

## Prevalence of Anemia and Thrombocytopenia in Pregnant Females of Lahore

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### ABSTRACT

*Increased demand of nutrition during pregnancy due to the developing fetus sometimes results in anemia in those women who are not taking enough food. Anemia in pregnancy is a serious condition and it may cause lethal outcomes both for the mother and baby. Thrombocytopenia is also an important finding in pregnancy along with preeclampsia which results in a high risk pregnancy. Anemia and thrombocytopenia should be monitored in a pregnant lady and if found must be treated as soon as possible to prevent serious outcomes associated with these disorders. This study was designed to find out the prevalence of anemia and thrombocytopenia in pregnant women of Lahore. Blood samples were collected from 200 admitted pregnant women and tested for Anemia, Thrombocytopenia using automated hematology analyzer. Data was entered and analyzed using SPSS 19. Out of 200 pregnant females, 70.5% females were anemic and thrombocytopenia was present in 16.5% females. From this study we can conclude that it is important to diagnose the effect of low hemoglobin and low platelets count in pregnant females and in offspring. Maternal anemia is quite risky due to hemorrhage and infection in the mother and may result in preterm birth*

### INTRODUCTION

Pregnancy represents stress period and increased demand of nutrients for both the mother and the fetus. Pregnancy frequently accompanies anemia with unpleasant effects on the mother. Anemia may be defined as a hemoglobin level below the 5<sup>th</sup> percentile of a trimester-specific hemoglobin reference level in iron supplemented women. The rate of anemia among women participating in public health nutrition programs is approximately 8% in the 1<sup>st</sup> trimester, 12% in the 2<sup>nd</sup> trimester, and 29% in the 3<sup>rd</sup> trimester (CDC, 1998).

According to a report of World Health Organization (WHO) in 2008, anemia affects 1.62 billion (24.8%)

people worldwide. In pregnancy this rate rises to 42% in pregnant women and is a major cause of maternal death (WHO, 2008; De Benoist, 2008).

Prevalence of anemia in all the age groups is much greater in developing countries including Pakistan and India in contrast to developed countries (US, 1993). Rate of anemia in South Asian countries is among the greatest in the world. Observational studies in US and Europe shows conflicting outcome about the clinical implication of maternal anemia during pregnancy (Kalaivani, 2009; Steer 1995). In Pakistan, the rate of anemia among married women of age ranges from 15 to 44 is reported to be 26% and 47% in urban and rural

areas respectively (Fatmi, 2007).

Thrombocytopenia is second most common hematologic anomaly after anemia encountered during pregnancy. The occurrence of a platelet count  $< 150 \times 10^9/L$  in the 3<sup>rd</sup> trimester of pregnancy is 6.6 to 11.6%. Gestational thrombocytopenia appears to be a modification of the physiologic thrombocytopenia that accompanies normal pregnancy (Tygart, 1986; Ahmed, 1993). There is not enough data available to pinpoint the exact cause and prevalence of thrombocytopenia in Pakistan as only a limited number of studies have been done to find out the prevalence of thrombocytopenia in pregnancy in Pakistan and the limited studies which have been conducted shows either reduce or no change of the platelet count (Giles, 1981; Burrows, 1988; Sill, 1985).

Different classes of thrombocytopenia are recognized based on the platelet count. The platelet count of less than  $150,000/L$  is typically known as Thrombocytopenia (Shehata, 1999; Burrows, 1990). The platelet counts from  $100,000$  to  $150,000/L$  is considered mild thrombocytopenia, levels ranging from  $50,000$  to  $100,000/L$  are considered as moderate thrombocytopenia and levels less than  $50,000/L$  are considered as severe thrombocytopenia (Magann, 1999).

## MATERIALS AND METHODS

Current study was conducted to evaluate the prevalence of anemia and thrombocytopenia in pregnant women. Blood samples of pregnant females were collected from Jinnah hospital Lahore to see the frequency of Anemia, thrombocytopenia in pregnant women. It was hospital based study done from May 2014 to September 2014.

