

ANAEMIA AMONG TERM PREGNANT WOMEN ATTENDING LABOUR UNITS IN TWO MATERNITY HOSPITALS IN MOSUL

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ABSTRACT

Background: Anemia is one of the most common nutritional deficiency diseases observed globally, the problem is more prevalent among pregnant women and contributes to maternal morbidity and mortality, as well as to low birth weight. **Objective:** The aim of the present study is to estimate the frequency of anaemia among full term pregnant women attending labour units in two Mosul maternity hospitals. **Method and Material:** A case series study design which was adopted included 400 full term pregnant women that were taken from both attendance of AL-Batool and AL-Khansaa Teaching Hospitals. A special questionnaire form was prepared using simplified and summarized questions. Data collection started on the 1st of January 2012 and ended on 1st of July 2012. **Results:** The study results showed that 42.25% of sample were anaemic, majority of them had mild grade of anaemia. Pregnant women with a mean age of 28.17 ± 5.57 years. Primary school educated and illiterate women were highly and significantly observed in anaemic group. It was seen also that 94.25% of women in the sample were taken iron supplement even one time, but only 45.36% of them take supplement on regular basis. Those on regular usage high significant less frequently observed in anaemic group. Pica appeared in 13.75% of studied women where they were more frequently seen in anaemic group. **Conclusion:** There were 42.75% of full term pregnant women were anaemic, majority (98.22%) had mild grade, no detection of severe grade. Illiterate women more frequently among anaemic group. Employed and urban residing women less frequently among anaemic group. Screening for anaemia in antenatal care was done only in 42.75% of pregnant women.

KEYWORDS: Pregnant women with a mean age of 28.17 ± 5.57 years.

INTRODUCTION

Anaemia 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 age groups but is more prevalent in pregnant women and young children. In 2002, iron deficiency anaemia (IDA) was considered to be among the most important contributing factors to the global burden of disease.^[1]

Anaemia in pregnancy is defined by the WHO as a haemoglobin value below 11 g/dl and severe anemia as Hb less than 7.0 g/dl.^[2]

The Centers for Disease Control and Prevention defined anemia in iron-supplemented pregnant women using a

cutoff point of Hb level 11 g/dL in the first and third trimesters, and 10.5 g/dL in the second trimester.^[3]

Pregnancy has been described as a state of physiologic anemia. Part of the reduction in hemoglobin concentration is dilutional, but iron and folate deficiencies are the major causes of correctable anemia during pregnancy.^[4]

Nutritionally related iron deficiency is the main cause of anemia throughout the world. It is especially common in women of reproductive age and particularly during pregnancy. The demand for iron increases about six to seven times from early pregnancy to the late pregnancy.^[5] Besides poor nutrition, frequent labour, multiparity, abortions, parasitic infestations, consuming excess tea or coffee after meals determined as the predictors of anemia in reproductive age women.^[6]

Pregnancy requires an iron intake of around 2.5 mg/day throughout, with perhaps 3.0–7.5 mg/day required in the third trimester.^[7]

The total iron content of normal adult women ranges from 2.0 to 2.5g or about half the amount found normally in men. Importantly, the iron stores of normal young women are only approximately 300 mg.^[3]

Anaemia during pregnancy may be classified based on aetiology as:-

- A- Physiological anaemia of pregnancy.
- B- Acquired: a- Nutritional:- IDA, folate and vitamin B12 deficiencies. b- Infections:- malaria, hook worm. C-Haemorrhagic:- acute or chronic blood loss. d- Bone marrow suppression as aplastic anaemia or drugs. e- Renal disease.
- C- Genetic-haemoglobinopathies:- as sickle-cell disease, thalassemia.^[8]

Mild deficiency of iron (before anaemia) in maternal and fetal wellbeing is linked to increased delivery bleeding, poor fetal iron stores and an increased placenta: fetus weight ratio.^[7]

Incidence of preterm delivery and low birth weight was increased as the severity of anemia increased.^[9]

The aim of the study is to estimate the frequency of anaemia among term pregnant women attending labour units in two Mosul maternity hospitals.

