FREQUENCY & CAUSES OF ANEMIA AMONG PREGNANT WOMEN VISITING HEALTH CARE FACILITY

Maryam Gul[1], Muhammad Ishtiaq[2], Atif Hussain[3], Bushra Ijaz[4], Waqar Ali[2], Ikramullah[1]

ABSTRACT

Background: Globally, anemia is the commonest nutritional deficiency all over the worldand affecting approximately 55 to 65% of total population. According to WHO,Iron deficiency Anemiais highly prevalent amongpregnant women and multiple factorsshowed strong relationship. The main objective was to assess the frequency of anemia and its various risk factors amongpregnant womenvisiting health facilities in District Nowshera.

Methods: After taking ethical approval, a descriptive cross sectional study was conducted from March to July 2018, in the health facilities of district Nowshera among n=169 permanent resident pregnant female populations, of age above 17 years. Woman was termed as anemic if the HB level is below 11gm/ dl. A structured questionnaire was used to collect data and analyzed by SPSS version 19.0 and finally the results were presented in form of tables.

Results: The results showed that 59.76% of pregnant female wasanemic. 40.83% had monthly income less than 15000 per month, 55.03% were housewives, 44.38% were illiterate, 47.93% had 3 or 4 children, 41.425 were under-weight, and only 28.99% followed balanced diet. Moreover, 54.44%, 33.14%, 81.64%, and 44.38% had poor personnel hygiene, take nutritional supplements, took 1 to 2 meals per day, and didn't take meat weekly respectively.

Conclusions: It was concluded that the frequency of anemia among pregnant women visiting health care facility was high and showed strong relationship with poor socioeconomic conditions, poor personnel hygiene, lack of nutrition, medical conditions, meat and fruits consumption and health status of pregnant mothers and thus effective Maternal &Child Health services were needed to reduce morbidity and mortality and its associated complications among mothers and infants.

Key Words: Anemia, Female, Rural, Diet, Health Facility, Nowshera.

INTRODUCTION

Anemia is a major and global public health problem that affects children of 0 to 5 years, pregnant women and women of child bearing ages[1]. Anemia is concentrated in low socioeconomic groups, and is strongly associated with nutrition, infectious diseases, and other factors[2,3]. Malaria, Schistosomiasis, HIV infection, cancer, and chronic medical conditions like heart failure, and inflammatory bowel disease showed strong significant relationship with anemia during pregnancy[4], and its associated complications to mothers and newborns[5]. In developing countries, iron deficiency anemia typically result from insufficient dietary intake, loss of blood due to intestinal worm colonization, or both. In high income countries, certain eating habits and pathologic conditions are the most common causes. Moreover, anemia is a serious condition in countries that are industrialized and in countries with poor resources[6].

Anemia during pregnancy is a major cause of morbidity and mortality of pregnant women in developing countries and has both maternal and fetal consequences[7,8]. Approximately 42.7% of women experienced anemia during pregnancy in low- and middle-income countries. Moreover, in South Asian, African, and low-income countries showed a higher pooled anemia prevalence[9].

Anemia is a global public health problem and is related with pregnancy, rural residence, illiteracy, no iron supplementation, and meal frequency of less than two times per day[10]. Low average monthly income of the family, having birth interval less than two years, iron supplementation, and family size >2 were found to be independent predictors of anemia in pregnancy. More than 40% of pregnant women are anemic worldwide. Globally, the prevalence of anemia in South Asia and Central/West Africa was the highest[11]. Anemia is highly prevalent among pregnant women in China. Lower socio-economic status, mother's unemployment, and those who attend a lower quality hospital had a greater risk of anemia[12,13]. Moreover, studies in Vietnam and other countries indicated that lack of iron supplementation

[1] Department of Community Medicine, Nowshera Medical College, Nowshera
[2] Department of Community Medicine, Northwest School of Medicine, Peshawar
[3] Department of Anatomy, Women Medical & Dental College Abbottabad
[4] Department of Community Medicine, Multan Medical & Dental College, Multan

Address for correspondence:
Prof. Dr. Muhammad Ishtiaq
Department of Community Medicine, Northwest School of Medicine, Peshawar
Cell No: 0334-9121822
E-mail: drishtiaq250@yahoo.com

is among the most significant risk factors for developing anemia during pregnancy[14-16].

According to the 2015 World Health Organization (WHO) report, anemia affected 1.62 billion (24.8%) people globally; and is estimated that 42% of pregnant women were affected[17]. In Uganda, as compared to 1st trimester (14.6%) and 2nd trimester (20.7%), the prevalence of anemia in 3rd trimester was high (24.3%). A study in Beijing showed that the incidence of anemia among pregnant women of first pregnancy and second pregnancy was 2.68% and 10.34% respectively[11]. In Africa, 57.1% of the pregnant women were anemic. Moreover, anemia in pregnant women is a severe public health problem in Ethiopia, and 62.7% of pregnant women were anemic. According to WHO, Anemia is particularly prominent in South Asia and approximately 75% of pregnant women are affected[17].

