P-ISSN: 2790-6795	Annals of Human and Social Sciences	Oct-Dec 2023,Vol. 4, No. 4
O-ISSN:2790-6809	http://doi.org/10.35484/ahss.2023(4-IV)04	[42-50]

Annals of Human and Social Sciences
www.ahss.org.pk

RESEARCH PAPER

Prevalence of Anemia and its Determinants among the Rural Women of Khyber Pakhtunkhwa-Pakistan

[1]Shaista Naz*, [2]Mahnoor Aslam and [3]Aniqa Sayed

1. Assistant Professor, Department of Rural Development, Amir Muhammad Khan Campus Mardan, The University of Agriculture, Peshawar, KP, Pakistan.
2. Graduate, School of Public Health, University of Alberta, Canada
3. Master of Public Health, University of Alabama, Birmingham, USA

Corresponding Author shaista@aup.edu.pk

ABSTRACT

Current study investigated prevalence of anemia and its determinants among the rural women of Khyber Pakhtunkhwa-Pakistan. Anmeia is a major public health concern in the country, however there is a lack of research studies in the rural settings. For the prevalence of anemia, 100 respondents provided blood samples and a questionnaire was also filled from each respondent. For the determinants of anemia, key informant interviews (10) from the lady doctors were conducted. It was found that more than half of the respondents were anemic as their hemoglobin was <12.0 g/dl. Socioeconomic status, cultural and gender norms, dietary factors, reproductive factors, and other factors were the important determinants of anemia among the rural women. The study calls for the developmental interventions like improved access to iron-rich foods, promotion of education and awareness, enhancement of healthcare services, and addressing of gender disparities in the study area to combat anemia.

Keywords: Anemia, Determinants, Key Informant Interviews, Prevalence

Introduction

Anemia is a major public health concern especially among the women of reproductive age due to the associated adversaries like maternal mortality, morbidity and, adverse pregnancy outcomes (Ali et al., 2020). Anemia represents the situation when the concentration of hemoglobin (Hb) falls below the established threshold value of <12.0 g/dl among women of the reproductive age, which results in a reduced capacity of blood to transport oxygen to the body (WHO, 2011). Anemia prevalence around the world has been reported as two third among the women of reproductive age (WHO, 2015; Ali et al., 2020). Globally, more than half a billion reproductive age women had been affected by anemia (Kassa et al., 2017). Both pregnant and non-pregnant women are affected by anemia (Ali et al., 2020; WHO, 2015).

High number of anemic women has been found in the South Asian and African countries (Habib et al., 2018). Among the South Asian countries, Pakistan is also experiencing anemia as the major health issue (Ali et al., 2020). It has been found that anemia affects about 42% to 77% of women in the country (MoNHSR&C, 2018). The statistics goes high in the rural areas as compared to urban areas and thus results in a number of health complications like maternal mortality (Naz et al., 2022b), preterm delivery, postpartum hemorrhage, stillbirth, and low birth weight babies (Ali et al., 2020; Hambidge et al., 2019).

In the above mentioned context, it is important to deal with the issue so that the consequences may be reduced or eliminated. However, for this it is important that the issue may be understood in the context of its various socioeconomic, cultural and other factors.

In this regard, the literature showed for a few studies (Habib et al., 2018; Ali et al., 2020; Ali et al., 2021) which has been discussed in the upcoming section of this research paper.

Literature Review

Among the South-east Asian countries, like India, Cambodia, Pakistan, Nepal, Bangladesh, and Maldives are the highly affected countries in terms of anemia, where about 42% of women has been reported as anemic (Ali et al., 2021). In the country, about 42% of women are anemic with a high prevalence in the rural areas as compared to urban areas (MoNHSR&C, 2018). Moreover, high prevalence has been found among the women who belong to low socioeconomic status (Bentley & Griffiths, 2003). Similarly, anemia has been found high among the women with low body weight and who have recently gave birth to a child (Ali et al., 2021). According to the national survey conducted in 2018, anemia is mostly due to iron deficiency among women which is more prevalent in the rural areas as compared to urban areas.

