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**Original Research Article**

# Early Versus Late Discharge in Postpartum Care: Outcomes after Normal Delivery

Tahmina Begum Tuhin[1*], Gulshan Ara[2], Sadia Afrin[3], Monowara Begum[4], Ismat Ara[5]

[1]Associate Consultant, Department of Gynaecology and Obstetrics, Evercare Hospital, Dhaka, Bangladesh
[2]Senior Consultant and Coordinator, Department of Gynaecology and Obstetrics, Evercare Hospital, Dhaka, Bangladesh
[3]Senior Specialist, Department of Gynaecology and Obstetrics, Evercare Hospital, Dhaka, Bangladesh
[4]Senior Consultant, Department of Gynaecology and Obstetrics, Evercare Hospital, Dhaka, Bangladesh
[5]Specialist, Department of Gynaecology and Obstetrics, Evercare Hospital, Dhaka, Bangladesh

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***Corresponding author:** Tahmina Begum Tuhin
Associate Consultant, Department of Gynaecology and Obstetrics, Evercare Hospital, Dhaka, Bangladesh

## Abstract

***Introduction:*** The optimal timing for postpartum discharge remains a subject of debate, with varying recommendations and practices globally. This study aims to compare the outcomes of early versus late discharge in postpartum care following normal delivery. ***Methods:*** This randomized controlled trial was conducted at the Department of Gynaecology and Obstetrics, Institute of Child and Maternal Health, Matuail, Dhaka, Bangladesh, from March 2011 to August 2011. 200 patients who underwent normal vaginal delivery were randomized into early (<24 hours) and late (>24 hours) discharge groups. Baseline characteristics, regularity of antenatal care visits, clinical examination findings at discharge and 7-day follow-up, and postpartum complaints were recorded and analyzed. ***Result:*** In our study of 200 participants, the early discharge group (n=100) and late discharge group (n=100) showed comparable baseline characteristics. Age, residence, socioeconomic status, educational status, and gestational age were similar across groups. Antenatal care regularity showed no significant difference with a p-value of 0.75. Clinical examination findings at discharge and the 7-day follow-up revealed no statistically significant differences in maternal and newborn health indicators: anemia (early: 26, late: 28), edema (early: 15, late: 12), minor breast problems (early: 8, late: 6), jaundice (early: 15, late: 12), dehydration (early: 12, late: 9), excessive crying (early: 26, late: 21), and complications of the umbilical stump (early: 7, late: 11). Postpartum complaints such as excessive vaginal bleeding (early: 5, late: 4), fever (early: 8, late: 6), foul-smelling lochia (early: 6, late: 8), feelings of depression (early: 16, late: 14), breast engorgement (early: 26, late: 22), and feeding difficulty (early: 32, late: 28) also showed no significant differences. A substantial number of mothers in both groups preferred the same or a shorter duration of hospital stay for their next delivery (shorter duration preference: early: 46, late: 39). ***Conclusion:*** The study concludes that both early and late discharge protocols can be viable options in postpartum care after normal delivery, without significant differences in maternal and newborn health outcomes. The findings support the implementation of flexible discharge policies, tailored to individual needs and preferences, in postpartum care.

**Keywords:** Postpartum care, Early discharge, Late discharge, Maternal health, Newborn health.



## INTRODUCTION

Postpartum care is a critical aspect of maternal and neonatal health, encompassing various practices aimed at ensuring the well-being of the mother and newborn following childbirth. This period is crucial for significant physical and emotional adjustments. The practices within postpartum care, while aimed at supporting health and recovery, show considerable variability across different cultural and healthcare contexts [1]. The standard duration of hospital stay after normal delivery varies widely. This variation in postpartum care practices, including the length of hospital stay, reflects diverse perspectives influenced by healthcare resources, cultural norms, and economic considerations. The decision on the timing of discharge post-delivery carries implications for the health and well-being of the mother and child, with practices varying significantly across different regions and healthcare systems [2–5]. Determining the optimal