Ethical consideration

Approval of study proposal has been obtained through a seminar at the Department of Community Medicine, College of Medicine in Mosul University. Then essential official agreements have been obtained from Nineveh Health Directorate (NHD) to facilitate data collection from hospitals that were to be involved in this study. In addition AL-Batool and AL-Khansaa Teaching Hospitals in Mosul have been informed too before the conduction of the present study. Moreover approval of the ethical committee in NHD has been obtained. Verbal consent have been taken from the study participants after explanation of the aim & benefit of the present study.

METHOD AND MATERIAL

Case series study design was adopted in labour units of two maternity hospitals in Mosul city which include AL-Batool and AL-Khansaa Teaching Hospitals. The study was conducted over 6 months from 1/1/2012 to 1/7/2012.

The present study included 400 term pregnant women from all age groups of reproductive period attending labour units in two Mosul Maternity Hospitals.

Inclusion criteria: All term healthy pregnant women attending labour units during 2 days per week over the study period.

Exclusion criteria: women in preterm labour (not completing 37th weeks of gestation)^[7] attending labour units.

Case Definition:- every term pregnant women from all age groups of reproductive period with (Hb) concentration less than 11 g/dl will be addressed as anaemic patient.^[10]

Women completed the questionnaire in the presence of researcher who explained the questionnaire clearly to them. Blood sample was taken for hemoglobin concentration and hematocrit as a routine for all pregnant admitted for labour as recommended by Ministry of Health in Iraq.

The questionnaire form used in the study include (socio-demographics Information, obstetrical and current Pregnancy History, antenatal care history, menstrual and contraception history, and nutrition and diet behavior).

SPSS package version 22 for data tabulation was used for the statistical analysis. Descriptive statistical methods were used to determine the numbers and percentage, t test for contingency tables and to evaluate the statistical significance between variables of interest. P value of less than 0.05 was considered significant throughout data analysis.

RESULTS

There were 400 full term pregnant women from all age groups of reproductive period participated in this study. Age ranged between 15-43 years, the mean age of women was 28.17 ± 5.57 SD. There was no significant difference between age and anaemia, $p=0.179$.

Out of the total; there were 169 (42.25%) anaemic women and 231 (57.75%) were non-anaemic. From anaemic group, 166 (98.22%) women with mild grade anaemia (Hb 9-10.9g/dL) and only 3 (1.78%) with moderate grade anaemia (Hb 7-8.9g/dL), without detection any pregnant women with severe grade anaemia (Hb below 7g/dL). Table 1 and figure 1 (a and b).

Table 1: Distribution of pregnant women according to grades of anaemia.

Grades of anaemia	Value of Hb* g/dl	No. of anaemic women	%
Non-anaemic	>11	231	57.75
Mild anaemia	9-10.9	166	41.5
Moderate anaemia	7-8.9	3	.75
Severe anaemia	<7	0	0
Total	-----	400	100

