ISSN: 3005-6632

Afghanistan Journal of Basic Medical Sciences

Vol. 1, No.1, January 2024, pp. 19-24

ajbms.knu.edu.af

The Prevalence of anemia in adolescents and non-pregnant women of reproductiv age, referring to City Medical Complex in 2022

Latifa Sadeqi[1], Fazal Rabi Salarzai[1], Ahmad Jamshid Mehrpoor[2], Murtaza Haidary[3*]

1. Department of Medical Laboratory Sciences, City Medical Complex, Kabul, Afghanistan
2. Medical Sciences Research Center, Ghalib University, Kabul, Afghanistan
3. Research and Technology Center, Khatam Al Nabieen, University, Kabul, Afghanistan

ARTICLE INFO

Accepted: 8 September, 2023

*Corresponding Author:
Address: Medical Sciences Research Center, Khatam Al-University, Kabul, Afghanistan.
E-mail address:
sadramurtaza@gmail.com

ABSTRACT

Introduction: Anemia is a prevalent illness of the hematopoietic system that generally occurs in both developed and developing countries. Anemia is rampant among children and reproductive women. The present study was conducted to investigate the prevalence of anemia in adolescent girls and non-pregnant women of reproductive age, referring to the City Medical Complex in 2022.

Materials and methods: A total of 671 adolescents and healthy, non-pregnant women of reproductive age (aged 10 to 49 years old) take part in the study. Informed consent was obtained from the subjects, and hemoglobin concentrations were measured. Statistical analysis was performed using SPSS version 24 software.

Results: Of the 671, 131 (19.5%) had mild anemia, 136 (20.3%) had moderate anemia, and 23 (3.4%) had severe anemia, and 381 (56.8%) had normal hemoglobin.

Discussion: Our findings show that the prevalence of anemia and a low body mass index (BMI) in adult women is higher than that in adolescent girls living in Kabul in 2022.

Keywords: Anemia, Adolescents, Reproductive age, Women, Kabul

To cite this article: Sadeqi L, Salarzai FR, Mehrpoor AJ, Haidary M. Prevalence of anemia in adolescents and non-pregnant women of reproductive age, referring to City Medical Complex in 2022. Afghanistan J Basic Med Sci. 2024;19-24. https://doi.org/10.62134/ajbms/v1.i1.khatamuni.3

1. Introduction

Women's reproductive health is primarily influenced by their fertility and maternal role, and women's health during this period has an affectionate effect on their long-term health and the health of their family members, particularly their children, and anemia is linked to many deaths caused by pregnancy and childbirth complications (1). Anemia is one of the most common and neglected nutritional deficiencies. It is considered one of the most common health problems in developed and developing societies and affects almost a quarter of the world's population of different social strata and all age groups, especially women of reproductive age and children (2, 3).

Anemia refers to a low level of hemoglobin (Hb) (4) and is classified based on hemoglobin level into three severity scales (mild, moderate, and severe). A decrease in the level of hemoglobin limits oxygen transformation in the blood and makes it insufficient to meet the physiological needs of the body (5). This leads to decreased physical and mental strength and raises the risk of other adverse health effects (6, 7). These conditions vary according to factors such as age, gender, height, smoking status, and pregnancy status (8). Anemia can be caused by various factors, including infectious diseases, genetic factors, including nutritional habits, a lack of access to micronutrients, chronic disease, inflammatory bowel disease, and nutritional deficiency (9).

Anemia, as a multifactorial disease, affects physical and psychological growth, behavior, and proficiency in a variety of tasks (4). Its symptoms result from impaired tissue oxygenation and may include weakness, fatigue, difficulty concentrating, or poor work productivity (10). Although anemia can occur at all stages of life, adolescents and women of reproductive age are the most susceptible (11–13). Anemia in children and adolescents leads to the impairment of physical and cognitive growth, decreases physical fitness, and raises the risk of infection. In women of reproductive age, anemia reduces productivity and work capacity and causes fatigue, dizziness, and increased susceptibility to infection (14). Anemia affects 41.8% of pregnant women and 30.2% of non-pregnant women. but amongst various crowds, the largest number of people with anemia belongs to non-pregnant women, with 468.4 million people (15).