A study conducted by Baig-Ansari et al., (2008) reported that 75% of the regional population of Pakistan is anemic. Similarly, another study conducted in the rural areas of the country found that 77% of women in the area were anemic, included about 21% mildly anemic and 56% were sever anemic (Parks et al., 2018). Literature shows that the high prevalence of anemia results in sever health issues and complications (Habib et al., 2018). Like in pregnant women it led to the poor maternal and fetal outcomes such as intrauterine growth retardation, abortion, post-partum hemorrhage, stillbirths, low-birth-weight, prematurity, and perinatal mortality (Ali et al., 2020). A recent study conducted by WHO shows that severe anemia led to two-fold increase in the risk of maternal deaths (Daru et al., 2018).

In terms of prevalence of anemia in the country is abundant covering the rural areas as well. However, the Khyber Pakhtunkhwa province of the country is partly neglected in terms of the prevalence of the issue in the rural areas. Therefore, there is a need to understand the issue in terms of its associated factors which can increase or decrease anemia among the rural women. Literature indicates for a few available studies such as Ali et al., (2020), Habib et al., (2018), Anum et al., (2015), Ullah et al., (2013) who had covered the determinants of anemia in the country. However, these studies have not covered all the determinants and prevalence of the issue especially in the rural areas of the Khyber Pakhtunkhwa province. Therefore, there is a need to fill in the left research gap. In this regard, the current research study is an attempt to fill out the gap.

Material and Methods

The current study is conducted in Khyber Pakhtunkhwa province of Pakistan. The research study site is primarily district Mardan of the province. A facility based research study was conducted in the Sara Khalid Maternity Clinic located in Parhoti Mardan. The duration of the study was from March to May, 2023. The total respondents of the study who had visited the clinic was 100 women of reproductive age (i.e. 18 to 40 years). For the prevalence of anemia, complete blood count test (CBC) was performed in the Sara Khalid Lab. The CBC is a standard blood test that provides essential information about the blood, including hemoglobin concentration, hematocrit (the proportion of blood volume occupied by red blood cells), and red blood cell count. A hemoglobin level below a certain threshold, often <12.0 g/dL, is typically used to diagnose anemia among women.

Hemoglobin levels (grams per deciliter) in the blood was used to classify a woman as anemic established through the CBC. Moreover, the World Health Organization (WHO) cut-off of a hemoglobin level <12.0 g/dL was used for the classification of a non-pregnant woman aged ≥15 years as anemic (Trinh LTT, Dibley, 2007; Kamruzzaman et al., 2015; Ali et al., 2020). Data regarding socioeconomic characteristics of the respondents were

collected through a questionnaire including, age, marital status, literacy status, profession, and household income level from the willing candidates. The study followed research ethics of data privacy and usage for research purpose only (Naz et al., 2022a; Naz et al., 2023b).

Frequencies and percentages were used for the analysis of data. For the determinants of anemia among rural women Key Informant Interviews were conducted with lady doctors of Khyber Pakhtunkhwa province. A total of 10 key informant interviews (i.e. 2 each from Mardan, Charsadda, Peshawar, Nowshehra and Swabi) were conducted. The collected data were subjected to thematic analysis (Naz et al., 2023a; Afridi et al., 2022). The results were interpreted and discussed in the upcoming section of this article.

Results and Discussion

Data in Tale 1 show the socioeconomic characteristics of the respondents. It has been found that 23%, 52%, and 25% respondents were of the age group of 20-30 years, 31-40 years, and above 40 years, respectively. In the case of marital status, 25% were single, while 75% were married. A total of 54% respondents were literate, while 46% were illiterate. A total of 67%, 12%, and 21% respondents were housewives, in service, and students, respectively. Regarding total annual household income, data show that 28%, 43%, 14%, 10%, and 05% respondents had PKR 10,000-20, 000, PKR 21,000-30,000, PKR 31,000-40,000, PKR 41,000-50,000, and above PKR 50,000 annual income, respectively.

