



ANEMIA; MODERATE TO SEVERE DURING PREGNANCY

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INTRODUCTION

Around 2 billion people, amounting to over one third of the world's population are anemic¹. Although anemia is multi-factorial in aetiology, most studies confirmed iron deficiency in > 80 % cases of anemia². It is especially common in women of reproductive age, particularly during pregnancy as the demand for iron increases about six to seven fold³. WHO reports 35–75% (average 56%) of pregnant women in developing countries and 18% of women from industrialized countries are anemic⁴.

ABSTRACT... Background: Moderate to severe anemia during pregnancy is associated with increased maternal and fetal morbidity and mortality. Therefore moderate to severe maternal anemia is a high risk group and it is imperative that all cases of anemia should be identified and treated to ensure adequate hemoglobin level before labour. Different countries have shown considerable variations in the prevalence of moderate to severe anemia during pregnancy. **Objective:** To determine the frequency of moderate to severe anemia during pregnancy and its association with socio-demographic and obstetric characteristics. **Study Design:** Cross-sectional descriptive study. **Place and duration of Study:** This study was conducted from 1st October 2011 to 31st March 2012, in the obstetrics and gynaecology department of Sir Syed Hospital, a tertiary care hospital in Karachi. **Methodology:** The patients attending the antenatal OPD between the gestational age of 20 to 41 weeks who were moderate to severely anemic (according to WHO criteria based on Hb level) were selected for the study. A self-designed proforma was then utilized to obtain relevant information. This proforma covered socio-demographic as well as patient's obstetric characteristics. **Result:** The frequency of anemia was found to be 42% (633/1507). Patients with moderate to severe anemia after 20 weeks till 41 weeks were 323. Patients with moderate anemia were 268/323 (83%), while 55/323 (17%) women had severe anemia. Majority of women with moderate anemia were multiparous between 26-32 years of age and presented between 35-41 weeks gestation. Majority of women with severe anemia were primigravidas between 18-25 years and presented in late third trimester. **Conclusions:** Our study revealed multiparity, illiteracy, poverty and late antenatal booking as the factors responsible for the severity of anemia during pregnancy. Therefore, anemia should be recognized as a serious public health problem. The adverse effects of anemia can be avoided by counseling on birth spacing and early antenatal booking.

Key words: Anemia, Pregnancy, Trimester, Parity

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The national health survey of Pakistan reported that 43–47% of rural and 35–40% of urban area is suffering from iron deficiency anemia⁵. In our community majority of women start their pregnancy with some degree of iron deficiency anemia because of poor nutrition, short inter-pregnancy interval, multiparity, abortions, parasitic infestations. In addition, cereal rich diet reduced the bioavailability of iron.

Data from DLHS (District Level Household Survey India) showed that prevalence of moderate and

severe anemia was high even among educated and high income groups⁶. Although mild anemia is not associated with adverse pregnancy outcome, severe maternal anemia carries significant risk of hemorrhage and infection in the mother. It was found that the relative risk of maternal mortality associated with moderate anemia was 1.35 and for severe anemia was 3.51⁷. It is also associated with preterm birth, low birth her weight and small for gestational age infants, as well as low apgar score and high perinatal mortality⁸. Therefore moderate to severe maternal anemia is a high risk group and it is imperative that all cases of anemia be identified and treated to ensure adequate hemoglobin level before labour⁹.

The importance of anemia, especially during pregnancy as a major public health problem is widely recognized. Different countries have shown considerable variations in the prevalence of moderate to severe anemia during pregnancy. The purpose of this study is to determine the frequency of moderate to severe anemia during pregnancy and its association with socio-demographic and obstetric characteristics.

METHODOLOGY

This prospective cross-sectional study was conducted in the department of Obstetric and Gynaecology, Sir Syed Hospital, a tertiary care hospital in Karachi. Sir Syed Hospital is affiliated with Sir Syed College of Medical Sciences (for girls). The duration of study was six months from 1st October 2011 to 31st March 2012.

During this period all pregnant women attending ante-natal OPD with the gestational age between 20 – 41 weeks regardless of their age and parity were checked for Hemoglobin level. Those women who showed Hemoglobin < 11.0 gm/ dl were labeled as anemic. At this point patients were categorized into mild, moderate and severe anemia according to World Health Organization classification, i.e mild anemia (hemoglobin 9.0–10.9 g/dL), moderate anemia (hemoglobin 7.0–8.9 g/dL), and severe anemia (hemoglobin less than 7.0 g/dL). The patients with mild anemia were given oral iron therapy and were followed in

the out-patient department.