To our knowledge, there is no study on anemia among adolescents and women of reproductive age in Afghanistan. Therefore, this study was done to evaluate the prevalence of anemia in adolescents and women of reproductive age, referring to the City Medical Complex in 2022.

2. Material and methods

A cross-sectional descriptive-analytical study was conducted among 671 adolescent and non-pregnant women of reproductive age who were referred to the City Medical Complex in Kabul. The population of the study was all adolescents (only girls) between 10 and 19 years old and non-pregnant women of reproductive age (20–49 years old) who visited the city medical complex to determine the level of Hb in 2022.

Exclusion criteria were the presence of a recorded underlying disease related to anemia, chronic kidney and liver diseases, or blood donation within the last 3 months. The Hb level was determined by collecting 5 mL of blood and thoroughly mixing it with ethylenediaminetetraacetic acid (EDTA) to prevent clotting. Hb concentration is measured using an automated cell counter (Mindry). The information was collected by completing a questionnaire, and for the evaluation of the results, the subjects were divided into four groups according to their Hb level as follows: non-anemic, mild, moderate, and severe anemic. Hb cutoff values were >12 g/dl (non-anemia), 11.0–11.9 g/dl (mild anemia), 8.0–10.9 g/dl (moderate anemia), and 8.0 g/dl (severe anemia) (5). The data were analyzed using SPSS 24 statistical software. The data

derived in this study are presented using mean (SD), standard deviation (SD), frequency (F), and percentage (P).

2-1. Ethical considerations

This study is based on the ethical rules and regulations of the ethics committee of the City Medical Complex (approval code: AF, City Medical Complex, 02, 25/12/2021).

3. Results

Of the 1200 people, 671 patients with a mean age of 30.50 years were included in the study. Among these, 131 (19.5%) individuals had mild anemia, 136 (20.3%) individuals had moderate anemia, 23 (3.4%) individuals had severe anemia, and 381 (568%) individuals had normal Hb. (Table 1). Among this group, early adolescents (4 individuals) had normal concentrations of Hb.

In middle-aged adolescents, 7.4% had mild anemia, 14.8% had moderate anemia, and 3.7% had severe anemia. In late adolescence, (26.1% mild anemia), (26.1% moderate anemia), and (8.7% severe anemia) were common. Mild anemia was more common in 20- to 24-year-old adult women (25.4%); moderate anemia was more common in 25-29 year-old adult women; but severe anemia was more common in 40- to 44-year-old adult women (22.5%). (table 2). Interestingly, the result of the BMI (body mass index) evaluation showed that women in the age group of 25–29 years old had the highest underweight condition. Table 3 contains additional information about BMI.

Table 1: severity of anemia

Hb	Frequency	Percentage
Mild	131	19.5%
Moderate	136	20.3%
Severe	23	3.4%
Non Anemic	381	56.8%
Total	671	100%

4. Discussion

Anemia remains centralized in low- and middle-income countries (LMICs) and affects millions of women all over the world. Available evidence shows that in 2019, 30.1% of women of reproductive age had anemia worldwide (16). Local estimates are recommended by the WHO for each region to provide initial awareness for devising preventive and therapeutic strategies to control the disease (17). The present study was conducted to estimate the prevalence of anemia among adolescent girls and women of reproductive age in Kabul, Afghanistan. It is noteworthy that we only report the prevalence of anemia in the target subjects. Among 77 adolescents and 594 women of reproductive age, anemia was more prevalent in women aged 20–29 years old. Furthermore, underweight individuals were observed in this age group. According to a previous study, the prevalence of anemia in pregnant women in Afghanistan was 38.2%, 42.0% in women of reproductive age, and 46.4% in children under five years old, while it affects a third of adolescent girls (14).

The prevalence of anemia in women of reproductive age in rural areas of India and in Tamil Nadu was reported to be 54.4% and 56.9%, respectively (17). The prevalence of anemia in women of reproductive age living in Thatta, Pakistan, was reported at 61.3% by Sumera Aziz Ali et al. in 2020 (18). The prevalence of anemia in adolescent girls is considered a moderate public health difficulty, but in adult women, it is considered a severe public health quandary (4). Anemia involves a complex etiology that includes nutrition and non-nutritional factors and mechanisms (6, 19). Of all the causes, iron deficiency is surely the most frequent, as iron deficiency and iron deficiency anemia are mostly used instead of others (6).

