Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Obstetrics & Gynaecology

"Maternal and Fetal Outcomes in Early Pregnancy Bleeding: A Prospective Study"

Dr. Ayesha Nigar Nur[1*], Dr. Nazneen Ahmed[2], Dr, Ferdousi Begum[3]

[1]Assistant Professor, Department of Obstetrics and Gynaecology, Holy Family Red Crescent Medical College Hospital, Dhaka, Bangladesh
[2]Associate Professor, Department of Obstetrics and Gynaecology, Holy Family Red Crescent Medical College Hospital, Dhaka, Bangladesh
[3]Assistant Professor, Department of Obstetrics and Gynaecology, Holy Family Red Crescent Medical College Hospital, Dhaka, Bangladesh

DOI: 10.36347/sjams.2024.v12i05.019 | **Received:** 05.04.2024 | **Accepted:** 11.05.2024 | **Published:** 24.05.2024

***Corresponding author:** Dr. Ayesha Nigar Nur
Assistant Professor, Department of Obstetrics and Gynaecology, Holy Family Red Crescent Medical College Hospital, Dhaka, Bangladesh

Abstract **Original Research Article**

Introduction: The outcome of early pregnancy bleeding remains a subject of ongoing debate within the medical community. Vaginal bleeding, while common, can be a potentially alarming symptom in early pregnancy. It is a prevalent occurrence during the first trimester, presenting a significant concern for both patients and healthcare providers alike. ***Aim of the study:*** The aim of this study was to determine the maternal and fetal outcome in patients presenting with early pregnancy bleeding. ***Methods:*** This prospective study was conducted in the Department of Obstetrics and Gynaecology of Holy Family Red Crescent Medical College Hospital, Dhaka, Bangladesh during the period from January 2021 to December 2023. It included 300 cases of early pregnancy bleeding. All patients in the study were evaluated for various outcomes, including threatened abortions, spontaneous abortions, complete or incomplete abortions, sub-chorionic hematoma, intrauterine fetal demise, missed abortions, second and third-trimester bleeding, intrauterine growth restriction (IUGR), premature rupture of membranes (PROM), and preterm deliveries. ***Result:*** Out of 300 patients presented with early pregnancy bleeding. The incidence was highest (85.5%)) in the age group of 21-30 years. 61% primigravida presented with first trimester bleeding as compared to 39% of multigravidas. It was seen that 69.67% patients who presented before 6 weeks aborted whereas only 5.7% patients who presented after 10 weeks aborted. Out of the 80 patients that continued pregnancy after first trimester vaginal bleeding 1.25% had a second trimester abortion, 17.5% went into preterm labor 11.25% has premature rupture of membranes and 2.5% had antepartum hemorrhage. ***Conclusion:*** The results of the present study indicate that early pregnancy bleeding serves as a predictor for additional maternal and fetal complications. Effective clinical intervention plays a crucial role in sustaining pregnancy and minimizing fetal complications. Therefore, precise management and planning by physicians are essential in optimizing outcomes for both mother and baby.

Keywords: EPB, First trimester bleeding, Abortions.

INTRODUCTION

Early pregnancy bleeding (EPB) refers to the occurrence of bleeding during the initial 20 weeks of gestation [1]. It encompasses a spectrum of conditions, with four primary etiologies: miscarriage (including threatened, inevitable, incomplete, or complete), ectopic pregnancy, implantation bleeding, and cervical pathology [2]. Among women who have bleeding in early pregnancy, there is a significant statistical possibility: a 30-50% chance of miscarriage, a 2% probability of ectopic pregnancy, and a rare 0.1% chance of molar pregnancy [3].

Bleeding in early pregnancy can manifest in various forms, including spotting or heavy bleeding. Spotting is characterized by the patient reporting scant or trace amounts of blood, or by clinicians observing minimal or no blood in the vagina or at the cervix. Conversely, heavy bleeding is described by patients as exceeding typical menstrual flow. Clinically, it presents as a moderate to heavy volume of blood in the vagina or at the cervix. The causes of first-trimester vaginal bleeding are diverse, falling into obstetric and non-obstetric categories. Obstetric causes encompass conditions such as abortion, ectopic pregnancy, and

gestational trophoblastic disease, while non-obstetric causes include cervical erosion, polyps, malignancy, and ruptured varicose veins. Ultrasound serves as the primary imaging modality for evaluating patients presenting with bleeding in the first trimester of pregnancy. As a safe and non-invasive diagnostic tool, ultrasound aids in the prompt and accurate diagnosis of bleeding per vaginum during the initial stages of pregnancy [4].

