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Original article

Prevalence of Anemia and Platelet Deficiency Among Pregnant Women in Brack Al-Shati District in Southern Libya

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ABSTRACT

Aims*. The purpose of this study was to identify the prevalence, severity, underlying causes, and contributing variables of anemia, platelet shortage, and related conditions.* ***Methods****. The study involved 197 female patients at Brack General Hospital, whose ages varied from 16 to 49 years. To detect blood variations, blood samples were obtained, and a complete blood analysis was performed. The samples under consideration had anemia and platelet deficiencies, and their grades and kinds met WHO requirements.* ***Results****. The findings revealed that the prevalence of anemia among women was 49.7%, which was higher in the age range of 28 to 39. Additionally, the incidence of anemia was mild in some cases (58%), average in others (37%) and severe in some cases (5%), including microcytic hypochromic anemia (56%) and microcytic normochromic anemia (3%). Pregnant women were more likely to have normocytic hypochromic anemia (7%) and platelet insufficiency (2%), which were both more common and whose incidence rose with the fetus's age and peaked in the third trimester (53%), respectively.* ***Conclusion****. According to this study, pregnant women in Brack region had a significant prevalence of anemia and platelet insufficiency. Pregnant women should consume vitamins, proteins, and meals high in iron while avoiding items that inhibit the absorption of iron. Moreover, pregnant women should be educated on the value of self-care, and blood parameter levels, particularly the level of hemolytic, should be monitored as the pregnancy progresses.*

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INTRODUCTION

Women undergo a variety of physiological changes during pregnancy, to allow normal fetal growth. Even in normal situation for pregnant women, the concentration decreases with the dilution of hemoglobin according to the increase in the volume of blood plasma. Iron and folic acid are consumed in quantities necessary for the fetus and are transported in detail to the fetus. About 20% of pregnant women suffer from anemia in the world and one of the most common countries in the world is Africa and Southeast Asia, and the majority of the vulnerable groups are children, pregnant and non-pregnant women. For instance, in Africa, the proportion of pregnant women with anemia is about 55.8%, and about 44.4% of non-pregnant women who suffer from the same disease. In Europe, the prevalence of the disease among pregnant women was 18.7%, while in non- pregnant women it was 15.2% [1].

Anemia is defined as the decrease in the value of hemoglobin in the blood and its marginal value varies by age, sex and physiological condition. Anemia is one of the most serious public health problems on the international stage. The most common causes include iron deficiency, micronutrients, body misappropriation of iron and parasitic and infectious diseases [2,3]. Iron deficiency anemia can be defined as the inability of the bone marrow to produce enough red pellets due to the lack of iron necessary to build hemoglobin, leading to the formation of small red blood cells containing little hemoglobin and also a decrease in the volume of blood that supplies cells

and tissues [4]. The purpose of this study was to investigate anemia and platelet deficiencies in pregnant women in the Brack municipality while taking into account the following aspects: (i) women in the Brack Al-Shati municipality have anemia and platelet deficiencies, and they are aware of the risks and disadvantages of these conditions during pregnancy as well as their causes. (ii) knowing which age groups are most affected by platelet deficiencies and anemia.

METHODS

Patients

This study was conducted on 197 women attending Barak General Hospital, their ages ranged between (16-49) years. The cases were divided into three categories according to the stages of pregnancy (first trimester: 53 samples, second trimester: 66 samples, third trimester:78 samples). The attached questionnaire was used to collect some information from the patients, and each woman's personal information, including her age, occupation, the number of pregnancies, abortions, types of births, and diet knowledge, was recorded.

Samples collection

In order to study the total blood cell count represented by the complete white blood cell count, red blood cell count, and platelet count, as well as to measure the concentration of hemoglobin, measurement of hematocrit, and measurement of erythrocyte indices, 3ml of venous blood is withheld from the veins in the arms. The kx21 system device for the CBC process counts all of the red and white cells and platelets.

Statistical analysis

Statistical analysis of the results obtained from the current study was carried out using the SPSS 20 software, where the arithmetic mean and standard deviation were calculated, and the T-test also used one-way ANOVA followed by the least significant difference test LSD.

