



## Maternal Outcome of Placenta Accreta Spectrum Disorder Patients admitted at Cumilla Medical College Hospital

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### Abstract

**Background:** Placenta Accreta Spectrum Disorder (PAS) is a complex obstetric condition with significant implications for maternal and fetal health. The study aims to provide a comprehensive understanding of the maternal and fetal outcomes associated with PAS in a tertiary care hospital in Bangladesh.

**Material & Methods:** This prospective observational study was conducted at a tertiary care hospital in Bangladesh over 18 months. The study included 60 pregnant women diagnosed with PAS, adhering to specific inclusion and exclusion criteria. Data were collected through structured questionnaires and analyzed using SPSS version 26. **Results:** The majority of participants was aged between 21-30 years (76.67%) and had completed their Higher Secondary Certificate (HSC) (50%). Regular antenatal care was reported by 50% of the participants. Hemorrhage was observed in 21.67% of the cases, with 36.67% requiring blood transfusion. Maternal outcomes were uneventful in 78.33% of the cases, and fetal outcomes resulted in 90% live births. **Conclusions:** The study reveals the complex nature of PAS and its significant impact on maternal and fetal health. Despite the high incidence of hemorrhage and the need for blood transfusion, proactive and multidisciplinary management strategies appear to result in a majority of uneventful maternal outcomes. The findings emphasize the need for comprehensive antenatal care and further research to improve outcomes.

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## INTRODUCTION

Placenta Accreta Spectrum (PAS) disorder is a severe obstetric condition that has been gaining increasing attention due to its rising incidence and significant impact on maternal and neonatal health. The disorder is characterized by the abnormal invasion of the placenta into

the uterine wall, leading to potential complications such as hemorrhage and the need for surgical interventions like hysterectomy.<sup>[1,2]</sup> The condition is categorized into three types based on the depth of placental invasion: accreta, increta, and percreta, each with its own set of challenges and management protocols.<sup>[3]</sup> Globally, the incidence of PAS has been

escalating, largely attributed to the increase in caesarean section rates.<sup>[4,5]</sup> Recent studies indicate that the incidence has risen from 1 in 2500 pregnancies to 1 in 500 pregnancies over the past few decades.<sup>[1]</sup> In Egypt, a study conducted at Minia Maternity University Hospital reported an incidence rate of 0.91%.<sup>[2]</sup> Although data specific to Asia is limited, the increasing trend is a global concern that warrants immediate attention. The exact etiology of PAS remains unclear, but it is primarily associated with defects in the decidua basalis layer of the uterus. The trophoblastic tissue penetrates through this layer into the underlying uterine myometrium, leading to the disorder.<sup>[1]</sup> Several risk factors have been identified for PAS, including maternal age greater than 32 years, a history of multiple caesarean sections ( $\geq 2$ ), multiparity ( $\geq 3$ ), and a previous history of placenta previa.<sup>[6]</sup> The ramifications of PAS on maternal health are notably severe, often necessitating complex and high-risk interventions. One of the most alarming maternal risks associated with PAS is obstetric hemorrhage, a condition that can rapidly escalate into a life-threatening situation.<sup>[7,8,9]</sup> Studies indicate that the average blood loss for mothers with PAS ranges between 3000-5000 mL, a volume that far exceeds the typical blood loss experienced during childbirth.<sup>[1]</sup> This elevated risk of hemorrhage often leads to other cascading complications, such as disseminated intravascular coagulation and multi-organ failure. Consequently, up to 90% of mothers with PAS require blood transfusions, and many also necessitate admission to intensive care units for advanced hemodynamic monitoring and support.<sup>[1]</sup> On the neonatal front, the risks are primarily anchored in iatrogenic

prematurity, a consequence often unavoidable due to the maternal complications. Premature neonates are at an increased risk for respiratory distress syndrome, intraventricular hemorrhage, and long-term neurodevelopmental issues, among other complications.<sup>[1]</sup> The ripple effect of PAS thus extends beyond the immediate perinatal period, potentially leaving lasting impacts on both maternal and neonatal health. Management strategies for PAS have undergone significant evolution over the years, moving away from the more radical approach of peripartum hysterectomy, which, while effective in controlling hemorrhage, leaves women with long-term physical and psychological consequences. Contemporary management strategies have started to lean towards more conservative approaches. These include the intentional retention of the placenta, allowing for a natural resorption over time, and partial myometrial excision, which aims to remove only the affected uterine tissue.<sup>1</sup> Another noteworthy development is the 'Triple P procedure,' a multi-step surgical approach designed to minimize blood loss and preserve fertility.<sup>[1]</sup> In summary, PAS presents a complex clinical challenge with far-reaching implications for both maternal and neonatal health. The disorder's rising incidence makes it an urgent focus for obstetric research. Understanding its underlying etiology, identifying risk factors, and developing effective management strategies are not just academic exercises but are crucial for improving real-world outcomes. The present study aims to contribute to this body of knowledge by providing an in-depth analysis of the maternal outcomes among PAS patients admitted to a tertiary care hospital.