Total 200 (n=200) pregnant women ages 18-40 years, were selected using simple random sampling technique from Gynecology unit. Blood samples were collected from every pregnant woman for the measurement of Hemoglobin and Platelets counts. Blood specimen was collected with minimum stasis from the anti-cubital vein using a sterile dry disposable needle & syringe. 3ml of blood was dispensed into EDTA anticoagulant tubes. The specimens were labeled with patient's age, sex & identification number.

**Table 1: Hemoglobin (mg/dl) levels of Pregnant Females**

Hemoglobin (mg/dl)	Frequency	Percent
9-11	91	45.5
6-9	44	22.0
<6	6	3.0
>11	59	29.5
Total	200	100.0

**Table 2: Platelet Count ( $10^9/L$ ) of Pregnant Females**

Platelet count ( $10^9/L$ )	Frequency	Percent
100-150	20	10.0
50-100	9	4.5
<50	4	2.0
>150	167	83.5
Total	200	100.0

**Table 3: Age groups of Pregnant Females**

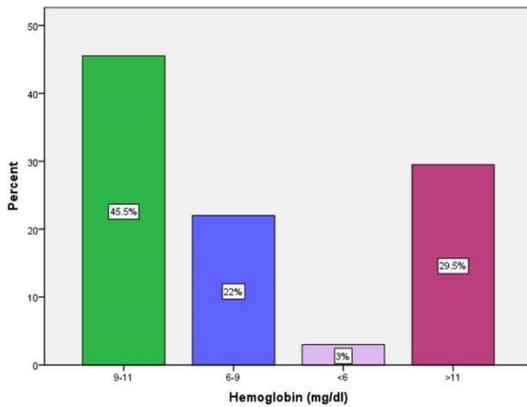
Age	Frequency	Percent
18-25	67	33.5
26-32	96	48.0
33-40	37	18.5
Total	200	100.0

Haemoglobin and platelets were measured by using hematology analyzer Sysmex (KX-21N). Calibration of instrument and processing of samples were done according to manufacturer's directions. The WHO standard Hb level of 12 g/dl was used as a benchmark (WHO, 2001). Women with Hb level more than 12g/dl were considered normal. Anemic women were further investigated to determine the underlying causes of anemia by haematological and biochemical tests.

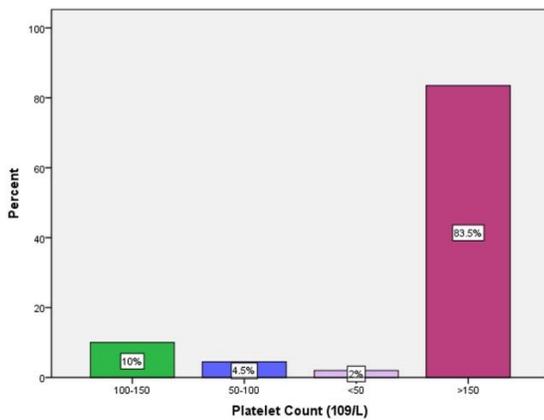
Thrombocytopenia is said to be present when the platelet count of the patient is less than  $150 \times 10^9 / L$ . The normal range for platelets in the non-pregnant woman is  $150$  to  $400 \times 10^9 / L$ .

