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Original Research Article

# An Institutional Research on Maternal Thrombocytopenia and Anemia in Pregnant Women: A Cross Sectional Study

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**Abstract**

**Background:** Thrombocytopenia and anemia in pregnancy are major causes of maternal and perinatal morbidity and death, thus it is vital to pay close attention to pregnant women and treat them as soon as possible to avoid catastrophic complications.

**Aims & Objectives:** The goal of this study was to find out how common gestational thrombocytopenia and anemia are in pregnant women.

**Materials and Methods:** This was a 9-month cross-sectional study of 220 pregnant women who visited the Department of Obstetrics and Gynecology's outpatient department and wards. A random blood sample was taken for a peripheral blood film and haemoglobin count in order to assess platelet and haemoglobin levels.

**Results:** Pregnant women were on average 24.29.33 years old. The majority of the study participants are from rural areas, are employed by occupation, and are in their second trimester of pregnancy. Anemia and thrombocytopenia were shown to be prevalent in this study at 67 percent and 19 percent, respectively.

**Conclusion:** Thrombocytopenia and anemia are major concerns for both the mother and the infant, therefore antenatal care should include platelet and hemoglobin counts, as well as health education and dietary assessments.

**Keywords:** Anemia; Thrombocytopenia; Pregnancy; platelet and haemoglobin.

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## Introduction

Platelets are non-nucleated cells generated from megakaryocytes in the bone marrow that can survive for up to ten days in the peripheral circulation. Platelets play a crucial part in the haemostatic system as initiators [1]. Thrombocytopaenia is one of the most well-known hematologic abnormalities in pregnancy, second only to anemia. Thrombocytopenia can be caused by a variety of reasons, including gestational thrombocytopenia, idiopathic thrombocytopenic purpura, or preeclampsia. Infections such as malaria and folate deficiencies, as well as illnesses such as

leukemia and aplastic anemia, can cause significant morbidity and mortality [2]. The term "gestational thrombocytopenia" refers to a mild amplification of the normal decline in blood platelets that happens during pregnancy [3]. Pregnant women with thrombocytopenia are known to have an increased risk of excessive bleeding during or after childbirth, especially if they require a cesarean section or other surgical intervention during pregnancy or labor [4]. When the platelet count is below the usual range, such bleeding issues are more frequent. Anaemia in pregnancy has long been recognized as having negative consequences on the mother and as a serious public health issue in India, where it leads to low birth weight and high infant mortality [5]. In iron-supplemented women, anemia is defined as a hemoglobin level below the 5th percentile of a trimester-specific hemoglobin reference level. Anemia during pregnancy can be caused by a variety of factors, including iron, folate, and vitamin B12 deficiency, as well as parasitic disorders such malaria and intestinal parasitic infections [6]. Although severe thrombocytopenia has been documented in rare cases, iron deficiency anemia is frequently linked with thrombocytosis. Thrombocytopenia and anemia have become a reason for unneeded, and frequently invasive, extra testing and cesarean deliveries during pregnancy [7]. It's unclear what causes gestational thrombocytopenia, however it could be related to rapid platelet consumption and the increased plasma volume that comes with pregnancy.

Aims & objectives: The goal of this study was to find out how common gestational thrombocytopenia and anemia are among pregnant women who come to our tertiary healthcare center for antenatal care.

## Material and Methods

Subjects: This was a 9-month cross-sectional study of 220 pregnant women who visited the Department of Obstetrics and Gynecology of a medical college in Central India's outpatient department and wards. The Institutional Ethical Committee approved this study. During the study, all participants were required to sign informed consent forms. According to a pre-designed proforma, every person who entered the study had a complete history and physical examination. Women who were pregnant and had one of the following conditions were excluded from the study: Women taking nonsteroidal anti-inflammatory medicines like aspirin, Splenomegaly, Connective tissue illness like SLE, Hypertension, HIV, and hepatitis B infection are all risk factors. The clinical records were used to extract information such as medication history, splenomegaly, and HIV/hepatitis B status.

Specimen: Each pregnant lady had a total of 3 ml of blood drawn at random for a peripheral blood film and complete blood count. A BeneSphera H33s automated haematology analyzer was used to determine the whole blood count. Drabkin and Austin's approach was used to calculate haemoglobin levels in the blood (1932). On a daily basis, quality control was assessed by analyzing three distinct manufacturer-provided samples with known cell counts. If a pregnant woman's haemoglobin level was less than 11 g/dl, she was deemed anemic. Anemia was classified as mild if Hb was 9.0–10.9 g/dl, moderate if Hb was 7.0–8.9 g/dl, and severe if Hb was less than 7.0 g/dl.

When a pregnant woman's platelet count is less than 150 109/L, she is considered to have thrombocytopenia. Mild thrombocytopenia is defined as platelet counts of 100 to 150 109/L, moderate thrombocytopenia is defined as counts of 50 to 100 109/L, and severe thrombocytopenia is defined as counts of less than 50 109/L.

Statistical analysis: The data was analyzed with the SPSS Package version. To determine the relationship between two groups, simple proportions, mean, standard deviation,

Student "t" test, and Chi-square test were utilized. Statistical significance is defined as a P value of less than 0.05.