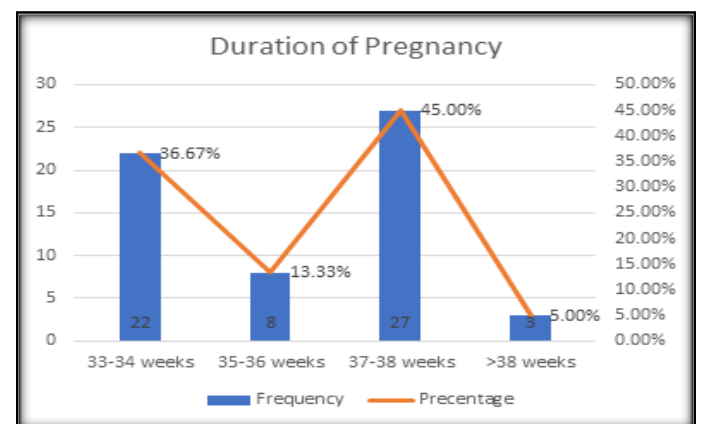
## MATERIAL AND METHODS

This prospective observational study was conducted in the Department of Obstetrics and Gynecology at Cumilla Medical College Hospital (CMCH), a tertiary care center in Bangladesh, over an 18-month period from January 2022 to June 2023. The study population consisted of 60 pregnant women who were admitted to the hospital and diagnosed with Placenta Accreta Spectrum Disorder (PAS) during this timeframe. The inclusion criteria for the study were as follows: 1) patients who were prenatally diagnosed with PAS disorder through ultrasound, with or without the aid of color Doppler study; 2) patients diagnosed intraoperatively with PAS; and 3) patients who were at or beyond 28 weeks of gestation, irrespective of the presence or absence of antepartum hemorrhage (APH). Exclusion criteria included patients who were before 28 weeks of gestation, those who experienced APH but were not diagnosed with PAS, and those who were unwilling to be enrolled in the study. Patients with incomplete medical records or who declined to participate were also excluded. The diagnosis of PAS was confirmed through a combination of ultrasound and magnetic resonance imaging (MRI), and in some instances, the diagnosis was further corroborated intraoperatively. Data were collected using a structured questionnaire designed to capture pertinent variables such as maternal age, parity, the number of previous cesarean sections, and other relevant medical history. Fetal outcomes, including birth weight and Apgar scores, were also recorded. The collected data were subsequently analyzed using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics

were employed to summarize the demographic and clinical characteristics of the study population.

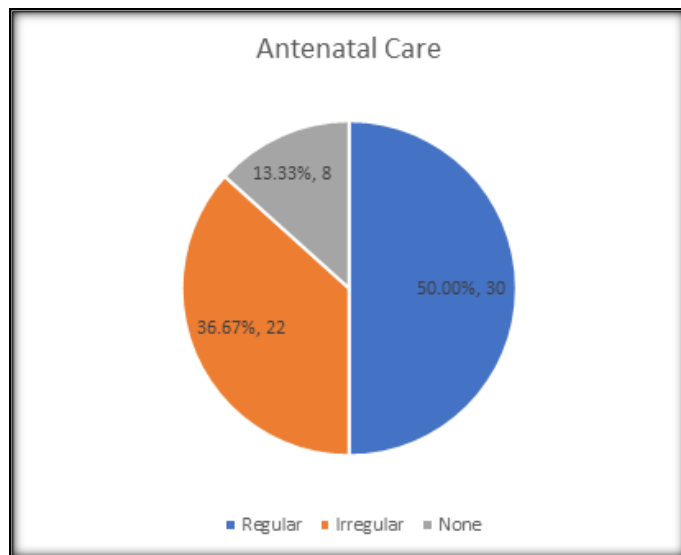
## RESULTS

[Table 1] presents the sociodemographic distribution of the 60 participants in the study. The majority of the participants fell within the age range of 21-30 years, accounting for 76.67% of the total study population. Those aged 30 and above constituted 13.33%, while participants aged 20 or below made up the smallest group at 8.33%. In terms of educational background, half of the participants had completed their Higher Secondary Certificate (HSC), followed by 31.67% who had completed their Secondary School Certificate (SSC), and 18.33% with primary education. The socioeconomic class distribution showed that the largest group belonged to the upper-middle class at 40%, followed by the lower-middle class at 30%, and the lower class at 20%. The upper class constituted the smallest proportion at 10%. Interestingly, the residence type was evenly split between urban and rural areas, each accounting for 50% of the participants.