Nevertheless, while iron deficiency leads to decreased Hb levels and reduced red blood cell manufacture, there are several other reasons for

anemia that do not include iron deficiency (6, 19, 20).

Table 2: Prevalence of anemia in adolescents and women of reproductive age

Age	Mild anemia 11-11.9 g/dL	Moderate anemia 8.0-10.9 g/dL	Severe anemia <8.0 g/dL	Non anemia <12.5 g/dL
Early adolescence (10-13 years old) (n=4)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (100.0%)
Middle adolescence (14-16 years old) (n=27)	2 (7.4%)	4 (14.8%)	1 (3.7%)	20 (74.1%)
late adolescence (17-19 years old) (n=46)	12 (26.1%)	12 (26.1%)	4 (8.7%)	18 (39.1%)
20-24 (n=126)	32 (25.4%)	18 (14.3%)	1 (0.8%)	75 (59.5%)
25-29 (n=138)	26 (18.8%)	34 (24.6%)	1 (0.7%)	77 (55.8%)
30-34 (n=93)	12 (12.9%)	16 (17.2%)	2 (2.2%)	63 (67.7%)
35-39 (n=76)	16 (21.1%)	18 (23.7%)	4 (5.3%)	38 (50.0%)
40-44 (n=80)	18 (22.5%)	17 (21.3%)	5 (6.3%)	40 (50.0%)
45-49 (n=81)	13 (16.0%)	17 (21.0%)	5 (6.2%)	46 (56.8%)

Table 3: Body Mass Index of patients with anemia

Age	Underweight	Normal	Overweight
Early adolescence (n=4)	0 0 (0.0%)	4 (100.0%)	0 (0.0%)
Middle adolescence (n=27)	2 (7.5%)	25 (92.5%)	0 (0.0%)
late adolescence (n=46)	6 (13.04%)	40 (86.9%)	0 (0.0%)
20-24 (n=126)	21 (16.6%)	105 (83.3%)	0 (0.0%)
25-29 (n=138)	30 (21.7%)	107 (77.5%)	1 (0.72%)
30-34 (n=93)	11 (11.8%)	80 (86.0%)	2 (2.1%)
35-39 (n=76)	7 (9.2%)	69 (90.8%)	0 (0.0%)
40-44 (n=80)	9 (11.2%)	70 (87.5%)	1 (1.2%)
45-49 (n=81)	13 (16.0%)	65 (80.2%)	3 (3.7%)

Considering the multiple causes of anemia, efforts to reduce the rate of anemia should not be focused exclusively on iron; rather, all factors must be identified to develop and implement evidence-based, context-specific, and locally-based interventions (14). Afghanistan's health system completely disintegrated after the fall of 2001, and there was an intensive deficiency of healthcare, supply chain, and foundation personnel (21). The instability of the political system, the weak economy, and continuous violence have entangled Afghanistan's development. These factors strongly affect the provision of health care and the modality of that care (22).

Conclusion

Our findings indicated that the prevalence of anemia was higher in adult women than in adolescent girls. Furthermore, a strong relationship was found between the level of hemoglobin and the BMI as the underweight condition was also more prevalent in adult women with severe anemia. However, anemia prevalence is mostly used as a substitute for iron deficiency anemia, and there are several factors involved in anemia. In addition to iron consumption, several factors affect Hb concentration. Therefore, to develop effective strategies to improve the health of adolescent girls and women of reproductive age, the details of anemia should be identified.

Acknowledgment

This study is supported by the City Medical Complex. We thank all officials for their valuable support in providing the equipment and facilities for this study.

Conflict of interest

We declare that we have no conflict of interest.