RESULTS

A total of 197 pregnant women included in this study at Brack general hospital and Al-Sara clinic, about 98 (49.7%) of the study precipitate were anemic, as shown in figure (1)

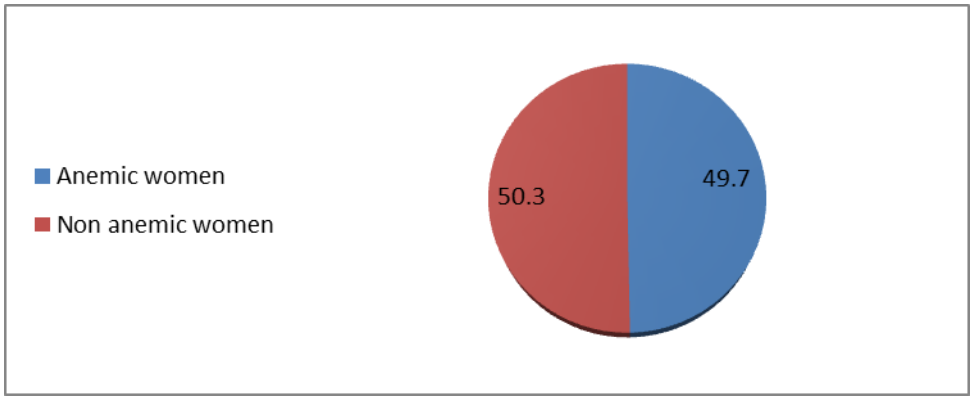

Figure 1. The prevalence of anemia among pregnant women

According to the study, pregnant women with anemia were most affected in the third trimester (53%), followed by the second trimester (30%), and then the first trimester (17%). In terms of the total number of cases for each trimester, the third (39.5%), the second (33.5), and the first (27%), respectively, as shown in figure 2.

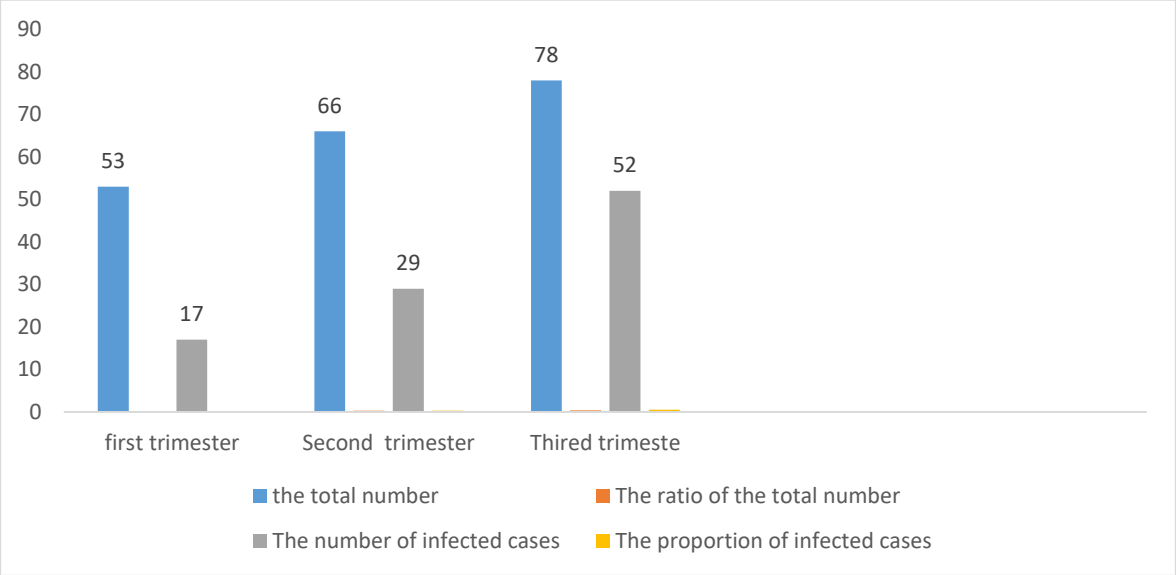

Figure 2. Distribution of the study cases according to pregnancy periods

Figure (3) depicts the prevalence of anemia among pregnant women. According to the findings, their percentage of mild anemia (58%) was higher than that of moderate anemia (37%) and severe anemia (5%).

