OPEN ACCESS

Kashf Journal of Multidisciplinary Research
Vol: 02 - Issue 1 (2025)
P-ISSN: 3007-1992 E-ISSN: 3007-200X
https://kjmr.com.pk

ASSESSMENT OF KNOWLEDGE AND AWARENESS OF ANEMIA IN DISTRICT SIALKOT, PUNJAB, PAKISTAN

Fatima Afzal
Faculty of Pharmacy, Grand Asian University, Sialkot, Pakistan
Sherjeel Adnan
Faculty of Pharmacy, Grand Asian University, Sialkot, Pakistan
Jannat Asif
Islam College of Pharmacy, Sialkot, Pakistan
Laiba Zia
Islam College of Pharmacy, Sialkot, Pakistan
Maila Iftikhar
Islam College of Pharmacy, Sialkot, Pakistan
Manal Akmal
Islam College of Pharmacy, Sialkot, Pakistan
Mariam Amir
Islam College of Pharmacy, Sialkot, Pakistan
Maryam Asif
Islam College of Pharmacy, Sialkot, Pakistan
Umme Kalsoom
Islam College of Pharmacy, Sialkot, Pakistan

Corresponding author: fatima.afzal@gaus.edu.pk
DOI: https://doi.org/10.71146/kjmr240

Article Info

Abstract

Background: Anemia is a major global health issue that impacts public health by reducing quality of life and productivity. This study explores how much people in Sialkot, Punjab, Pakistan knows about anemia and identifies gaps in their awareness.

Objective: To assess knowledge, identify risk factors, and evaluate perceptions about anemia and its management.

Methods: A descriptive cross-sectional study surveyed 424 participants from urban and rural areas using a structured questionnaire. Data were analyzed using Microsoft Excel 2019, with descriptive statistics highlighting trends.

Results: Of 424 respondents, 78.8% had general awareness of anemia, with healthcare professionals being the most common source of information (23.5%). About 71.9% recognized risk factors, while 67.1% were familiar with symptoms. Challenges remain in understanding diagnostic methods and available treatment options.

Conclusion: The study highlights a moderate level of awareness with notable differences between urban and rural populations. Targeted interventions are essential to address these gaps and enhance public health outcomes.

Keywords:
Anemia, knowledge, hemoglobin, red blood cells, iron.

Introduction

Anemia is a condition marked by insufficient red blood cells or low hemoglobin levels, represents a significant global health challenge. The World Health Organization (WHO) defines anemia as hemoglobin levels below 13 g/dL in adult males and 12 g/dL in adult females, with variation with age, sex, and pregnancy status. Anemia affects an estimated 1.92 billion people worldwide and remains a critical issue in developing regions, where poor nutrition, socio-economic inequalities, and limited healthcare access contribute to its widespread prevalence (1,2).

Anemia fundamentally disrupts the oxygen transport system, causing tissue hypoxia and impairing bodily functions. It has various causes, broadly classified into nutritional deficiencies, chronic illnesses, and genetic factors. Most cases are due to iron deficiency anemia (IDA), which results from inadequate dietary intake, blood loss, or poor absorption. Other key factors include vitamin B12 and folate deficiencies, essential for red blood cell production, as well as genetic conditions like thalassemia and sickle cell disease. Chronic diseases, including kidney disorders, infections, and autoimmune conditions, also significantly contribute to anemia's development (3,4).

Anemia has a widespread impact, with certain groups being more vulnerable than others. Women of reproductive age, especially in low-resource settings, are among the most affected. In Pakistan, 41.7% of women in this group are anemic, with rural areas experiencing higher rates (44.3%) compared to urban areas (40.2%), highlighting inequalities in nutrition and healthcare access. Adolescents and young children are also at significant risk due to the demands of rapid growth and, in girls, menstrual blood loss. Pregnant women with untreated anemia face increased risks of complications, including preterm birth, low birth weight, and maternal mortality, emphasizing the importance of early intervention (5,6).

The symptoms of anemia differ based on its severity and causes, ranging from fatigue, weakness, and pale skin to more serious issues like shortness of breath, dizziness, and chest pain. In severe cases, it can lead to life-threatening complications such as heart failure and severe infections. Anemia not only impacts physical health but also impairs cognitive function and productivity, creating significant economic and social challenges for individuals and communities (7,8).