DOI

https://doi.org/10.62134/ajbms/v1.i1.khatamuni.3

References

1. Baig-Ansari N, Badruddin SH, Karmaliani R, Harris H, Jehan I, Pasha O, et al. Anemia prevalence and risk factors in pregnant women in an urban area of Pakistan. Food Nutr Bull. 2008;29(2):132-9.
2. Haidar J. Prevalence of anaemia, deficiencies of iron and folic acid and their determinants in Ethiopian women. Journal of health, population, and nutrition. 2010;28(4):359.
3. Rahman MS, Mushfiquee M, Masud MS, Howlader T. Association between malnutrition and anemia in under-five children and women of reproductive age: Evidence from Bangladesh Demographic and Health Survey 2011. PloS one. 2019;14(7):e0219170.
4. Chang MC, Poh BK, June J, Jefrydin N, Das S. A study of prevalence of anaemia in adolescent girls and reproductive-age women in Kuala Lumpur. Archives of Medical Science. 2009;5(1):63-8.
5.Organization WH. Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity. World Health Organization; 2011.
6. Organization WH. Global anaemia reduction efforts among women of reproductive age: impact, achievement of targets and the way forward for optimizing efforts. 2020.
7. Turner J, Parsi M, Badireddy M. Anemia. StatPearls [Internet]: StatPearls Publishing; 2022.
8. Getachew M, Yewhalaw D, Tafess K, Getachew Y, Zeynudin A. Anaemia and associated risk factors among pregnant women in Gilgel Gibe dam area, Southwest Ethiopia. Parasites & vectors. 2012;5(1):1-8.
9. Righetti AA, Koua A-YG, Adiossan LG, Glinz D, Hurrell RF, N'goran EK, et al. Etiology of anemia among infants, school-aged children, and young non-pregnant women in different settings of south-central Côte d'Ivoire. The American journal of tropical medicine and hygiene. 2012;87(3):425.
10. Kassebaum NJ, Jasrasaria R, Naghavi M, Wulf SK, Johns N, Lozano R, et al. A systematic analysis of global anemia burden from 1990 to 2010. Blood, the Journal of the American Society of Hematology. 2014;123(5):615-24.
11. Engidaw MT, Wassie MM, Teferra AS. Anemia and associated factors among adolescent girls living in Aw-Barre refugee camp, Somali regional state, Southeast Ethiopia. PloS one. 2018;13(10):e0205381.
12. Whitney EN, Rolfes SR. Understanding nutrition: Cengage Learning; 2015.
13. Chandrakumari AS, Sinha P, Singaravelu S, Jaikumar S. Prevalence of anemia among adolescent girls in a rural area of Tamil Nadu, India. Journal of family medicine and primary care. 2019;8(4):1414.
14. Al-Jawaldeh A, Taktouk M, Doggui R, Abdollahi Z, Achakzai B, Aguenaou H, et al. Are countries of the eastern mediterranean region on track towards meeting the world health assembly target for anemia? A review of evidence. International Journal of Environmental Research and Public Health. 2021;18(5):2449.
15. Sadeghian M, Fatourechi A, Lesanpezeshki M, Ahmadnezhad E. Prevalence of anemia and correlated factors in the reproductive age women in rural areas of tabas. Journal of family & reproductive health. 2013;7(3):139.
16. Kinyoki D, Osgood-Zimmerman AE, Bhattacharjee NV, Kassebaum NJ, Hay SI. Anemia

prevalence in women of reproductive age in low-and middle-income countries between 2000 and 2018. Nature medicine. 2021;27(10):1761-82.
17. Osborn AJ, Muhammad GM, Ravishankar SL, Mathew AC. Prevalence and correlates of anemia among women in the reproductive age (15-49 years) in a rural area of Tamil Nadu: An exploratory study. J Educ Health Promot. 2021;10:355.
18. Ali SA, Abbasi Z, Shahid B, Moin G, Hambidge KM, Krebs NF, et al. Prevalence and determinants of anemia among women of reproductive age in Thatta Pakistan: Findings from a cross-sectional study. PloS one. 2020;15(9):e0239320.
19. Chaparro CM, Suchdev PS. Anemia epidemiology, pathophysiology, and etiology in low-and middle-income countries. Annals of the new York Academy of Sciences. 2019;1450(1):15-31.
20. Balarajan Y, Ramakrishnan U, Özaltin E, Shankar AH, Subramanian S. Anaemia in low-income and middle-income countries. The lancet. 2011;378(9809):2123-35.
21. Ventevogel P, van de Put W, Faiz H, van Mierlo B, Siddiqi M, Komproe IH. Improving access to mental health care and psychosocial support within a fragile context: a case study from Afghanistan. PLoS Medicine. 2012;9(5):e1001225.
22. Rahmani Z, Brekke M. Antenatal and obstetric care in Afghanistan–a qualitative study among health care receivers and health care providers. BMC Health Services Research. 2013;13(1):1-9.