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ORIGINAL ARTICLE

To study the correlation between maternal anaemia and pregnancy outcomes

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ABSTRACT:
Aim: To study the correlation between maternal anaemia and pregnancy outcomes. **Methods:** This prospective research was conducted on 100 pregnant women who were determined to be anaemic. During the first visit, at the 30th and 36th weeks of gestation, all individuals were thoroughly examined, and haemoglobin levels were determined. All newborns admitted to the NICU for different reasons had blood cultures taken. The following investigations were conducted on these subjects: Hemoglobin percentage: Sahli's approach was used to estimate haemoglobin quantitatively. Peripheral smear: A peripheral smear test was used to determine the type of anaemia. **Results:** Moderate anaemia was seen in almost 55% of patients, followed by moderate (30%) and severe (15%) anaemia. In the current research, there was a high rate of unfavourable foetal outcomes such as preterm birth (19%), IUGR (12%), FTD (41%), NICU hospitalisation (25%), and IUD (3%). severe and moderate anaemia are more common in the 20-25 and 25-30 age groups, respectively. This link was found to be statistically significant ($p<0.05$). Severe and moderate anaemia were detected more often in illiterate people and less frequently in educated ones, and this relationship was statistically significant ($p<0.05$). Anaemia was more common in lower socioeconomic classes, however this relationship was not statistically significant ($p>0.05$). The severity of anaemia was higher among unregistered pregnant women and multigravida women, and this connection was statistically significant ($p<0.05$). The current research found a statistically insignificant relationship between risk factor, distance between pregnancy, and severity of anaemia ($p>0.05$). **Conclusions:** Iron supplementation during pregnancy improves iron status throughout pregnancy and the postpartum period, giving some protection against iron deficiency in the future pregnancy in iron deficient women. Proper prenatal care is essential for the prevention, early identification, and treatment of anaemia.
Keywords: Anemia, Fetal outcome, IUGR, LSCS, NICU, Space between pregnancies

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INTRODUCTION

Anemia is a condition in which the amount of red blood cells or their ability to transport oxygen is inadequate to fulfil the body's physiologic demands. Anemia in pregnancy is defined by the World Health Organization as a haemoglobin (Hb) level of 11 g/dL, with a rate of 23 percent in industrialised nations and a worldwide prevalence of 38.2 percent in 2011. [1] Several studies have shown that pregnant women who are anaemic are more likely to have a negative pregnancy outcome. Anemia in the first or second trimester raises the risk of low birth weight (LBW, defined as a birth weight of less than 2,500 g) and preterm delivery. [2,3] Women who have moderate (Hb level of 7-9 g/dL) or severe anaemia (Hb level less than 7 g/dL) anaemia are at a higher risk of maternal and newborn mortality, infectious diseases[4], and poor foetal neurodevelopment. [5] Postpartum anaemia is also linked to a worse quality of life, such as increased weariness, dyspnea, palpitations, and infections[6], as well as increased stress and sadness. [7,8] However, the World Health Organization's suggested cutoff value of 11 g/dL was obtained from research done in both developed and developing nations and published decades ago, and it was independent of the time of pregnancy. Furthermore, preceding categorization of anaemia severity (mild, moderate, and severe) is arbitrary, with no epidemiologic data to back it up. Indeed, it has been proposed that the standardised Hb threshold value for maternal anaemia be modified first for characteristics that lower Hb levels, such as race, population, and gestational weeks, and subsequently for well-known factors that raise Hb levels, such as altitude of residence and smoking habit. [9]

MATERIAL AND METHODS

This prospective research was conducted on 100 pregnant women who were determined to be anaemic. Data collection occurred with ethical approval from the institutional ethics committee and informed consent from clients. During the first visit, at the 30th and 36th weeks of gestation, all individuals were thoroughly examined, and haemoglobin levels were determined. All newborns admitted to the NICU for different reasons had blood cultures taken. A pre-tested questionnaire was used, and data such as socio-demographic information, a history of medical sickness, and a menstrual history were obtained.