## Results

In this study, the majority of pregnant women (71%) were between the ages of 31 and 40, while 19% were between the ages of 21 and 30, and the remaining 10% were above 40. The average age of the participants in the study was 24.29 (3.33) years. The majority of the survey participants (59%) resided in rural areas. Sixty-two percent of the study participants were housewives, whereas 38 percent worked in some capacity. Illiteracy was found in 57 percent of the survey participants. The gestational age of the women revealed that 43% were in the second trimester. (See Table 1)

**Table 1: Sociodemographic characteristics of pregnant women (N = 220)**

| Variables | | **Number** | **Percantgae** |
|---|---|---|---|
| Age group (years) | 21– 30 | 42 | 19% |
| | 31–40 | 156 | 71% |
| | ≥ 40 | 22 | 10% |
| Occupation | Housewife | 136 | 62% |
| | Employed | 84 | 38% |
| Educational status | Illiterate | 116 | 57% |
| | Literate | 104 | 43% |
| Residence | Rural | 110 | 59% |
| | Urban | 90 | 41% |
| Trimester | 1st trimester | 84 | 32% |
| | 2nd trimester | 94 | 43% |
| | 3rd trimester | 42 | 15% |

In this study, anemia was identified in 148 (67%) pregnant women, whereas the remaining 72 (33%) had RBC counts that were within normal limits. The prevalence of anemia was mild in 56 percent of the 148 pregnant women in this study, moderate in 33 percent, and severe in 11 percent. In this study, thrombocytopenia was detected in 42 women (19%), whereas the remaining 178 (81%) women had a platelet count within normal limits. In this study, 67 percent of the 42 thrombocytopenic pregnant women had mild thrombocytopenia, 25% had moderate thrombocytopenia, and 7% had severe thrombocytopenia.

**Table 2: Sociodemographic factors associated with Thrombocytopenia and anaemia in pregnancy.**

| Variables | | **Thrombocytopenia (%)** | **Anaemic (%)** |
|---|---|---|---|
| Age group (years) | 21– 30 | 6(14) | 28 (19) |
| | 31–40 | 32 (76) | 108 (73) |
| | ≥ 40 | 4 (10) | 12 (8) |
| Occupation | Housewife | 30 (71) | 110 (74) |
| | Employed | 12 (29) | 38 (26) |
| Educational status | Illiterate | 24 (57) | 108 (73) |
| | Literate | 18 (43) | 40 (27) |
| Residence | Rural | 20 (48) | 124 (84) |

| | | | |
|---|---|---|---|
| | Urban | 22 (52) | 24 (16) |
| Trimester | 1st trimester | 28 (67) | 112 (76) |
| | 2nd trimester | 10 (24) | 24 (16) |
| | 3rd trimester | 4 (10) | 12 (8) |

Women in the age group 31-40 years had a higher prevalence of anemia (73%) and thrombocytopenia (76%) than women in other age groups; however, women with jobs had a lower prevalence of anemia (26%) and thrombocytopenia (29%) than women without jobs, though the difference was not statistically significant. Other characteristics linked to anemia during pregnancy include education, residency, and gestational age, with the majority of pregnant women showing anemia and thrombocytopenia in the first trimester and coming from a rural background (Table 2).

## Discussion

In India, thrombocytopenia and anemia in pregnancy have been identified as a serious public health issue, leading to a variety of physiologic or pathologic disorders, some of which are unique to pregnancy, resulting in substantial maternal morbidity and mortality [8]. Following anemia in pregnancy, it is the second most frequent hematologic disease. Women who have thrombocytopenia during pregnancy are more likely to hemorrhage, and postpartum haemorrhage is a leading cause of maternal death. The goal of this study was to find out how common thrombocytopenia and anemia are among pregnant women who visit our hospital [9]. Thrombocytopenia and anemia were shown to be prevalent in 19% and 67 percent of pregnant women in this study, respectively. Which was almost identical to the findings of previous investigations. Anemia during pregnancy is caused by a variety of factors in underdeveloped nations, including iron, folate, and vitamin B12 deficiency, as well as parasite disorders like malaria and intestinal parasitic infections. The relative impact of each of these factors to anemia during pregnancy varies a lot depending on where you live, what season you're in, and what you eat. The majority of pregnant women in this study were between the ages of 31 and 40, with a mean age of 24.58. Pregnancy-related thrombocytopenia was observed in all three trimesters, according to our findings. In the first trimester, no cases of severe thrombocytopenia were observed. The study found that the most occurrences of thrombocytopenia (47 percent) occurred in the second trimester of pregnancy [10]. This was in line with Pandey and Singh's findings, which stated that gestational thrombocytopenia occurs largely in the late second trimester of pregnancy. Several studies have found that education reduces the chance of becoming anemic [11]. In comparison to their counterparts, educated women were less likely to be anemic. Pregnant women who are educated earn more money and eat more nutritious foods are less likely to develop nutritional anemia. Illiteracy was found in 58 percent of the survey participants. These findings support a previous study that found a greater frequency of anemia among pregnant women without a high school diploma. Secondary and higher education have also been linked to a number of positive maternal and child outcomes [12]. This study found a link between anemia and living in the country, which is consistent with earlier findings [13].

## Conclusion:

In conclusion, thrombocytopenia and anemia are the most serious disorders that pregnant women face. Because the pregnant women in this study were from a rural area and were illiterates and housewives, antenatal treatment should include platelet and haemoglobin counts, as well as health education and

nutrition assessment. As a result, thrombocytopenia and anemia are important warning signs for both the mother and the infant, and they must be addressed as soon as possible.

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