ORIGINAL ARTICLE

Factors Associated with Anemia Among Pregnant Women attending Arif Memorial Teaching Hospital, Lahore

SAIMA QURBAN[1], ASMA YASIN[2], SAMAR HUSSAIN[3], MADIHA AFZAL[4], HUMA TAHSEEN[5], AYESHA AZHAR KHAN[6]

[1,3,6]Assistant Professor of Obstetrics and Gynecology, Rashid Latif Medical College, Lahore
[2]Professor of Obstetrics and Gynecology, Rashid Latif Medical College, Lahore
[4]Associate Professor of Obstetrics and Gynecology, Rashid Latif Medical College, Lahore
[5]Associate Professor of Obstetrics and Gynecology, Azra Naheed Medical College, CMA Hospital, Raiwind Road, Lahore
Correspondence to: Dr. Saima Qurban, Email: saimaqurban11@gmail.com, Phone:+92 333 4586662

ABSTRACT

Background: Anemia in pregnancy is a major contributor that leads to severe morbidity and even high risk for maternal mortality. There is lack of information about factors that lead to anemia, especially in low-income countries.
Objective: To determine the frequency of factors associated with anemia among pregnant women attending a tertiary care hospital, Lahore
Material and methods: This cross sectional study was one at Department of Obstetrics & Gynecology for 6 months from 1st October 2021 to 1st March 2022. One hundred females were enrolled and their medical records and history was taken to determine the factors involved in anemia during pregnancy. All the data was analyzed in SPSS v26.
Results: In this study, the mean age of females was 28.61 ± 6.45 years. The mean gestational age at presentation was 35.02 ± 2.17 weeks. The mean age at first pregnancy was 22.76 ± 4.79 years. The mean birth interval was 7.39 ± 3.92 months. Out of 100 females, the most common factor was inter-pregnancy interval <6 months [48 (48%)], followed-by 72 (72%) not taken folic acid, 86 (86%) of not taking iron supplement, 44 (44%) were taking grains only, 50 (50%) were taking vegetables only, 41 (41%) were taking meat >2 times per week, 64 (64%) were not taking fruits, 69 (69%) were not taking milk, 57 (57%) were avoiding food or taking less meals, 61 (61%) had nausea and vomiting during pregnancy and 38 (38%) had chronic anemia (before pregnancy).
Conclusion: In this study, all of the above factors were highly effective in occurrence of anemia in pregnancy.
Key words: pregnancy, anemia, nausea and vomiting, folic acid

INTRODUCTION

Anemia, defined as a low blood haemoglobin concentration, is a public health issue that affects both developing and wealthy countries. Due to a variety of variables, including parasite infection and food habits during pregnancy, anaemia poses the greatest threat to expectant mothers.[1] There are less red blood cells and haemoglobin present in the blood when a person has anaemia. The three kinds of anaemia are mild, moderate, and severe. To be classified as "mild," "moderate," or "less than 7 g/dL," a woman's haemoglobin concentration should be between 10.0 and 10.9 g/dL during pregnancy (severe). [1-3] It is usual for pregnant women to experience mild anaemia. Anemia is more common in women than in men because of a lack of iron or vitamin D and other factors. Anemia can lead to exhaustion and exhaustion. If it is severe but not handled, it might increase the risk of significant complications, such as early birth.[4]

In pregnant women, anaemia can be caused by a variety of factors. It has been suggested that the presence of geo-helminth infections during pregnancy could be associated to maternal anaemia. Pregnant women are at an increased risk of developing anaemia due to hookworm infection, which is itself a known cause of anaemia..[5, 6] Reduced maternal anaemia is essential for safe motherhood. Anemia risk factors are diverse and complex, especially during pregnancy. As a result, understanding these risk factors and respondents' compliance with government-implemented programmes are critical for preventing anaemia and its effects.[7]

Therefore, we planned this study to get evidence for local population and extent of different factors on the development of anemia in pregnancy. This would help us to determine the major contributor of anemia in pregnancy and we can control the modifiable factors in order to prevent anemia in prengnacy.

MATERIAL AND METHODS

Study design: Cross sectional study
Study place: Department of Obstetrics & Gynecology, Arif memorial teaching hospital, Lahore from 1st October 2021 to 1st March 2022.

