



Anemia and Thrombocytopenia Among Pregnant Women in Nasiriyah city – Iraq

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Abstract:

Thrombocytopenia (TP) in general with anemia are common hematological (Hb) disorders that negatively affect the mother's and the fetus's health. The objective of this study was to determine the prevalence of thrombocytopenia and hemoglobin deficiency among pregnant women in Nasiriyah, Iraq, and assess the correlation between hemoglobin levels and specific reproductive factors. 150 pregnant women (ages 20–35) were randomly selected for a descriptive cross-sectional study. attending Bint Al-Huda Hospital in the city of Nasiriyah- Iraq. Data were collected by reviewing medical records and laboratory tests (Hb level- platelet count- iron level). The data were statistically analyzed using SPSS V.26. The results showed show the mean gestational age was 7.05 ± 1.514 months while The average age of mothers was 26.66 ± 4.661 years. The hematological findings demonstrated mild reductions in hemoglobin and PCV values which may reflect physiological (Hb) adaptations during pregnancy . illustrates the correlation between (Hb) levels and various hematological parameters. The results showed a somewhat favorable relationship between hemoglobin with age ($r = 0.067$) but this correlation was not statistically significant ($P = 0.419$). The study concluded that anemia remains a common health problem among pregnant women, calling for enhanced prenatal care health education and therapeutic nutrition programs to reduce its prevalence and complications.

Key words: Anemia, Thrombocytopenia, Pregnant women, Hemoglobin, PCV.

Introduction:

Anemia is one of the most common blood disorders during pregnancy and represent a significant global public health issue, especially in underdeveloped nations. It is associated with an increased risk of serious complications, such as preterm birth low birth weight, and higher rates of morbidity and mortality among mothers and newborns. Early detection and effective management are key pillars due to improving maternal and fetal health and enhancing pregnancy outcomes [1-2]. Anemia during the World Health Organization (WHO) defines anemia during pregnancy as a decrease in blood hemoglobin concentration to less than 11 g/dL, and it is classified into varying degrees of severity based on laboratory hemoglobin levels [3]. The (WHO) reports indicate that the global Over 35% of pregnant women have anemia, with the highest rates found in economically disadvantaged areas. This indicates a substantial health burden, especially in low- and middle-income nations [4]. Irons deficiency is the leading cause of anemia during pregnancy due to increased physiological iron requirements during this period, combined with inadequate dietary intake and poor adherence to recommended iron supplementation during pregnancy. [6-5]. In contrast to anemia, (TP) — distinguished by a diminished platelet count—represents an alternative hematological disorder that may manifest during gestation, albeit it is comparatively less prevalent than anemia. This reduction in platelet count is typically regarded as physiological and mild, and it predominantly arises during the third trimester [8-7]. Immune thrombocytopenia (ITP) is diagnosed in less than 0.1% of pregnancies; however, it is one of the most common causes in the first trimester. It is an autoimmune condition marked by a decrease in platelet formation and an increase in platelet breakdown mediated by IgG antibodies. Although several treatment

options are available, data regarding the safety and efficacy of most of them during pregnancy remain limited, which restricts their widespread use [9]. In Iraqi women anemia during pregnancy is one of the most significant public health issues, with rates of prevalence between 32.5% and 53% according to local studies; iron deficiency, along with socioeconomic factors and low levels of health awareness, contributes to these pregnant women in Baghdad had a high prevalence of anemia, according to this study, and ignorance was found to be a significant risk factor. [10]. Given their direct effects on the mother's and the fetus's health, anemia and (TP)during pregnancy have been the subject of several international and local studies. A study indicated that anemia during pregnancy affects 31% of pregnant women in Iraq, making it a serious public health issue moreover, nearly half a billion women worldwide, leading to negative outcomes for mothers [11]. According to a study done in Iraq's Ghat region, the prevalence of anemia among pregnant women was of moderate severity and that most cases of anemia were mild [12]. Low-risk and high-risk pregnant women in Palestine had anemia rates of 27.6% and 30.3%, respectively. The risk of anemia is increased by a number of risk factors [13]. A recent analytical study conducted in Egypt in 2025 indicated that anemia during pregnancy remains a major public health problem despite the existence of nutritional intervention programs and recommendations to strengthen prenatal care and periodic screening [14]. Globally, recommendations [15] have emphasized the need for continuous routine screening for anemia throughout pregnancy, given the persistently high prevalence rates worldwide. Low-risk and high-risk pregnant women in Palestine had anemia prevalence's of (27.6% and 30.3%) respectively. The risk of anemia is increased by a number of risk factors [13]. A recent analytical study conducted in Egypt in 2025 indicated that anemia during pregnancy remains a major public health

problem despite the existence of nutritional intervention programs and recommendations to strengthen prenatal care and periodic screening [14]. Globally, recommendations have emphasized the need for continuous routine screening for anemia throughout pregnancy, given the persistently high prevalence rates worldwide [15]. There are certain social factors that may hinder women's participation in research studies, such as the need for a husband's consent, fear of having blood drawn, or a lack of trust in medical research, particularly in rural areas and provinces with limited services [21].