The following investigations were conducted on these subjects:

- **Hemoglobin percentage:** Sahli's approach was used to estimate haemoglobin quantitatively.

- **Peripheral smear:** A peripheral smear test was used to determine the type of anaemia.

All individuals were categorised using WHO standards, and depending on their level of anaemia, they were treated with either oral iron, intravenous iron, or blood transfusions, and were closely monitored throughout the antepartum, intrapartum, and postpartum periods. Finally, all of the research individuals' modalities of delivery, maternal and perinatal outcomes were investigated.

RESULTS

According to Table 1, the average age of research participants was 26.12.6. The majority of participants (48%) were between the ages of 20 and 25, with 33 percent between the ages of 25 and 30, and 10 percent younger than 20.

Table 1: Clinico-social information of study participants

Parameter	Number	Percentage
Age (in year)		
below 20	10	10
20-25	48	48
25-30	33	33
above 30	9	9
Mean age (mean ± SD)	26.1±2.6	26.1±2.6
Socio-economic status		
Lower	82	82
Middle	18	18
Literacy status		
Illiterate	30	30
Primary	42	42
Secondary	22	22
Graduate and above	6	6
Registration status pregnancy		
Booked	55	55
Un-booked	28	28
Referred	17	17
Parity		
Primigravida	35	35
Multi-gravida	65	65
Maternal complication in puerperium		
Present	15	15
Absent	85	85
Mode of delivery		
Vaginal	66	66
LSCS	34	34

Table 2: Degree of anaemia

Degree of anaemia	Number	Percentage
Mild	30	30
Moderate	55	55
Severe	15	15

Kuppuswami categorization was used to determine socioeconomic level, which was separated into two groups. Almost 82 percent of participants came from the lowest socioeconomic classes. Around 42 percent of participants had completed basic school, followed by illiteracy (30 percent), secondary school (22 percent), and graduation and above (6 percent). Only 55% of patients were enrolled as registered cases, while the remaining 17% were referred cases. Almost 65 percent of instances were multi-gravida, and 61 percent were pregnant within two years of their prior pregnancy. Pregnancy-related risk factors such as PE, PROM, oligohydramnios, hypothyroidism, Rh -ve, placenta previa, GDM, GHTN, abruptio placenta, and others were detected in this research. A risk factor was present in 55% of the cases, and maternal difficulties in puerperium were reported in 15% of the cases. Moderate anaemia was seen in almost 55% of patients, followed by moderate (30%) and severe (15%) anaemia. In the current research, there was a high rate of unfavourable foetal outcomes such as preterm birth (19%), IUGR (12%), FTD (41%), NICU hospitalisation (25%), and IUD (3%). Table 3 reveals that severe and moderate anaemia are more common in the 20-25 and 25-30 age groups, respectively. This link was found to be statistically

significant (p<0.05). Severe and moderate anaemia were detected more often in illiterate people and less frequently in educated ones, and this relationship was statistically significant (p<0.05). Anaemia was more common in lower socioeconomic classes, however this relationship was not statistically significant (p>0.05). The severity of anaemia was higher among unregistered pregnant women and multigravida women, and this connection was statistically significant (p<0.05). The current research found a statistically insignificant relationship between risk factor, distance between pregnancy, and severity of anaemia (p>0.05).

LSCS was shown to be more prevalent in patients with severe anaemia, and this relationship was statistically significant (p<0.05). The current investigation found a statistically significant relationship between foetal outcome and anaemia severity (p0.05), but not between birth weight and anaemia severity (p>0.05).