Sample size: Sample size of 100 cases is calculated with 95% confidence level, 9.5% margin of error and percentage of anemia i.e. 36.5%[8] in pregnancy
Sampling technique: Non-probability, consecutive sampling
Selection criteria: Females of age 18-40 years, presenting at gestational age >32 weeks and diagnosed with anemia (hb<10g/dl during pregnancy). Females already received blood transfusions, hemolytic or sickle cell anemia, cardiac disease, renal or liver dysfunction, females presenting with excessive bleeding were excluded from the study
Data collection: Females were enrolled and informed consent was taken. All females were ensured about the security of their personal information and only use for research purpose. Demographic information including name, age, gestational age, parity, number of abortions, socioeconomic status, were noted. Then females were asked for their routine diet and antenatal care to determine the factors of anemia in pregnancy.
Data analysis: SPSS version 26 was used to enter and analyze the collected data. Numeric variables like age, gestational age, BMI were presented as mean and standard deviation while categorical variables like socioeconomic status and factors were presented as frequency and percentage.

RESULTS

In this study, the mean age of females was 28.61 ± 6.45 years. The mean gestational age at presentation was 35.02 ± 2.17 weeks. The mean BMI of females was 23.89 ± 3.30 kg/m². Out of 100 female, 10 (10%) were primigravida, 43 (43%) were primiparous, 21 (21%) had parity 2, 18 (18%) had parity 3 and 8 (8%) had parity 4. Out of 100 females, 9 (9%) females had history of abortions. There were 21 (21%) housewives, 18 (18%) were maids, 28 (28%) were doing office job while 33 (33%) were laborer. Out of 100 females, 19 (19%) were illiterate, 27 (27%) were matric pass, 28 (28%) were graduate while 26 (26%) were postgraduate. Out of 100 females, 53 (53%) came from urban region while 47 (47%) came from rural region. About 32 (32%) females had low socioeconomic status, 33 (33%) females had middle socioeconomic status, and 35 (35%) females had high socioeconomic status. Table 1

The mean age at first pregnancy was 22.76 ± 4.79 years. The mean birth interval was 7.39 ± 3.92 months. Out of 100 females, 48 (48%) females had <6 months interval between two consecutive pregnancies, 39 (39%) had inter-pregnancy interval of 7-12 months, while 13 (13%) females had >12 months of inter-pregnancy interval. Mostly females had 3 or less antenatal visit i.e. 27 (27%) females had only 2 antenatal visit. Only 28 (28%) females had history of taking folic acid, 14 (14%) had history of taking iron supplement during current pregnancy. Out of 100 females, 45 (45%) had 2 meals per day while 50 (50%) were taking 3 meals per day. Out of 100 females, 44 (44%) were eating grains only, 50 (50%) were taking vegetables only, 41 (41%) were taking meat >2 times per week, 64 (64%) were not taking fruits, 69 (69%) were not taking milk, 57 (57%) were avoiding food or taking less meals, 61 (61%) had nausea and vomiting during pregnancy and 38 (38%) had chronic anemia (before pregnancy). Table 2

Table 1: Demographics features of females

	Mean ± SD, f (%)
n	100
Age (years)	28.61 ± 6.45
Gestational age at presentation	35.02 ± 2.17
BMI	23.89 ± 3.30
Parity	
Primigravida	10 (10%)
Parity 1	43 (43%)
Parity 2	21 (21%)
Parity 3	18 (18%)
Parity 4	8 (8%)
Gravidity	
2	53 (53%)
3	21 (21%)
4	18 (18%)
5	8 (8%)
Abortions	
No	91 (91%)
Yes	9 (9%)
Occupation	
House wife	21 (21%)
Maid	18 (18%)
Job	28 (28%)
Laborer	33 (33%)
Education	
Illiterate	19 (19%)
Matric	27 (27%)
Graduate	28 (28%)
Postgraduate	26 (26%)
Family income	
<25000/-	31 (31%)
25-50,000	32 (32%)
>50,000	37 (37%)
Family system	
Nuclear	53 (53%)
Combined	47 (47%)
Residence	
Urban	53 (53%)
Rural	47 (47%)
Socioeconomic status	
Low	32 (32%)
Middle	33 (33%)
High	35 (35%)

Table 2: Factor leading to anemia in pregnancy

	Mean ± SD, F (%)
n	100
Age at first pregnancy (years)	22.76 ± 4.79
Birth interval (months)	7.39 ± 3.92
<6 months	48 (48%)
7-12 months	39 (39%)
>12 months	13 (13%)
Number of antenatal visits in current pregnancy	
2	37 (37%)
3	35 (35%)
4	28 (28%)