Materials and Study Methods:

This investigation was carried out as cross-sectional descriptive research. The Bint Al-Huda Teaching Hospital's Department of obstetrics and gynecology provided the data. Fifty pregnant women between the ages of twenty and thirty-five made up the study's random sample. A pre-made questionnaire that asked about age, gestational age, number of prior births, number of abortions, number of cesarean sections, and pregnancy-related symptoms was used to gather data. Hemoglobin (Hb) levels from laboratory testing and medical records were also examined, and anemia was categorized using the World Health Organization [16]. SPSS version 26 was used to analyze the data. We employed descriptive statistics (percentage, frequency).

Results and Discussion

General Characteristics of the Sample

The results in Table (1) and Figure (1) show the mean gestational age was 7.05 ± 1.514 months while The average age of the mother was 26.66 ± 4.661 years. The hematological findings demonstrated mild reductions in hemoglobin and PCV values which may reflect physiological hematological adaptations during pregnancy.

This decrease can be explained by the natural physiological changes associated with pregnancy, as plasma volume increases at a rate that exceeds the increase in red blood cells, leading to a relative decrease in hemoglobin and PCV levels—a condition known as physiological anemia of pregnancy. It may also be related to the body's increased need for iron and folic acid during the later stages of pregnancy; if these needs are not met, it may progress to pathological anemia, which affects the health of both the mother and the feta.

The results of the current study are partially consistent with those of a study conducted on 400 pregnant women in Iraq. That study showed an anemia prevalence of 43.0% distributed as follows :1.5% severe, 17.5% moderate, and 24.0% mild. The study also demonstrated a significant correlation between anemia and several factors including young age low socioeconomic status low educational attainment residence in rural areas, and low dietary iron intake ($p < 0.05$) [10]. Similar results were reported in an Iraqi study conducted where the average age of pregnant mothers was 26.5 ± 7.5 years, confirming the frequency of blood diseases and anemia among women in this age range [19]. In a study conducted in Baghdad, which found that Hb and hematocrit values in pregnant women decreased during different trimesters, especially in late pregnancy [20]. However, our current study showed a slight decrease in the prevalence of anemia compared to the aforementioned study. This may be attributed to the different sample size improved health awareness among pregnant women or increased attention to nutritional supplements and prenatal care in the studied area.

Table (1) shows the general characteristics of the participants in the study

Variables	Mean	Standard Deviation (SD)
Gestational Age (Months)	7.05	1.514
Maternal Age (Years)	26.66	4.661
White Blood Cells (WBC) $\times 10^9/L$	9.28	2.978
Red Blood Cells (RBC) $\times 10^{12}/L$	4.20	1.034
Hemoglobin (Hb) g/dL	10.74	1.671
Packed Cell Volume (PCV) %	32.79	4.852
Platelets (PLT) $\times 10^9/L$	222.03	68.198
Gravidity (G)	2.07	0.949