Table 1
Socioeconomic characteristics of the respondents

Variable	Frequency	Percentage
Age (in years)		
20-30	23	23
31-40	52	52
Above 40	25	25
Marital status		
Single	25	25
Married	75	75
Literacy status		
Literate	54	54
Illiterate	46	46
Profession		
Housewives	67	67
In service	12	12
Students	21	21
Household Income level (PKR)		
10,000-20,000	28	28
20001-30,000	43	43
30,001-40,000	14	14
40,001-50,000	10	10
Above 50,000	05	05

Prevalence of anemia

Data in table 2 show the prevalence of anemia in the study area. it has been found that 69% of the respondents were anemic, while 31% were non-anemic.

Table 2
Prevalence of anemia among the respondents of the study

Variable	Frequency	Percentage
Anemic	69	69

Non-anemic	31	31
Total	100	100

Determinants of Anemia

Determinants of anemia among rural women in the Khyber Pakhtunkhwa (KP) province of Pakistan is a multifaceted issue influenced by a combination of determinants. Understanding these determinants is crucial for developing effective strategies to address anemia in this specific population. Here are some of the key determinants of anemia among rural women in KP, Pakistan derived from the key informant interviews through thematic analysis. These include socioeconomic status of rural women, dietary factors, reproductive factors, cultural and gender norms, infections and parasitic diseases, access to healthcare, education, early marriages and childbearing, and limited awareness. The several sub-themes under the main themes have also been discussed as follow;

Socioeconomic Status

Poverty: Rural areas of the province in general face economic challenges, leading to limited access to nutritious food, healthcare, and education. The economic challenges results in widespread poverty in the rural areas thus affecting the rural women in terms of their limited access to education, awareness, healthcare and nutritious food leading to anemia.

Lack of Education: Lower educational attainment among rural women may result in limited awareness of the importance of nutrition and healthcare practices for preventing anemia.

Cultural and Gender Norms

Under this themes or factors, lady doctors pointed out two main factors i.e. gender disparities and food distribution mentioned as below;

Gender Disparities: Cultural norms and gender inequalities affect rural women in terms of their limited access to food, healthcare services, and decision-making, resulting in their increased vulnerability to anemia.

Early Marriages and Childbearing: Early marriage can lead to early and frequent pregnancies, increasing the risk of anemia.

Food Distribution and Food insecurity: In most of the rural households, men and children receive priority in food distribution, leaving women with less nutritious meals. The households with food insecurity adopt certain coping strategies which affect the meal choices of women and thus their likeliness towards anemia increases.

Dietary Factors

Dietary factors includes iron deficient diet and inadequate intake of micro nutrients pointed out during the key informant interviews.

Iron-deficient Diet: A diet low in iron-rich foods is a major determinant of anemia pointed out by the lady doctors. Rural women tend to consume less amount of fruits and meat which are the main sources of iron. It was further reported that these women in general have limited access to diverse and nutritious foods which results in iron deficiency and thus anemia.

Inadequate Intake of Micronutrients: It was reported that rural women are in general facing deficiency of various micronutrients like folate, vitamin B12, and vitamin C. These micronutrients play an important role in anemia and thus affecting rural women.

Reproductive Factors

Pregnancy and Lactation: Women in rural areas may have high fertility rates, and multiple and frequent pregnancies which increases their risk towards anemia. Women in rural settings with low resources can't affords proper diet and thus with the multiple and frequent pregnancies they are mostly anemic. Similarly, breastfeeding in women deplete iron stores and thus leading to anemia. In this situation, women need to take supplements but due to their unawareness, less access to healthcare services, and ow socioeconomic status, their chances to anemia increases.

Other Factors

Limited Awareness: Health and Nutrition Awareness: Rural women may have limited access to health and nutrition information, affecting their ability to make informed choices.