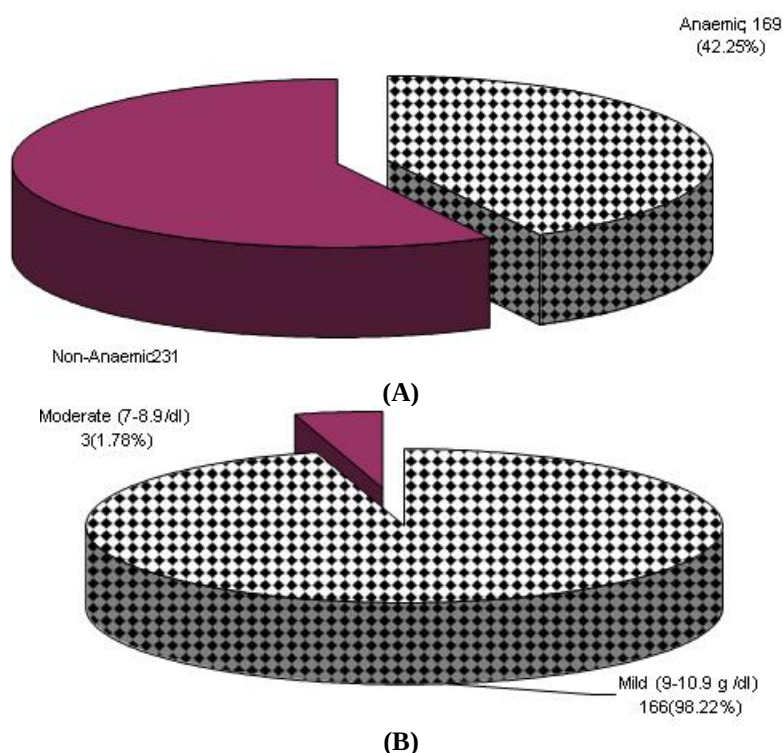


Figure 1: (a) proportion of anaemia in the study sample (b) proportion of mild and moderate grade of anaemia among anaemic group.

Table 2 exhibits that women with primary education and illiterate women more frequently observed among anaemic group (56.21%) and (28.40%) respectively. These differences noted were highly significant, $P=0.007$.

women from rural area represents 43.78% from anaemic group and 31.16% from non-anaemic group, this difference found to be significant with $P=0.01$.

Regarding women occupation, 98.22% of housewives constitute were anaemic, this difference were highly significant $P=0.0002$.

Table 2: Distribution of studied sample according to anaemic state, educational levels of women, occupation, and their residency, Mosul, 2012.

Variables	Anaemic No. %		Non- anaemic No. %		Total No. %		P=value*
Educational level of women							
Illiterate	48	28.40	42	18.18	90	22.50	0.007
Primary	95	56.21	105	45.45	200	50.00	
Secondary	23	13.61	44	19.05	67	16.75	
High education	3	1.77	40	17.32	43	10.75	
Total	169	100	231	100	400	100	
Residence							
Urban	95	56.21	159	68.83	254	63.50	0.01
Rural	74	43.78	72	31.16	146	36.50	
Total	169	100	231	100	400	100	
Women occupation							
Employed	3	1.77	27	11.68	30	7.50	0.0002
House wife	166	98.22	204	88.31	370	92.50	
Total	169	100	231	100	400	100	

Table 3 demonstrated the regularity of antenatal visits in current pregnancy, women with irregular visits more frequently observed among anaemic group (68.63%), this difference found to be significant $P=0.004$.

Those with history of supplementation usage, constitute 97.40% of non-anaemic group and (89.94%) of anaemic group, this difference noted was significant ($P=0.001$). Women used supplement regularly less frequently seen

among anaemic group (25.65%) than non-anaemic group (58.66%), this difference highly significant $P=0.0001$.

Concerning duration of supplement usage, women using supplement less than 5 months more frequently observed among anaemic group than non-anaemic group, the difference noted was significant.

Regarding Hb checking in antenatal visits, more than half of the study sample (57.25%) had no prior Hb checking until time of labour.

Women without prior Hb checking form majority (88.75%) of anaemic group and form only (34.19%) of non-anaemic group, this difference was highly significant ($P=0.0001$).

Table 3: Distribution of studied pregnant women according to their antenatal care history and anaemic state.

Antenatal care Characteristics	Anaemic No. %		Non-anaemic No. %		Total No. %		P= value*
Antenatal visit							
Regular	53	31.36	105	45.45	158	39.50	0.004
Irregular	116	68.63	126	54.54	242	60.50	
Total	169	100	231	100	400	100	
Iron supplementation							
Positive	152	89.94	225	97.40	377	94.25	0.001
Negative	17	10.06	6	2.59	23	5.75	
Total	169	100	231	100	400	100	
Supplementation Regularity							
Regular	39	25.65	132	58.66	171	45.36	0.0001
Irregular	113	74.34	93	41.33	206	54.64	
Total	152	100	225	100	377	100	
Duration							
< 5M	133	87.5	165	73.33	298	79.05	0.001
≥5 M	19	12.5	60	26.66	79	20.95	
Total	152	100	225	100	377	100	
Prior Hb checking in antenatal visit							
Positive	19	11.24	152	65.80	171	42.75	0.0001
Negative	150	88.75	79	34.19	229	57.25	
Total	169	100	231	100	400	100	

Regarding history of menorrhagia before pregnancy, only 18 women (4.26%) of the study sample had menorrhagia, from those with history of menorrhagia 14 women were anaemic form (8.28%) of anaemic group and only 4 women non-anaemic form (1.73%) of non-anaemic group, this difference noted was high significant with $P=0.002$. Table 4 Concerning contraception usage, from 283 multiparous women only 74 (26.15%) were used different types of contraception and about three quarters (73.85%) were not used. Women used contraception more frequently seen among anaemic group (33.90%) than non-anaemic (20.6%), this difference was statistically significant $P=0.012$. Table 4.