**Figure 1:** Distribution of participants by week of pregnancy

[Figure 1] illustrates the distribution of participants based on the duration of their pregnancy. The largest group of participants was those in the 37-38 weeks range, making up 45% of the study population. This was followed by those in the 33-34 weeks range, who constituted 36.67% of the participants. Women in the 35-36 weeks range made up a smaller proportion at 13.33%, and those who were beyond 38 weeks of pregnancy were the least represented, accounting for only 5% of the total participants.

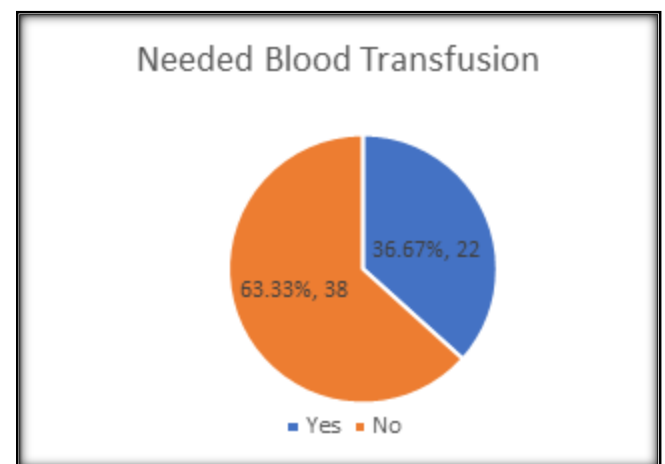


**Figure 2:** Distribution of participants by history of antenatal care

[Figure 2] delineates the distribution of participants based on their history of antenatal care. Exactly half of the participants, or 50%, reported having regular antenatal care visits. Those with irregular antenatal care constituted a significant portion as well, making up 36.67% of the study population. The remaining 13.33% of participants reported having no antenatal care.

[Table 2] outlines the distribution of participants based on their presenting complaints or complications. The most common presenting complication was mild anemia, affecting 33.33% of the study population. This was closely followed by antepartum hemorrhage, which was reported by 31.67% of the participants. Moderate anemia was also a significant concern, affecting 23.33% of the women in the study. Severe anemia was less common but still noteworthy, as it was reported by 10% of the participants. Postpartum hemorrhage was the least common presenting complaint, affecting only 3.33% of the study population.

[Table 3] provides insights into the history of drug usage among the 60 participants in the study. Broad-spectrum antibiotics were the most commonly used drugs, reported by 30% of the study population. This was closely followed by the use of uterotonic drugs, which were taken by 28.33% of the participants. Additionally, 1.67% of participants reported using other drugs.



**Figure 3:** Distribution of mothers by necessity of blood transfusion



[Table 4] focuses on the distribution of participants based on maternal outcomes. The majority of the study population, 78.33%, experienced uneventful maternal outcomes, indicating that despite the complexities associated with Placenta Accreta Spectrum Disorder, a significant proportion of cases were managed without severe complications. However, hemorrhage was a notable concern, affecting 21.67% of the participants.

[Table 5] shows that 90% of pregnancies resulted in live births, indicating generally

favorable fetal outcomes despite the maternal risks associated with Placenta Accreta Spectrum Disorder. However, 10% experienced intrauterine death, highlighting the serious fetal risks that exist with this condition.

[Figure 3] reveals that 36.67% of the mothers required blood transfusions, underscoring the significant risk of hemorrhage in Placenta Accreta Spectrum Disorder. Conversely, 63.33% did not require a transfusion, indicating that a majority of cases were managed without this particular intervention.

**Table 1:** Sociodemographic distribution of the participants (n=60)

Characteristics	Frequency	Percentage
Age		
≤20	5	8.33%
21-30	46	76.67%
>30	8	13.33%
Education		
Primary	11	18.33%
SSC	19	31.67%
HSC	30	50.00%
Socioeconomic Class		
Lower Class	12	20.00%
Lower middle class	18	30.00%
Upper middle class	24	40.00%
Upper class	6	10.00%
Residence Type		
Urban	30	50.00%
Rural	30	50.00%

**Table 2:** Distribution of participants by presenting complaints

Presenting Complications	Frequency	Percentage
Antepartum hemorrhage	19	31.67%
Postpartum hemorrhage	2	3.33%
Mild Anemia	20	33.33%
Moderate Anemia	14	23.33%
Severe Anemia	6	10.00%



**Table 3:** History of drug usage among the participants (N=60)

History of Drugs	Frequency	Percentage
Uterotonic Drugs	17	28.33%
Broad Spectrum Antibiotics	18	30.00%
Other Drugs	1	1.67%