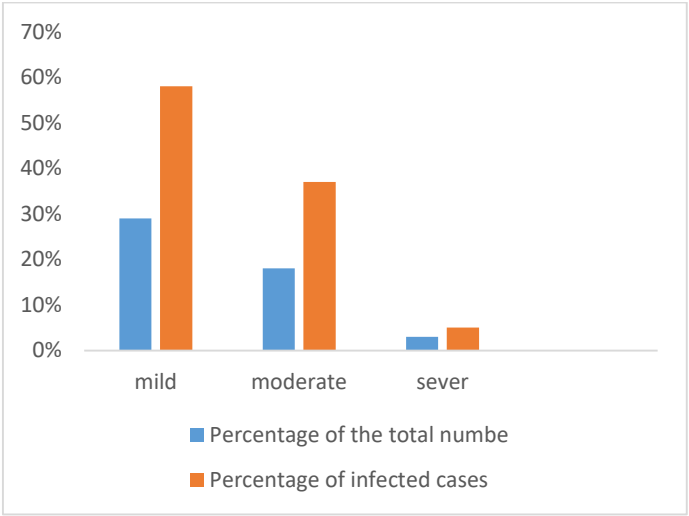

Figure 3. The percentage of anemia degrees among pregnant women

Figure (4) shows the percentage of women with anemia by age groups in relation to the affected cases and it was from (16-27) 44% and (28-39) 49%, and the age group (40-51) was 7% and the percentage of the total number was 46%, 45% and 9% respectively.

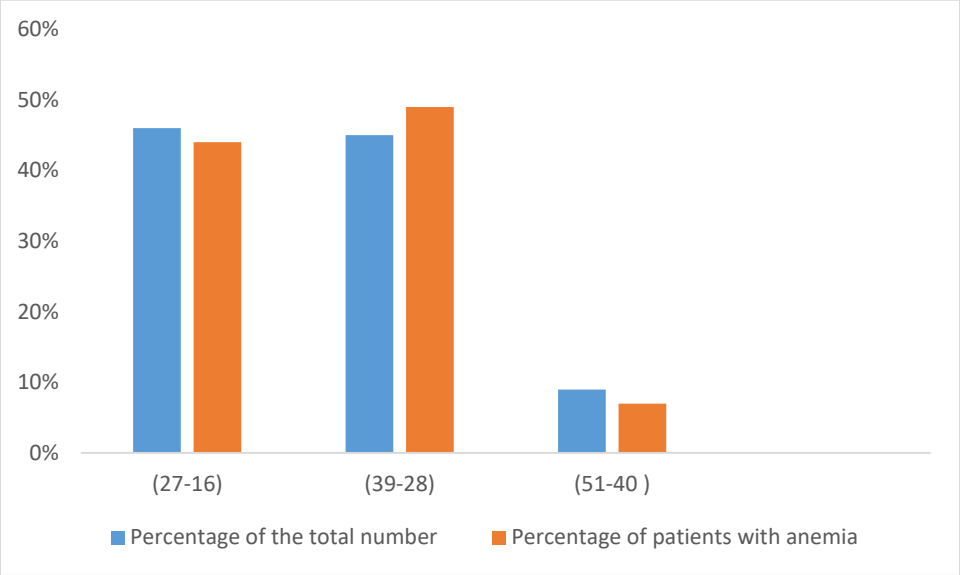

Figure 4. The percentage of women with anemia by age

Result shown in Figure (5) represents the distribution of pregnant women with anemia according to occupation were the highest percentage was among housewives by percentage of (65.3%)from the total number of samples and was (57%)from the women with anemia, followed by teachers by percentage of (19.4%)(14%), followed by nurses (11%)and (2.04%), then female employees at (6%) and (7.14%), then female students at (8%) and (5.1%).finally laboratory technicians by percentage of (4%) (1.02%) from the total number of patients and patients with anemia, respectively.

