



Prevalence of Anemia among Adolescent Girls of Latur, Maharashtra

Gavhane Mahadev¹, Fere Swati^{1*}, Salunke Mohini², Wakure Balaji²

¹Shiv Chhatrapati Shikshan Santha's, Rajarshi Shahu Mahavidyalaya (Autonomous), Latur-413512.

² Vilasrao Deshmukh Foundation, Group of Institutions, VDF School of Pharmacy, Latur-413531.

(Received: 27 October 2023

Revised: 22 November

Accepted: 26 December)

KEYWORDS

Adolescence,
Anemia,
Haemoglobin,
Prevalence,
Maharashtra

ABSTRACT:

Anemia is a widespread nutritional issue that affects people all over the world. Due to their increased physical activity and fast development spurt throughout adolescence, adolescents require extra supplements and are at the greatest threat of developing nutritional anaemia. The purpose of this study was to determine the prevalence of anaemia in adolescent girls.

The purpose of this study was to determine the prevalence in adolescent girls between the ages of 17- 20. Age, menstruation history, and brief clinical information were recorded after obtaining the individuals' informed consent. Blood samples were taken, and an automated haematology analyser was used to do the analysis.

Anemia was reported to be prevalent overall at (48% n=48). With an average haemoglobin level of 10.55 ± 1.54 , the majority of the anaemic girls (27% n=27) had mild anaemia, 15% had moderate anaemia, and 6% had severe anaemia.

Unfortunately, because public health measures to prevent anaemia frequently target newborns, young children, pregnant women, and nursing women rather than necessarily adolescents the needs of adolescents may be unmet, and the effects of anaemia in adolescents persist. In addition to being informed about the health issue affecting this age group, healthcare practitioners need to receive support in order to intervene in a school or college setting.

1. Introduction

More over 1 billion teenagers are thought to exist worldwide (aged 10 to 19), Adolescents still have a lot of unmet needs, though, and their needs particularly those of adolescent girls are routinely ignored. They are also difficult to quantify and address. Iron deficiency throughout adolescence has many unknown elements and effects in terms of standards, measurement indicators, and health repercussions, making this field of adolescent health challenging to study [1].

Adolescence is a time of rapid growth in terms of the physical, psychological, and cognitive domains. Due to the increasing demands for blood volume expansion brought on by the menstrual cycle and the teenage growth spurt, adolescent girls' needs for iron increase [2] One nutrient in particular that is in high need is iron. The formation of haemoglobin and the activity of enzymes are two key physiological processes that depend on iron,

which is found in all body cells. Since dietary iron intake is insufficient to fulfil needs, iron stores in the body are often depleted in order to maintain the body's physiological demands. In times of rapid growth and frequent blood loss (such as during menstruation), the body need extra iron; adolescent girls are therefore at a higher-than-average risk of getting iron insufficiency. This is particularly true for certain teenage girls who have significant blood loss during their periods [3].

"Iron deficiency is a condition caused by too little iron in the body," the CDC (centres for disease control and prevention) states. Iron is necessary for erythroblasts to produce haemoglobin. Red blood cell formation fails and falls in number if there is insufficient iron supply. Another name for this illness is "Anemia"[4].

Worldwide, anaemia is a significant public health issue that is frequently disregarded in both developed and developing nations. Anemia is more common in young



children, pregnant women, and adolescents. Adolescence is a critical time in a person's life since it marks the transition from childhood to maturity. A particularly quick rate of expansion characterises this time period [5]. Adolescents, especially girls, are at risk for iron deficiency anaemia because menstrual blood typically loses 12.5–15 mg of iron each month, or 0.4–0.5 mg per day [6].

Nutritional factors, inflammatory or viral disorders, blood loss, and other conditions can all contribute to anaemia. The most prevalent type of anaemia in India is iron-deficiency anaemia, which is brought on by insufficient intake and poor dietary iron absorption. There is proof that severe anaemia contributes to premature birth and intrauterine growth retardation, which raises perinatal morbidity and mortality [7].

The prevalence of iron deficiency anaemia in women is highest in India, where 60 to 70 percent of adolescent girls are anaemic [8]. Adolescents are anaemic 27% of the time globally, compared to 6% of the time in industrialised nations [9].

Anemia has detrimental effects on adolescent physical development, performance, and immunity, and it may have long-term consequences in older age groups, particularly in women who are of reproductive age. Pregnancy problems such low birthweight, preterm deliveries, and neonatal mortality may occur at higher rates as a result [10].