Despite its significant impact, anemia is preventable and treatable through dietary improvements, supplementation, and medical interventions. Raising public awareness is essential to encourage early diagnosis, and promote treatment adherence. However, knowledge gaps, particularly in rural and undeveloped areas, hinder progress in addressing this issue. This study focuses on assessing the knowledge and awareness of anemia among the general population of Sialkot, Punjab, Pakistan. By identifying key knowledge gaps and evaluating perceptions of risk factors, symptoms, and treatment options, the research aims to guide strategies for improving public health outcomes and reducing the anemia burden in the region (9,10).

2. MATERIALS AND METHODS

A descriptive cross-sectional study was conducted to assess the knowledge and awareness of anemia among the general population of the Sialkot district, Punjab, Pakistan. This design was chosen to gather relevant data at a single point in time, providing insights into knowledge about anemia, its risk factors, and public perceptions. The study was carried out over six months, from May to October 2024.

The target population included individuals aged five years and older residing in Sialkot. Participants of all genders and educational backgrounds were eligible, provided they were willing to give informed

consent. Individuals with chronic diseases, such as malignancies or chronic kidney disease, which could independently affect anemia outcomes, were excluded, along with those undergoing active treatments like chemotherapy or unwilling to provide consent.

The minimum required sample size, determined using the Rao soft sample size calculator, was 385 participants, with a 5% margin of error and a 95% confidence interval. To ensure adequate representation and account for potential non-responses, the sample size was increased to 424 participants. Convenience sampling was used to select participants based on accessibility and willingness.

Data were collected through a structured, close-ended questionnaire, designed under the guidance of experienced researchers. The questionnaire, based on a thorough literature review, was divided into sections assessing knowledge about anemia, including its risk factors, symptoms, diagnostic methods, and treatment options. Participants were approached in hospitals, community centers, and educational institutions in Sialkot, where face-to-face interviews were conducted by trained researchers. Verbal responses were recorded to ensure accuracy.

Ethical approval was obtained from the relevant institutional review board, and all participants provided informed consent after being briefed about the study's objectives and procedures. To ensure participant confidentiality, data were anonymized, and personal information was securely stored.

Data analysis was performed using Microsoft Excel 2019. Descriptive statistics, such as frequency distributions, cumulative frequencies, and percentages, were used to summarize the findings. This approach provided valuable insights into the prevalence of anemia awareness and its related factors in the Sialkot district, highlighting trends that could inform effective public health interventions.

3. RESULTS

The study analyzed data from 424 participants, providing insights into their awareness and knowledge of anemia, its risk factors, symptoms, diagnostics, and treatments.

3.1 Socio-Demographic Characteristics of Participants

The socio-demographic profile of the participants n=424 showed that most individuals (50.2%) were between the ages of 16 and 30, while 22.6% were aged 31–45, 18.2% were above 45, and 9.0% were in the 0–15 age group. Females made up the majority of the sample (59.2%), with males accounting for 40.8%. Regarding education, 35.6% of participants had secondary education, and another 35.6% had undergraduate qualifications. A smaller proportion had primary education (19.1%), while 9.7% were uneducated. Most participants lived in urban areas (63.7%), with the remaining 36.3% residing in rural location.

Table 1. Socio-Demographic Characteristics of Participants

Sr.no	Questions	Options	Frequency (n=424)	Percentage (%)
1.	**Age**	0-15	38	9.0
		16-30	213	50.2
		31-45	96	22.6
		Above 45	77	18.2
2.	**Gender**	Male	173	40.8
		Female	251	59.2
3.	**Qualification**	Uneducated	41	9.7
		Primary	81	19.1
		Secondary	151	35.6
		Undergraduate	151	35.6
4.	**Location**	Urban	270	63.7
		Rural	154	36.3

3.2. Participants General Knowledge about Anemia

The survey results on anemia awareness among participants n=424 showed that only 4.4% had prior information about anemia, while 55.1% had no knowledge. Sources of information included friends or family (14.1%), books/newspapers (12.9%), healthcare professionals (10.6%), and the internet or TV (7.07%). Additionally, 10.6% of participants reported having no specific source of knowledge.

