Original Article

Frequency of Iron Deficiency Anemia in Pregnant Females attending Antenatal Care Clinic at Sharif Medical City Hospital

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ABSTRACT

Objective: To determine the frequency and various predictors of iron deficiency anemia among females who are pregnant and visiting antenatal care clinic at Sharif Medical City Hospital.

Methodology:It was a cross–sectional descriptive study in which 100 pregnant females attending the Gynae and Obstetrics OPD of Sharif Medical City Hospital were interviewed. Data was collected through a questionnaire, which was analyzed by using SPSS 23.0.

Results: The frequency of anemia in the pregnant females was calculated to be 53%, out of which 20% had mild anemia, 31% had moderate anemia and 2% had severe anemia. Anemia was found to be more prevalent in the pregnant females >30 years of age (68.2%) and in their 3rd trimester of pregnancy (56.1%). Educational status of the pregnant women, monthly income of the household, the type of family (nuclear or extended) and the number of children were the factors that had statistically significant and definite relationship with anemia in pregnancy.

Conclusion: This study showed that anemia in pregnancy is one of the serious health issues in Pakistan. Giving knowledge to women on the early start of antenatal clinic attendance and addition of iron would decrease the problem of anemia in pregnancy. Further researches should be carried out to know the exact cause of anemia in pregnancy so that appropriate steps could be taken by the Health Department to alleviate this problem.

Keywords: *Pregnant women. Iron Deficiency anemia. Antenatal care. Hemoglobin levels.*

INTRODUCTION

Anemia during pregnancy is a worldwide growing concern and a major constrain in the Millennium Development Goals no. 4 and 5 directed towards a mother and child care. About 50% pregnant females are anemic world widely. According to the World Health Organization (WHO), about 17% of the pregnant women in the developed countries and 64% in the developing countries are anemic. The prevalence rate in Pakistan is about 51%.[1]

WHO defines anemia in pregnancy as Hemoglobin (Hb) levels <11g/dL. It is further classified into mild anemia (Hb 10–10.9g/dL), moderate anemia (Hb 7-9.9g/dL) and severe anemia (Hb< 7g/dL).[2]There is an increased iron requirement during pregnancy due to greater expansion in the plasma volume. Therefore, any hemoglobin level less than11g/dL in pregnancy is taken as anemia.

The most common cause of anemia in pregnancy is iron deficiency anemia. It is generally considered that half of the cases of anemia are due to iron deficiency include a low intake of iron, less absorption of iron from diets containing high quantity of phenolic compounds and time periods when iron is required in a greater amount as in growing age and period of reproduction. Nutritional deficiencies like vitamin B12, folic acid, riboflavin, parasitic infection, heavy menstrual bleeding and chronic infections such as tuberculosis can also lower blood hemoglobin concentrations. Grand multiparity, inadequate child spacing, late booking for antenatal care and low socioeconomic status also contribute to anemia in pregnancy.[3]

In pregnancy, anemia affects the health of the mother as well as the fetus. Anemia during pregnancy may present as anorexia, fatigue, irritability, breathlessness, palpitations, weakness, pale skin and difficulty in concentrating. Consequences of iron deficiency anemia in pregnancy may include still–birth, low birth weight, preterm births, reduced fetal brain maturation, pediatric cognitive defects, maternal depression and death from anemic heart failure.[4]

Antenatal care is the most important part of safe motherhood strategy and it can decrease the morbidity and mortality. Centers for Disease Control and Prevention (CDC) advises screening for anemia in pregnant women and iron intake to meet the iron requirements of pregnancy, globally.[3] The rationale is to screen pregnant women and maintain maternal iron stores by treatment which is beneficial to both mother and neonate.

Prevalence of anemia in Pakistan is high and is due to low socioeconomic status and other factors of the population. In spite of the high magnitude of the disease, not enough research data has been collected to unveil the heavy load of the problem in Pakistan.

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Therefore in light of the above mentioned factors, it is very pertinent to conduct this study.

METHODOLOGY

It was a cross-sectional descriptive study conducted at Gynae and Obstetrics outpatient department, Sharif Medical City Hospital. A sample of 100 pregnant women was taken by non-probability sampling. Only the pregnant women coming for antenatal checkup were included in the study. Women who were unwilling to participate or who presented with an acute illness were excluded. Formal consent and permission were taken from concerned authorities. Data was collected during the month of July 2016 using a semi structured questionnaire.

Data was entered and analyzed with SPSS Software 23. Data was presented in frequencies and percentages by applying Chi-square test between different categorical variables. A P-value of < 0.05 was used as a cut-off point for statistical significance.

