Original Article

Effect of Anemia on Maternal and Fetal Outcome at Delivery ⌾

Natia Rahnuma[1], ⓘ **Barnali Sinha[2],** ⓘ **Shahina Akther[3],** ⓘ **Iffana Azam[4]** ⓘ

ABSTRACT

Background: *In impoverished nations, anemia during pregnancy correlates to a bad outcome for both mother and child. It is also a significant cause of maternal mortality.*

Objective: *This study aims to determine the effect of anemia on the maternal and fetal outcomes at the delivery period of the Bangladeshi population.* *Method*: *A cross-sectional study was conducted among 270 patients in the Gynaecology Department of Jalalabad Ragib Rabeya Medical College Hospital, Sylhet Bangladesh, from January 2019 to December 2020. Details and data were obtained from the medical records section, and then these were analyzed. All patients having anemia were included, and fetomaternal outcomes were measured.* *Results*: *Here, a maximum (46.7%) of patients were between 20-24 years of age. 38.9% of patients were illiterate, 61.9% of patients were housewives. Maximum patients (32%) had pregnancy-induced hypertension, 16% had post-partum haemorrhage, 5% had abruption placentae, 19% had infection, 27% had a mode of delivery C/S, and 17% needed ICU admission, and 2% maternal death occurred. Here, 81 children had low birth weight, and 39 children were premature. 45.9% of patients had ANC visits below three months, 34.1% had diseases, and 64.4% had adequate iron and folic acid supplementation.* *Conclusion*: *The prevalence of anemia in pregnant women is relatively high. It can be minimized with enough iron and folic acid supplements and enhanced with adequate ANC treatment. It is necessary to raise public knowledge about pre-pregnancy haemoglobin levels and the necessity of prenatal check-ups. Hospitals should also take steps for anemia prevention, early detection, and treatment at priority basis during pregnancy.*

1. *Assistant Professor, Obstetrics and Gynaecology, Jalalabad Ragib Rabeya Medical College, Sylhet, Bangladesh,*
2. *Professor, Obstetrics and Gynaecology Jalalabad Ragib Rabeya Medical College, Sylhet, Bangladesh*

3. Associate Professor, Obstetrics and Gynaecology, Jalalabad Ragib Rabeya Medical College, Sylhet, Bangladesh,
4. Associate Professor, Obstetrics and Gynaecology, Sylhet Womens Medical College, Sylhet

INTRODUCTION

Anemia is a frequent medical condition that affects pregnant women. It is persistent in underdeveloped nations because of inadequate nutrition and a high incidence of parasitic infestation [1,2]. According to the World Health Organization, anemia is defined as "a haemoglobin level less than 10 gms percentage in pregnancy [3]." According to the WHO, the prevalence of anemia in pregnant women is 14 percent in affluent nations and 51% in developing countries [3]. Anemia is linked to 22 percent of maternal fatalities worldwide [2]. It has a significant impact on both the mother and the child. It has several adverse effects on maternal health, including a reduction in immunological response, an increased risk of heart failure, and an increase in the hazards of delivery [2]. Maternal anemia during pregnancy can result in a poor fetal outcome, such as growth retardation or perinatal death, as well as an increased risk of infant morbidity and mortality [4,5]. However, it is still unclear to what degree of anemia in pregnancy affects maternal and fetal risks in low-income nations.

Similarly, little is known about the relationship between anemia severity, gestational age at beginning or duration of anemia, and pregnancy outcome. In contrast, anemia in early pregnancy appears to be linked to an increased risk of low birth weight or preterm birth [6]. The prevalence of anemia among pregnant women in developing nations is 56 percent on average, ranging from 35% to 100% depending on the area [3]. Anemia during pregnancy is thought to be one of the leading causes of maternal mortality [7]. The relationship between anemia and negative maternal outcomes, such as puerperal infection, antepartum hemorrhage, postpartum hemorrhage, and maternal mortality, is no longer disputed [8,9]. For a pregnancy to be carried out, a minimum of 10 gm percent hemoglobin must be present. As a result, it is critical to diagnose and treat anemia as soon as possible. Severe anemia induces cardiac collapse when Hb falls below 5.0 g/dl. A deficiency of iron is the major cause of anemia [6]. Pregnancy-related problems disproportionately impact mothers and infants with poor health and lower socioeconomic levels. Premature delivery is more common in women who have moderate anemia. Severe anemia, infection, maternal death from antepartum and postpartum hemorrhage, pregnancy-induced hypertension, and sepsis are all common among pregnant women. Anemia during pregnancy has been associated to low birth weight, preterm delivery, higher perinatal mortality, lower childhood intellectual capacity, and neonatal anemia due to insufficient reserve [9]. Infants with anemia are more likely to fail to thrive, have delayed intellectual development, and have higher rates of morbidity and newborn

death than those who do not have anemia. Understanding the socio-demographic variables linked to anemia can aid in the development of measures to combat this serious health issue.