**Table 4:** Distribution of participants by Maternal outcome

Maternal Outcome	Frequency	Percentage
Hemorrhage	13	21.67%
Uneventful	47	78.33%

**Table 5:** Distribution of participants by Fetal outcome

Fetal Outcome	Frequency	Percentage
Live birth	54	90.00%
Intrauterine Death	6	10.00%

## DISCUSSION

The present study aimed to provide a comprehensive understanding of the maternal and fetal outcomes associated with Placenta Accreta Spectrum Disorder (PAS) in a tertiary care hospital in Bangladesh. One of the pivotal findings was the age distribution, with a majority (76.67%) of the participants falling within the 21-30 age range. This aligns with existing literature that also reports a higher incidence of PAS among women in their late twenties to early thirties.<sup>[10]</sup> Education emerged as another significant sociodemographic factor, with 50% of the participants having completed their Higher Secondary Certificate (HSC). While our study did not directly investigate the impact of educational level on PAS outcomes, it is worth noting that higher educational levels have been associated with better pregnancy outcomes in general.<sup>[11]</sup> The study also revealed that 50% of the participants had regular antenatal care, which is crucial given that regular antenatal visits have been shown to improve both maternal and fetal outcomes.<sup>[12]</sup>

However, the necessity for blood transfusion in 36.67% of the cases is a significant concern and is consistent with other studies that highlight the risk of hemorrhage in PAS.<sup>[13]</sup> One of the most salient findings was the maternal outcomes, particularly the incidence of hemorrhage, which affected 21.67% of the participants. This is a critical point of discussion, given that hemorrhage is a leading cause of maternal morbidity and mortality in PAS cases. A study by the American Journal of Obstetrics and Gynecology found that women with PAS are at a significantly higher risk of hemorrhage, requiring rapid intervention often in the form of blood transfusions.<sup>[13]</sup> Our study corroborates these findings, with 36.67% of the participants requiring blood transfusions. This high rate of transfusion is consistent with other studies that have reported transfusion rates ranging from 40% to 90% in PAS cases.<sup>[14]</sup> The necessity for blood transfusion in such a significant proportion of cases underscores the critical nature of this condition and the need for immediate and effective management



strategies. Interestingly, despite the high incidence of hemorrhage and the subsequent need for blood transfusion, 78.33% of the maternal outcomes were uneventful. This is slightly lower than rates reported in other studies, which could be attributed to the proactive management strategies employed at the tertiary care center where the study was conducted. A study published in the Journal of Maternal-Fetal & Neonatal Medicine emphasized the importance of multidisciplinary teams in managing PAS cases and reported improved outcomes in centers that adopted such an approach.<sup>[15]</sup> The lower incidence of adverse maternal outcomes in our study could potentially be attributed to similar proactive and multidisciplinary management strategies. Fetal outcomes were generally favorable, with 90% resulting in live births. However, the 10% rate of intrauterine death is a critical point of concern. While our study did not delve into the specific causes of these adverse fetal outcomes, it is worth noting that similar studies have reported a strong correlation between maternal hemorrhage and adverse fetal outcomes, including intrauterine death.<sup>[16]</sup> In summary, the study provides an in-depth understanding of the maternal and fetal outcomes of PAS, revealing both consistencies and disparities with existing research. The high incidence of hemorrhage and the significant need for blood transfusion highlight the severe risks associated with this condition, necessitating immediate and effective management strategies. The findings underscore the critical need for comprehensive antenatal care, proactive management, and

multidisciplinary approaches to mitigate the risks and improve outcomes in PAS cases.

### Limitations of The Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

### CONCLUSIONS

In conclusion, this study offers valuable insights into the maternal and fetal outcomes associated with Placenta Accreta Spectrum Disorder (PAS) in a tertiary care setting in Bangladesh. The findings underscore the complex nature of this obstetric condition and its significant impact on both maternal and fetal health. Notably, the high incidence of hemorrhage and the substantial need for blood transfusion highlight the critical risks associated with PAS. Despite these challenges, a majority of the maternal outcomes were uneventful, potentially owing to proactive and multidisciplinary management strategies employed at the tertiary care center. The study also emphasizes the importance of regular antenatal care in improving outcomes, as evidenced by the distribution of participants based on their history of antenatal visits. While the study provides a comprehensive understanding of PAS in the specific context of a tertiary care hospital in Bangladesh, it also reveals the need for further research to explore the underlying factors contributing to both favorable and adverse outcomes. Such research could inform targeted interventions and management protocols to mitigate the risks and improve outcomes for both mothers and neonates affected by this complex condition.



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