While regarding bleeding complication associated with contraception usage, the study shows that 26.66% of anaemic group have a history of associated bleeding compared to 0.0% among the non-anaemic group, this difference is highly significant $P=0.006$. Table 4.

Lastly table (3.9) depicts the distribution of anaemic state of multiparous pregnant women according to their birth spaces. Multiparous women with birth space < 24 months more frequently observed among anaemic group than non-anaemic group, the difference noted was not significant. Table 4.

Table 4: Pregnant women anaemic state according to previous menstrual and contraception history , Mosul , 2012.

Characteristics	Anaemic			Non-anaemic			Total		P= value*
	No.	%		No.	%		No.	%	
History of menorrhagia									
Positive	14	8.28	4	1.73	18	4.26			0.002
Negative	155	91.71	227	98.27	382	95.74			
Total	169	100	231	100	400	100			
Contraception usage									
Positive	40	33.90	34	20.6	74	26.15			0.012
Negative	78	66.10	131	79.4	209	73.85			
Total	118	100	165	100	283	100			
Associated bleeding complication									
Positive	8	26.66	0	0.00	8	10.81			0.006
Negative	22	73.33	44	100	66	89.18			
Total	30	100	44	100	74	100			
Birth Space									
< 24 month	70	58.33	83	50.92	153	54.06			0.216
≥24 month	50	41.66	80	49.07	130	45.94			
Total	120	100	163	100	283	100			

Table 5 illustrated that, women of moderate and poor nutrition form (97.63%) of anaemic group and (62.33%) of non-anaemic group, on versus women with good nutrition form only (2.36%) of anaemic group and (37.66%) of non-anaemic group, these differences were highly significant P=0.0001.

More than halve 263 (65,75%) of the study sample gave a positive history for tea drinking. Those with positive

history to tea drinking more frequently seen in anaemic group (75.73%) than non-anaemic (58.44%) ,this difference noted was highly significant P=0.0003.

Positive history to pica were seen in 55 women (13.75%) of the studied sample, those with history of pica more frequently seen in anaemic group than non-anaemic group, this difference noted was highly significant P=0.0001.

Table 5: Distribution of anaemic state of studied pregnant women according to nutritional and diet behavior, Mosul, 2012.

Nutritional Characteristics		Anaemic			Non-anaemic			Total		P= value*
		No.	%		No.	%		No.	%	
Nutrition										
Good		4	2.36		87	37.66		91	22.75	0.0001
Moderate &poor		165	97.63		144	62.33		309	77.25	
Total		169	100		231	100		400	100	
Tea Drinking										
positive		128	75.73		135	58.44		263	65.75	0.0003
Negative		41	24.26		96	41.56		137	34.25	
Total		169	100		231	100		400	100	
Pica										
Positive		47	27.81		8	3.46		55	13.75	0.0001

Negative	122	72.19	223	96.53	345	86.25	
Total	169	100	231	100	400	100	

DISCUSSION

In the present study appeared that 42.25% of full term pregnant women were anaemic this result slightly higher than another study that done in Iraq^[11] showed that the prevalence of anaemia among women currently pregnant was 37.9%, this difference might be due to that the present study included full term pregnant women only, where the third trimester has the highest prevalence of anaemia in pregnancy. Another study^[21] done in Mosul revealed that 62.85% of pregnant women were anaemic, her high result could be due to insecurity situation after American invasion.

Comparing the result of present study with neighboring countries see that, anaemia among pregnant women in Lebanon(22%), Jordan (35.7%) and Egypt (46.1%), also studies have showed that the prevalence in Arab Gulf countries to be around 11-40%, iron deficiency anemia was found to be the most common type of anemia in all Arab Countries.^[13]

In the present study majority of anaemic women had mild grade anaemia, minority had moderate grade and without detection anyone with severe grade, this come with result of a study^[14] which concluded that there were 88.10% of anaemic women had mild grade, only 12.8% had moderate grade, no severe anaemia. While another study^[12] showed that 1.57% of anaemic women had severe anaemia.