MATERIALS AND METHODS

Type of Study: A cross-sectional study

Place of Study: Obstetrics and Gynaecology Department of Jalalabad Ragib Rabeya Medical College Hospital,Sylhet, Bangladesh

Period of study: January 2019 to December 2020

Sample size: 270 cases

Data collection: Data collected from the patients in a prescribed protocol.

Data analysis: After collection, all data were reviewed and edited during the analysis. Using window-based computer software built with Statistical Packages for Social Sciences (SPSS 24), the data were then entered into the database, and statistical analysis of the results was obtained. The findings were presented in figures and tables.

RESULT

The patient age distribution is shown in table I. Among 270 women, the maximum (46.7%) of patients were between 20 and 24 years of age. Moreover, a minimum (0.7%) of patients were more than 39 years of age. The following Table I showed the age distribution of the patients:

Table I: Age distribution of the patients

Age	Frequency	Percentage (%)
15 – 19 years	21	7.7%
20 – 24 years	126	46.7%
25 – 29 years	68	25.2%
30 – 34 years	42	15.5%
35 – 39 years	11	4.2%
More than 39 years	2	0.7%
Total	270	100.0

Table II shows the educational background of the patients of this study. Here, maximum patients (38.9%) were illiterate and minimum patients (6.7%) were graduated.

Table II: Educational level of the patients

Educational level	Number of patients	Percentage (%)

Illiterate	105	38.9%
Primary	63	23.3%
Secondary	36	13.3%
Higher-Secondary	24	8.9%
Under-graduate	18	6.7%
Post-graduate	24	8.9%

Table III shows the occupation of the patients of this study. Here, maximum patients（61.9%） were housewives, and minimum patients （6.3%） were doing business.

Table III: Occupation of the patients

Occupation	Number of patients	Percentage (%)
Service	36	13.3%
Business	17	6.3%
Housewife	167	61.9%
Laborer	21	7.8%
Other	29	10.7%

Figure 1 shows the number of children of the patients of this study. Here, the maximum (157) patients had 1 or no children, and 113 patients had 2 or more than 2 children.
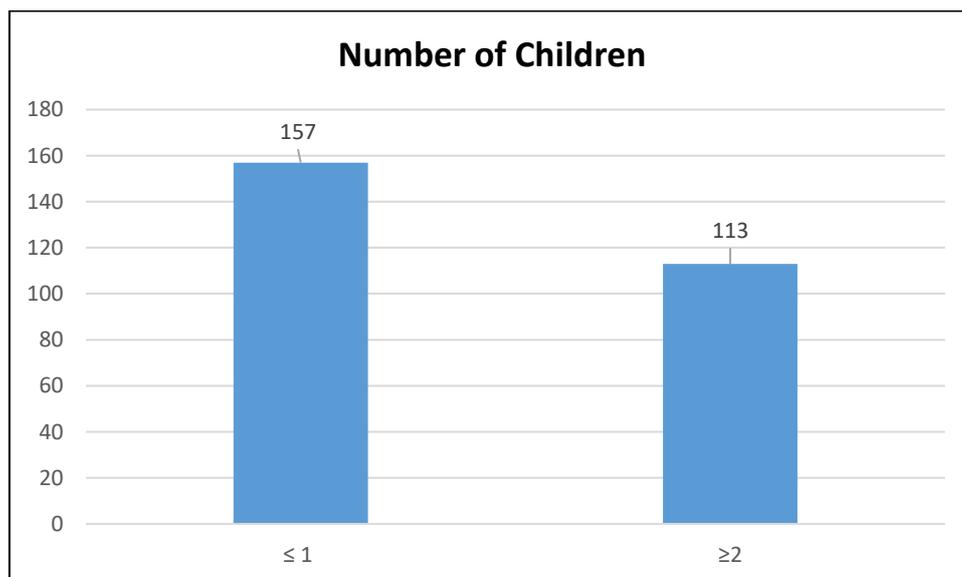

Figure 1: Number of children of the patients

The distribution of parity among the 270 patients is shown in table 4. Here, maximum patients （67.8%） had multipara, while the minimum patients （9.6%） had grand multipara.