## RESULTS

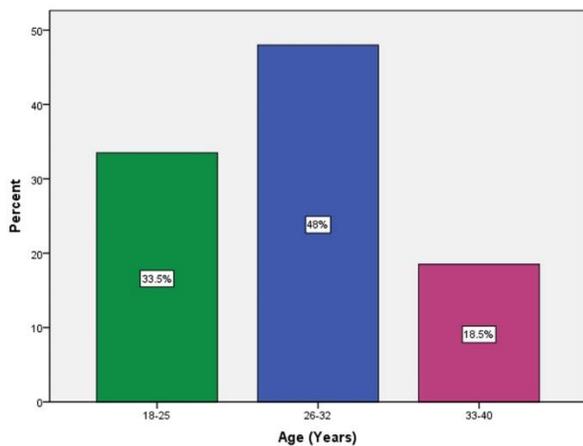
Total 200 pregnant women who were admitted in Gynecology ward of Jinnah hospital were included in this study. Data showed that total 70.5% of the pregnant females were anemic. 3% were severely anemic (Hb  $< 6$  g/dl). 22% were found moderate anemic (Hb 6-9 g/dl) and 45.5% were found mild anemic (Hb 9-11 g/dl) and



**Figure 1: Figure showing the Hemoglobin level in pregnant females**



**Figure 2: Figure showing the Platelet counts in pregnant females**



**Figure 3: Figure showing the age groups of pregnant females**

29.5 % pregnant females were having normal Hb levels as shown in (Table and Figure 1).

Thrombocytopenia was observed in 16.5 % of pregnant

ladies. Out of these 16.5 % pregnant ladies, 2% were found severe thrombocytopenic (Platelet count  $<50 \times 10^9/L$ ), 4.5% were having moderate thrombocytopenia (platelet count in between  $50-100 \times 10^9/L$ ) and 10% were mild thrombocytopenic (platelets count ranges  $100-150 \times 10^9/L$ ) as shown in (Table and Figure 2).

We made groups of pregnant females based on their age to find out any correlation between age and anemia. We found 33.5% anemic women were between age group 18-25 years, 48% anemic women were between the age group 26-32 and 18.5% anemic women were found between 33-40 age group as shown in (Table and Figure 3).

**DISCUSSION**

Our study has established a primary connection between severe anemia and different maternal and perinatal complications. Women are considered more liable to anemia the world over. Anaemia in pregnancy is an important cause of maternal and perinatal morbidity & mortality (Awan, 2004). In Pakistan it is common to see patients with severe anemia late in pregnancy with no preceding antenatal care, especially in low socioeconomic settings. We also found the similar thing in this study as most of pregnant females included in this study were anemic.

Different researchers have shown a prevalence of anemia in pregnancy from 19-50% (Hyder, 2004; Chotnopparatpattara, 2003; Martí-Carvajal, 2002). Pathological anemia of pregnancy is mainly due to iron deficiency (Beard, 2000). The occurrence of low hemoglobin in our study is 70.5%. The range of low Hb among pregnant women in other developing countries is from 35% to 81% (McLean, 2002; Seshadri, 2001).

Women who were reported eating meat two or more times a week had normal mean hemoglobin concentrations. Diet is extremely important in preventing severe complication of anemia. A study from Zimbabwe shows that poor nutrition leading to anemia is the main cause of post-partum hemorrhage (Tsu, 1993).

The term thrombocytopenia is commonly defined as a platelet count below  $150 \times 10^9/L$ . Thrombocytopenia is related with a higher occurrence of intrauterine growth

retardation and preterm delivery & was also found as an important risk factor. Similar study from India shows platelet count in 30 normal pregnant women and 90 pregnant women with unstable degree of pregnancy related to hypertensive disorders (Mohapatra, 2007). Thrombocytopenia is reported comparatively common in severe pre-eclampsia with the occurrence range of 11-29% (Burrows, 1987). In our study, platelet count was measured in 200 females and a considerable decrease in platelet number was observed in pregnant females and the occurrence rate of thrombocytopenia was 16.5% in our study.

## CONCLUSION

There was a high prevalence of anemia and thrombocytopenia in pregnant females. Anemia is usually ignored in pregnant females in our rural population and poor communities of our cities, but this is a serious alarm for both mother and the baby and needs to be dealt on priority basis. The causes of anemia need further research. Thrombocytopenia also influence the outcome of a pregnancy and may play a very important role at the time of delivery so care must be taken to keep the platelet count of the pregnant females within normal range.

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