Bleeding during pregnancy can cause maternal anxiety, as it raises concerns about the health and well-being of both the mother and the developing fetus. Emerging evidence indicates that such bleeding episodes may indeed be correlated with adverse fetal and maternal outcomes [5-7]. The outcome of pregnancy-related bleeding is influenced by several factors, including the gestational age at which the bleeding occurs, the underlying cause of the bleeding, and the severity of the bleeding [8]. After taking a complete history, physical examination, and pelvic examination, further diagnostic evaluation with imaging techniques helps to establish a diagnosis and formulate an appropriate management plan. Statistics reveal that more than 50% of pregnancies experiencing first-trimester bleeding end in pregnancy loss. For those pregnancies that continue, there remains a risk of poor maternal and fetal outcomes, including preterm delivery, preterm premature rupture of membranes (PPROM), placental abruption, pre-eclampsia, and intrauterine growth restriction (IUGR). Various maternal factors, such as age, systemic diseases like diabetes mellitus and hypothyroidism, history of infertility treatment, thrombophilia, maternal weight, and uterine structural anomalies, contribute to the risk of pregnancy loss. Additionally, emerging evidence suggests an association between first-trimester bleeding and adverse fetal and maternal outcomes. There is a hypothesis that first-trimester bleeding may signal underlying placental dysfunction, which could potentially lead to complications later in pregnancy, such as an increased risk of pre-eclamptic toxemias, preterm delivery, prelabor rupture of membranes (PROM), and IUGR [9]. The study aimed to examine the effect of first trimester vaginal bleeding on maternal and fetal outcomes.

Objectives

The objective of the study was to investigate the effect of early pregnancy bleeding on maternal and fetal outcomes.

METHODOLOGY & MATERIALS

This was a prospective study and was conducted in the Department of Obstetrics and Gynaecology of Holy Family Red Crescent Medical College Hospital, Dhaka, Bangladesh during the period from January 2021 to December 2023.

A total of 300 cases of first trimester bleeding who were included in the study. All patients underwent a comprehensive examination, including general, physical, and gynecological assessments, during their initial booking visit. Subsequently, they received regular follow-up care in the antenatal clinic, ensuring continuous monitoring of their pregnancy progress. Repeat ultrasound scans were conducted as deemed necessary based on individual patient needs and clinical indications. For patients diagnosed with subchorionic hematoma, a specialized approach was adopted. Weekly ultrasound scans were repeated until resolution of the hematoma was observed. Other inclusion criteria were a normal body mass index, accurate dates, previous regular cycles, the absence of cervical pathology, and a single viable pregnancy verified by ultrasound. The amount of bleeding was recorded at each visit. Pregnant women with chronic hypertension, diabetes, syphilis, thrombophilia, smoking, a history of recurrent miscarriage, a history of congenital malformation in children, a history of trauma or surgery during the current pregnancy, cervical incompetence, congenital uterine anomalies, uterine fibroids, or local cervical pathology such as cervical polyps or erosions were excluded from the study.

If spotting occurred, it was categorized as light, while bleeding resembling menstrual flow or greater was deemed heavy. In cases of heavy bleeding accompanied by the presence of fetal tissue in the cervix and vagina (indicative of incomplete abortion), urgent investigations were conducted, followed by a check curettage procedure. Ultrasonography was utilized to diagnose, determine gestational age, and identify the presence of subchorionic hematoma. Diagnosis of threatened, complete, missed, or inevitable abortion was confirmed through ultrasonography. Patients experiencing threatened miscarriage were prescribed complete bed rest until 48 hours after bleeding cessation, along with folic acid supplementation and a dosage of 200mg of micronized progesterone tablets twice daily. These patients were registered, regularly monitored at antenatal clinics, and eventually delivered at the same hospital.

Statistical Analysis: All data were recorded systematically in preformed data collection form and quantitative data was expressed as mean and standard deviation and qualitative data was expressed as frequency distribution and percentage. Statistical analysis was carried out by using Statistical analysis was done by using SPSS (Statistical Package for Social Science) Version 26 for windows 10. P value <0.05 was considered as statistically significant. Ethical approval regarding the study was obtained from the institutional ethical review committee.