Table IV: Parity distribution of the patients

Parity distribution	Frequency	Percentage (%)
Primipara	61	22.6%
Multipara	183	67.8%
Grand Multipara	26	9.6%

Figure 2 shows all the maternal complications of the patients in our study. Here, the maximum number of patients （32%） had pregnancy-induced hypertension. However, 16% had a post- partum haemorrhage, 5% had abruption placentae, 19% had infection, 27% had the mode of delivery C/S, 17% needed ICU admission, and only 2% maternal death occurred.
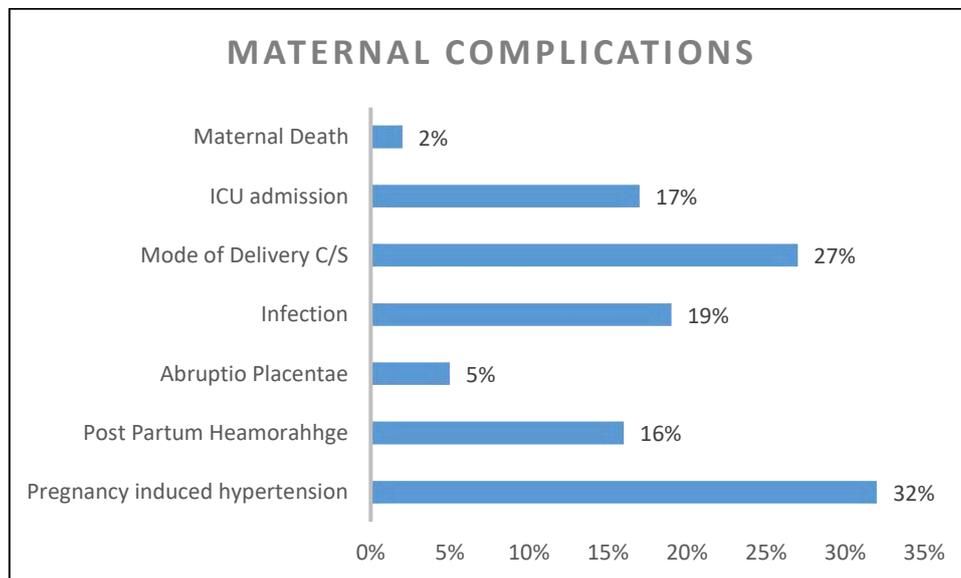

MATERNAL COMPLICATIONS

- Maternal Death — 2%
- ICU admission — 17%
- Mode of Delivery C/S — 27%
- Infection — 19%
- Abruptio Placentae — 5%
- Post Partum Heamorahhge — 16%
- Pregnancy induced hypertension — 32%

Figure 2: Maternal complications of the patients

Figure 3 shows all the fetal and newborn outcomes in our study. Here, the 219 children were normal, 81 children had low birth weight, 39 were premature, and 87 were still birth.
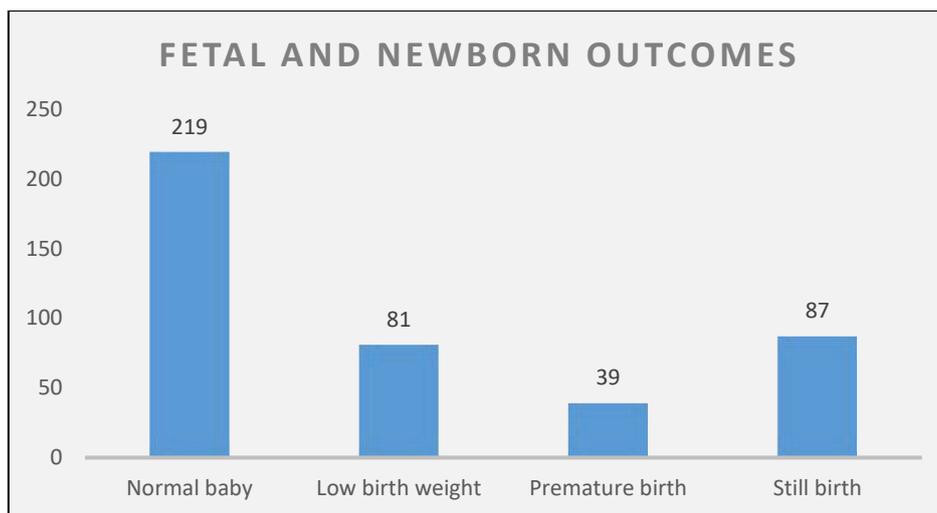
Figure 3: Fetal and newborn outcomes

Table V shows the relationship between ANC parameters with anemia in the third trimester. Here, the data presents inter-pregnancy intervals in months. 45.9% of patients had ANC visits below 3 months, 34.1% of patients had diseases, and 64.4% of patients had adequate iron and folic acid supplementation.