Regarding anemia cases in their surroundings, 70.7% reported having observed such cases, while 29.2% had not. Observed cases were most commonly seen in institutes (35.3%), followed by family (28.3%), friends (18.8%), and workplaces (14.1%). Furthermore, 58.9% of participants considered anemia a life-threatening condition, while 41.0% did not.

Table 2.Participants General Knowledge about Anemia

Sr.no	Questions	Options	Frequency (n=424)	Percentage (%)
1.	**Do you have prior information about anemia?**	Yes	19	4.4
		No	234	55.1
2.	**If yes what is the source of information?**	Health-care professionals	45	10.6

		Books/Newspaper	55	12.9
		Friends/Family	60	14.1
		Internet/TV	30	7.07
		No knowledge	45	10.6
3.	**Have you seen any case of anemia in your surroundings?**	Yes	300	70.7
		No	124	29.2
4.	**If yes, where have you seen?**	Family	120	28.3
		Friend	80	18.8
		Institute	150	35.3
		Workplace	60	14.1
5.	**Is anemia a life threatening condition?**	Yes	250	58.9
		No	174	41.0

3.3. Awareness among Anemic Patients

The findings on symptoms experienced by participants (n=424) revealed that fatigue and weakness, as well as rapid and irregular heartbeat, were the most commonly reported symptoms, each cited by 25.6% of respondents. Pale skin was noted by 14.2%, cold hands and feet by 13.0%, and shortness of breath by 14.0%.

Table 3. Awareness among Anemic Patients

Options	**Frequency (n=424)**	**Percentage (%)**
1.Which type of symptoms do you feel?		
Fatigue and weakness	108	25.6
Rapid and irregular heartbeat	108	25.6
Pale Skin	60	14.2
Cold hand and feet	55	13.0
Shortness of breath	59	14.0
2.Which of the lifestyle modifications are you following after treatment?		
Healthy diet	120	28.3
Avoid caffeine	50	11.7

Exercise	60	14.1
Knowing more about risk factors	40	9.43
3.How much improvement do you feel after getting treatment?		
No improvement	50	3.57
Little	70	16.5
Getting better day by day	150	35.3
Fully recovered	154	36.3

3.4. Participants Knowledge Related Medical Treatment of anemia

The results regarding knowledge of anemia treatment among participants (n=424) showed that 58.9% were aware of treatment options, while 41.0% were not. Among those familiar with treatment methods, 35.3% mentioned iron supplements, 16.5% identified vitamin B12 supplements, 14.1% were aware of folate supplements, and 11.7% each recognized dietary changes and blood transfusion as treatment options.

Table 4. Participants Knowledge Related Medical Treatment of anemia

Sr.no	Questions	Options	Frequency (n=424)	Percentage (%)
1.	Do you know about treatment of anemia?	Yes	250	58.9
		No	174	41.0
2.	If yes, which of the following treatment option you know?	Iron supplements	150	35.3
		Vitamin B12 supplements	70	16.5
		Folate supplements	60	14.1
		Dietary changes	50	11.7
		Blood transfusion	50	11.7

3.5. Participants Knowledge Related Diagnosis of anemia

The data on participants' knowledge regarding the diagnosis of anemia (n=424) showed that 42.4% were aware of diagnostic procedures, while 57.5% were not. Among those who had knowledge, 37.7% identified complete blood count (CBC) as a diagnostic method, 18.8% mentioned hemoglobin (Hb) tests, 16.5% were aware of serum iron tests, 14.1% recognized hematocrit tests, and 7.07% were familiar with bone marrow test

Table 5. Participants knowledge related to diagnosis of anemia

Sr.no	Questions	Options	Frequency (n=424)	Percentage (%)
1.	**Do you know about diagnostic procedures of anemia?**	Yes	180	42.4
		No	244	57.5
2.	**If yes, which of the following option you know about diagnosis of anemia?**	CBC	160	37.7
		Hematocrit Test	60	14.1
		Hb Test	80	18.8
		Serum iron test	70	16.5
		Bone marrow test	30	7.07

3.6. Participants Knowledge Related symptoms of anemia

The analysis of participant's knowledge regarding the signs and symptoms of anemia (n=424) revealed that 70.7% were aware of the symptoms, while 29.2% were not. Among those with knowledge, 35.3% identified fatigue and weakness, 21.2% mentioned shortness of breath, 16.5% each recognized pale skin and cold hands and feet, and 14.1% reported rapid and irregular heartbeat as signs and symptoms of anemia.