Infections and Parasitic Diseases: Malaria and Hookworm: Rural areas may have a higher prevalence of diseases like malaria and hookworm infections, which can lead to anemia.

Lack of Clean Water and Sanitation: Poor access to clean water and sanitation facilities can contribute to the spread of waterborne diseases, impacting anemia rates.

Limited Access to Health Facilities: Rural areas in KP may have limited access to healthcare facilities, making it challenging for women to receive timely anemia screening and treatment.

Discussion

The current study has investigated prevalence and determinants of anemia among the rural women of Khyber Pakhtunkhwa province of Pakistan. For this, mixed method of research was used and data were collected through a questionnaire and key informant interviews. Current study has demonstrated high prevalence of anemia in the study area among the women. The results are consistent with the previous findings of various studies who had found that 41% to 77% of women are anemic in the rural areas of the country (MoNHSR&C, 2018; Parks et al., 2019; Ali et al., 2020).

Socioeconomic status of women serves an important determinant of anemia as reported in the current study. The higher economic status led to the non-anemic status of rural women, while the poor socioeconomic conditions led to anemia among these women. The same fact has been endorsed in the literature at large (Gebremedhin & Enquselassie, 2011; Ullah et al., 2013; Kamruzzaman et al., 2015; Ali et al., 2020). A study conducted in the northern areas of Pakistan reported that rich women are less likely to be anemic as compared to poor women (Ullah et al., 2013). It shows that the purchasing power of the women with low socioeconomic status is challenging which led to the low intake of iron rich food like meat, fruits and vegetables. Therefore, these women tend to consume non-nutritious diet consequently resulting in anemia (Ghose et al., 2016; Harding et al., 2018). Educational status of women serves as an important indicator of the socioeconomic status of women in the rural areas and has a strong association with anemia as well. The low levels or lack of education results in the low awareness about nutritious food and preventing measures about anemia. Thus, women with the lack of education are more likely to be anemic as compared to educated women. The same fact has been endorsed in the literature as well (Kamruzzaman et al., 2015; Ullah et al., 2013).

Cultural and gender norms prevailing in the study area also determines anemia among women. The current study reported that gender disparities at domestic level and community level not only limited women's access to healthcare services but also affect women's nutrition level. Women are mostly belong to low socioeconomic status and thus their access to proper diet is limited. The households hit with food insecurity cope the situation by limiting women's meals (Azam et al., 2022) and thus increasing their vulnerability to anemia. The same fact has been endorsed in the literature as well (Ali et al., 2020; Habib et al., 2018). Similarly, early marriages are common in the area which results in early pregnancies and thus increasing the risk to anemia among women (Ali et al., 2021). In most of the rural households, men and children receive priority in food distribution, leaving women with less nutritious meals. The households with food insecurity adopt certain coping strategies which affect the meal choices of women and thus their likeliness towards anemia increases (Habib et al., 2018).

Dietary factors such as low iron diet was found as the major risk factor or determinant of anemia in the current study among the rural women. The low amount of meat and fruits consumption among rural women largely contribute to iron deficiency and thus leading to anemia. The same findings have been reported by Ali et al., (2020) that women in rural Sindh consume less amount of fruits, vegetables and meat which resulted in iron deficiency and thus contributing to anemia. Literature indicates that four-fifths of rural Pakistani women in Sindh were found to consume a diet with inadequate diversity, which contribute towards anemia among women (Lander et al., 2019). The current study has also reported that women of the study area do not consume appropriate diet encompassing essential micronutrients like folate, vitamin B12, and vitamin C which increases the risk of anemia. In this regard, the available literature in the country also supported the fact that in rural areas women tend to consume food having less calories, proteins and key micronutrients (Lander et al., 2019).

