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**RESEARCH ARTICLE**

# DETERMINE MORPHOLOGICAL TYPES OF ANEMIA IN ANEMIC PREGNANT WOMEN IN AL-BATOOL TEACHING HOSPITAL FOR MATERNITY AND CHILDREN IN BAQUBAH CITY, IRAQ.

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## *Abstract*

**Background:-** Anemia is a sever public health nutritional problem in pregnant women has a significant impact on the health of the fetus as well as that of the mother and responsible for low birth weight.

**Objective:-** To determine the frequency and morphological types of anemia in anemic pregnant women admitted to the Al-Batool teaching hospital for maternity and children in Baqubah city and related with socio-demographic and antenatal factors.

**Patients and Methods:-** Descriptive, cross-sectional study consist of 112 pregnant women were selected using a systematic random sampling technique from Al-Batool teaching hospital for maternity and children in Baqubah city, Diyala. Iraq during the period from 1st September 2014 till 30th May 2015. After clinical examination, blood count was carried out and full information were collected from each participant in pretested preform which included the sociodemographic and antenatal characteristics such as age, occupation of pregnant women, gravity, inter pregnancy interval, antenatal care visit, iron folic acid receiving, any medical problem, and severity of anemia also were recorded.

**Results:-** Out of 112 pregnant women, blood samples analyzed, majority 48(42.85%) were moderate anemia cases whereas 39.28% were mild anemia and 17.85% were severe anemia. The age of patients ranged from (17-42) years with mean of 27.67 years. Most cases were recorded within non-worker, multiparous and in women have birth space between 1-3 years, hypochromic microcytic anemia was the (67.85%) higher followed by 22 (19.6%) normochromic microcytic anemia. Statistical analysis demonstrated significant difference regular visit and in women with iron folic acid taken.

**Conclusion:-** Anemia in pregnancy is still a major health problem in Baqubah city; iron deficiency anemia was the higher, identifying multigravidae as being more at risk than others. Comprehensive nutrition education and health promotion program shout be carried out targeting pregnant women, Educating women on early ANC visit, use of iron and folate supplements also it needs new programs strategies particularly those that control the large family size and improve the overall nutrition status of pregnant women.

## Introduction:-

Anemia is an important health issue throughout the world with the highest prevalence rate being seen in developing countries [1]. Anemia is define as lack of functioning red blood cells (RBCs) that leads to a lack of oxygen-carrying ability, causing unusual complications during life time. These RBCs are produced in the bone marrow. They have a life expectancy of about 120 days. Among other things, the body needs iron, vitamin B12 and folic acid for erythropoiesis. If there is a lack of one or more of these ingredients or there is an increased loss of RBCs, anemia develops [2].

According to WHO, in developing countries, the prevalence of anemia among pregnant women averages 56%, ranging between 35 to 100% among different regions of the world [3]. Anaemia ranges from mild, moderate to severe and the WHO pegs the haemoglobin level for each of these types of anaemia in pregnancy at 10.0 – 10.9g/d1 (mild anaemia) 7- 9.9g/dl (moderate anemia) and < 7g/ dl (severe anaemia) [4].

In pregnancy is defined as an Hb <110 g/L in the first and last trimester, and a Hb <105 g/L in the second trimester. Women with anaemia in pregnancy may experience fatigue, reduced energy levels, reduced mental performances, and in cases of severe anaemia it is associated with preterm birth, low birth weights, and a small for gestational age fetus. In the postpartum period anaemia has been found to be linked to depression, emotional instability, stress and lower cognitive performance tests [5]. It is significantly higher in the third trimester than in the first and second trimester of pregnancy. Asia has the highest rates of anemia in the world. Indian subcontinent has half of the anemic women [6].

Anemia in pregnancy is grossly classified into two types: first one is pathological anemia in pregnancy. It is further sub-classified into. Deficiency Anemia (e. g. Iron deficiency, Folic acid deficiency, B12 deficiency, Protein deficiency) and hemorrhagic (Acute hemorrhagic, Chronic hemorrhagic and Hereditary. While the second type is physiological anemia, during pregnancy there is disproportionate increase in plasma volume upto 50%, RBC 33% and Hb 18-20% mass. In addition there is marked demand of extra iron during pregnancy especially in the second half of pregnancy. So, physiological anemia is due to combined effect of hemodilution and negative iron balance [7].