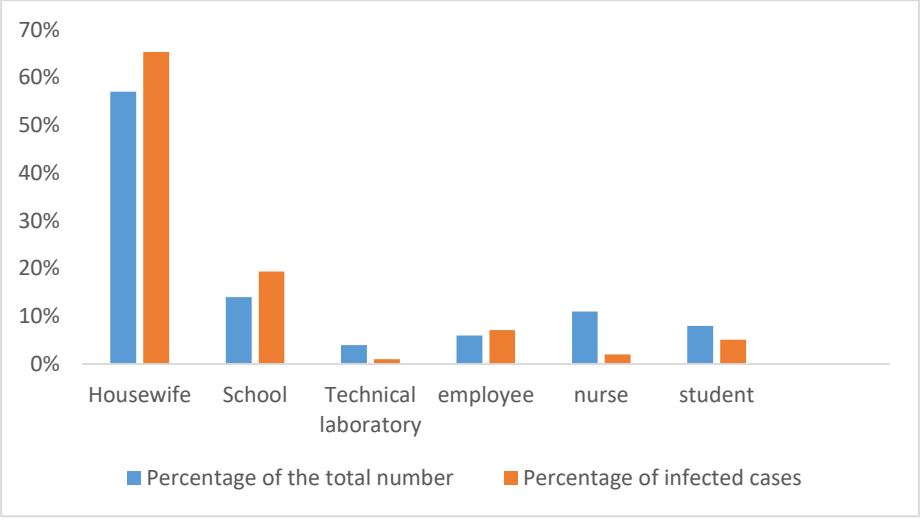

Figure 5. Distribution of the total number of pregnant women depending on the job

Table (1) lists the types of anemia according to the average size of the red blood cells MCV and the average hemoglobin in the red blood cells MCH, where it was the highest percentage microcytic hypochromic anemia (56%), normocytic normochromic anemia (34%), normocytic hypochromic anemia (7%), normochromic microcytic anemia (3%).

Table 1. Types of anemia according to the average size and shape of the red blood cells.

Classification	Numbers	Percentage
Normocytic Normochromic Anemia(MCV=80-89,MCH≥27)	33	**%34**
Normocytic Hypochromic Anemia(MCV=80-89 , MCH<27)	7	**%7**
Normochromic Microcytic Anemia(MCV<80, MCH≥27)	3	**%3**
Microcytic Hypochromic Anemia (MCV<80,MCH<27)	55	**56%**
Total	98	**100**

The distribution of all pregnant women with anemia by type of delivery is shown in figure (6). The results showed that the percentage of natural births was (78%) and (77%), and the percentage of cesarean delivery was (22.4%) and (23%) of the total number of women with anemia over the years.

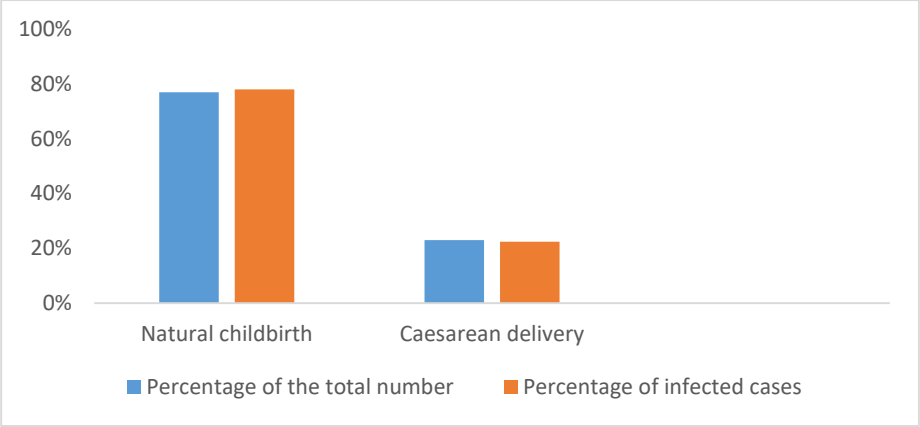

Figure 6. The distribution pregnant women with anemia by type of delivery

The distribution of anemic cases according to the number of births is shown in figure 7, with the largest percentage (20.3%) of instances occurring in women who had never given birth, followed by three times (19.4%), four times (18.3%), and finally two times. (17.4%), once (12.3%), twice (12.3%), and more than four times (12.3%).

