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A STUDY ON ROUTINE ESTIMATION OF HAEMOGLOBIN IN IMMEDIATE POST PARTUM PERIOD

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Abstract
Background: Postpartum anemia is an underappreciated maternal morbidity with a high prevalence. Anaemic women who are pregnant have an increased risk of premature delivery, a low-birth weight infant, and postpartum depression, and are more likely to have anaemia in the postpartum period which can continue and affect haemoglobin levels in a subsequent pregnancy.
Methods: This study included 500 postnatal women who gave birth at Saveetha Medical College and Hospital during the data collection period. Haemoglobin measurements of blood samples from post-partum women were performed by using hematologic analyzer by an experience laboratory technical staff at the study sites. The analysis was performed immediately after the samples were collected. The value was recorded and disclosed to each participant. Participants who had haemoglobin levels of less than 11g/dl were considered anemic.
Result: Among 298 women with anaemia 19% were having mild anaemia, 25.6% were moderate and 15% were observed with severe anaemia. The mean Hb level was 10.86 g/dl. Comparing the risk factors between anaemic and non-anaemic women, antenatal anaemia (p=<0.0001), PPH (p=0.05) and iron intake antenatally (p=<0.0001) were the significant risk factors which was reason for the postnatal anaemia in pregnancy women in our study.
Conclusion: The high prevalence of post-partum anemia found in this study highlights the importance of screening and treating prepartum anemia as well as provision of education on ideal child spacing which may constitute an important approach for reducing the prevalence of anemia.
Keyword: Postpartum anemia, Obstetric blood loss, Iron deficiency, haemoglobin

INTRODUCTION

Complications can occur during pregnancy and affect the health and survival of the mother and the fetus. Postpartum period (PPP), ranging from childbirth to 6 weeks, is the most crucial time for the survival and well-being of the newborn and the mother [1]. During this period, postpartum anemia (PPA) is a frequently observed complication, and a critical factor for maternal morbidity and mortality [2]. Prevalence of Anaemia in pregnant women in India is 58.7% Anaemia is defined as Hb level < 11g/dl in pregnancy or immediate post-partum period [3]. Anemia is grouped as mild (10-10.9g/dl), moderate (7-9.9 g/dl), severe (< 7 g/dl). Iron deficiency anemia is the commonest one seen among pregnant women [4].

Postpartum anemia is an underappreciated maternal morbidity with a high prevalence. At 24–48 h after delivery, postpartum anemia (defined as a hemoglobin (Hb) <11g/dL) can affect 50 % women. Anaemic women who are pregnant have an increased risk of premature delivery, a low-birth-weight infant, and postpartum depression, and are more likely to have anaemia in the postpartum period which can continue and affect haemoglobin levels in a subsequent pregnancy [5,6]. Mild to moderate anaemia is most commonly treated orally with iron supplementation, with tablets easily dispensed during health care appointments e.g., for pre- or post-natal care, or home visits [7].

Routine assessment of maternal hemoglobin level at obstetric admission is common practice and is aligned with recommendations from the American Congress of Obstetricians and Gynecologists (ACOG) [8]. In contrast, the clinical utility of routine postpartum hemoglobin assessment is less clear; resulting in practice variations. Ostensibly, the benefits of routine evaluation would be to identify women with postpartum anemia without a clinical risk factor such as postpartum hemorrhage and without clinical symptoms of hypovolemia.some times clinically anemia may not correlate due to interobserver variation .selective postpartum haemoglobin estimation for some patients who had history of PPH ,antental anemia will miss other patients who had postpartum anemia ,so to find out actual prevalence of postpartum anemia ,this should be administered as routine protocol of estimation of haemoglobin postnatally. In view of these consequences, our study aimed to monitor the prevalence and morbidity of postpartum anemia in any setting, and to evaluate the most important risk factors for low haemoglobin values after delivery.

MATERIAL AND METHODS

A prospective cross sectional study was conducted from august 2023 to November 2023 at Saveetha Medical College and Hospital. The source population consisted of all postpartum

mothers who gave birth at Saveetha Medical College and Hospital. The study population consisted of mothers who met the requirements to be a source population and made themselves available during the data collection period. This study included all postnatal women who gave birth at Saveetha Medical College and Hospital during the data collection period.

Considering the prevalence of post-partum anemia of 42% with a 95% confidence interval, absolute precision of 5% and assuming a non-response rate of 10%. The total adjusted sample size estimation in a large population was 500 women. Haemoglobin measurements of blood samples from post-partum women were performed by using hematologic analyzer by an experience laboratory technical staff at the study sites. The analysis was performed immediately after the samples were collected. The value was recorded and disclosed to each participant. Participants who had haemoglobin levels of less than 11g/dl were considered anemic. The detailed history was taken from the women using an interviewer assigned questionnaire, which was developed before initiating the study. The questionnaire contains sociodemographic characteristics, obstetrical-related variables, coexisting infection-related variables, and dietary and micronutrient-uptake-related variables.

Data collected in the study were entered in duplicate in IBM SPSS version 20 statistical program. Data was checked for missing data and consistency. Data analysis was done to determine the strength of association between dependent and independent variables using Chi-square for categorical variables. Categorical variables were summarized using proportions. Data are presented as mean (standard deviation), median [interquartile range], and number (percentages), as appropriate.