Our study included patients having moderate to severe anemia with gestational age between 20 – 41 weeks. A pre-designed proforma was utilized to obtain relevant information. Socio-demographic characteristics included name, age, educational level, occupation and monthly income. Socio-economic status categorized as low when monthly income was less than 10,000/ rupees and lower middle class when monthly income was more than 10,000 but less than 15,000/ rupees. Data about obstetrical characteristics included booking status, parity, inter-pregnancy interval. A detailed history was taken about diet to assess nutritional status of the patients, drinking of unboiled water as well as eating of pica to identify the risk factors of anemia. Exclusion criteria was thalassemia minor, anemia due to blood loss (menorrhagia, haemorrhoids etc) and anemia due to hemolysis such as malaria.

Blood samples were taken for complete blood count including, Hemoglobin level, Hematocrit, morphology of RBCs, red cell indices and peripheral film. Serum ferritin, total iron binding capacity (TIBC) and Hemoglobin electrophoresis were done, only in few selected cases because majority of women were unable to bear the cost due to poverty. In addition, management with injectable iron or blood transfusion was also recorded on the proforma.

RESULT

During the study period total number of patients seen in antenatal OPD were 2153. Patients between 20 to 41weeks were 1507. Out of these 1507, a total of 633 patients were found to be anemic (according to WHO criteria i.e Hb less than 11.0gm%) , making the frequency of anemia as 42%. Patients with mild anemia were 310/633 (49%), while patients with moderate to severe anemia were 323/633(51%).Among these 323, patients with moderate anemia were 268 (83%), while 55 (17%) had severe anemia.

Our study was conducted on patients who had moderate to severe anemia.

Table-I showed age of the patients. Mean age of anemic women was 27.5 years \pm 5 years. Majority, 139/268 (51.9%) women with moderate anemia were between 26-32 years. Severe anemia was more common in age group ranging 18-25 years were 23/55 (41.8%).

Age in years	Moderate anemia (N=268)	Severe anemia (N=55)
18-25	94 (35.1%)	23 (41.8%)
26-32	139 (51.9%)	16 (29.1%)
33-40	35 (13%)	16 (29.1%)

Table-I. Age of the patients (N = 323)

Table II showed parity of the patients. Majority of women with moderate anemia were multiparous 136/268(50.75%). In case of severe anemia, majority of patients 26/55 (47.28%) were primigravida. spacing more than 3 years.

Parity	Moderate anemia (N=268)	Severe anemia (N=55)
Primigravida	77 (28.73%)	26 (47.28%)
Multigravida	136 (50.75%)	09 (16.36%)
Grandmultiparity	55 (20.52%)	20 (36.36%)

Table-II. Parity of the patient (N = 323)

Table III shows gestational age of the patients at first visit. Majority women with moderate 148/268(55.2%) and severe anemia 26/55(47.3%) presented in 35-41 weeks.

Gestational age in weeks	Moderate anemia (N=268)	Severe anemia (N=55)
20-26	36 (13.4%)	16 (29.1%)
27-34	84 (31.3%)	13 (23.6%)
35-41	148 (55.2%)	26 (47.3%)

Table-III. Gestational age of the patients at first visit (N = 323)

Adequate birth spacing was lacking in our women. Majority multiparas & grand multiparas

171/220(78.1%) had birth spacing between 1-2years. A considerable number of patients 39/220(17.8%) had birth spacing of even < 1 year, and only few 9/220(4.1%) had birth spacing more than 2 years.

Socio-economic status	Moderate anemia (N=268)	Severe anemia (N=55)
Low socio economic less than 10000	171 (63.8%)	39 (70.6%)
Middle class 10000-15000	97 (36.2%)	16 (29.4%)
Educational status		
Primary pass	126 (47%)	26 (47%)
Illiterate	142 (53%)	29 (53%)

Table-IV. Socio-demographic characteristics

All the patients who presented in late 3rd trimester (35-41weeks) and those who presented with severe anemia regardless of gestational age had blood transfusion. So total 203/323(63%) patients received blood transfusion while the rest were given injectable iron 20/323(37%).

DISCUSSION

The global prevalence of anemia in pregnancy is approximately 41.8%, varying from as low as 5.7% in USA to as high of 75% in Gambia (World Health Organization)¹⁰. Frequency of anemia among pregnant women in Asia averages 41.6%, while in one of the study conducted in Pakistan reported almost same frequency(42.5%)¹¹.