Table V: Relationship between ANC parameters with anemia at third trimester

ANC Parameters		Frequency	Percentage (%)
Inter-Pregnancy Interval (Months)	< 18	25	9.3%
	18 −23	59	21.9%
	> 23	127	47.1%
ANC Visit	< 3	124	45.9%
	≥ 3	146	54.1%
Medical Illness	Diseased	92	34.1%
	Not-diseased	178	65.9%
Iron and folic acid supplementation	Adequate	174	64.4%
	Inadequate	52	19.3%
	Not taken	44	16.3%

DISCUSSION

The findings of our study show that anemia during pregnancy is linked to a poor mother and fetal outcome. The sample size was very small for statistical analysis of differences in maternal mortality, and the number of adverse maternal events was too low for further statistical analysis. Despite this, the patients in this research had a substantial result. Only 2% of deaths were thought to be caused directly by severe anemia during pregnancy. This reveals the unspoken effect of anemia on maternal mortality throughout pregnancy [10]. This

study found a connection between severe anemia and a poor fetal outcome. Women with anemia had a threefold higher risk of perinatal mortality and a threefold higher risk of giving birth to a baby with a low birth weight.

Patients with anemia were frequently identified in this research to have had no prior prenatal treatment. According to Jallel R and Khan A, 69.9% of pregnant women are anemic, with 4.8% of those suffering from severe anemia [11]. According to our data, anemia increases the risk of pregnancy-induced hypertension. We also found that anemic individuals acquired infection in 19% of instances, more significant than the 7.8% reported by Riffat Jallelet al, but still very low compared to the 69.2% reported by Dare FO and colleagues [12]. The frequency of preterm birth in this research is comparable to that seen in a South African study [13]. Iron supplementation in the form of a dietary supplement and the prescription of iron pills during frequent prenatal check-ups have been proposed to ameliorate the anemic situation.

Like us, Viveki et al. discovered that an inter-pregnancy gap of less than two years was linked to a significant prevalence of anemia in pregnancy (90.9%). Mothers with less than three prenatal visits were shown to be significantly anemic in this research. This might be the result of insufficient prenatal care during pregnancy. Anemia and other pregnancy-related diseases can be detected with regular prenatal checkups. The existence or absence of a medical

disease was not demonstrated to be associated to anemia in pregnancy, despite the fact that women with a medical condition had a higher risk of anemia. Anemia was shown to be more prevalent in persons with dyspepsia and diabetes mellitus, according to a research done by E Ugwuja in Nigeria. Even yet, the difference was not statistically significant, indicating that additional variables have a role in the development of anemia [15]. Low birth weight is a major cause of infant mortality [3]. Furthermore, maternal anemia and low birth weight might contribute to neonatal anemia due to insufficient iron storage throughout pregnancy [16]. In pregnancy, the relationship between fetal outcome and haemoglobin concentration follows a U-shape, with more negative consequences on both ends. High maternal haemoglobin levels associated to (pre)-eclampsia have been linked to poor fetal outcome in industrialized countries [4]. Our data did not support this link between outcome and increased hemoglobin levels, probably due to the limited frequency of high haemoglobin levels. Few prospective studies on mother and fetal outcomes following severe anemia in pregnancy have been conducted, and even fewer in low-income countries. Women who were not anemic before they went into delivery had a greater chance of having a healthy baby. Women who went to prenatal care regularly had a better likelihood of having a healthy fetus. The absence of a qualified supervisor at the birth was linked to a poor fetal outcome. Emergency obstetric care is currently being stressed as a way to reduce maternal and fetal risks. However, it's

crucial to remember that non-emergency prenatal and delivery care are also vital obstetric services since they allow for the prevention and early diagnosis of problems [17].

Data on the women's occupational status and educational levels were collected, and the results revealed that low-educated patients and housewives were disproportionately affected in this study. The outcomes of this study might be explained by the fact that less-educated women lack knowledge about nutritious diets, make poor use of health facilities, and are ignorant of the influence of anemia on pregnancy and its outcome. According to this study, labor women have a lower socioeconomic status, have a lower educational level, and are forced to operate hard during their pregnancy, with attendance at an antenatal clinic resulting in a loss of daily wages. The link between pregnant women with anemia and outcome may be more complicated than previously thought. More study is needed to thoroughly understand the connection between anemia and maternal and fetal outcomes during delivery.

CONCLUSION

Anemia is still prevalent among pregnant women, posing a significant risk to both the mother and the child. As a result, community-wide prevention measures are required. Anemia can be reduced in pregnancy with adequate iron and folic acid supplements, enhanced with good ANC treatment. It is necessary to raise public knowledge about pre-pregnancy hemoglobin levels and the prelevance of prenatal check-ups about mother and fetal poor pregnancy outcomes. To avoid and diagnose issues during pregnancy and delivery, non-emergency maternity care must be supported by sufficient referral services for the management of emergency problems.

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