Table 3: Association between socio-clinical characteristics with severity of anaemia

Variable	Severity of anaemia			P Value
	Mild=30	Moderate=55	Severe=15	
Age				
below 20	3	5	2	0.007
20-25	15	29	4	
25-30	10	15	8	
above 30	2	6	1	
Literacy				
Illiterate	4	19	7	
Primary	16	22	4	
Secondary	9	10	3	0.0001
Graduate and above	1	4	1	
Socio-economic status				
Lower	24	46	12	0.63
Middle	6	9	3	
Registration status				
Booked	19	32	4	
Un-booked	7	15	6	0.008
Referred	4	8	5	
Gravida				
Primigravida	14	18	3	0.011
Multigravida	16	37	12	
Mode of delivery				
Vaginal	19	44	3	0.0001
LSCS	11	11	12	
Risk factor				
PE	8	10	6	
PROM	8	15	4	
Oligohydramnios	2	10	1	
Hypothyroidism	3	2	1	
Rh-ve	3	9	1	0.08
Placenta PRV	0	2	1	
GDM	4	3	0	
GHTN	0	3	1	
Abruptio placenta	2	1	0	
Fetal outcome				
FTD	13	25	3	0.001
PTD	4	12	3	
IUGR	3	8	1	
IUD	0	2	1	
NICU	10	8	7	
Birth weight				
<2.5	20	40	10	0.63
>2.5	10	15	5	

DISCUSSION

Anaemia is a common problem among pregnant women in underdeveloped nations such as India. Several studies have shown diversity in pregnancy outcomes in anaemic individuals. [10] The current research included 100 women. The current research sought to determine the prevalence and treatment of anaemia in pregnancy in relation to mother and foetal outcomes. With the regular literature reading accessible, the numerous parameters of the topics were investigated, analysed, and assessed. In the current research, 30% were mildly anaemic, 55% were moderately anaemic, and 15% were severely anaemic. The majority of the anaemic research individuals in this study were between the ages of 20 and 25. (48 percent). This was consistent with the findings of Alli R et al. [11] In his research, 40 percent of women in the same age range were anaemic. Low socioeconomic position is thought to predispose to anaemia, with inadequate nutrition being the major reason. In the current research, 82 percent of the anaemic women belonged to the low socioeconomic group, while all of the women in the Alli R et al study belonged to the low socioeconomic group. [12] The current study's findings were similarly comparable to those of Rangnekar et al, who found that 67 percent of anaemic mothers belonged to a low socioeconomic category, suggesting a direct association between poor socioeconomic circumstances and pregnant anaemia. [13]

Early detection and treatment of anaemia requires effective and appropriate prenatal care. In the current research, 55% of women were charged. Unbooked and recommended patients accounted for 28% and 17%, respectively. In the current research, 70% of unbooked and referred subjects exhibited severe anaemia, which was equivalent to Awasthi A et al (83.5 percent). [14] Anemia in pregnancy is more likely in women with multiple pregnancies and insufficient spacing. A link has been shown between severe anaemia and pregnancy-induced hypertension. Pregnancy-induced hypertension was found in 4% of the women in this investigation. It was equivalent to Awasthi A et al (24.5 percent) and Sarin AR et al (24.5 percent) (28.5 percent). [14,15]

The most prevalent kind of anaemia in this research was Microcytic Hypochromic anaemia (80%), followed by Dimorphic anaemia (20 percent). This was equivalent to the research of Awasthi A et al (66.5 percent), Rangnekar GA et al (65 percent), and Alli R et al (65 percent) (68 percent). [11,13,14] In the current research, 70% of the subjects got oral iron. Parenteral (IV) iron and blood transfusions were administered to 25% and 5% of the patients, respectively. In the current research, there was a high rate of unfavourable foetal outcomes such as preterm birth (19%), IUGR (12%), FTD (41%), NICU hospitalisation (25%), and IUD (3%). These were similar to the findings of Awasthi A et al PT (9.5 percent), IUGR (37.5 percent), and IUD (8 percent), as well as Rangnekar et al PT (73 percent), IUGR (4 percent), and IUD (8 percent) (16 percent).[13,14] In the current research, the prevalence of low birth weight newborns was 70%, which was equivalent to the 66 percent seen by Rangnekar et al and the 69.1 percent observed by Khalida H et al.[13,16] Angelitta J conducted a recent research in Muscat and found that mother age, parity, and late prenatal visit were all independently linked with maternal anaemia, low birth weight, and preterm delivery.[17]