Iron deficiency anaemia (IDA) is cited as the most common cause of anaemia in women of childbearing age worldwide. Iron deficiency anemia does not only affect the mother but also has impact on cognitive and psychomotor function and anemia in infant [8]. Iron deficiency and consequent anemia during pregnancy could be associated with severe complications like increased risks of maternal mortality and morbidity, premature delivery, and low birth weight. Thus, routine screening tests for anemia are recommended in pregnant women [9].The consequences of IDA have been widely studied [10, 11].

In Iraq, Al.Shawi *et al.,* (2012) study incidence and type of anemia in pregnant women in Bagdad province also other study done in different place such as study done by Abdul-Hussin (1996) in pregnant women in waist city and Mohammed (1990) in pregnant women in Basrah city.

In view of the above, the present study was carried out to determine the frequency and morphological types of anemia in anemic pregnant women admitted to the Al-Batool teaching hospital for maternity and children in Baqubah city and related with socio-demographic and antenatal factors.

## Patients and Methods:-

### Study design:-

Descriptive, cross-sectional study consist of 112 anemic pregnant women were selected using a systematic random sampling technique from Al-Batool teaching hospital for maternity and children in Baqubah city during the period from 1st September 2014 till 30th May 2015.

### Ethical approval

Ethical clearance was obtained from Al-Batool teaching hospital for maternity and children administrator in Baqubah city, Diyala. Iraq. Participants were also informed that they have full right to discontinue or refuse to participate in this study.

**Sampling and processing:-**
A complete blood count was done on a coulter counter and a Giemsa-stained thin blood film was studied to determine the blood cell morphology also blood samples were collected in to EDTA tube to determine type of anemia by the hematological parameters such as haemoglobin (Hb), mean cell volume (MCV), mean corpuscular hemoglobin (MCH) and mean corpuscular hemoglobin concentration (MCHC) in all the samples.

A questionnaire including sociodemographic and antenatal characteristics such as age, occupation of pregnant women, gravity, inter pregnancy interval, antenatal care visit, iron folic acid receiving, any medical problem, and severity of anemia.

**Statistical analysis:-**
Date was analyzed using statistical package of social sciences (SPSS) for version 16. Differences in proportions were assessed by Chi-square test. P-values < 0.05 were considered statistically significant.

## Results:-

We evaluated 112 pregnant women for the morphology of anemia. The socio-demographic characteristics of the study group are set out in table 1. Minimum age was 17 years and maximum 42 years, The mean age was 27.67 years there was significant differences (P<0.05) noticed among age group. Majority of women were non-worker 85(75.89%). Regarding parity, high percent of women were multipara 62(55.35%) followed by primipara 37(28.57%) also it observed that the maximum number of the study subject 64 (57.14%) were birth spacing between 1-3 years, 42(37.5%) women had even spacing of less than 1 year, only 6 (5.35) had birth spacing women than 3 years.

**Table 1:** Socio-demographic characteristics among studied group.

| Parameters | Number | Percentage | Comparison of significance P-value |
|---|---|---|---|
| **Age stratum** | | | |
| 17-27 years | 54 | 48.21% | P<0.001 |
| 28-37 years | 54 | 48.21% | |
| 38-47 years | 4 | 3.57% | |
| **Occupation** | | | |
| Worker | 27 | 24.10% | P<0.001 |
| Non-worker | 85 | 75.89% | |
| **Parity** | | | |
| Nulliparaous | 16 | 14.28% | P<0.001 |
| Primiparaous | 32 | 28.57% | |
| Multiparaous | 62 | 55.35% | |
| Grandmultipar | 2 | 1.78% | |
| **Birth spacing** | | | |
| < 1year | 42 | 37.5% | |
| 1-3 year | 64 | 57.14% | P<0.001 |
| > 3year | 6 | 5.35% | |
| **Total** | 112 | 100% | |

Anemia was classified as severe (haemoglobin <7 g/dl), moderate (7- 9.9 g/dl) and mild (≥10 g/dl); according to the result of this study 20 patients (17.85%) had severe anemia, 48 (42.85%) had moderate anemia and 44 (39.28%) had mild anemia. Statistical analysis show significant differences as shown in table (2)