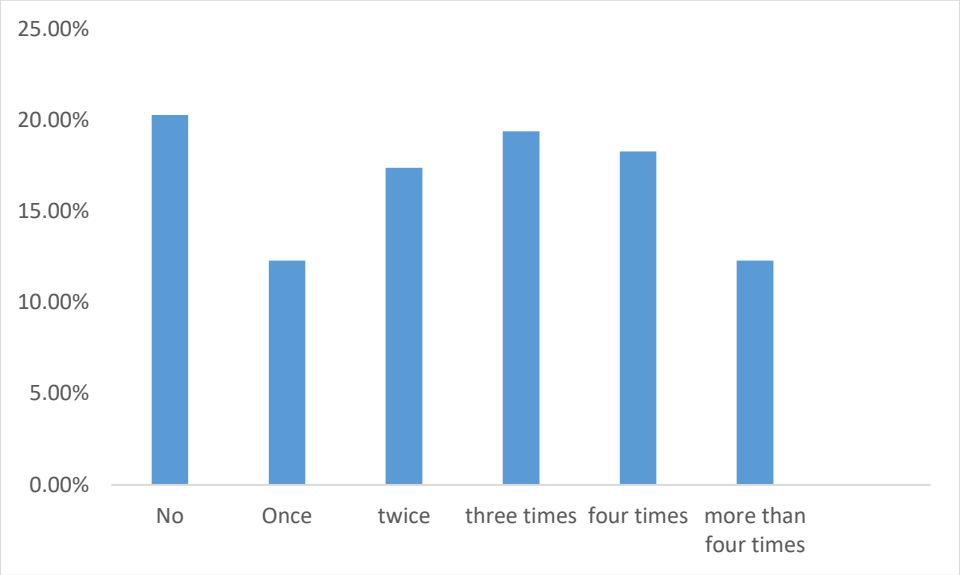

Figure 7. The distribution of anemic cases according to the number of births

Results in Figure (8) shows the percentage prevalence of thrombocytopenia in pregnant women in Brack Al-Shati District in Southern Libya

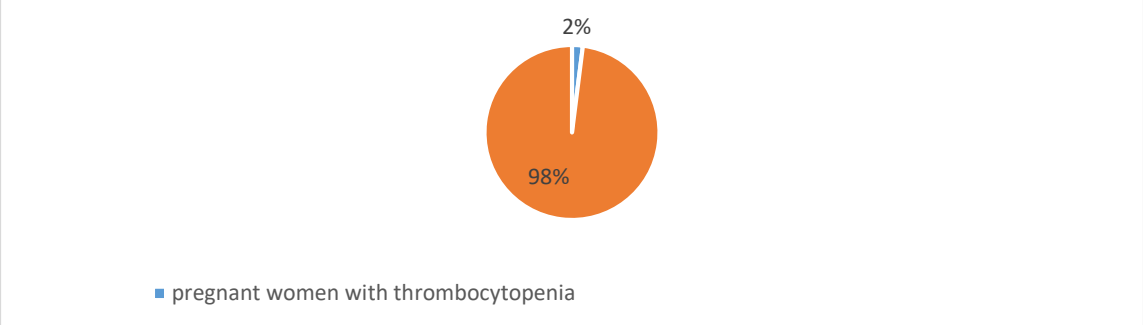

Figure 8. The prevalence of thrombocytopenia in pregnant women

The results in Figure (9) shows the distribution of thrombocytopenia cases by pregnancy period, as it was found that pregnant women with thrombocytopenia in the third trimester of pregnancy are the most prevalent (67%) and then the first trimester (33%), while there is no deficiency in the second trimester.

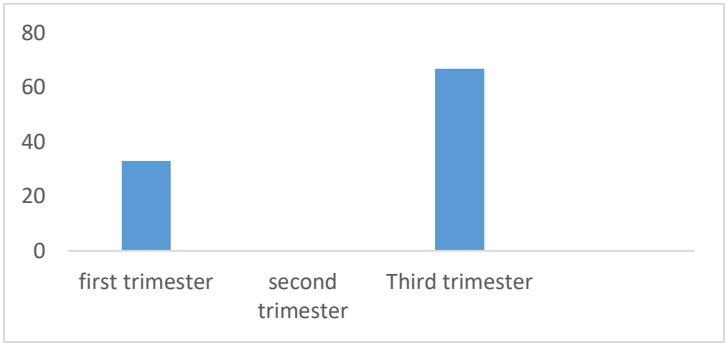

Figure 9. Rate of thrombocytopenia among pregnant women

DISCUSSION

Anemia is the most common medical disorder in pregnant women, defined by the World Health Organization (WHO) as a hemoglobin concentration less than 11 g/dl and classified according to severity into mild, moderate, severe or severe anemia (mild anemia 10-10.9 g/dL, moderate anemia 9.9-9 g/dl), severe anemia less than 7 g/dl) according to hemoglobin level [5].