CONCLUSIONS

Iron supplementation during pregnancy improves iron status throughout pregnancy and the postpartum period, giving some protection against iron deficiency in the future pregnancy in iron deficient women. Proper prenatal care is essential for the prevention, early identification, and treatment of anaemia.

REFERENCES

1. WHO. Hemoglobin concentrations for the diagnosis of anemia and assessment of severity. World Health Organization; 2014.
2. V Gopalakrishnan, R Singh, Y Pradeep, D Kapoor, A K Rani, S Pradhan, E Bhatia, S B Yadav. Evaluation of the prevalence of gestational diabetes mellitus in North Indians using the International Association of Diabetes and Pregnancy Study groups (IADPSG) criteria. J Postgrad Med 2015 Jul-Sep;61(3):155-8.
3. Haider BA, Olofin I, Wang M, Spiegelman D, Ezzati M, Fawzi WW; Nutrition Impact Model Study Group (anaemia). Anaemia, prenatal iron use, and risk of adverse pregnancy outcomes: systematic review and meta-analysis. BMJ 2013;346:f3443.
4. Daru J, Zamora J, Fernández-Félix BM, Vogel J, Oladapo OT, Morisaki N, et al. Risk of maternal mortality in women with severe anaemia during pregnancy and post partum: a multilevel analysis. Lancet Glob Health 2018;6:e548–54.
5. Kahlon A. Impact of maternal iron deficiency anemia on neural development of fetus. J Perinatol 2015;18:133–8.
6. Milman N. Postpartum anemia I: definition, prevalence, causes, and consequences. Ann Hematol 2011;90:1247–53.
7. Beard JL, Hendricks MK, Perez EM, Murray-Kolb LE, Berg A, VernonFeagans L, et al. Maternal iron deficiency anemia affects postpartum emotions and cognition. J Nutr 2005;135:267–72.
8. Corwin EJ, Murray-Kolb LE, Beard JL. Low hemoglobin level is a risk factor for postpartum depression. J Nutr 2003;133:4139–42.
9. New S, Wirth M. Anaemia, pregnancy, and maternal mortality: the problem with globally standardised haemoglobin cutoffs. Bjog 2015;122:166–9
10. Mangla M, Singla D. Prevalence of anaemia among pregnant women in rural India: a longitudinal observational study. Int J Reprod Contracept Obstet Gynecol. 2016;5:3500-5.
11. Alli R, Satyanarayana M. Anemia complicating pregnancy. J Obstet Gynecol India. 1985; 35(2): 335-338.

12. Bhatt RV. Management of pregnancy anaemia: Obstetrician's dilemma. J Obstet Gynecol India. 1998;48(6):96-100.
13. Rangnekar AG, Rashmi D. Fetal outcome in pregnancy anemia. J Obstet Gynecol India. 1993;43(2):172-6.
14. Awasthi A, Thakur R, Dave A, Goyal V. Maternal and perinatal outcome in cases of Moderate and Severe anemia. J Obstet Gynecol India. 2001;51(6):62-5.
15. Sarin AR. Severe anemia of pregnancy: recent experience. Int J Gynecol Obstet India. 1997;1(1):39-44.
16. Khalida H, Shah GN, Farooq F. Some obstetric and fetal correlations in association with anemia in pregnancy. Indian J Maternal Child Health. 1997;8(2):48-50.
17. Angelitta JN, Alkhasawneh E, Seshan V, Raman S. Anemia in pregnancy: consequences and challenges: a review of literature. J South Asian Federation Obstet Gynecol. 2012;4(1):64-70