RESULT

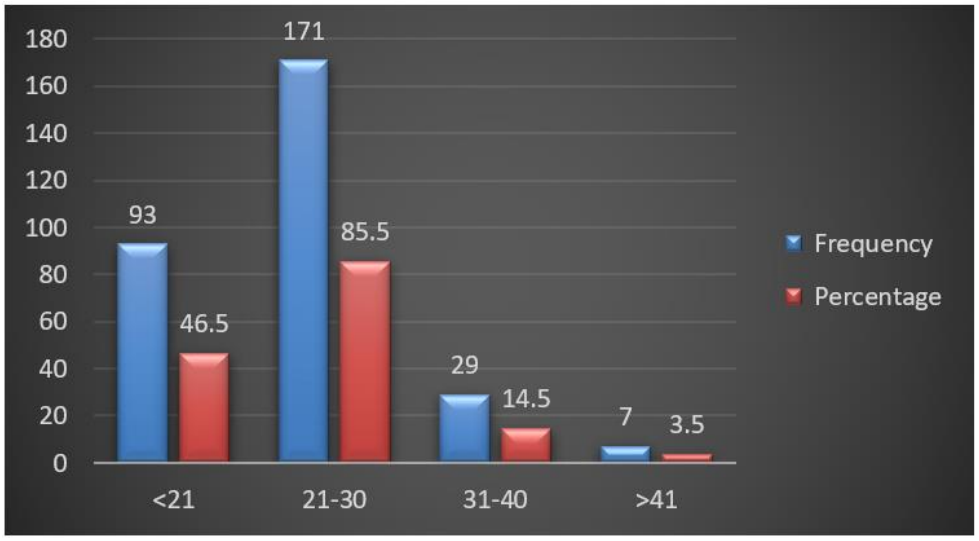

Figure 1: Age distribution of the respondents

Figure 1 shows that majority (85.5%) of our patients were aged 21-30 years old, followed by (46.5%) under <21 years old. Among all participants 14.5%, 3.5% were aged between 31-40 years & >41 above years old respectively.

Table 1: Baseline characteristics of the respondents

Characteristics		Patient who aborted	Patient who continued pregnancy	Total	Percentage
Parity	Primigravida	134	49	183	61.00
	Multigravida	86	31	117	39.00
Gestational age	<6 weeks	201	8	209	69.67
	7-10 weeks	14	60	74	24.67
	>10 weeks	5	12	17	5.67
Type of bleeding	Spotting	185	70	255	85.00
	Heavy	35	10	45	15.00
U.S. G	Missed Abortion	116	0	116	38.67
	Subchorionic hematoma	7	5	12	4.00
	Complete abortion	14	0	20	6.67
	Incomplete abortion	80	0	80	26.67
	IUFD	3	0	3	1.00
	Normal Outcome	0	75	75	25.00

Table 1 shows that the characteristics of the respondents. We found 61% patients who came with first trimester bleeding were primigravida and 39% were multigravida. Incidence of abortion was higher in patients with first trimester bleeding in less than 6 weeks of gestation (69.67%) whereas it was significantly less after 10 weeks of gestation (5.67%). Out of the 300 females with First Trimester Vaginal Bleeding, 85% had spotting with abortion rate of 72.5%, whereas 15% had heavy bleeding with an abortion rate of 80%. On the other hand, 38.67% patients were diagnosed to have missed abortion and underwent uterine curettage. USG revealed sub chorionic hematoma in 12 patients of which 7 eventually aborted in spite of conservative management. 26.67% had incomplete abortion and emergency curettage was performed. 25% patients went up till term and delivered normally.