RESULTS

In our study a total of 500 women were screened for Hb level postnatally on day 3. The mean age of study group was 28.63±3.36 with range of 24-36 and 23-37. The mean weight of study group was 65.34±8.01 with range of 58-71. The mean height of study group was 156.25±1.86. Regarding gravida among study group 57.6% were in primi and 37.4% were belongs to multi gravida. The mean gestation age of study group was 39.23±2.01 and range between 33 to 40 weeks **(Table 1).**

Table 1: Demographic data of Study group

Parameters	Study group (n-500)
Age	
(Mean±SD)	28.63±3.36
Range (Min - Max)	24-36
Weight in kg	
(Mean±SD)	65.34±8.01
Range	58-71
Height in cm	
(Mean±SD)	156.25±1.86
Range	139-170
Gravida	
Primi	288 (57.6%)
Multi	212 (42.4%)
Gestation in weeks	
(Mean±SD)	39.23±2.01
Range	33 to 40 weeks

Among 500 women, 40.4% were having normal Hb level and 59.6% women were observed with lower Hb level. Among 298 women with anaemia 19% were having mild anaemia, 25.6% were moderate and 15% were observed with severe anaemia. The mean Hb level was 10.86 g/dl **(Table 2)**.

Table 2: Distribution of Haemoglobin among study group

Parameters	Study group (n-500)
Hb level	
<11 g/dl (anemic)	298 (59.6%)
> 11g/dl (normal)	202 (40.4%)
Mean±SD	10.86±1.31 g/dl
Anemia range	
Mild	95 (19%)
Moderate	128 (25.6%)
Severe	75 (15%)

While comparing the risk factors between anaemic and non-anaemic women, antenatal anaemia (p=<0.0001), PPH (p=0.05) and iron intake antenatally (p=<0.0001) were the significant risk factors which was reason for the postnatal anaemia in pregnancy women in our study. Type of delivery did not significantly affect the postnatal anaemia **(Table 3)**.

Table 3: Comparision of various risk factors among women with and without postpartum anemia

Risk factors	Women with postpartum anemia (n-298)	Women without postpartum anemia (n=202)	'P' value
Antenatal anemia			**<0.0001***
Yes	205 (68.7%)	18 (9%)	
No	93 (31.3%)	184 (91%)	
PPH			**<0.05***
Yes	82 (27.5%)	26 (12.9%)	
No	216 (72.5%)	176 (87.1%)	
Iron intake antenatally			**<0.0001***
Regular	102 (34.2%)	156 (77.2%)	
Irregular	196 (65.8%)	46 (22.8%)	
Type of delivery			0.451
Vaginal delivery	204 (68.4%)	128 (63.4%)	
LSCS	94 (31.6%)	74 (36.6%)	

DISCUSSION

Anemia after the delivery of a child (postpartum anemia) is a common problem throughout the world [9]. The prevalence of postpartum anemia is highest in developing countries where it is a major cause of maternal morbidity and mortality [10]. It has been estimated that of the ~500,000 maternal deaths occurring each year on a global scale in association with delivery, 20% are caused by peripartum hemorrhage and anemia [11]. However, postpartum anemia also constitutes a significant and partly unrecognized problem even in developed countries [11,12]. Our study reported 59.6% of high prevalence of postpartum anemia. International initiatives have assigned a high priority to the prevention and treatment of postpartum hemorrhage in an effort to achieve a decrease in maternal deaths [12].

The development of postpartum anemia relies on the presence of prepartum anemia and the magnitude of peripartum blood

losses [13]. Most studies of Hb decrease after delivery have been in the context of overt PPH, where patient inclusion was based on visual estimation of increased hemorrhage after delivery [14]. However, addressing only cases of overt bleeding fails to assess the possible benefit of strict follow-up and treatment with iron sucrose and blood transfusion gained by women with occult PPH. Our study reported 27.5% of PPH among women with postpartum anemia which was statistically significant when comparing with women with normal Hb level.

Anaemia during the postpartum period may have long-term health implications for the mother and her infant. To increase opportunities for measurement, implementation research on point of care tests, including feasibility, availability, and acceptability is needed, along with test accuracy assessments. The measurement of clinical endpoints or morbidities associated with postpartum anaemia is needed for both women and infants [15]. This should include measures of fatigue, weakness, breastfeeding challenges, and postpartum depression for mothers and low birth weight, preterm delivery, and breastfeeding challenges for infants.

Women with obstetric problems, for example, multiple pregnancy, placenta previa, uterine bleeding in late pregnancy, and anemia in pregnancy, have a higher prevalence of early postpartum anemia [16]. However, the blood losses at delivery, especially in cesarean deliveries, are by far the most important risk factor for postpartum anemia [17]. Cesarean deliveries may be associated with blood losses of ~1,000 ml. [18] .

Precise and accurate diagnosis of anaemia is required to provide timely and correct treatment if needed, not only for the implications on women's health, but also for the economic and resource implications of an incorrect diagnosis, whether false positive or false negative. Haemoglobin thresholds during the postpartum period should be standardized to facilitate understanding of the true burden in local and global contexts. Next steps include incorporating measurement of postpartum anaemia in global anaemia measurement consultations such as those seeking to standardize anaemia thresholds across the lifespan, and improving or ensuring the reporting of anaemia measurement in studies.

Evidently, postpartum hemorrhage, anemia, and iron deficiency constitute a health problem in most parts of the world, especially in developing countries. Consequently, routine screening for postpartum anemia should be considered in order to diagnose anemia at an early stage and institute proper treatment

CONCLUSION

The major causes of postpartum anemia are prepartum iron deficiency and anemia in combination with acute blood losses at delivery.Good antenatal care is important for good maternal and fetal outcome ,same care should be continued in postpartum period . In consecutive series of women, the prevalence of anemia 24–48 h after delivery is above 50%. The high prevalence of post-partum anemia found in this study highlights the importance of screening and treating prepartum anemia as well as provision of education on ideal child spacing which may constitute an important approach for reducing the prevalence of anemia. Our study also indicated regular iron supplement during antenatal period also helps in avoiding postpartum anemia.

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