**Table 2:** Distribution of anemic pregnant women according to severity of anemia

| Variable | Number | Percentage | Comparison of Significance Mean Std. Dev. |
|---|---|---|---|
| **Haemoglobin (> 11 gm%)** | | | |
| Mild anemia9-10 g/dl | 44 | 39.28% | 0 .000 |
| Moderate anemia7-8.9 g/dl | 48 | 42.85% | |
| Severe anemia < 7 g/dl | 20 | 17.85% | |
| **MCV (83-97 fl):** | | | |
| Low (< 83fl) | 16 | 14.28% | 71.5411±9.16499 |
| Very low (< 60 fl) | 88 | 78.57% | |
| High (> 100 fl) | 8 | 7.14% | |
| **MCH (27-33 pg)** | | | |
| Normal | 20 | 17.85% | 22.3429±4.13170 |
| Abnormal | 92 | 82.14% | |
| **MCHC (32-36 gm%):** | | | |
| Normal (32- 36 gm%) | 30 | 26.78% | 31.0429±2.29734 |
| Low (<32 gm%) | 78 | 69.64% | |
| High (>36 gm%) | 4 | 3.57% | |
| **Total** | 112 | 100% | |

Typing of anemia was determined by morphological examination of the peripheral blood film, the results revealed that 87 anemic pregnant women (67.85%) had hypochromic microcytic anemia, 22 (19.6%) normochromic microcytic anemias. While 10 (8.92%) had normochromic normocytic anemia as shown in figure 1.

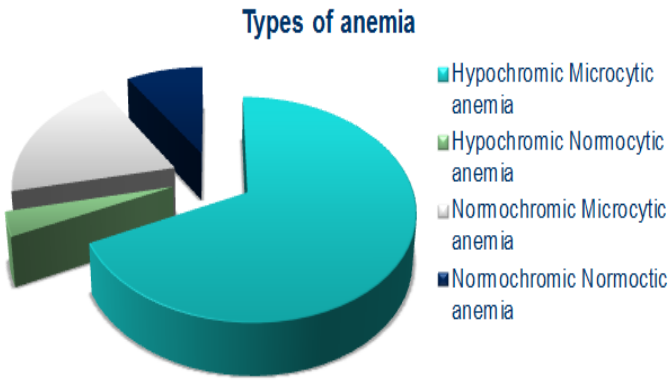


**Figure 1:** Types of anemia in anemic pregnant women.

According to the subjects "visitor to antenatal care ", the greater number of them illustrated regular visit, and they are accounted 50(44.643%), followed by irregular visit, and they are accounted 24(21.42%), and finally non-visit accounted 38 (33.92%). The prevalence of anemia was higher among women with regular visitor to antenatal care which and statistical analysis show significant difference (P= 0.011) as shown in figure (2).

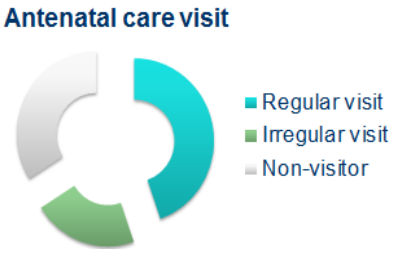


**Figure 2:** Distribution of anemic pregnant women according to antenatal care (ANC) visit.

Distribution of pregnant women according receiving iron and folic acid which demonstrated that 62 (55.35%) with iron folic acid taken while non-taken was constitute 50(44.64%), but the difference was not significant (p=0.257).

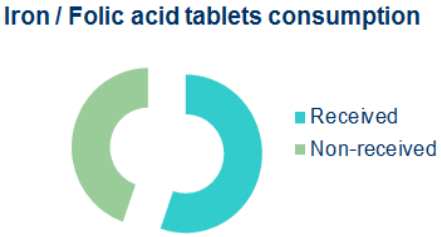


**Figure 3:** Distribution of anemic pregnant women according to iron folic acid (IFA) tablets receiving.

Commonest diagnosis 108 (96.42%) in anemic patients without any medical problem. Four cases had a hypertension only 4 (3.57%) as shown in figure (4).

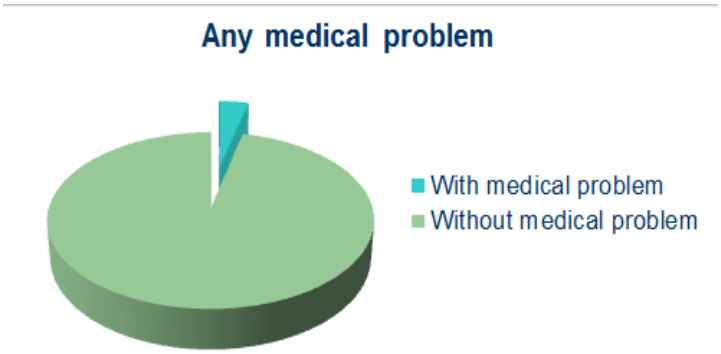


**Figure 4:** Distribution of study group according to any medical problem

## Discussion:-

Anemia is a global public health problem affecting both developing and developed countries with major consequences for human health as well as social and economic development. It occurs at all stages of life cycle, but is more prevalent in pregnant women and young children.