RESULTS

Out of 100 pregnant females, 70% were 20–30 years old, 8% were less than 20 years old and 22% were more than 30 years old. Eighteen respondents were illiterate and eighty three were educated. Majority of respondents (94%) were housewives, 5% were doing a job as well. Husbands of the 32% respondents were businessmen while 24% were govt./private employees. Out of 100 study respondents, 17% respondents had a monthly income <10,000 rupees, 37% had between 10,000–20,000 rupees while 46% had an income >20,000 rupees. Seventy seven respondents were residing in an extended family. Out of 100 pregnant women, 11 were in the 1st trimester, 32 were in the 2nd trimester and 57 were in the 3rd trimester of pregnancy. Thirty six respondents were having their first pregnancy while 54% had1-3 children. Out of 100, 59% respondents had no previous history of miscarriage (Table 1).

Out of 100 pregnant women, 47% women had no anemia, 20% had mild anemia, 31% had moderate anemia and only 2% had severe anemia (Table 2).

The frequency of anemia was highest in women >30 years of age (68.2%). In pregnant women who were housewives anemia was seen in 54.3% and in 75% females whose husbands were laborers. The statistical association between low monthly income and anemia in the pregnant women was found to be highly significant ($p<0.01$). Similarly, statistically significant results were found ($p<0.05$) while comparing the relationship of anemia with educational status of women, type of families and number of children of women. The frequency of anemia was 53.2% in those living in extended families, 88.9% in illiterate women and 70% in women with 4-7 children (Table 3).

Anemia was more frequent in the women who were in their 3rd trimester (56.1%) and who had a previous history of miscarriage (56.1%). The frequency of anemia in women who took fresh fruits and vegetables once a month was 100% whereas it was reduced to 50% in those who used to take daily. Similarly, it was 80% in those who consumed meat rarely as compared to 41.7% in those who took meat daily. It was 45.5% in respondents who ate just like routine during pregnancy as compared to 47.4% in those who ate less than previous during pregnancy. The frequency of anemia was higher in the pregnant women who do not use iron supplements (63.6%), who had never used any contraceptive measure (54.8%) and in those who had a birth interval of 3-4 years between their children (77.3%). However, the relationship between any of these factors and anemia was not statistically significant ($p>0.05$) (Table 3).

DISCUSSION

Anemia in pregnancy is a worldwide issue both in the developing and the developed countries. This present study indicates an anemia load of 53% in the pregnant women visiting an antenatal clinic at a tertiary care hospital in Pakistan. This percentage is much higher as compared to that observed in Ethiopia (36.6%), Kenya (36.2%) and Palestine (21.7%). [3,5,6] Our results are comparable with a study conducted in India in which prevalence of anemia in pregnant women was 50.1%.[7] This discrepancy may be due to poverty, lack of health awareness and health facilities in Pakistan. A similar research carried out in another tertiary care hospital in Pakistan in the past showed similar results i.e. an anemia load of 57% in the pregnant females.[2]

Out of the 100 pregnant women included in this study, 20% had mild anemia, 31% had moderate anemia and 2% had severe anemia. In a similar Kenyan study, the prevalence of mild anemia was 51.4%, moderate anemia was 47.8% and severe anemia was 0.3%.[6] An Indian study showed that 63.5% of the pregnant women had mild anemia, 35% had moderate anemia and 1.5% had severe anemia.[7] According to our present study, the frequency of anemia in the pregnant women aged <20 years was 50%, in women between ages 20-30 years was 48.6% and 68.2% in the women of age >30 years. However, the study carried out in Kenya showed that anemia was more prevalent in the women aged between 21-30 years (39.1%) as compared to women of age <20 year (29.8%) and 29.9% in the >30 years age group.[5] The results of this study indicate that anemia was most frequent in the illiterate women mounting to 88.9% while it was least in the graduate women (23.3%). This is because increased educational levels is expected to

improve knowledge and hence is expected to reflect more awareness regarding health problems. This finding was found consistent with a study carried out in Turkey.[8]

Anemia was found to be more frequent in housewives (54.3%) than in working women. This contradicts the results of the Ethiopian and Palestinian studies.[3,6] This difference in results may be due to the fact as more housewives were observed in our study. The frequency of anemia in women with total family income <10,000 rupees was 88.2%, it was less in other groups. Anemia is mostly associated with poverty as consistent with the results of the studies carried out in Nigeria and Turkey.[9,10]

The results of this study show that the frequency of anemia is highest in the 3rd trimester of pregnancy (56.1%). These results are consistent with those observed in the Ethiopian and Palestinian studies.[3, 6] This may be due to hemodilution of the blood in the 3rd trimester or the high prevalence of anemia in the second and third trimester may also be attributed to late initiation of antenatal care. This causes late detection and missing of opportunity to correct the deficiency through iron supplementation early in the pregnancy. The frequency of iron deficiency anemia in the pregnant women living in a nuclear family was 52.2% whereas it was slightly more in the women living in extended families i.e. 53.2%. These results contradict the results of the Indian study.[7]