Table 6. Participants Knowledge Related symptoms of anemia

Sr.no	Questions	Options	Frequency (n=424)	Percentage (%)
1.	**Do you know about sign and symptoms of anemia?**	Yes	300	70.7
		No	124	29.2
2.	**If yes, which of the following do you consider as signs and symptoms of anemia?**	Fatigue and weakness	150	35.3
		Rapid and irregular heartbeat	60	14.1

		Pale Skin	70	16.5
		Cold hand and feet	70	16.5
		Shortness of breath	90	21.2

4. DISCUSSION

The demographic analysis of the present study revealed a predominantly young participant group, with 50% of respondents aged between 16 and 25. This age distribution contrasts with a previous study in Abbottabad, Pakistan, which found the highest prevalence of anemia among individuals aged 25-30 (Noreen et al., 2014). The educational background of the participants in this study was relatively higher, with most (36.8%) having a higher secondary education. This contrasts with a study in rural Bahawalnagar, Pakistan, where a significantly higher proportion of illiterate respondents (44%) was reported (Khalid et al., 2017).

The residential distribution in this study revealed a significant urban-rural divide, with 63.6% of respondents living in urban areas and 36.4% in rural areas. This profile contrasts with a study in Abbottabad, Pakistan, which reported higher anemia prevalence in rural areas (43-47%) compared to urban areas (35-40%) (Noreen et al., 2014). Inadequate nutrition was identified as the primary cause of anemia by 28.4% of respondents in this study, aligning with findings from Malwa, India, where inadequate dietary iron absorption, hookworm and malaria infections, and low consumption of iron-rich foods were key contributors to high anemia prevalence (Prakash et al., 2013).

Diagnostic tests for anemia were commonly used, with 31.6% of respondents undergoing a Complete Blood Count (CBC), 19.8% hematocrit tests, 15.6% Hemoglobin (Hb) tests, and 7% serum tests. However, existing research typically uses serum ferritin as the gold standard for assessing iron deficiency (Asif et al., 2016). Regarding treatment, 43.6% of respondents considered iron supplements the most effective solution for anemia, although research indicates a significant gap in iron supplement usage among anemic patients (Ahmad et al., 2017).

Furthermore, 35.4% of respondents adopted caffeine avoidance as a lifestyle modification after an anemia diagnosis, a finding that contrasts with ongoing research in Tamale, which investigates the complex relationship between lifestyle choices and anemia risk (Anabire et al., 2023). The study also highlighted the severity of anemia, with 40.6% of respondents experiencing severe anemia and 27.4% having mild anemia. This contrasts with research in Malwa, India, where only 2% of the population suffers from severe anemia (Noreen et al., 2014).

This study provides valuable insights into the demographic characteristics, perceived causes, diagnostic tests, treatments, and lifestyle modifications related to anemia. The findings emphasize the need for targeted interventions to address the high prevalence of anemia, particularly among young adults and those with inadequate nutrition. Future research should focus on developing effective strategies to improve iron supplementation, dietary habits, and lifestyle modifications to reduce the burden of anemia.

5. CONCLUSION

This study of 424 individuals in Sialkot reveals a satisfactory level of anemia awareness. Media and literature were the primary sources of knowledge, with urban residents showing a better understanding due to higher education levels. Physical activities and health education also played a crucial role in raising awareness. Effective management of anemia requires comprehensive knowledge, education, and healthy lifestyles. The findings underscore the importance of targeted interventions to improve anemia awareness and management.