Iron deficiency anemia is the most common anemia in Pakistan and the most common nutritional deficiency worldwide. Pakistan is a developing country, and having high rates of infant, child and maternal morbidity and mortality rates. Approximately more than half of the population of Pakistan is anemic, and leads to serious health problems among mothers, children and newborns. Therefore this cross sectional study was conducted to estimate the frequency of anemia and its various factors among the pregnant female visiting health care facility of district Nowshera, and to communicate findings to the concerned department to reduce the complications and adverse effects of anemia during pregnancies and its fatal outcomes on mothers and newborns.

METHODOLOGY

A descriptive cross sectional study was conducted in District Nowshera, from March to July 2018. After taking ethical approval from the Ethical Review Committee, a total of n=169 pregnant women visiting health facility were assessed regarding the anemia status and its various important determinants. Pregnant women of district Nowshera of age above 18 years were included while those who were not permanent resident of district Nowshera were excluded from the study. Woman was termed as anemic if the HB level is below 11gm/ dl. A structured questionnaire was used to collect data regarding the different dependent and independent variables. Data was analyzed by SPSS version 19.0, and Microsoft Office software was used for data entry. Finally results were presented in form of tables.

RESULTS

The frequency and percentage of anemia among pregnant mothers (n=169) visiting health care facility of District Nowshera Pakistan was shown in Table No 1.

The demographic characteristics of pregnant mothers (n=169) visiting health facility of District Nowshera was shown in Table No 2.

The determinants of anemia among pregnant mothers (n=169) visiting health facility of District Nowshera was shown in Table No 3.

DISCUSSIONS

In our study, the prevalence of anemia among the pregnant female was 59.76%. Thus our study findings revealed higher prevalence but it was consistent with the many international studies showing prevalence of 42.7%[9], 36.1%[10]; and 56.8%[18]. Moreover, our study results were less as compared to a study conducted in Ethiopia which revealed nearly 62.7% of anemia among the pregnant female population[17]. Furthermore, according to National Health Survey of Pakistan, approximately 56% of pregnant women are anemic and thus our study prevalence was similar to previous findings[19].

One of the most important risk factors of anemia in pregnancy was Gravidae and parity; and many studies showed that increase in the number of pregnancies and less interval between subsequent pregnancies, increases the risk to anemia[20]. In our study results, approximately 61.54% of pregnant female had high family size and having more than three children per family, and thus similar findings were revealed by many international studies which found that large family size and multi-parity increases risk to anemia during pregnancy[11,21].

In our study, approximately 38.46% of female had history of worm infestations and such findings were also reported by many international studies with prevalence ranged from 10% to 30% among the female pregnant populations[5,6]. Thus our study findings were in consistent with the international studies findings.In a study conducted in Ethiopian women and published by Haidar J in 2010, &Morasso CM et al., in 2002; revealed

Table No 1. Showing the frequency and percentage of anemia among pregnant mothers (n=169) visiting health facility of District Nowshera Pakistan

S. No	HB Levels	Outcome	F	%
1	HB < 11 gm/dl	Anemia	101	59.76
2	HB > 11 gm/dl	No Anemia	68	40.24
Total			169	100

Table No 2. Showing the demographic characteristics of pregnant mothers (n=169) visiting health facility of District Nowshera Pakistan

Demographics	Variables	F	%
Age of Mothers	< 25 years	76	44.97
	25 - 35 years	55	32.54
	35& above	38	22.49
Monthly Income	< 15000	69	40.83
	15000 – 25000	53	31.36
	> 25000	47	27.81
Occupations	Housewife	93	55.03
	Job	41	24.26
	Labor etc	35	20.71
Educational Status	Middle	42	24.85
	Secondary	33	19.53
	FA/BA etc	19	11.24
	Illiterate	75	44.38
Social Setup	Rural	123	72.78
	Urban	46	27.22

Table No 3. Showing the determinants of anemia among pregnant mothers (n=169) visiting health facility of District Nowshera Pakistan

Variables	Response	n=169	
		f	(%age)
No of Children	1 & 2	65	38.46
	3 & 4	81	47.93
	> 4	23	13.61
BMI of mothers	Underweight	70	41.42
	Normal	46	27.22
	Overweight	53	31.36
History of worm infestation	Yes	65	38.46
	No	104	61.54
Taking Fe – Supplements	Yes	56	33.14
	No	113	66.86
History of acute / chronic infectionc	Yes	97	57.40
	No	72	42.60
Frequency of meals per day	One	75	44.38
	Two	63	37.28
	> 2	31	18.34
Frequency of meat per week	None	75	44.38
	1 & 2	47	27.81
	3 & 4	34	20.12
	> 4	13	7.69
Frequency of fruits per week	None	83	49.11
	One	41	24.26
	Two	35	20.71
	> 2	10	5.92

that anemia in pregnant female can be prevented by recommending iron supplementation and by increasing interval space between subsequent pregnancies[22,23].