The women having a previous history of miscarriage had more frequency of anemia (56.1%) than the women who did not have any history of miscarriage (50.8%). It is consistent with the Ethiopian study.[3] The frequency of anemia in the women not using contraceptives was slightly higher (54.8%) than those using contraceptives (43.7%) and severe anemia was also frequent in these women (2.4%). This is in harmony with a study in Ethiopia and a similar study carried out in the past in Islamabad.[3,2]

The women who took vegetables monthly were 100% whereas it was reduced to 56.4% in women who took vegetables daily. This finding were almost similar to a study in Ethiopia.[3] Similarly, the frequency of anemia in the pregnant women who consumed meat rarely was 80% whereas it was reduced to 41.7% in the pregnant women who took meat daily. Comparable results were also seen in another study conducted in Ethiopia.[3] This shows that pregnant women who take diets with iron of low biological value have low hemoglobin levels and are usually anemic. The prevalence of anemia among the pregnant women with a systemic disease like hypertension and diabetes mellitus was low (45.5%) whereas it was high in women with a current systemic disease (56.7%). This is inconsistent with the results of the Palestinian study.[6]

The frequency of anemia was higher in the pregnant women who do not use iron supplements (63.6%). This is an expected observation as iron supplementation is the major treatment option for iron deficiency anemia in the pregnant women. This result is supported by the result of the Palestinian study.[6]

Table 1: Total respondents by socio-demographic characteristics

Characteristics	Frequency	Percentage
Age (in years)		
< 20	8	8
20-30	70	70
>30	22	22
Educational status		
Illiterate	18	18
Primary	8	8
Middle	7	7
Matric/intermediate	37	37

Graduate	30	30
Occupation of wife		
Housewife	94	94
Working	1	1
Both	5	5
Husband's occupation		
Farmer	8	8
Laborer	20	20
Businessman	32	32
Employee(govt./private)	24	24
Other	16	16
Monthly income		
<10,000 Rs.	17	17
10-20,000 Rs.	37	37
>20,000Rs.	46	46
Type of family		
Nuclear	23	23
Extended	77	77
Trimester		
1st	11	11
2nd	32	32
3rd	57	57
No. of children		
First child	36	36
1-3	54	54
4-7	10	10
<7	0	0
H/O miscarriage		
Yes	41	41
No	59	59

Table 2: Frequency distribution of pregnant women according to different grades of anemia

Hemoglobin level(g/dl)	Frequency	Percentage
Hemoglobin level(g/dl)		
No anemia (>11)	47	47
Mild anemia (10-10.9)	20	20
Moderate anemia (7-9.9)	31	31
Severe anemia (<7)	2	2

Table 3: Comparison of factors affecting anemia with hemoglobin levels of respondents

Characteristic	No anemia	Mild anemia	Moderate anemia	Severe anemia	Statistical significance
Age (in years)					
< 20	4(50%)	0(0%)	3(37.5%)	1(12.5%)	p>0.05
20-30	36(51%)	12(17.5%)	21(30.5%)	1(1%)	
>30	7(32%)	8(36%)	7(32%)	0(0%)	
Educational status					
Illiterate	2(11%)	6(33%)	9(50%)	1(6%)	
Primary	4(50%)	1(12.5%)	3(37.5%)	0(0%)	p>0.05
Middle	3(43%)	2(28.5%)	2(28.5%)	0(0%)	
Matric/intermediate	15(40%)	8(22%)	13(35%)	1(3%)	
Graduate	23(77%)	3(10%)	4(13%)	0(0%)	
Occupation of wife					
Housewife	43(46%)	18(19%)	31(33%)	2(2%)	p>0.05
Working	1(100%)	0(0%)	0(0%)	0(0%)	
Doing both	3(60%)	2(40%)	0(0%)	0(0%)	
Husband's occupation					
Farmer	4(50%)	1(12.5%)	3(37.5%)	0(0%)	
Laborer	5(25%)	8(40%)	6(30%)	1(5%)	p>0.05
Businessman	20(62.5%)	2(6.5%)	10(31.5%)	0(0%)	
Employee(govt./private)	13(54%)	5(21%)	6(25%)	0(0%)	
Others	5(31.25%)	4(25%)	6(37.5%)	1(6.25%)	
Monthly income					
<10,000 Rs.	2(12%)	5(29%)	8(47%)	2(12%)	p>0.05
10-20,000 Rs.	16(43%)	10(27%)	11(30%)	0(0%)	
>20,000Rs.	29(63%)	5(11%)	12(26%)	0(0%)	
Type of family					
Nuclear	11(48%)	9(39%)	3(13%)	0(0%)	p>0.05
Extended	36(47%)	11(14%)	28(36%)	2(3%)	
Trimester					
1st	6(55%)	3(27%)	2(18%)	0(0%)	p>0.05
2nd	16(50%)	8(25%)	7(22%)	1(3%)	
3rd	25(43.5%)	9(16%)	22(38.5%)	1(2%)	
No. of children					
First child	25(69%)	5(14%)	5(14%)	1(3%)	p>0.05
1-3	19(35%)	11(20.5%)	23(42.5%)	1(2%)	
4-7	3(30%)	4(40%)	3(30%)	0(0%)	
H/O miscarriage					
Yes	18(44%)	11(27%)	11(27%)	1(2%)	p>0.05
No	29(49%)	9(15%)	20(34%)	1(2%)	