Reproductive factors which determines anemia included pregnancy and lactation. Women in rural areas may have high fertility rates, and multiple and frequent pregnancies which increases their risk towards anemia. Women in rural settings with low resources can't affords proper diet and thus with the multiple and frequent pregnancies they are mostly anemic. Literature n this regard also endorse these facts (Habib et al., 2018; Ali et al., 2020). Similarly, breastfeeding in women deplete iron stores and thus leading to anemia. In this situation, women need to take supplements but due to their unawareness, less access to healthcare services, and ow socioeconomic status, their chances to anemia increases. The same fact has been endorsed in the literature (Fite et al., 2021; Ali et al., 2020; Habib et al., 2018).

There are various other factors like limited awareness about anemia, limited access to healthcare services, lack of clean water and sanitation, and infections and parasitic diseases which increases women's likelihood to anemia in the rural settings. Literature are also in conformity with these determinants of anemia. In this regard, literature reports that limited access to healthcare services results in the low level of diagnosis and treatment of anemia among women (Naz et al., 2023a; Ali et al., 2020). Likewise, infections and parasitic diseases like malaria also increases the vulnerability of women to anemia (Fite et al., 2021; Kassa et al., 2017). Lack of clean water and sanitation lead to the outburst of various diseases including the vulnerability to anemia among women as well (Ali et al., 2020).

Conclusions

Current study investigated the prevalence and determinants of anemia among the rural women of Khyber Pakhtunkhwa Pakistan. It was concluded that anemia prevalence is high as more than half of the respondents of the study were found anemic. The various determinants of anemia in the province included socioeconomic factors, gender and cultural norms, dietary factors, reproductive factors, and other factors like limited awareness about

anemia, limited access to healthcare services, lack of clean water and sanitation, and infections and parasitic diseases.

Recommendations

Addressing anemia among rural women in the province needs a comprehensive approach with appropriate consideration of these determinants. The developmental interventions should include improving access to iron-rich foods, promoting education and awareness, enhancing healthcare services, and addressing gender disparities. Community-based programs, along with government and non-governmental initiatives, are vital to combat anemia and improve the overall health and well-being of the rural women in this region.

References

Afridi, M. J., U. Zada, I. Younas. (2022). Factors influencing the Effectiveness of Dispute Resolution Council in Khyber Pakhtunkhwa-Pakistan. *Journal of Development and Social Sciences,* 3(4), 452-461.

Ali S. A, Khan U, Feroz A. (2020). Prevalence and determinants of anemia among women of reproductive age in developing countries. *Journal of Coll Physicians Surgery Pakistan*, 30(2), 177-186.

Anam, A., M. Maleeha, M. Nadia, Shakir H. A. (2015). Prevalence of anemia during pregnancy in district Faisalabad, Pakistan. *Punjab University Journal of Zoology*, 30(1), 15–20.

Azam, A., Naz, S., Shafi, M. M., Afridi M. J. & Waheed, A. (2022). What determines food security among the farm households of Khyber Pakhtunkhwa, Pakistan? A binary logistic regression analysis. *Sarhad Journal of Agriculture,* 38(5), 346-354

Bentley M, Griffiths P. (2003) The burden of anemia among women in India. *European journal of clinical nutrition*, 57(1),52.

Baig-Ansari N, Badruddin SH, Karmaliani R, Harris H, Jehan I, Pasha O. (2008). Anemia prevalence and risk factors in pregnant women in an urban area of Pakistan. *Food and nutrition bulletin*, 29(2), 132–9.

Daru J, Zamora J, Fernández-Félix B. M, Vogel J., Oladapo O. T, Morisaki N. (2018). Risk of maternal mortality in women with severe anaemia during pregnancy and post partum: a multilevel analysis. *The Lancet Global Health*. 6(5), 133-147.

Fite, M. B., N. Assefa and B. Mengiste. (2021). Prevalence and determinants of Anemia among pregnant women in sub-Saharan Africa: a systematic review and Meta-analysis. A*rchives of Public Health*, 79, 219.

