



CORRELATION OF DIFFERENT OBSTETRICAL FACTORS WITH HEMOGLOBIN LEVEL IN PREGNANT FEMALES.

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Article received on:

04/07/2019

Accepted for publication:

00/00/2019

ABSTRACT... Objectives: To assess the correlation of different obstetrical factors with the hemoglobin level in multiparous pregnant females in Taif KSA. Anemia in pregnancy is a multifactorial phenomenon, among which obstetrical factors like parity, previous H/O abortions, inter pregnancy interval, mode of delivery etc are frequently associated. **Study Design:** Observational study. **Setting:** Outpatient department in King Faisal Hospital (KFH), Taif, Saudi Arabia. **Period:** 1st June 2018 and 31st August 2018. **Material & Methods:** Conducted in 200 pregnant women by random sampling technique. Hemoglobin value and all patient's data was noted. All data was fed to SPSS version 23.0 and statistically analyzed using chi square test for qualitative and student's t test for quantitative data. **Results:** The study was conducted in 200 patients that showed that there was no statistically significant association of increasing parity, inter pregnancy interval, mode of delivery (NVD or Cesarean section) & history of anemia and PPH in preceding pregnancy with the Hemoglobin level. While history of previous abortion is associated and a risk factor for anemia in pregnancy, 50% with history of 01 previous abortion had anemia while 100% of the cases with history of 02 previous abortions had moderate anemia. (Table-II). This association was observed statistically significant with p value of 0.001. **Conclusion:** This study concluded that anemia is a predictable as well as preventable entity. Obstetrical factors may be the contributory factors of anemia in pregnancy. Health education awareness programs, regular antenatal visits and iron supplements can be helpful to improve health of pregnant women.

Key words: Hemoglobin Level, Mild Anemia, Moderate Anemia, Severe Anemia, PPH.

Article Citation: Imran I, Zareen N, Fatima U, Nazir I, Khan RR, Farid A. Correlation of different obstetrical factors with hemoglobin level in pregnant females. Professional Med J 2020; 27(3):625-630. DOI: 10.29309/TPMJ/2020.27.3.3901

INTRODUCTION

Anemia is a worldwide health issue especially affecting the pregnant women and young children.¹ It is defined by reduced hemoglobin concentration in the blood.² World Health Organization (WHO) recommended anemia values to be followed during pregnancy are: Anemia (hemoglobin level < 11g/dl), Mild anemia (hemoglobin level 10 -10.9 g/dl), Moderate anemia (hemoglobin level 7 – 9.9g/dl) and Severe anemia (hemoglobin level <7g/dl).³ Iron deficiency being the commonest cause of anemia during pregnancy. Throughout the world, around half of the pregnant ladies start their pregnancy with extremely low iron reserves (serum ferritin <30 mg/l) and among remainders, a vast majority have inadequate reserves (iron stores of <500 mg & serum ferritin <70 mg/l), which cannot fulfil the increased iron needs during

pregnancy and result in anemia.³ The prenatal anemia is among one of the greatest risk factors for adverse outcome. Mothers with prenatal anemia have more chances of preterm labour, low birth weight infants, infections, postpartum hemorrhage and even maternal mortality.¹ In fact, anemia during pregnancy is considered as one of the most common indirect obstetric cause of maternal mortalities⁴ similarly, the affected neonates have cognitive and behavioral problems that are sometimes irreversible even after iron replacement.⁵

Anemia during pregnancy is a multifactorial entity. Nutritional factors, chronic illnesses, short birth intervals, bleeding during pregnancy and increasing parity are important obstetrical factors⁶ which affect hemoglobin levels during anemia.

In Saudi Arabia the large family's concept is highly appreciated and a scanty research is available to date to investigate the association of different obstetrical factors to development of anemia in pregnancy in Saudi population.^{7,8}

Therefore, the present study was designed to assess the hemoglobin levels and associated obstetrical risk factors related to it, among pregnant women receiving antenatal care at King Faisal Hospital Taif KSA.

MATERIAL AND METHODS

An observational study was designed from the period between 1st June 2018 and 31st August 2018, total of 200 women were recruited from the outpatient department in King Faisal Hospital (KFH), Taif, Saudi Arabia by convenient sampling technique at the time of their booking antenatal visit. The Participants were classified into two groups according to parity: multipara [1–4 births], and grand multipara [5 or more births].