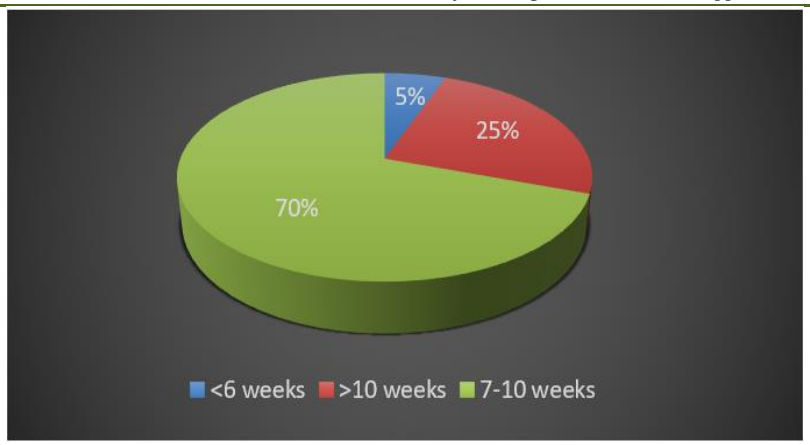

Figure 2: Gestational age distribution of the respondents

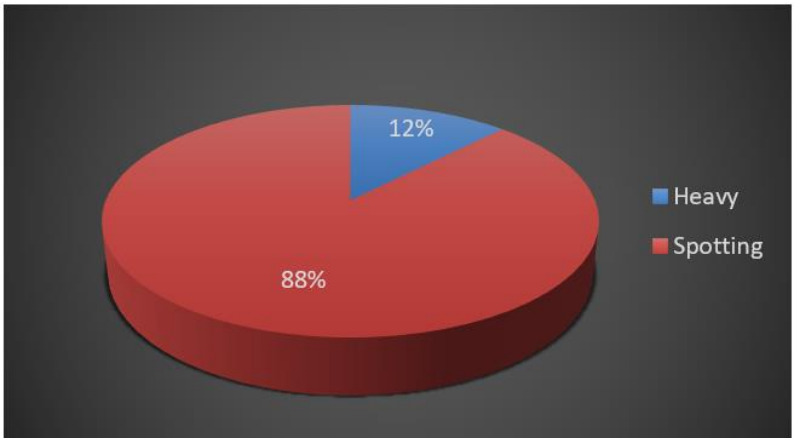

Figure 3: Type of bleeding of the respondents

Table 2: Management of the respondents

Management	Number	Percentage
Uterine curettage	160	53.33
Conservative treatment	90	30.00
Cervical cerclage	1	0.33
Tocolytics	37	12.33
Transfusion	12	4.00

Table 2 shows that the management of the respondents. We found 160 patients required uterine curettage. Blood transfusion was required in 12 patients of heavy bleeding. Tocolytics were started for 37 patients and cerclage was performed in 1 patient.

Table 3: Maternal and Fetal outcome of the respondents

Outcome		Number	Percentage
Maternal outcome	II nd trimester abortion	1	1.25
	Preterm labor	14	17.5
	PROM	9	11.25
	PIH	4	5
	APH	2	2.5
	FTVD/LSCS	35+15	62.5
Fetal outcome	<2kg	7	8.75
	2-2.5 kg	22	27.5
	>3 kg	51	63.75
	APGAR (5) <7	4	5
	APGAR (5)>7	76	95

Table 3 shows that the maternal and Fetal outcome of the respondents. Total 80 patients continued pregnancy beyond first trimester; of which 14 had preterm labor. 50 patients went till term and delivered either vaginally or by LSCS. 3 patients had bleeding in second and third trimester; of which 1 patient aborted in second trimester and 2 were diagnosed to have Ante-partum Hemorrhage. We also found, out of all the females with first trimester bleeding, 80 delivered live babies. Out of these, 63.75% babies had birth weight >3kg. 5% babies required NICU care.

DISCUSSION

First-trimester bleeding is indeed linked not only to miscarriage but also to a spectrum of adverse pregnancy outcomes, including premature rupture of membranes (PROM), preterm premature rupture of membranes (PPROM), antepartum hemorrhage (APH), and preterm delivery. Numerous studies have consistently demonstrated this association between first-trimester bleeding and adverse pregnancy outcomes.