This study showed frequency of anemia as 42% which is similar to other national study¹¹ but quite higher than that of our neighboring country Singapore (15%)¹². It correlates with that observed in Indonesia (37.1% to 46.2%)^{13,14}. Our prevalence is lower when compared to many developing countries like South India 69.5 %¹⁵ and Eastern Africa and Western Africa¹⁶.

With regards to severity of anemia, our study showed moderate-severe anemia to be (51%) which is quite comparable with that of a national

study conducted in Multan¹⁷. Another study conducted in Pakistan reported 138/250 (55%) women were anemic, out of which 83(60%) had moderate anemia, while mildly anemic women were 55(40%)¹⁸. Severe anemia in our hospital was found to be 17 % which is quite higher than that observed in India ie. 7.9 %¹⁹. Surprisingly a study in Bangladesh²⁰ reported no case of severe anemia .

The mean age of the patients observed in our study was 27.5 years (Table-I), which is quite similar to the results shown by Nuzhat et al. from Abbottabad Pakistan²¹. In this regard our data also matches with the study conducted in Malaysia by Jamiyah Hanif et al who showed mean age group 29 years²². In our study it was observed that severe anemia was more common in younger age group and this is in contrast to results shown by Saad.S²³ who observed severe cases of anemia becoming more common with increasing maternal age.

Regarding parity (TableII) it was observed in our study that severe anemia was quite common (47%) in primigravidas & nearly half (53%) were multiparas, while moderate anemia was more common(70%) in multiparas. In this regard Farzana et al²⁴ & Saad et al²³ made same observations in their studies that prevalence of anemia was higher in women with high parity. A study in Turkey²⁵ also confirms association of anemia with increasing parity. In contrast many other studies from Bangladesh²⁰ Nigeria²⁶ & Jordan²⁷ have found no association of anemia with parity.

When gestational age was considered (Table-III), we observed that nearly 70% of patients with severe anemia & 80% in case of moderate anemia presented in their third trimester .This is in contrast with the results observed in Mirpurkhas²⁸ where 54% of anemic patients presented in their third trimester. In this regard our results also do not match with those of Saad et al who only showed 30% patients with anemia presenting in 3rd trimester²³.

A study conducted in south India¹⁹ showed, around 70 % of patients with anemia presenting during 3rd trimester which is quite similar to our study.

The economic status of majority of women in our sample (Table-IV) was very low; i.e 171/268 (63.8%) of moderate anemia & 39/55(70.6%) of severe anemia had income less than Rs.10,000 while rest had income between R.s 10,000-15000. In this regard our results are consistent with Shehzadi et al²⁸ & many other studies^{29,30,27}.

The results regarding the literacy rate in our study (TableIV) are quite discouraging. Out of 323 nearly half of the patients 171(53%) were illiterate while rest 152(47%) were only primary pass. The study conducted in a government set up in Islamabad²⁸ showed illiteracy rate of 39% among anemic pregnant women. This shows a significant association of anemia with illiteracy. Study from Taif , Saudi Arabia²³ showed same association.

In contrast a study from Turkey²⁵ revealed that among pregnant anemic women only 10.2% were illiterate.

Managing moderate to severe anemia in late pregnancy poses a big challenge as it takes some time to increase the hemoglobin levels using oral or parenteral iron. Furthermore the use of parenteral iron is associated with increased risk of allergies and anaphylactic reactions. Blood transfusion can increase hemoglobin level within a short duration but there is an increased risk of transmitting blood borne diseases such as HIV and hepatitis. Our study revealed that 63% patients had blood transfusion as they presented in late third trimester while the rest were given injectable iron. The expenditure on blood transfusion or parenteral iron infusion and hospitalization is much more than daily iron intake in anemia.

Our study revealed that low income, multiparty, and late antenatal booking are the major contributing factors to cause anemia during

pregnancy as other studies concluded the same result³¹. The importance of anemia as a serious public health problem should be recognized. Measures to increase the income of people is beyond our scope & need special consideration from government, but counseling on birth spacing and early antenatal booking are the factors of which women can be made aware of, through LHV's and health care centers. Knowledge about the adverse effects of anemia can be delivered through media, pamphlets & doctors will enable women to seek early antenatal checkups.

It is a cross-sectional hospital-based study. The study was not able to examine the contribution of risk factors such as malaria infection, menstrual blood loss, and poor nutritional intake. Hemoglobin electrophoresis could not be done because of non affordability.

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