Pregnant women with multiple gestations; chronic medical illnesses such as renal and cardiac diseases and patients suffering from hereditary anemias were excluded from the study. An informed verbal consent was obtained from all participants prior to their participation in the study.

Careful medical and Socio-demographic history was obtained from every patient including detailed information about inter pregnancy interval, H/O anemia and mode of delivery during preceding pregnancy as well as previous abortions to know any associated factors that could lead to low iron reserves and development of anemia in under-study pregnancy.

Association of different obstetrical factors including parity, history of abortions, inter pregnancy interval, anemia or PPH and mode of delivery of preceding pregnancies were assessed against development of anemia in the presenting pregnant women.

Different modalities were further categorized to assess their effects on anemia development in

the cases studied. The presenting women were categorized on the basis of their ages as, < 20, 21-25, 26-30, 31-35, 36-40 and < 40 years. Parity was considered in 02 categories, first comprising of Multipara 1-4 women, while second comprising of grand multipara (P 5 or more).

Similarly, women with history of previous abortions were also categorized as women with history of Nil, 01 or 02 abortions respectively.

The inter pregnancy interval in presenting women was recorded and analyzed as <6 months between 6-12 months, 1-1.5 Years, 1.5-2 years or >2years.

Association between anemia in pregnancy and mode of delivery in the preceding pregnancy e.g. SVD, or caesarian section was also analyzed.

Presence or absence of anemia or PPH in the preceding pregnancy was also assessed for a possible cause of anemia in the presenting pregnancy.

All data was fed to SPSS version 23.0 and statistically analyzed using chi square test for qualitative and student's t test for quantitative data. Statistical association was analyzed between obstetrical factors like parity, previous abortions, inter pregnancy interval, mode of delivery, history of anemia in preceding pregnancy and anemia in the current pregnancy. A p value of <0.05 was considered statistically significant.

RESULTS

The first recorded Hb of the presenting women was analyzed against the data retrieved for these women for any association. Although the eldest age group of > 40 years had more recorded cases of anemia as compared to the youngest girls, the difference was not statistically significant.

Regarding the parity of the presenting women there was no association of increasing parity and the development of anemia or otherwise (Table-I). The number of women with parity 1 to 4, had more normal Hb levels (n = 93) as compared to grand multipara women (n=16). On the other hand, the number of females in the lesser parity category had lesser tendency to develop anemia either

mild, moderate or severe (n = 71) as compared to grand multipara women (n=20). However, none of these associations were statistically significant.

History of previous abortions had a significant effect on the Hb values of the cases studied. 54% of women with no previous history had some level of anemia, 50% with history of 01 previous abortion had anemia while 100% of the cases with history of 02 previous abortions had moderate anemia. (Table-II). The association of recorded Hb value and history of previous abortions was observed to be statistically significant with a p

value of 0.001.

Whereas the majority of cases (54.5%) who had inter pregnancy interval of more than 2 years had normal Hb value range, the data analyzed statistically had no significant association to the recorded Hb value.

Table-III summarizes other factors analyzed like presence or absence of anemia, or PPH or Mode of delivery in the preceding pregnancy. None of these had any significant association to the recorded Hb level (Table-IV).

Parity	HB Level				Total Cases	P-Value
	Normal HB	Mild Anemia	Moderate Anemia	Severe Anemia		
1-4	93	48	21	2	164	0.24
5 or >	16	11	9	0	36	

Table-I. Association of maternal parity and recorded HB, using CHI square test.

H/o Abortion	HB Level				Total Cases	P-Value
	Normal HB	Mild anemia	Moderate anemia	Severe anemia		
Nil	90	49	25	0	164	0.001
1 Abortion	19	10	3	2	34	
2 Abortions	0	0	2	0	2	

Table-II. Association of H/O Abortion & recorded HB, using CHI square test.

Modality	Subcategory	HB Level				Total Cases	P-Value
		Normal	Mild Anemia	Moderate Anemia	Severe Anemia		
Anemia in prev. Preg.	Present	38	29	21	1	89	.006
	Absent	71	30	9	1	111	
PPH in prev. Preg.	Present	7	7	2	0	16	.612
	Absent	102	52	28	2	184	
MOD	NVD	74	41	23	2	140	.630
	C-Section	35	18	7	0	60	

Table-III. Association of interpregnancy interval (IPI) & recorded HB, using CHI square test.