Gebremedhin S, Enquselassie F. (2011). Correlates of anemia among women of reproductive age in Ethiopia: evidence from Ethiopian DHS 2005. *Ethiopian Journal of Health Development*, 25(1), 22–30.

Ghose B, Tang S, Yaya S, Feng Z. (2016). Association between food insecurity and anemia among women of reproductive age. *Peer Journal,* 4:e1945.

Habib, M. A., C. R. Greenow, S. B. Soofi, N. Ali, S. Nausheen, I. Ahmed, Z. A. Bhutta and K. I. Black. (2018). Prevalence and determinants of iron deficiency anemia among non-pregnant women of reproductive age in Pakistan. *Asia Pacific Journal of Clinical Nutriton*, 27(1), 195-203.

Harding K. L, Aguayo V. M, Namirembe G, Webb P. (2018). Determinants of anemia among women and children in Nepal and Pakistan: An analysis of recent national survey data. *Maternal & child nutrition.* 14: e12478.

Kamruzzaman M, Rabbani M. G, Saw A, Sayem M. A, Hossain M. G. (2015). Differentials in the prevalence of anemia among non-pregnant, ever-married women in Bangladesh: multilevel logistic regression analysis of data from the 2011 Bangladesh Demographic and Health Survey. *BMC women's health.* 15 (1), 54.

Kassa, G. M., A. A. Muche, A. K. Berhe, and G. A. Fekadu. (2017). Prevalence and determinants of anemia among pregnant women in Ethiopia; a systematic review and meta-analysis. *BMC Hematol.* 17, 17.

Lander R. L, Hambidge K. M, Westcott J. E, Tejeda G, Diba T. S, Mastiholi S. C. (2019). Pregnant women in four low-middle income countries have a high prevalence of inadequate dietary intakes that are improved by dietary diversity. *Nutrients.* 11(7), 348-363.

Ministry of National Services Regulation and Coordination (MoNHSR&C) GoP. (2018). *National Nutrition Survey.*

Naz, S., O, Khan, M. Azam. (2023a). Determinants of rural women's' healthcare behavior in the rural areas of Khyber Pakhtunkhwa, Pakistan. *Journal of Development and Social Sciences,* 4(1), 160-168.

Naz, S., O, Khan, R. Karim. (2023b). Gender disparities in livestock management and control over livestock income in erstwhile FATA, Khyber Pakhtunkhwa, Pakistan. *Annals of Human and Social Sciences, 4*(1), 137-149.

Naz, S., M. Aslam, R. Karim. (2022b). Healthcare Behavior, utilization and associated factors in the rural areas of Khyber Pakhtunkhwa, Pakistan. *Journal of Development and Social Sciences,* 3(4), 254-265.

Naz, **S**., M. Aslam, Azra, R. Karim. (2022a). Social and cultural factors influencing maternal mortality in Khyber Pakhtunkhwa, Pakistan. *Journal of Positive School Psychology.* 6(10), 453-465.

Parks S, Hoffman M. K, Goudar S. S, Patel A, Saleem S, Ali S. A. (2019). Maternal anaemia and maternal, fetal, and neonatal outcomes in a prospective cohort study in India and Pakistan. BJOG: *An International Journal of Obstetrics & Gynaecology*, 126(6), 737–43.

Trinh L. T. T., Dibley M. (2007). Anaemia in pregnant, postpartum and non-pregnant women in Lak district, Daklak province of Vietnam. *Asia Pacific journal of clinical nutrition*, 16(2).

Ullah I, Zahid Muhammad, Ismail Khan Muhammad S M. (2013). Prevalence of anemia in pregnant women in district Karak, Khyber Pakhtunkhwa, Pakistan. *International Journal of Biosciences*, 3, 77–83.

World Health Organization. 2011. *Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity*.

World Health Organization. 2015-2017. *The global prevalence of anaemia in 2011*. Geneva: World Health Organization.

WHO.(2014). *Global nutrition targets 2025: anaemia policy brief (WHO/NMH/NHD/14.4)* Geneva: World Health Organization.