

*Co morbidities hypothyroidism, menorrhagia, obesity, dental problems, gastric ulcer

Table 2:Prevalance of Anemia among Adolescent Female based on severity

Hemoglobin(gm/dl)	Grading of Anemia	Age of female				Total	
		14-20yrs		21-30yrs			
		No	%	No	%	No	%
<6.9	Severe	50	7.1	204	25.8	254	18
7-9.9	Moderate	355	50	491	62.1	846	57
10-11.9	Mild	236	33.3	68	8.6	304	19
>12	Normal	69	9.5	27	3.4	96	6
Total		710	100	790	100	1500	100
Chi square-73.47 p value = <0.000001							

Anemic subjects are classified based on peripheral examination. Out of 1404 Anemic patient 5 were normocytic normochromic anaemia, 1144 were microcytic hypochromic which is more common in this study and 244 was having dimorphic anemia(Table 3 & 4). A highly significant correlation (p <0.01) exist between age and hemoglobin level.

Table 3-prevalance of anemia in different age group

Age	No of female	No of female with anemia(<12%)
14-20	710	642
21-30	790	762
P value =0.005(<0.01)		

Table 4:classification of Anemia based on Peripheral smear

S.no	Age	No of Anemic subject	Type of Anemia based on Peripheral smear		
			Normocytic normochromic	Microcytic hypochromic	Dimorphic (Microcytic hypochromic &

					macrocytic)
1	14-20	642 (out of 710)	11	564	67
2	21-30	762 (out of 790)	5	580	177
Total		1404/1500	16	1144	244

Conclusion:

The prevalence of anemia among adolescent girls in India is not only a public health concern but also has significant social implications. Addressing anemia requires a comprehensive approach that includes nutritional interventions, supplementation programs, menstrual health awareness, healthcare services strengthening, and collaborative efforts. By implementing practical solutions such as the WIFS and NDD programmes at the national level and successful initiatives like the Puthygam Napkin Programme at the state level, India can make significant progress in combating anemia, improving health outcomes, empowering girls, and fostering social development. Continued efforts, along with collaboration between government bodies, healthcare providers, educational institutions, and community organizations, will be crucial in sustaining these programs and creating a brighter future for adolescent girls in India.

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