In our study, approximately 33.14% of pregnant female had history of iron supplementation during pregnancy and was reported by many international studies which also recommended supplemented iron provision during pregnancy[14,16,24]. In an international study conducted by Addis Alene &Mohamed Dohein 2014, found that approximately 44.7% of Ethiopian pregnant women were undernourished on MUAC assessment. Our study findings were in consistent and showed similar prevalence of 41.42%[18].

Many international studies reported that pregnant women of low socio-economic classes were at increased risk of developing anemia, with rural setup, no job and monthly income of less than 15000 per month compared with those in higher socio-economic classes[16,25]. Moreover, in our study, 57.4% of pregnant female had positive history of acute and chronic medicalconditions as was revealed and supported by many international studies which showed strong association of anemia during pregnancy and medical conditions[11,26].

Many international studies found that dietary pattern and iron absorption are the main causes of IDA. Our study shows that those subjects, who had their meals regularly and consumed iron rich foods in sufficient amounts, has less frequent iron deficiency anemia in the absence of other factors[24]. In our study, approximately 49.11% didn't consume any fruits and 44.38% didn't consume meat throughout a previous week and thus showed higher prevalence of anemia (59.76%). Many international studies reported strong and significant relationship of anemia with fruits intake and meat consumption frequency per day and per week[6,21]. In our study, only 27.81% had 3 or more than 3 times meat consumed per week, while in a study conducted in Dhaka Bangladesh by Ahmad F et al., in 2003; also revealed that only 31% of pregnant female consumed meat[27].

In an internationally study conducted in Ethiopia in 2014, and published in Journal of Anemia; reported that 96% and 66.6% had eaten meat and fruits more than two times per week respectively while in our study only 55.62% had consumed 1 or 2 times meat per week and only 50.89% had consumed 1 or 2 times fruits per week[18]. Thus in our study, 44.38% had less than 2 times meal frequency per week and thus revealed high prevalence of anemia among the pregnant female[24].

Dietary pattern along with fruits, vegetables and their frequency per day and week were the significant determinants which predisposes female to anemia during pregnancy. In our study, about 5.92% of pregnant female had more than 2 times fruits consumption per week while in a study conducted in 2003 revealed that approximately 64% of pregnant female had more than four times fruits consumption per week[27].

CONCLUSIONS

From the results, it was concluded that the frequency of anemia among the pregnant women visiting health facility in District Nowshera, was high. Moreover, the anemia among pregnant female showed strong relationship with poor socioeconomic conditions, poor personnel hygiene, multi-parity, under-nutrition, lack of proper and adequate nutrition, acute and chronic medical conditions, inadequate frequency of meat and fruits consumption. Thus effective Maternal &Child Health care services were needed to reduce the burden of anemia and to avoid the associated morbidity and mortality and its complications among mothers and infants.

REFERENCES

1. Lopez A, Cacoub P, Macdougall IC, Peyrin-Biroulet L. Iron deficiency anaemia. The Lancet. 2016 Feb 27;387(10021):907-16.
2. Balarajan Y, Ramakrishnan U, Özaltin E, Shankar AH, Subramanian SV. Anaemia in low-income and middle-income countries. The lancet. 2011 Dec 17;378(9809):2123-35.
3. Di Renzo GC, Spano F, Giardina I, Brillo E, Clerici G, Roura LC. Iron deficiency anemia in pregnancy. Women's Health. 2015 Nov;11(6):891-900.
4. Kassebaum NJ, Jasrasaria R, Naghavi M, Wulf SK, Johns N, Lozano R, Regan M, Weatherall D, Chou DP, Eisele TP, Flaxman SR. A systematic analysis of global anemia burden from 1990 to 2010. Blood. 2014 Jan 30;123(5):615-24.
5. Breymann C. Iron deficiency anemia in pregnancy. InSeminars in hematology 2015 Oct 1 (Vol. 52, No. 4, pp. 339-347). WB Saunders.
6. Camaschella C. Iron-deficiency anemia. New England journal of medicine. 2015 May 7;372(19):1832-43.
7. 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, GamoGofa Zone, Ethiopia: A Cross-sectional study. Anemia. 2016;2016.
8. Srour MA, Aqel SS, Srour KM, Younis KR, Samarah F. Prevalence of Anemia and Iron Deficiency among Palestinian Pregnant Women and Its Association with Pregnancy Outcome. Anemia. 2018;2018.
9. Rahman MM, Abe SK, Rahman MS, Kanda M, Narita S, Bilano V, Ota E, Gilmour S, Shibuya K. Maternal anemia and risk of adverse birth and health outcomes in low-and middle-income countries: systematic review and meta-analysis, 2. The American journal of clinical nutrition. 2016 Jan 6;103(2):495-504.
10. Gebre A, Mulugeta A. Prevalence of anemia and associated factors among pregnant women in North Western zone of Tigray, Northern Ethiopia:

a cross-sectional study. Journal of nutrition and metabolism. 2015;2015.

11. Xu X, Liu S, Rao Y, Shi Z, Wang L, Sharma M, Zhao Y. Prevalence and sociodemographic and lifestyle determinants of anemia during pregnancy: a cross-sectional study of pregnant women in China. International journal of environmental research and public health. 2016 Sep 13;13(9):908.

12. Baig-Ansari N, Badruddin SH, Karmaliani R, et al. Anemia prevalence and risk factors in pregnant women in an urban area of Pakistan. Food and Nutrition Bulletin. 2008;29(2):132–139. [PMC free article] [PubMed] [Google Scholar]

13. Akhtar M, Hassan I. Severe Anemia during late pregnancy. Case Reports in Obstetrics and Gynecology. 2012;2012:3 pages.485452 [Google Scholar]

14. Milman N. Anemia—still a major health problem in many parts of the world!. Annals of hematology. 2011 Apr 1;90(4):369-77.

15. Aikawa R, Khan NC, Sasaki S, Binns CW. Risk factors for iron-deficiency anaemia among pregnant women living in rural Vietnam. Public Health Nutrition. 2006;9(4):443–448. [PubMed] [Google Scholar]

16. Vivek RG, Halappanavar AB, Vivek PR, Halki SB, Maled VS, Deshpande PS. Prevalence of Anemia and its epidemiological. Determinants in Pregnant Women. 2012;5(3):216–223. [Google Scholar]

17. Melku M, Addis Z, Alem M, Enawgaw B. Prevalence and predictors of maternal anemia during pregnancy in Gondar, Northwest Ethiopia: an institutional based cross-sectional study. Anemia. 2014;2014.

18. Addis Alene K, Mohamed Dohe A. Prevalence of anemia and associated factors among pregnant women in an urban area of eastern Ethiopia. Anemia. 2014;2014.

19. Suryanarayana R, Chandrappa M, Santhuram AN, Prathima S, Sheela SR. Prospective study on prevalence of anemia of pregnant women and its outcome: A community based study. Journal of family medicine and primary care. 2017 Oct;6(4):739.

20. Okube OT, Mirie W, Odhiambo E, Sabina W, Habtu M. Prevalence and factors associated with anaemia among pregnant women attending antenatal clinic in the second and third trimesters at pumwani maternity hospital, Kenya. Open Journal of Obstetrics and Gynecology. 2016 Jan 11;6(01):16.

21. Obse N, Mossie A, Gobena T. Magnitude of anemia and associated risk factors among pregnant women attending antenatal care in ShallaWoreda, West Arsi Zone, Oromia Region, Ethiopia. Ethiopian journal of health sciences. 2013;23(2):165-73.

22. Morasso CM, Molero J, Vinocur P, Acosta L, Paccussi N, Raselli S, Falivene G, Viteri FE. Iron deficiency and anemia in pregnant women from Chaco, Argentina. Archivoslatinoamericanos de nutricion. 2002 Dec;52(4):336-43.

23. 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):359–368. [PMC free article] [PubMed] [Google Scholar]

24. World Health Organization. Prevention and Control of Iron Deficiency Anaemia in Women and Children: Report of the UNICEF/WHO Regional Consultation February 1999. Geneva. World Health Org. 2001.

25. Balarajan Y, Ramakrishnan U, Özaltin E, Shankar AH, Subramanian SV. Anaemia in low-income and middle-income countries. The Lancet. 2011;378(9809):2123–2135. [PubMed] [Google Scholar]

26. Hameed H, Hameed A, Bashir S, Akram S, Arshad M. Study of Prevalence of Anemia among Pregnant Women and Its Correlation with Different Risk Factors. Drug Des. 2018;7(158):2169-0138.

27. Ahmed F, Mahmuda I, Sattar A, Akhtaruzzaman M. Anaemia and vitamin A deficiency in poor urban pregnant women of Bangladesh. Asia Pacific journal of clinical nutrition. 2003 Dec 1;12(4):460-6.