REFERENCES

1. Sharourou AS, Hassan MA, Alsharif HM, Alamoudi AS, Alkhatem HM, Alsinani TS. Anemia: its prevalence, causes, and management. *Egypt J Hosp Med.* 2018;70(10):1877-1879.
2. Jin L, Yeung LF, Cogswell ME, et al. Prevalence of anemia among pregnant women in southeast China. *Public Health Nutr.* 2010;1511-1518.
3. Chaparro CM, Suchdev PS. Anemia epidemiology, pathophysiology, and etiology in low- and middle-income countries. *Ann N Y Acad Sci.* 2006;15-31.
4. Hodges VM, Rainey S, Lappin RL, Maxwell AP. Pathophysiology of anemia and erythrocytosis. *Crit Rev Oncol Hematol.* 2007;139-158.
5. Khalid R, Irshad J, Saleem A, Ashraf S. Risk factors of anemia in pregnant women in a rural area of Bahawalnagar, Pakistan: A descriptive cross-sectional study. *Pak J Med Health Sci.* 2017;1238-1240.
6. Adnan Z, Nayyar A, Nayyar S, Mehraj A. Feto-maternal outcome in pregnancy with anemia. *J Inst Integr Med Cardiol.* 2018;12(6):57-59.
7. Bagal S. *The Iron Disorders Institute's Guide to Anemia.* United States of America: Cheryl Garrison; 2009.
8. Habib A, Kureishy S, Soofi S, et al. Prevalence and risk factors for iron deficiency anemia among children under five and women of reproductive age in Pakistan: Findings from the National Nutrition Survey 2018. *J Nutr.* 2018;1-10.
9. Zhu A, et al. Evaluation and treatment of iron deficiency anemia. *Dig Dis Sci.* 2010;548-559.
10. Shah S, et al. Immunosuppressive therapy for aplastic anemia: a single-center experience from western India. *Ann Hematol.* 2019;41-46.
11. Noreen S, Nouroz F, Ahmad S, et al. Prevalence of anemia in pregnant women of district Abbottabad, Pakistan. *Pak J Clin Biomed Res.* 2014;12-16.
12. Khalid R, Irshad J, Saleem A, Ashraf S. Risk factors of anemia in pregnant women in a rural area of Bahawalnagar, Pakistan: A descriptive cross-sectional study. *Pak J Med Health Sci.* 2017;1238-1240.
13. Prakash S, Kumar A, Sharma S. Prevalence and risk factors of anemia in rural women of reproductive age in Malwa region of Punjab, India. *J Fam Med Prim Care.* 2013;2(3):257-262.
14. Ahmad A, Iqbal S, Rana S, Farooq H. Frequency of anemia in pregnant females presenting in gyne outdoor Shalamar Hospital Lahore. *Pak J Med Health Sci.* 2017;976-978.
15. Anabire NG, Billak DG, Helegbe GK. Alcohol intake, smoking, self-medication practices, and burden of anemia. *BMC Res Notes.* 2023;1-5.
16. Raza MA, Rahman MU. Anemia in pregnant women: A review of the recent literature. *J Health Med Sci.* 2019;44-46.
17. Rathi SK, Vadhwani S, Wadhwani S, Goyal RK. Maternal anemia and adverse pregnancy outcomes. *J Clin Diagn Res.* 2023;1-6.
18. Rizwan MS, Iqbal M. Prevalence of anemia among pregnant women in southern Punjab, Pakistan: A hospital-based study. *BMC Pregnancy Childbirth.* 2021;1-7.
19. Saleh AH, Laman MD, Abbad AA. Anemia in pregnant women in Al-Karak city. *J Health Med Sci.* 2016; 14:143-148.
20. Sarfraz A, Ahmed A, Khan MR, Ullah MF. Prevalence and determinants of anemia among pregnant women in rural Pakistan. *J Community Med Health Educ.* 2023;1-6.
21. Shah A, Zubair S, Ullah MF, Rashid S. Prevalence of anemia among the pregnant women attending obstetric and gynecological clinics in Pakistan: A cross-sectional study. *J Med Case Rep.* 2023; 14:1-5.

22. Siddique K, Shafique K, Malik A. Prevalence of anemia in pregnant women attending antenatal clinics. *J Ayub Med Coll Abbottabad.* 2013;25(1):17-20.
23. Sulaiman S, Chandrasekaran R, Noor RM. Effects of anemia on the growth and development of children: A review. *J Environ Public Health.* 2016;1-5.
24. Tahir S, Amjad A. Prevalence of anemia in pregnancy and its associated risk factors. *Ann King Edward Med Univ.* 2021;11-14.