

A Study of the Effect of Anemia on Normal Birth weight

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Abstract— Anemia during pregnancy (ADP) has been shown to be associated with two-fold risk for preterm delivery and a three-fold risk for low birth- weight the study was carried out in Al Zahraa Hospital for Maternity and Children in Al Najaf Al Ashraf Governorate during November 2013. The Information were obtained from 1284 patients' case sheets attending the obstetric ward having singleton pregnancies. The results show that 44.5% of the patients were anemic, there is statistical significant differences between Hb level and parity on the level $P < 0.05$, and no statistical significant differences between Hb level and birth weight on the level $P < 0.05$, while there is statistical significant differences on the level $P < 0.01$ between (parity, age) and abortion.

Keywords— ADP Anemia during pregnancy, LBW low birth- weight, Parity, IDA iron deficiency anemia, Hb hemoglobin concentration.

I. INTRODUCTION

Anemia during pregnancy (ADP) has been shown to be associated with two-fold risk for preterm delivery and a three-fold risk for low birth- weight [1]. There are multiple causes of anemia during pregnancy including; inadequate diet, impaired micronutrient absorption, blood loss resulting from hemorrhage, and helminthes infestation, in addition to none nutritional causes including thalasemia, malaria, sickle disease and repeated pregnancies [3]. It has been clearly demonstrated that the anemic pregnant women are at greater risk of death during the perinatal period [4]. In many regions, anemia is a factor in almost all maternal death, and the risk of death increases in severe anemia [5, 6]. Iron deficiency anemia (IDA) account for 90% of the cases of anemia in pregnant women [7, 8] because pregnant women should consume double the amount of iron used in none pregnant women [9]. Clinical symptoms of IDA include fatigue, headache, mild dyspnea, and if anemia is sever then tachycardia or hypotension syndrome and pica [10, 11]. The clinical consequences of IDA include preterm delivery, prenatal mortality and postpartum depression [9]. Fatal and neonatal consequences include low birth-weight, poor mental and psychomotor performance [12]. Most studies reported that per natal, neonatal, and post neonatal mortality rate was found to be higher in low birth weight (LBW) children [13]. LBW was stated when the banies weight is less than 2.5 Kg [14]. Almost all iron needs occurred during the second half of pregnancy [15], when fetus organ formation are developed, while in the first trimester the iron requirements are of little need because of menstrual absence and limited fetal needs [16]. Women of fertile age should be none anemic when planning for pregnancy because iron supplement often fail to prevent

iron deficiencies [1]. It must be mentioned here that delivery demands endurance and sever physical efforts, and physically fit women perform better and have less complicated delivery in contrast to less fit women [17, 18].

II. MATERIALS AND PATIENTS

The study was carried out in Al Zahraa Hospital for Maternity and Children in Al Najaf Al Ashraf Governorate during November 2013. The following Information were obtained from 1284 patients' case sheets attending the obstetric ward having singleton pregnancies: patient age, the dwelling area (urban and rural), gynecological history (number of previous deliveries and abortions), delivery type (normal or cesarean) and the state of the new borne (alive or dead). The hemoglobin concentration (Hb) for each patient was measured by technicians in the hospital laboratory using Ruby Abbott diagnosis instrument while the weight of the neonate is measured directly after delivery by the nurse in the ward using a Kubota balance (Italian origin). Statistical package for social science (SPSS) was used to analyze data.

III. RESULTS AND DISCUSSION

Table and figure 1 show that the highest percentage 38.3% of mother's age was in the 21-25 years rang, there was no significant differences between Hb value and mother's age. The studies reported that pregnancy complications including anemia and hypertension disorders are usually increased under the age of 20 years, in comparison with age ranging from 20 to 24 years [19]. However the grade of anemia increase with age, 30-34 years old were more likely to have grade of anemia than 20-24 years old [20], this may be due to decrease of serum ferritin values with increasing age and the association between low serum ferritin values and iron deficiency [20], also nutritional status affect all age groups specially reproductive age [21].

TABLE I. PERCENTAGE OF MOTHER AGE

Mother Age	Frequency	Percentage
15 -20	380	29.6%
21 -25	434	38.3%
26 -30	273	21.2%
31 -35	121	9.4%
36 -40	58	4.5%
41 -45	16	1.2%
> 46	2	0.2%

Total	1284	100%
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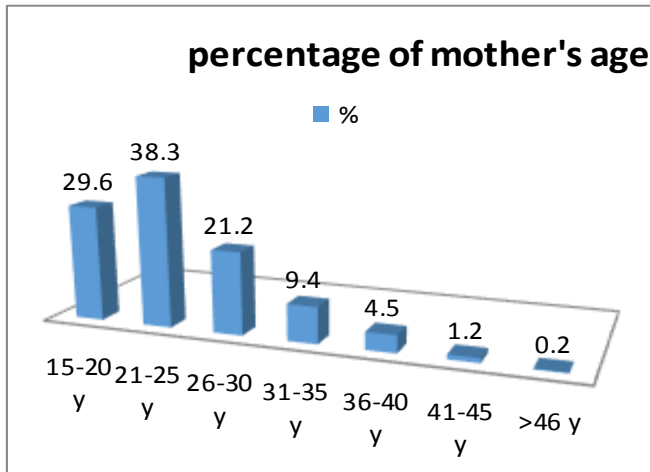


Fig. 1. Percentage of Mother's Age.

The Sample's dwelling location declared that 88% was urban, this is because of the hospital site (city center) and the presence of many primary health care in the rural sectors as shown in Figure 2, which did not affect the presence of anemia [20].