In this study, majority (85.5%) of our patients were aged 21-30 years old, followed by (46.5%) under <21 years old. Among all participants 14.5%, 3.5% were aged between 31-40 years & >41 above years old respectively. In the study conducted by Dwivedi S, the majority of participants, accounting for 67.6%, fell within the age group of 21 to 30 years. A smaller proportion, comprising 12.7% of the participants, were aged above 30 years [10]. In this study, 61% of patients were primigravida and 39% were multigravida. The results of our study align closely with findings from similar research conducted by Patel NG *et al.,* where the majority of patients, constituting 66%, were identified as multigravida [11]. Likewise, studies conducted by Patel S *et al.,* and Hasan R *et al.,* reported comparable proportions, with multigravida accounting for 66% and 66.1% of the study populations, respectively [12]. In this study, the incidence of abortion was higher in patients with first trimester bleeding in less than 6 weeks of gestation (69.67%) whereas it was significantly less after 10 weeks of gestation (5.67%). This is in accordance with study conducted by Jasoliya J and Bhatia S, majority (93%) presented at 6 to 12 weeks and < 6 weeks were only 7% [13]. In this study, we found 85% had spotting with abortion rate of 72.5%, whereas 15% had heavy bleeding with an abortion rate of 80%. In the study conducted by Rai P *et al.,* 70% of patients experienced spotting, 20% had moderate bleeding, and 10% had severe bleeding [14]. According to research by Patel NG *et al.,* the majority of patients (68%) experienced spotting, 22% had moderate bleeding, and 10% had severe bleeding [11]. An increased risk of premature birth has been linked to first-trimester bleeding [15]. Early in pregnancy, spontaneous miscarriage may occur due to poor implantation and invasive trophoblasts; however, premature delivery, preterm birth, PPROM, placental ablation, and preeclampsia may occur later in pregnancy. An essential study for determining the origin of bleeding was thought to be an ultrasound examination. According to research by Deutchman *et al.,* and Thorstensen *et al.*, the majority of first-trimester vaginal bleeding occurs in pregnancies.[16,17] In this study, we found 11.25% has PROM and 2.5% had APH. In study conducted by Sarmalkar MS *et al.,* PROM is 3%. In study conducted by Mulik V *et al.,* APH was seen in 6.8% of cases [18]. In this study, we found 80 patients that continued pregnancy in which preterm delivery occurred in 17.5% and full-term delivery occurred in 62.5% of patients. In study conducted by Barik S *et al.,* 65.95% of cases continued pregnancy in which 77.7% delivered full term and 22.3% delivered preterm [19]. In study conducted by Patel S *et al.,* 64% continued pregnancy of which 77.2% delivered full term and 22.8% delivered preterm [12]. In this study, vaginal delivery was carried out in 35 patients and LSCS was carried out in 15 patients. In the study conducted by Kamble PD *et al.,* vaginal delivery accounted for 68.7%, while 31.3% of deliveries were via cesarean section (LSCS) [20]. Similarly, in the study by Patel NG *et al.,* vaginal delivery constituted 59.5% of cases, with LSCS representing 40.5%. The most common indication for LSCS in Patel NG *et al.,*'s study was fetal distress, reported in 60% of cases [11]. Additionally, in the study conducted by Sarmalkar MS *et al.,* the rate of LSCS was 38%, with fetal distress being the most common indication, reported in 17% of cases [16]. In study conducted by Weiss JL *et al.,* and Wijesiriwardana A *et al.,* showed increased prevalence of caesarean section among women with first trimester bleeding [21,22]. In meta-analysis done by Sarastwat L *et al.,* demonstrated that first trimester bleeding has no effect on rout of delivery [23] Saraswat *et al.,* performed a systematic review and demonstrated that first trimester bleeding has no effect on rout of delivery [24]. But some other studies have shown that possibility of caesarean section in women with bleeding is more than others.

Limitations of the study

Our study was limited in scope as it was conducted at a single center, specifically within a single hospital setting, and and had a small sample size. Consequently, the findings derived from our study may not be entirely reflective of the broader population or community at large. The restricted scope and size of our study may constrain the generalizability of the results beyond the specific context in which the research was conducted. Therefore, caution should be exercised when extrapolating these findings to wider populations or making overarching conclusions. Future research endeavors could seek to replicate these findings in diverse settings with larger sample sizes to enhance the robustness and generalizability of the findings.

CONCLUSION AND RECOMMENDATIONS

The study highlights the heightened vulnerability of pregnant women experiencing first-

trimester bleeding, indicating an increased risk for spontaneous pregnancy loss and adverse outcomes. This understanding underscores the importance of obstetricians managing such cases with vigilance during the antepartum period, ensuring timely interventions as necessary. It emphasizes the need for choosing management strategies that offer sensitive and comprehensive care to women, aligning with the overarching goal of promoting the health of both mother and baby. By integrating this knowledge into clinical practice, healthcare providers can effectively address the immediate concerns associated with first-trimester bleeding while prioritizing the long-term well-being of both mother and child.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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