According to studies, iron deficiency in youngsters can have a negative impact on their physical and cognitive skills as well as lead to potentially permanent behavioural problems. According to studies, iron deficiency in youngsters can have a negative impact on their physical and cognitive skills as well as lead to potentially permanent behavioural problems [11].

Despite the lengthy history of the programme providing iron supplements, the prevalence of iron deficiency anaemia is still significant, particularly in rural areas. People must be educated on the factors that contribute to anaemia, how to avoid it, the value of dietary supplements, and the necessity of a healthy diet. However, there are few anaemia studies that have concentrated explicitly on the incidence and causes of anaemia in adolescent girls in this area. Therefore, the purpose of this study was to investigate anaemia prevalence.

2. MATERIALS AND METHODS

The goal of the current study was to determine the level of iron in adolescent girls between the ages of 17 and 20 who were enrolled in Rajarshi Shahu Mahavidyalaya in Latur, Maharashtra. This cross-sectional research was carried out in October 2022. 100 girls were included in the sample, who were chosen among students pursuing their eleventh, twelfth, and first-year degrees. Age, sociodemographic status, menstruation history, and brief clinical facts were recorded with the patients' informed agreement after they had been given assurances of confidentiality and privacy about the records. In order to determine how many adolescent females, have anaemia, the study used a statistical survey approach and a descriptive design [12].

Exclusion parameters for this investigation include (1) the parameters being studied could be impacted by haematological or systemic diseases such infection, inflammation, cancer, and other chronic illnesses; (2) blood transfusion history within the last three months; (3) underwent iron treatment; or (4) shown with a high-sensitivity C-reactive protein value (hs-CRP) [11].

A hemoglobinometer was used to measure haemoglobin. The blood sample for haemoglobin analysis was obtained while following all accepted aseptic procedures. The WHO divides anaemia in adolescent girls into three categories: mild, moderate, and severe. Anaemia's haemoglobin cutoff values are 11.0–11.9 g/dl (mild), 8.0–10.9 g/dl (moderate), and <8.0 g/dl (severe) [13].

3. Results

In terms of the survey participants' understanding of anaemia, only 11.2% were aware of it; the other 88.8% had no idea what anaemia is, and few believed it to be nothing more than blood loss, weakness, or dyspnea. Only 23% of respondents thought anaemia is caused by a reduction in red blood cells. The majority were unsure of which mineral shortage causes anaemia, and only a small percentage (12%) believed that an iron deficiency can do so. Almost 12% of the participants in the study claimed that haemoglobin is measured to identify anaemia. Only 23% of the study population believed that high blood loss during menstruation can induce anaemia, according to findings on knowledge regarding the aetiology, effects, prophylaxis, and treatment of anaemia.



About 15% of the research's participants believed that anaemia causes pale skin, nails, eyes, and other body parts, as well as decreased study focus. Anemia can be treated with iron supplements, according to 18% of research participants, and can be prevented by regular exercise and a healthy diet. Only few <12% of the study participants were knew about iron-rich foods. Only 7% of them were aware that vitamin C improves iron absorption while milk, coffee, and tea inhibit it. In the survey, 50% of participants were aware that severe anaemia can be life-threatening and necessitate blood transfusions.

According to Table 1, the overall prevalence of anaemia was discovered to be 48% (n = 48) among the 100 adolescent girls in the research population. 52% (n = 52) of the females were anaemic. With an average haemoglobin level of 10.55 ± 1.54 , the majority of the anaemic females (27%, n = 27) had mild anaemia, 15% had moderate anaemia, and 6% had severe anaemia.

Table 1: Adolescent girls' anaemia severity distribution

Hb (range in g/dL)	Severity of Anemia	No. of girls (n=48)	Percentage
Less than 8	Severe	6	6
8-10.9	Moderate	15	15
11-11.9	Mild	27	27

4. CONCLUSION

One of the main health issues affecting female adolescent pupils is iron deficiency anaemia. Education intervention is a successful strategy to increase their understanding, attitude, and practise regarding the same. To improve their present and future health, more needs to be done to raise adolescents' knowledge of this. A 48% overall prevalence of anaemia was discovered. The majority of the anaemic girls (27 percent, n = 27) had mild anaemia, followed by moderate and severe anaemia (each at 15 and 6 percent, respectively).