History of taking folic acid in pregnancy	
Yes	28 (28%)
No	72 (72%)
History of taking iron in pregnancy	
Yes	14 (14%)
No	86 (86%)
Meal per day	
2	45 (45%)
3	50 (50%)
4	5 (5%)
Eating grains only	
Yes	44 (44%)
No	56 (56%)
Eating vegetables only	
Yes	50 (50%)
No	50 (50%)
Taking meat >2 times per week	
Yes	41 (41%)
No	59 (59%)
Taking fruits	
Yes	36 (36%)
No	64 (64%)
Taking milk	
Yes	31 (31%)
No	69 (69%)
Avoiding food	
Yes	57 (57%)
No	43 (43%)
Nausea & vomiting	
Yes	61 (61%)
No	39 (39%)
Chronic anemia	
Yes	38 (38%)
No	62 (62%)

DISCUSSION

Anemia is prevalent in women of reproductive age group i.e. aged between 15 to 44 in Pakistan, with a prevalence of 26% in urban regions and 47% in rural ones. At a large private hospital, pregnant women who frequent prenatal clinics are more likely to be anaemic, with rates ranging from 29 percent to 50 percent.[9,10,11] A high prevalence of anaemia among pregnant women prompted India to develop the National Nutritional Anemia Prophylaxis Program to prevent anaemia in pregnant women. [12, 13]

Pregnant women's and their unborn children's long-term status of nutrition can be effected by healthy eating habits throughout pregnancy. More likely pregnant women are suffer from a lack of nutrition because of their eating habits and patterns than at any other time in their lives. [14-16] According to a study, many women in less developed nations reduce their prenatal food consumption out of fear of having a baby that is too big for gestational age, increasing their risk of labour problems.[17]

More stillbirths, early deliveries, low birth weight, and maternal and perinatal deaths can be caused by anaemia. Poor eating behaviors include coffee, excessive tea, or intake of chocolate in meal times, daily decrease meals (to three), and a deficiency of variety in food. [16] Some important nutrients were found to be inadequate in the average nutritional intake, leading to anaemia, and the occurrence of anaemia was higher in women who was pregnant and ate twice a day, according to a study of their eating habits. Item(s) [18-19]

In our study, the most common factor was inter-pregnancy interval <6 months [48 (48%)], followed-by 72 (72%) not taken folic acid, 86 (86%) of not taking iron supplement, 44 (44%) were taking grains only, 50 (50%) were taking vegetables only, 41 (41%) were taking meat >2 times per week, 64 (64%) were not taking fruits, 69 (69%) were not taking milk, 57 (57%) were avoiding food or taking less meals, 61 (61%) had nausea and vomiting during pregnancy and 38 (38%) had chronic anemia (before pregnancy).

In a study conducted by Ansari et al., those who drank more than three cups of tea daily, ate clay or dirt, or never ate eggs were all linked to an increased risk for miscarriage. The adjusted odds

ratio of 3.2 and the 95 percent confidence interval of 1.3 to 8.0 percent, respectively, were found to be associated with miscarriage. [9]

Tea's detrimental effects on iron absorption should be made known to all women with anaemia, and they should be counselled to reduce or at the very least spread out their tea consumption around mealtimes.[20] The iron absorption problems caused by pica, in particular by clay and dirt, should also be made known to expectant mothers.[21, 22]

CONCLUSION

In this study, all of the above factors were highly effective in occurrence of anemia in pregnancy. Now we can implement findings of this study in local setting and implement counselling sessions for females with anemia in pregnancy to control the modifiable factor that lead to anemia and can prevent several complications related to anemia.