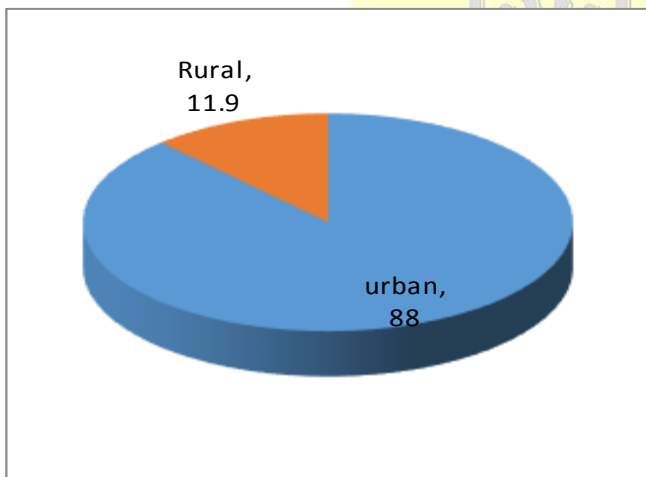


Fig. 2. Sample's dwelling location.

The results in table and figure 3 exhibits that 44.5% of the patients were anemic; having Hb level ranging 6- 10.5 g/dl, which agree with other studies which indicate that any Hb concentration below 10.5 g/dl in pregnancy as anemia because of the physiological heamodilution [22, 23], and anemia in non-pregnant women when the Hb level is lowered than 12 g/dl [24]

TABLE II. PERCENTAGE OF HB LEVEL

Hb level g/dl	Frequency	Percentage
6-6.5	10	0.8%
7-7.5	52	4.2%
8-8.5	82	6.4%
9-9.5	182	14.1%

10-10.5	243	19%
11-11.5	245	19.1%
12-12.5	273	21.2%
13-13.5	144	11.2%
14-14.5	35	3%
15-15.5	13	1%

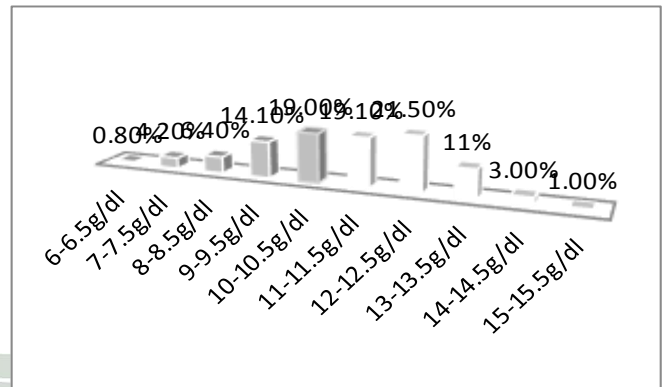


Fig. 3. Percentage of Hb level

Analysis was performed on the data using SPSS version 17.0 for windows. Significance was accepted at $P < 0.05$ and $P < 0.01$.

There is statistical significant differences between Hb level and parity on the level $P < 0.05$ and this agree with study which confirmed that frequent pregnancies cause further burden on mother which may accelerate the development and complications[25], the women who has had three or more pregnancies within 2 years as well as the multiparous woman who has progressed from one pregnancy directly to another, it considered to be at increased risk and is proved to deplete nutrient stores [26] The presence of anemia increased with gravidity that multigravid women were more likely to be anemic than primigravid or second gravid women [20], prior births may deplete maternal stores due to the increased nutritional demands of pregnancy and puerperal blood loss [20].

There was no statistical significant differences between Hb level and birth weight on the level $P < 0.05$ which disagree with other study that found strong differences between low maternal hematocrit and the occurrence of LBW [27, 28, and 29]. But the result agree with a study that found no important correlation between anemia and LBW [30].

There is statistical significant differences on the level $P < 0.01$ between (parity, age) and abortion because the risk of abortion increases with maternal age and cervical incompetence which is usually the result of trauma this occur most frequently from mechanical dilation of the cervix at the time of termination of pregnancy (31). However persons with 2-3 spontaneous abortions were more likely to have anemia than those who had one [20]. another study reported; there was a positive correlation between the number of spontaneous abortions and the developing of anemia.

TABLE III. CORRELATION

		Correlations					
		age	abortion	parity	hbw	wchild	title
age	Pearson Correlation	1	.346**	.595**	-.030-	.015	.026
	Sig. (2-tailed)		.000	.000	.285	.599	.357
	N	1284	1284	1284	1284	1281	1284
abortion	Pearson Correlation	.346**	1	.259**	-.040-	-.035-	.017
	Sig. (2-tailed)	.000		.000	.149	.204	.552
	N	1284	1284	1284	1284	1281	1284
parity	Pearson Correlation	.595**	.259**	1	-.062-*	-.010-	.034
	Sig. (2-tailed)	.000	.000		.027	.713	.224
	N	1284	1284	1284	1284	1281	1284
hbw	Pearson Correlation	-.030-	-.040-	-.062-*	1	.035	.044
	Sig. (2-tailed)	.285	.149	.027		.211	.119
	N	1284	1284	1284	1284	1281	1284
wchild	Pearson Correlation	.015	-.035-	-.010-	.035	1	-.003-
	Sig. (2-tailed)	.599	.204	.713	.211		.901
	N	1281	1281	1281	1281	1281	1281
title	Pearson Correlation	.026	.017	.034	.044	-.003-	1
	Sig. (2-tailed)	.357	.552	.224	.119	.901	
	N	1284	1284	1284	1284	1281	1284
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

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