IPI	HB Level				Total Cases	P-Value
	Normal HB	Mild Anemia	Moderate Anemia	Severe anemia		
< 6 months	11	3	3	0	17	0.86
6-12 months	12	6	3	0	21	
1-1.5 yrs.	15	10	2	0	27	
1.5 – 2 yrs.	17	5	4	0	26	
2 yrs.	54	35	18	2	109	

Table-IV. Association of different obstetrical modalities & recorded HB, using CHI square test.

DISCUSSION

Anemia in pregnancy is a common observation. More than half of the pregnant women in the world have hemoglobin levels indicative of anemia.⁹

As anemia is the most frequent maternal complication of pregnancy, its early detection and factors contributing to its development calls for special attention to it. Its early detection and management is vital for proper antenatal care.¹⁰

Despite is a high prevalence of anemia during anemia with severe consequences on health, social, and economic development, there is no recent evidence on the magnitude of the prenatal anemia.¹¹

Anemic pregnant women will be at risk of low physical activity, increased maternal morbidity and mortality, especially those with severe anemia.¹²

The present study was designed assess the hemoglobin levels and associated obstetrical risk factors related to it, among pregnant women receiving antenatal care at King Faisal Hospital Taif, Saudi Arabia. We analyzed the association of obstetrical factors including parity, history of abortions, inter pregnancy interval, anemia or PPH and mode of delivery of preceding pregnancies to development of anemia in the presenting pregnant women.

In the present study most of the studied obstetric, although related, did not prove to be significantly associated to the presence of anemia in pregnancy.

Regarding the association of age to maternal anemia the elder age group years had more recorded cases of anemia as compared to the younger girls the difference was not statistically significant. These results are corresponding to previous literature where maternal anemia was not associated to the age of the mother.¹³ However in general, studies emphasize that the anemia prevalence rate is specifically higher among women of reproductive age.¹⁴ However even this association was not statistically manifested in our

results.

Despite the non-association of anemia to age observed in our study and previous literature there are a few studies which do report the significant association. One of the studies conducted in Congo report that anemia was also found linked to extremes of reproductive ages, i.e. < 18- >35.¹⁵

The parity of the presenting women revealed a relation to anemia but the association was not statistically significant. The number of females in the lesser parity category had lesser tendency to develop anemia either mild, moderate or severe as compared to grand multipara women. The similar results were also reported in previous studies where anemia seems to be higher among women with parity more than three, but it was not statistically significant.¹⁶

In some studies, however statistically significant association of anemia and increasing parity was reported.¹⁷

History of previous abortions had a significant effect on anemia in the present study. Hundred percent of women with previous 02 abortions were recorded to have anemia. Similar association of anemia to miscarriages is reported by scientists, where anemia was also found to significantly linked to previous miscarriages.¹⁵

Regarding the association of inter pregnancy interval, in our no study no significant association to the recorded Hb value was recorded. Previous literature however endorses that short inter-pregnancy intervals (IPIs) have been associated with adverse maternal and infant health outcomes in the literature.¹⁸

A retrospective cohort study, in 2014-16 specifically reported that Short inter pregnancy interval is an independent risk factor for anaemia. It was thought to be related with maternal depletion theory and the increasing risk of bleeding in pregnancy.¹⁹

Other factors analyzed like presence or absence of anemia, or PPH or Mode of delivery in the

preceding pregnancy also did not have any significant association to development of anemia in our study. Considering the prevalence of anemia during pregnancy and non-association to the related obstetrical factors in our study, other factors should be taken into account for prevention, diagnosis and management of the condition.

Taner et al in 2015 have reported the association of maternal anemia to the socio-economic conditions. Low socio-economic conditions have been considered a risk factor for maternal anemia.²⁰ While a group of scientists in 2019 have emphasized on health education on family planning and the importance of taking of iron tablet to reduce the prevalence of maternal anemia.²¹

CONCLUSION

Majority of the obstetric modalities assessed in this study did not prove to be a significant factor affecting the Hb level of the pregnant females. The small sample size and the unequal number of cases could be a bias in the study.

In our study the only obstetrical factor that was observed to have a significant association with development of anemia was history of previous abortions. Females who had previous history of abortions developed anemia in the current pregnancy. Whereas maternal age, her parity, inter pregnancy interval, mode of delivery and presence of anemia or PPH in the preceding pregnancy do not have any significant association to her Hb levels in the present pregnancy. In this regard, a more elaborate study is suggested with proportionate number of cases under each category to better analyze the influence of obstetrical factors on the development of anemia in pregnant females.

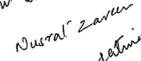
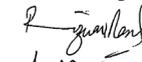
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