REFERENCES

1. Hailu T, Kassa S, Abera B, Mulu W, Genanew A. Determinant factors of anaemia among pregnant women attending antenatal care clinic in Northwest Ethiopia. Tropical Diseases, Travel Medicine and Vaccines. 2019;5(1):13.
2. Liyew AM, Tesema GA, Alamneh TS, Worku MG, Teshale AB, Alem AZ, et al. Prevalence and determinants of anemia among pregnant women in East Africa; A multi-level analysis of recent Demographic and Health Surveys. PloS one. 2021;16(4):e0250560.
3. Ness TE, Agrawal V, Bedard K, Ouellette L, Erickson TA, Hotez P, et al. Maternal hookworm infection and its effects on maternal health: a systematic review and meta-analysis. The American Journal of Tropical Medicine and Hygiene. 2020;103(5):1958.
4. Uscher J. Anemia in Pregnancy 2020 [cited 2022]. Available from: https://www.webmd.com/baby/guide/anemia-in-pregnancy.
5. Woldegebriel AG, Gebregziabiher Gebrehiwot G, Aregay Desta A, Fenta Ajemu K, Berhe AA, Woldearegay TW, et al. Determinants of anemia in pregnancy: findings from the Ethiopian health and demographic survey. Anemia. 2020;2020.
6. Abdulridha AS. Prevalence and Risk Factors of Anemia in Pregnant Women in Wasit Province, Iraq. Annals of the Romanian Society for Cell Biology. 2021;25(6):20298-307.
7. Sinha A, Adhikary M, Phukan JP, Kedia S, Sinha T. A study on anemia and its risk factors among pregnant women attending antenatal clinic of a rural medical college of West Bengal. Journal of Family Medicine and Primary Care. 2021;10(3):1327-31.
8. WHO. WHO Global Anaemia estimates 2021 [cited 2022]. Available from: https://www.who.int/data/gho/data/themes/topics/anaemia_in_women _and_children#:~:text=In%202019%2C%20global%20anaemia%20pr evalence,39.1%25)%20in%20pregnant%20women.
9. 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.
10. Bhandari S, Sayami JT, Thapa P, Sayami M, Kandel BP, Banjara MR. Dietary intake patterns and nutritional status of women of reproductive age in Nepal: findings from a health survey. Archives of public health. 2016;74(1):1-11.
11. Seshadri S. Prevalence of micronutrient deficiency particularly of iron, zinc and folic acid in pregnant women in South East Asia. British Journal of Nutrition. 2001;85(S2):S87-S92.
12. Lokare PO, Karanjekar VD, Gattani PL, Kulkarni AP. A study of prevalence of anemia and sociodemographic factors associated with anemia among pregnant women in Aurangabad city, India. Annals of Nigerian Medicine. 2012;6(1):30.
13. Bekele A, Tilahun M, Mekuria A. Prevalence of anemia and its associated factors among pregnant women attending antenatal care in health institutions of Arba Minch Town, Gamo Gofa Zone, Ethiopia: a cross-sectional study. Anemia. 2016;2016.
14. Nana A, Zema T. Dietary practices and associated factors during pregnancy in northwestern Ethiopia. BMC pregnancy and childbirth. 2018;18(1):1-8.
15. Salih S, Alqahtani H, Almalki A, Alfaifi F, Gazwani M, Faqehi H, et al. Anemia and dietary habits among pregnant women in Jazan, Saudi Arabia. British Journal of Medicine and Medical Research. 2015;10(9).
16. AlQuaiz AM, Gad Mohamed A, Khoja TA, AlSharif A, Shaikh SA, Al Mane H, et al. Prevalence of anemia and associated factors in child bearing age women in Riyadh, Saudi Arabia. Journal of nutrition and metabolism. 2013;2013.
17. Kuche D, Singh P, Moges D, Belachew T. Nutritional status and associated factors among pregnant women in Wondo Genet District, Southern Ethiopia. Journal of Food Science and Engineering. 2015;5(2):85-94.
18. Almurshed KS, Bani IA, Al-Kanhal MA, Al-Amri MA. A study of maternal dietary intake during pregnancy in Riyadh, Saudi Arabia. Journal of family & community medicine. 2007;14(1):9.
19. Ndegwa SK. Anemia & its associated factors among pregnant women attending antenatal clinic at Mbagathi county hospital, Nairobi county, Kenya. African Journal of Health Sciences. 2019;32(1):59-73.
20. Allen L, De Benoist B, Dary O, Hurrell R. Guidelines on food fortification with micronutrients: JSTOR; 2006.
21. Corbett RW, Ryan C, Weinrich SP. Pica in pregnancy: does it affect pregnancy outcomes? MCN: The American Journal of Maternal/Child Nursing. 2003;28(3):183-9.
22. López LB, CR OS, De Portela M. Pica during pregnancy: a frequently underestimated problem. Archivos latinoamericanos de nutricion. 2004;54(1):17-24.