This study showed that the mean age of study sample was 28.17 ± 5.57 years. There was no significant difference between age and anaemia, $p=0.179$. This is close to that study^[15] reported that the mean age was 28.28 ± 5.20 years, and result of another one that done in Mosul^[16] showed that mean age was 26.74 ± 5.45 years.

Our study exhibits that women with primary education and illiterate women more frequently observed among anaemic group (56.21%) and (28.40%) respectively. These differences noted were highly significant, $P=0.007$.

This come with result of a study done in Pakistan^[17] suggested that anaemic women more likely to have no formal education. Different result from another study^[18] done in Nablus showed that prevalence of anaemia showed increased levels with increased years of education, this could be related to working status of more educated women, because the same study cleared that prevalence of anaemia higher among working women.

women from rural area represents 43.78% from anaemic group and 31.16% from non-anaemic group, this difference found to be significant with $P=0.01$. This

come with that study^[11] were anaemia high prevalence in rural women (40.8%) than urban (36%). This could be due to early marriage and childbearing age among rural women beside dealing with big family, such women are usually less educated, and decision making is headed to her husband or mother's in low that made her less liable to utilize of health care services. Besides that inadequacy of health care services if it compare with urban health services.

Employed women less frequently seen in anaemic group in the present study, this difference were highly significant $P=0.0002$.

This might be due to their high education, the same picture seen in a study done in Turkey^[6] But a reverse result reported by Pakistan.^[17] were working women more frequently anaemic than housewives where woman need to work outside home because of low family income.

About third of the sample in the present study had regular ANC visit, this come with result of a study^[19] found that 28.8% of pregnant women had regular visits. The present study found that those with regular visits were significantly less frequently anaemic, $p=0.004$; this might be due to regular visits give more time to health provider in maternity care for health and nutrition education.

The present study cleared that 45.36% had using regular iron supplement. A study^[14] found that 75% of their sample had regular supplement usage. Also present study found those with regular supplement were significantly less frequently seen among anaemic group, $p=0.001$; similar finding were observed in a study^[15] showed that women take supplement less frequently anaemic(38.73%) than those not taken (76.85%).

The present study showed that women with history of contraception usage more frequently seen in anaemic group, could be due to associated bleeding complication.

The present study cleared that birth space ≥ 24 months was 45.94%, this close to that reported by Tameemi and Al-Fathy^[43] in Mosul which was 47.4% had birth space ≥ 24 .

Women had birth space ≥ 24 month less frequently in anaemic group in present study, this come with previous reports indicating that women with longer birth intervals were more likely to avoid anemia .But inconsistent with a study done^[18] in Nablus where showed low prevalence rate was found among participants with decreased years of spacing (21.3 % among those with 3 years or less of

spacing compared 23.3% among those with 3-5 years of spacing).

The present study showed that women with good nutrition least frequently in anaemic group (2.36%), the same result found in Taseer et al.^[15] study in Pakistan which found that women with good nutrition only 15.66% were anaemic while those with poor nutrition 82.10 % were anaemic

Tea drinking observed in 65.75% of present study sample while in study of Karaoglu et al.^[6] in Turkey found 90% of women drank tea at breakfast. The present study showed that women not drank tea less frequently seen in anaemic group, this come with result of Ansari et al.^[17]

In 13.75% of present study sample had pica. Women had pica high frequently seen in anaemic group, similar finding observed in the study conducted in turkey^[6] at 2010 showed that 11.17% of Turkish pregnant women had pica, anaemia prevalence was higher among those ate soil (37%) than those not ate(25.9%).

CONCLUSIONS

1. 42.75% of full term pregnant women were anaemic, majority (98.22%) had mild grade, no detection of severe grade.
2. Illiterate women more frequently among anaemic group.
3. Employed and urban residing women less frequently among anaemic group.
4. Screening for anaemia in antenatal care was done only in 42.75% of pregnant women.

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