Fresh fruit consumption					
Daily	28(50%)	10(18%)	16(28.5%)	2(3.5%)	p>0.05
Weekly	19(53%)	6(16.5%)	11(30.5%)	0(0%)	
Monthly	0(0%)	1(100%)	0(0%)	0(0%)	
Rarely	0(0%)	3(43%)	4(57%)	0(0%)	
Vegetables consumption					
Daily	24(44%)	11(20%)	19(34%)	1(2%)	
Weekly	22(52%)	8(19.5%)	11(26.5%)	1(2%)	p>0.05
Monthly	0(0%)	1(100%)	0(0%)	0(0%)	
Rarely	1(50%)	0(0%)	1(50%)	0(0%)	
Meat consumption					
Daily	7(58.5%)	0(0%)	4(33.5%)	1(8%)	
Weekly	33(52%)	14(23%)	14(23%)	1(1%)	p>0.05
Monthly	5(31%)	4(25%)	7(44%)	0(0%)	
Rarely	2(20%)	2(20%)	6(60%)	0(0%)	
Specific food believes					
Yes	9(56%)	3(19%)	4(25%)	0(0%)	p>0.05
No	38(46%)	17(20%)	27(33%)	2(2%)	
In-laws advice to eat specific food					
Yes	26(54%)	7(15%)	14(29%)	1(2%)	p>0.05
No	21(40%)	13(25%)	17(33%)	1(2%)	
Daily eating habits					
Routine	24(54.5%)	9(20.5%)	10(23%)	1(2%)	
Double than previous	13(35%)	8(22%)	15(40%)	1(3%)	p>0.05
Less than previous	10(52%)	3(16%)	6(32%)	0(0%)	
Use of iron supplements					
Yes	43(48%)	19(22%)	25(28%)	2(2%)	p>0.05
No	4(36.5%)	1(9%)	6(54.5%)	0(0%)	
Time of use of iron supplements					
Before pregnancy	7(78%)	2(22%)	0(0%)	0(0%)	
During pregnancy	37(46%)	17(21%)	25(31%)	2(2%)	p>0.05
After pregnancy	0(0%)	0(0%)	0(0%)	0(0%)	
Never	3(30%)	1(10%)	6(60%)	0(0%)	
Current systemic disease					
Yes	18(54.5%)	7(21.5%)	8(24%)	0(0%)	p>0.05
No	29(43.5%)	13(19%)	23(34.5%)	2(3%)	
Contraceptive use					
Yes	9(56%)	3(19%)	4(25%)	0(0%)	p>0.05
No	38(45%)	17(20.5%)	27(32.5%)	2(2%)	
Birth interval					
First child	23(68%)	5(14.5%)	5(14.5%)	1(3%)	
<2 years	17(46%)	7(19%)	12(32%)	1(3%)	p>0.05

3-4 years	5(23%)	6(27%)	11(50%)	0(0%)	
> 4 years	2(28.5%)	2(28.5%)	3(43%)	0(0%)	

CONCLUSION

This study showed that anemia is a serious threat to the health of the pregnant women. The frequency of anemia in the pregnant women is alarmingly high (53%) with the majority having moderate anemia (31%). Educational status of the pregnant women, monthly income of the household, the type of family (nuclear or extended) and the number of children were the factors that were related to anemia during pregnancy. These statistics show a dire need for educational, nutritional, family planning programs and strengthening of health care system.

RECOMMENDATIONS

- People should be counseled regarding the nutritional requirement, antenatal registration and regular checkup during pregnancy.
- The importance of taking iron supplements, intake of iron-rich foods and the use of foods which enhance the absorption of iron must be emphasized.
- Health education regarding nutrition and family planning through electronic and social media and health care programs should be imparted to women.
- National nutritional programs should be implemented for iron and folic acid fortification of flour.

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