In particular, in a school or college setting, health care providers need to be informed about this health issue affecting this age group and supported in order to assist them analyse, intervene, and frequently reassess this issue.

5. ACKNOWLEDGEMENTS

The Rajarshi Shahu Mahavidyalaya in Latur aided with data collecting, data input, data verification, and recognition of contributions to the study, which the authors gratefully thank. For technical assistance, the authors are grateful to the Vilasrao Deshmukh Foundation, Group of Institutions, VDF School of Pharmacy, Latur, Maharashtra, India.

6. CONFLICT OF INTEREST:

There are no conflicts of interest, according to the author(s).

REFERENCES

- [1] E.K. Shipala¹, G.A. Sowayi, ; Magaju, P. Kagwiria, ; Edwin O Were, Prevalence Of Anemia Among Teenage Pregnant Girls Attending Antenatal Clinic In Two Health Facilities In Bungoma District, Western Kenya, (n.d.). www.iiste.org.
- [2] 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*. 3 (2015) 1–9. <https://doi.org/10.13189/ujfns.2015.030101>.
- [3] Camila M. Chaparro. Chessa K., Anemia among adolescent and young adult women in Latin America and the Caribbean: A cause for concern, *Pan American Health Organization*. (n.d.) 1–12.
- [4] M. Mawani, S. Aziz Ali, Iron Deficiency Anemia among Women of Reproductive Age, an Important Public Health Problem: Situation Analysis, *Reproductive System & Sexual Disorders*. 5 (2016). <https://doi.org/10.4172/2161-038x.1000187>.
- [5] G.S. Prihanti, N. Fadli, G. H. S. P., P.S. D. I., F.D. Hidayati, Factors Analysis of Anaemia in Adolescent Girl, in: *The Health Science International Conference 114*, Scitepress, 2020: pp. 113–118. <https://doi.org/10.5220/0009124201130118>.
- [6] A. Gupta, P.R. Lal, L.K. Sharma, Understanding the Determinants of Anemia amongst Indian



- Adolescents, *Int J Health Sci Res.* 11 (2021) 213–235. <https://doi.org/10.52403/ijhsr.20210428>.
- [7] P.S.B.S.D.B.N.S. et. al G. S. Toteja, Prevalence of anemia among pregnant women and adolescent girls in 16 districts of India, *Food Nutr Bull.* 27 (2006) 311–315.
- [8] S. SukapriyaM, International Journal of Advanced Research in Biological Sciences Assessment of Nutritional Status and Prevalence of Anaemia among Adolescent girls (17-18 years), *Int. J. Adv. Res. Biol.Sci.* 2 (2015) 59–64. www.ijarbs.com.
- [9] P. Sari, R.T.D. Judistiani, D. Hilmanto, D.M.D. Herawati, M. Dhamayanti, Iron Deficiency Anemia and Associated Factors Among Adolescent Girls and Women in a Rural Area of Jatinangor, Indonesia, *Int J Womens Health.* 14 (2022) 1137–1147. <https://doi.org/10.2147/IJWH.S376023>.
- [10] N.N. Abu-Baker, A.M. Eyadat, A.M. Khamaiseh, The impact of nutrition education on knowledge, attitude, and practice regarding iron deficiency anemia among female adolescent students in Jordan, *Heliyon.* 7 (2021). <https://doi.org/10.1016/j.heliyon.2021.e06348>.
- [11] M. Andriastuti, G. Imana, S.A. Nawangwulan, K.A. Kosasih, Prevalence of anemia and iron profile among children and adolescent with low socio-economic status, *Int J Pediatr Adolesc Med.* 7 (2020) 88–92. <https://doi.org/10.1016/j.ijpam.2019.11.001>.
- [12] V. Krishnan, R.A. Zaki, A.M. Nahar, M.Y. Jalaludin, H.A. Majid, The longitudinal relationship between nutritional status and anaemia among Malaysian adolescents., *Lancet Reg Health West Pac.* 15 (2021). <https://doi.org/10.1016/j.lanwpc.2021.100228>.
- [13] A. Soodi Reddy, P. Lahari, Prevalence, knowledge, and risk factors of anemia among school-going adolescent girls in a rural community of Telangana, *MRIMS Journal of Health Sciences.* 9 (2021) 10. https://doi.org/10.4103/mjhs.mjhs_29_20.