The prevalence of anemia and its causes, as well as the classification of anemia cases, the prevalence of platelet deficiency in pregnant women, were studied. According to the research results, we found that the general percentage of anemia prevalence was 49.7%, and this is considered a severe percentage according to the classification of the WHO for the severity of the prevalence of anemia, where the prevalence of anemia was classified ≥40% among the population as an acute public health problem [1].

When comparing the obtained results with the results of previous studies conducted in Libya, this percentage was less than the results obtained in a study conducted in the city of Al-Zawiya, where the prevalence of anemia reached 55% [6] and a study in the city of Derna, the incidence rate was 54.6% [7], but it is higher than the study conducted in Tarhuna, where the percentage of anemia reached 47% in Tarhuna Hospital [8].our result also lower the prevalence in some Africa countries for example in Nigeria was 54.5% [9] Ethiopia was 56.8%, Kenya was 57% [10,11] .

The results of studies conducted in some African countries also showed that the prevalence of anemia, and found it 88% in Nigeria [12], 70.5% in India, 62.2% in Laholar [13], 40.8% in Egypt [14], 40% in Algeria [15], and 39% in Saudi Arabia [16]. The difference in the prevalence rates of anemia in these areas may be due to considering the difference in geographical locations, socioeconomic status [17], sampling methods and methodology used, as well as the intake of iron supplementation by pregnant women in some studies [18, 19].

It was found through the results that the largest percentage of anemia cases was in the third trimester (53%), this is higher than studies in Zawia city of Libya (34.9%), and Nigeria (50.8%) [20,21], and lower compared with what was obtained in study of Derna (59.6%), and Saudi Arabia (71%) [19]. This may be due to increase in plasma volume, leads to hormonal disorders and increases retention fluids and iron deficiency [7]. In addition to women in the study area do not start following pregnancy early in pregnancy, which led to an increase in its prevalence in the last stage of pregnancy.

The age group (28–39) years was the one with the highest prevalence of anemia in this study. Pregnant women are more prone to anemia because they produce less hemoglobin and red blood cells during pregnancy, which is one of the key nutrients for the synthesis of red blood cells and hemoglobin. It could be because the body produces more blood to help the developing fetus get the nutrition it needs, and this abnormality could make diseases more severe during pregnancy.

We also classified the obtained results for pregnant women with anemia according to their profession, where housewives (65%) constituted the highest percentage of pregnant women with anemia. This is higher in Ethiopia study that largest percentage of women was housewives (54.9%), and lower to Pakistanis study recorded that

housewives 95.2% and India study (91.8%). This difference might due to the economic and demographic characteristics and access to health care effected women were female housewives, also to the less awareness regarding to anaemia and consequences of anemia [19].

Our results showed that the prevalence of thrombocytopenia was 2%, which is much lower than the study conducted in the city of Al-Zawiya, where it was 6.3% and less than in India, where it was 7.67% and 8% in Iraq and 15.3% in Guinea, and 17% in a study conducted on Al-Galaa Hospital, Department of Obstetrics and Gynecology.

Our current study is similar to a study conducted by Shashikalakaranth et al., 2018 [22]. The percentage was 2.25 % and less than another study by Varghese et al., 2016 [23]. The percentage was 4.2%, however, the percentage is lower than that obtained in studies conducted by Asrie et al., 2017(24), Arora et al., 2017[25]and Dwivedi et al., 2012 [26] were 8.8%, 9.4%, and 8.17%, respectively.

It was found that pregnant women with thrombocytopenia in the third trimester are the most prevalent (67%). This is higher than Africa study (54%) [27] and study in Hospital Millennium Medical College, Addis Ababa, Ethiopia (9.4%) [17], and lower than Delhi study (93.3%) [28], this may due to that the number of platelets and the period of pregnancy affect each other, as they showed that the number of platelets decreases relatively with the progression of pregnancy and that there is a tendency for their numbers to decline with the increase in the growth of the fetus and the length of the pregnancy. In the third trimester, platelet count decreases due to hemodilution, increased platelet activation and consumption [29].

CONCLUSION

It can be concluded that the prevalence anemia among pregnant women in the Brack region was very severe, reaching 49.7% of the total study samples. It is more prevalent in the age group (28-39) and that most of the cases were mild anemia (58%), and also most of the anemia cases were from the third of the type of microcytic hypochromic anemia. As for the prevalence of thrombocytopenia among pregnant women, a simple percentage (2%) was of a mild type and was much lower than the percentages obtained in the studies conducted in Libya.

Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

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