In developing world, current strategies to prevent and correct anemia and iron deficiency in pregnant women have met little success [15].

The result of this study which revealed moderate anemia was the most common type of anemia in pregnant women, this is similar to result of other studies [1, 16] and different with study done by Al.Shawi *et al.*, (2012) who recorded high percent with mild anemia [6, 12, 17]. Severe anemia was seen in 20 cases it is in contrast to the study done by Geelhoed were no case of severe anemia was noted [18]. Also with [19].

Regarding age group, high number was recorded in the age group (17-37) years with mean age recorded was 27.67 years this is comparable with result of study done by many researchers [16,20]

The study appears that anemia is more common in multiparity, due to the depletion of inventories of iron because of recurrent delivery [12, 13, 14]. Multiparity, poor socio economical and educational statuses are the principal reason for high prevalence of anemia in population [20].

The present study has found high number of anemia were recorded among unemployed pregnant women may indicate that poverty borne out of unemployment may have contributed significantly to the high level of anaemia as the women cannot go for antenatal care, eat nourishing food and prevent possible infection.

This study indicate that women with child birth spacing of less than 1 year and between 1-3 years had significantly lower haemoglobin and high prevalence of anaemia. Similar observations were made in other researcher found that anemia was common in women with birth spacing of 1-3 years or less than 1 year [16, 21].

Study done by [6]. Who revealed birth spacing did not really affect the outcome. A space of two years was as likely to result in anemia as a space of 6 years. Primigravidas were as likely to be anemic as were third gravidas; and age as specified in the inclusion criteria had no influence on the anemia pattern. The intake of supplements did not reveal any definite indicators either except the fact that none of the groups took them regularly. The anemic patients were as likely to take regular supplements as were non-anemic likely not to take them. Routine iron supplementation dosage in women who were not anemic in their first and second trimester of pregnancy could not prevent their becoming anemic in their third trimester despite their taking regular iron supplements. Reason probably being the already low iron stores at the start of the pregnancy.

Morphological types showed that hypochromic microcytic anemia was maximum and this result agreement with result of study done by [1]. Followed by normochromic microcytic, these types of anemia were identified depend on the morphology of cells which in most cases iron deficiency anemia. This result agreement with study done by [12]. This may be related to similarity in studied area and life style and culture. Similar observation was made in study done by [16] [22].

This co-relates with the fact that iron deficiency anemia is the commonest anemia in pregnancy. The prevalence of iron deficiency is far more than prevalence of anemia and iron deficiency often develops during the later stages of pregnancy even in women who enter pregnancy with relatively adequate iron stores [23]. Also the iron deficiency is more likely to occur at certain times in life such as adolescence, pregnancy and breastfeeding. Women of childbearing age are therefore, at greatest risk of developing anemia because they have the greatest need for iron.

The percent of anemia in pregnant women who take iron, folic acid and vitamin B 12 was higher than in pregnant women who do not take this prophylactic drug, this result disagreement with [12]. The emergence of anemia in pregnant women who take these drugs may be due to the non-use these prophylactic drugs are complete and correct. One of the most common reasons leading to anemia in the world where the ratio of occurrence in tropical regions with less consumption of meat and which infested as well as intestinal parasites, as the developing fetus drains 500 mg of iron during pregnancy, even if the mother has of iron deficiency [24].

The result of present study found high percent of anemia in pregnant women who were regular visitor to antenatal care this disagreement with result of [12]. This may be related to do not apply all rules and advice during visit.

In conclusion, this study has shown that anemia in pregnancy is still a major health problem in Baqubah city; iron deficiency anemia was the higher, identifying multigravidae as being more at risk than others. Comprehensive nutrition education and health promotion program shout be carried out targeting pregnant women, Educating women on early ANC visit, use of iron and folate supplements also it needs new programs strategies particularly those that control the large family size and improve the overall nutrition status of pregnant women

Further it has been proved that anemia has strong relation with age, education level, social status, income, residence, family size and dietary, more studies are needed to support or disapprove this observation.