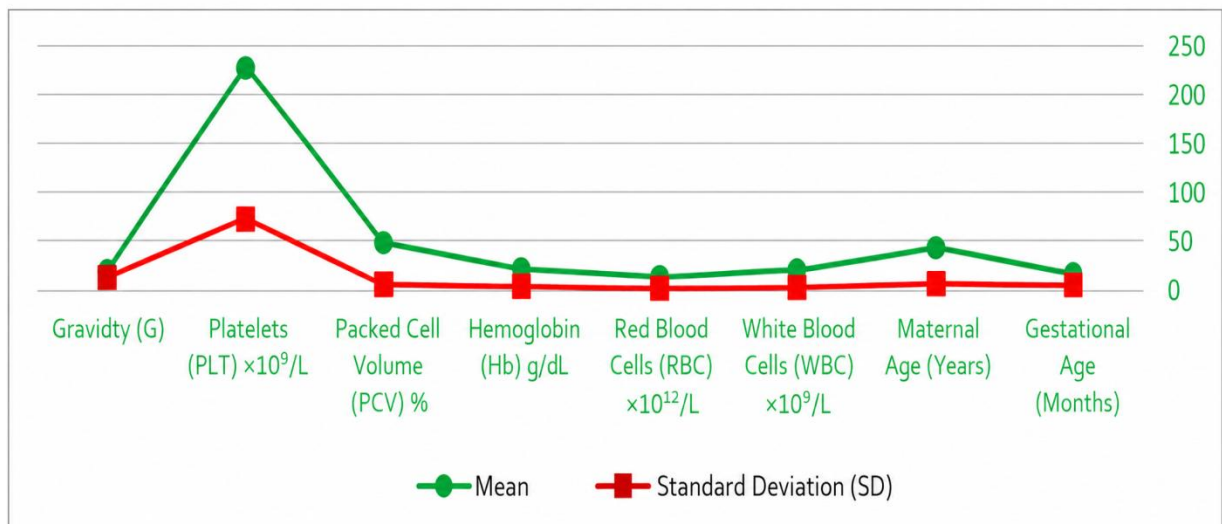


Figure (1) shows the general characteristics of the participants in the study.

Hemoglobin Correlation Analysis

The results in Table (2) and Figure (2) illustrates the correlation between hemoglobin (Hb) levels and various hematological parameters. The results showed a weak positive correlation between hemoglobin and age ($r = 0.067$) but this correlation was not statistically significant ($P = 0.419$). In contrast a weak but statistically significant positive correlation was found between hemoglobin and white blood cell (WBC) count ($r =$

0.261 - $P = 0.001$). A moderate positive correlation was also observed between hemoglobin and red blood cell (RBC) count ($r = 0.502$ - $P < 0.001$). Furthermore, hemoglobin showed a strong positive correlation with packed cell volume (PCV) ($r = 0.875$ - $P < 0.001$). On the other hand, a weak negative correlation was observed between hemoglobin and platelet count ($r = -0.282$ - $P < 0.001$).

This decrease can be explained by the natural physiological changes associated

with pregnancy, as plasma volume increases at a rate that exceeds the increase in red blood cells, leading to a relative decrease in hemoglobin and PCV levels—a condition known as physiological anemia of pregnancy. It may also be related to the body's increased need for iron and folic acid during the later stages of pregnancy; if these needs are not met, it may progress to pathological anemia, which affects the health of both the mother and the fetus.

Hemoglobin concentrations and (PCV) were significantly lower in the pregnant cohort, according to a comparative cross-sectional study that included 110 pregnant women and 50 non-pregnant controls. This decrease was most noticeable in the 26–40 age group and throughout the second and third trimesters. On the other hand, ferritin levels were constant and within normal

physiological bounds in every group that was studied.[17].

It was according to established clinical criteria , a hemoglobin concentration below 11 g/dL during the first and third trimesters of gestation serves as a diagnostic threshold for identifying anemia in pregnant women [18].

The findings of the present research align with a study conducted in Kirkuk, Iraq, which demonstrated that pregnant women with iron-deficiency anemia exhibited significantly lower mean serum ferritin levels (11.56 g/L) compared to their non-anemic counterparts (19.46 g/L; $P=0.001$). Furthermore, the study indicated that serum iron concentrations were markedly reduced in the anemic group (10.51 ± 3.11 g/dL) relative to the non-anemic pregnant cohort (16.85 ± 4.23 g/dL; $P=0.001$).[21].

Table (2) shows the general characteristics of the participants in the study.

Variables	Correlation Coefficient (r)	P-value	Interpretation
Hb vs Age	0.067	0.419	Non-significant weak positive correlation
Hb vs WBC	0.261	0.001	Significant weak positive correlation
Hb vs RBC	0.502	<0.001	Significant moderate positive correlation
Hb vs PCV	0.875	<0.001	Significant very strong positive correlation
Hb vs Platelets	-0.282	<0.001	Significant weak negative correlation