## References:-


1. Bansal, B, Jaspreet T, Soni ND, Deepak KA and Sonika A. Comparative study of prevalence of anemia in muslim and non-muslim pregnant women of western rajasthan. International Journal of Research in Health Sciences. 2013; 1(2): 47-52.
2. Sabina, S, Syed I, Zahid Z, Mohd MK and Sarfraz K. An Overview of Anemia in Pregnancy. JIPBS. 2015; 2 (2): 144-151.
3. Kumar P, Prasad P, Usha p. Maternal anemia and its impact on perinatal outcome in a tertiary care Hospital of Pune, in Maharashtra." Indian Journal of Basic and Applied Medical Research. ijbamr; 2012; 1(2): 111-119
4. Idowu OA, Mafiana CF, and Dapo S. Anaemia in pregnancy: A survey of pregnant women in Abeokuta, Nigeria Afr Health Sci. 2005; 5(4): 295–299.
5. Enrera JA, Abdelrahman EA and Abrar RA. Iron Deficiency Anemia among Pregnant Women in Hail Kingdom of Saudi Arabia. IOSR Journal of Nursing and Health Science (IOSR-JNHS) 2015; 4(2):74-80.
6. Khalil, AA, Tahira J, Shahida A and Sobia M. Frequency and type of anemia in antenatal clinic in the third trimester of pregnancy. Pakistan armed forces medical journal. 2007;1 (4):
7. Satyam Prakash1, Khushbu Yadav. Maternal Anemia in Pregnancy: An Overview. Ijppr.Human, 2015; 4 (3): 164-179.
8. Kilbride J, TG Baker, LA Parapia, SA Khoury, SW Shuqaidef and D Jerwood. Anaemia during pregnancy as a risk factor for iron-deficiency anaemia in infancy: a case-control study in Jordan.Int, J Epid, 1992; 28:461-468.
9. Malee, M. Anemia in Pregnancy.Obstet.Gynecol. 2008; 112 (1): 201-7.
10. Reveiz L, Gyte GM, Cuervo LG and Casasbuenas A. Treatments for iron-deficiency anaemia in pregnancy, Cochrane Database of Systematic Reviews, 2011; No. 10.
11. Khalafallah A and M. Mohamed, "Nutritional iron deficiency," in Anemia, InTech, Rijeka, Croatia, 2012.
12. AL- Shawi AJ, Jinan AO, Mays RM and Noor HM. Study the Incidence and Types of Anemia in Pregnant Women in Baghdad Province. J of university of Anbar for pure science. 2012; 6(1):
13. Abdul-Hussin, AJ. Incidence and Types of Anemia in Pregnant Women in Wasit Province.Technical Research Journal.1996;
14. Mohammed, NQ. Incidence and Types of Anemia in Pregnant Women inBasrah Province.Technical Research Journal. 1990; 6:73-85.
15. ACC/SCN Controlling bar Deficiency. A report based on an ACC/SCN workshop. S.Gillespie, J. Kevany and J. Mason, eds. ACC/SCN State of the Art series. Nutrition policy discussion paper. 1991. No. 9 ACC/SCN C/O WHO, Cieneva, Switzerland.
16. Abbassi RM, Shoaib A, Bikha R and Sumera A. The prevalence and risk factor of anamia in pregnant women. Gynaecology and obstetrics. 2009; 15(3):70-73.
17. Plante, C, Carole B, Louis R and Huguette TO. Prevalence of anemia among Inuit women in Nunavik, Canada. Int J Circumpolar Health 2011; 70(2):154-165.
18. Geelhoed D, Agadzi F, Visser L, Ablordeppey E, Asare K. Severe anemia in pregnancy in rural Ghana: case control study of causes and management. Acta Obstetricia et Gynecologica Scandinavica 2006; 85(10):1165-1771.
19. Aimaku CO, Olayemi O. Maternal haematocrit and pregnancy outcome in Nigerian women. West African J Med, 2003; 22:18-21.
20. Mahe Munir Awan, Muhammad Aftab Akbar, Misbahul Islam Khan. A study of anemia in pregnant women of Railway Colony, Multan. Pak J Med Res. 2004; 43(1):11-4.
21. Garn SM., Ridella SA, Petzold AS, Falkner F. Maternal Hematological level and pregnancy Outcomes. Sem, Perinatop 1981; 5:115-162.
22. Ghazala N, Saima N, Shafqut A, Shaheen A, Shakeel AM. Iftikhar HQ *et al.*, Anaemia; the neglected female health problem in developing countries. J Ayub Med Coll Abbottabad 2011; 23(2):
23. Lindsay HA. Anemia and iron deficiency, effects on pregnancy outcome: American Journal of clinical nutrition. 2000; 71:1280-1284.
24. World Bank. World development report: investing in health. New York. 1993. Oxford University Press.