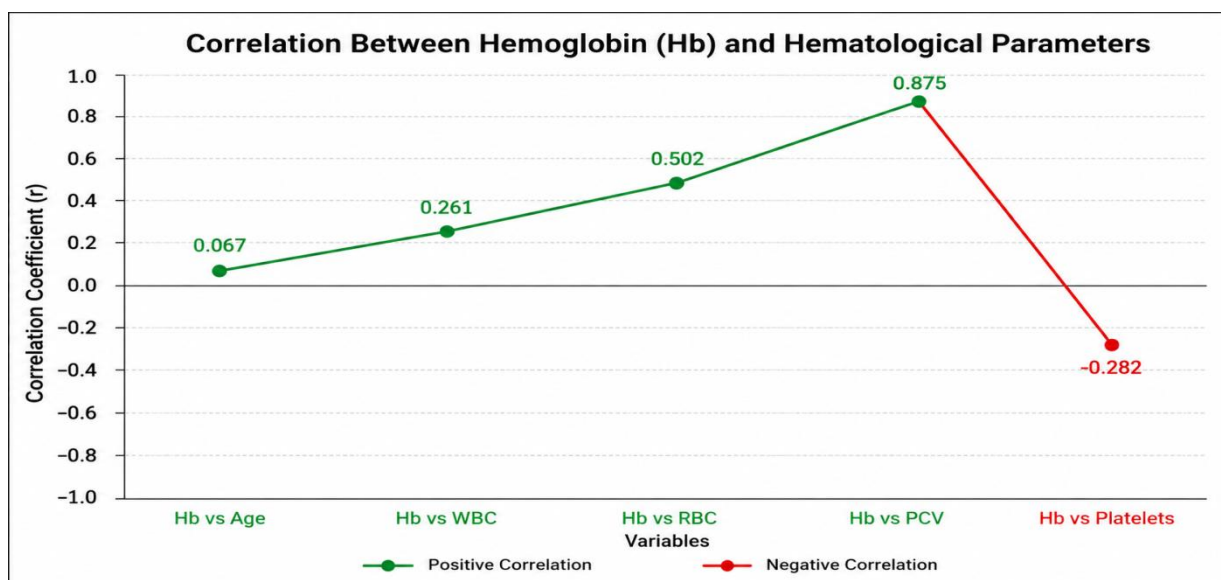


Figure (2) shows the Hemoglobin Correlation Analysis

Conclusions:

This study highlights that anemia during pregnancy is significantly influenced by modifiable and non-modifiable factors, including failure to take iron supplements, low dietary iron intake, low socioeconomic status, limited knowledge of anemia, and obstetric factors such as menorrhagia and antepartum hemorrhage, irregular prenatal care, young age, low educational level, and living in rural areas. The findings underscore the critical role of regular iron supplementation, improved dietary habits, enhanced patient education, and continuous prenatal care in reducing the prevalence of anemia. Ensuring adherence to supplementation, making supplements affordable, and implementing targeted interventions are essential steps toward improving maternal and fetal health.

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فقر الدم ونقص الصفيحات الدموية لدى النساء الحوامل في مدينة الناصرية – العراق

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الملخص:

فقر الدم من الاضطرابات الدموية الشائعة التي تؤثر سلبيًا على (TP) بعد نقص الصفيحات الدموية بشكل عام إلى جانب صحة الأم والجنين. وكان الهدف من هذه الدراسة هو تحديد معدل انتشار نقص الصفيحات الدموية ونقص الهيموجلوبين بين النساء الحوامل في الناصرية بالعراق، وتقييم العلاقة بين مستويات الهيموجلوبين وعوامل إنجابية محددة. تم اختيار (150) امرأة حامل (تتراوح أعمارهن بين 20 و35 عامًا) عشوائيًا لإجراء دراسة وصفية مستعرضة. كنّ يترددن على مستشفى بنت الهدى في مدينة الناصرية بالعراق. تم جمع البيانات من خلال مراجعة السجلات الطبية والفحوصات المخبرية SPSS (مستوى الهيموجلوبين - عدد الصفائح الدموية - مستوى الحديد). تم تحليل البيانات إحصائيًا باستخدام برنامج الإصدار 26.66. أظهرت النتائج أن متوسط عمر الحمل كان 7.05 ± 1.514 شهرًا، بينما كان متوسط عمر الأمهات 26.66 ، وهو ما $(PCV) 4.661 \pm$ سنة. أظهرت النتائج الدموية انخفاضات طفيفة في قيم الهيموجلوبين ونسبة خلايا الدم الحمراء قد يعكس التكيفات الفسيولوجية (الهيموجلوبين) أثناء الحمل. توضح النتائج العلاقة بين مستويات الهيموجلوبين ومختلف ، لكن هذه ($r = 0.067$) المعلمات الدموية. وأظهرت النتائج وجود علاقة إيجابية إلى حد ما بين الهيموجلوبين والعمر وخلصت الدراسة إلى أن فقر الدم لا يزال مشكلة صحية شائعة بين ($P = 0.419$) العلاقة لم تكن ذات دلالة إحصائية النساء الحوامل، مما يستدعي تعزيز الرعاية الصحية قبل الولادة والتثقيف الصحي وبرامج التغذية العلاجية للحد من انتشاره ومضاعفاته .

الكلمات المفتاحية: فقر الدم، نقص الصفيحات، النساء الحوامل، الهيموجلوبين، نسبة خلايا الدم الحمراء