timing for postpartum discharge is crucial. The decision-making process is influenced by various factors, including maternal and neonatal health, healthcare policies, and individual patient needs. Early discharge may offer benefits such as reduced hospital-associated stress and enhanced family bonding. However, it also poses risks, particularly if post-discharge support is inadequate or if there are underlying health concerns [6,7]. One noteworthy problem is the lack of agreement regarding the timing of postpartum discharge. Different recommendations are made; some support an earlier hospital discharge, while others call for a longer hospital stay. This discrepancy may cause uncertainty in the treatment process, which could affect patient outcomes. The varying risks and benefits of early versus late discharge further complicate the discussion. Although early release raises worries about the possibility of unnoticed problems and insufficient support, it may also encourage mother autonomy and comfort. Longer hospital stays, on the other hand, can be more expensive and may raise the risk of hospital-acquired illnesses, but they also allow for more thorough surveillance [8,9]. Previous investigations have examined a range of topics related to the timing and results of postpartum discharge; these studies have not only highlighted knowledge gaps but also offered insightful information. These studies have demonstrated the influence of discharge timing on the frequency of complications-related readmissions, breastfeeding behaviors, and maternal mental health. Nevertheless, they frequently have methodological or scope constraints, and they might not be generally relevant to all groups [10,11]. The literature exposes gaps and discrepancies, especially in the context of various healthcare systems and cultural customs. Further study is needed to understand the broader impact of discharge timing on maternal and newborn health, as well as to produce adaptable guidelines for varied contexts [12,13]. Our research aims to address the lack of clarity and consensus on the optimal timing for postpartum discharge and its impact on maternal and neonatal outcomes. This issue is significant for healthcare providers, patients, and policymakers, affecting the quality of care, resource allocation, and health outcomes. Our study's purpose is to analyze the effects of early versus late postpartum discharge on a range of outcomes, including physical health, psychological well-being, and healthcare costs, to contribute to evidence-based guidelines for postpartum care.

## METHODS

This randomized controlled trial was conducted at the Department of Gynaecology and Obstetrics, Institute of Child and Maternal Health (ICMH), Matuail, Dhaka, Bangladesh. The study duration was from March 2011 to August 2011. The study population included two hundred patients who underwent normal vaginal delivery at the department, selected based on specific inclusion and exclusion criteria. Inclusion criteria for mothers involved uncomplicated pregnancy, normal vaginal delivery, ensured perineal care, mobility with adequate pain control, adequate bladder and bowel function, demonstrated ability to feed the baby properly, provision of advice regarding contraception, and the mother's awareness and ability to access hospital services in case of an emergency. Newborn inclusion criteria were full-term birth (≥37 weeks) with appropriate size for gestational age, normal cardio-respiratory adaptation to extra-uterine life, absence of sepsis, stable temperature, no apparent feeding problems, having urinated and passed meconium, and a dry and healthy umbilical cord stump with no bleeding. Exclusion criteria for maternal participants included instrumental vaginal delivery, cesarean delivery, premature rupture of membranes, gestational age less than 37 weeks, any obstetric complication like pre-eclampsia or eclampsia, any systemic disease, any puerperal complication, or coagulation abnormalities. For newborns, exclusion criteria encompassed birth asphyxia, low birth weight (<2.5 kg), and any complications such as jaundice, sepsis, acute respiratory infection, or birth defects. Participants were randomized into two groups: those discharged early (<24 hours) and those discharged late (>24 hours) from the hospital. All participants were counseled to return for follow-up within 7-10 days of the puerperium, and contact addresses and mobile numbers were recorded to ensure follow-up. Informed written consent was obtained from all participants, and strict confidentiality was maintained regarding the data collected. Data were processed and analyzed using the Statistical Package for Social Sciences (SPSS) software. The test statistics used for the analysis of data included the T-test and Chi-square Test, along with Fisher's Exact Test for comparison of data presented in a categorical scale. For any analytical test, a p-value of $< 0.05$ was considered statistically significant. This methodological approach aimed to provide a robust and comprehensive evaluation of the outcomes associated with early and late postpartum discharge.

## RESULTS

**Table 1: Distribution of study population by baseline characteristics (N=200)**

| Variable | Early Discharge | Late Discharge |
|---|---|---|
| **Age** | | |
| ≤20 | 46 | 42 |
| 21-25 | 27 | 36 |
| 26-30 | 15 | 17 |
| 31-35 | 12 | 5 |
| Mean±SD | 23.26±4.93 | 22.73±3.61 |

| Variable | Early Discharge | Late Discharge |
|---|---|---|
| **Residence** | | |
| Rural | 64 | 68 |
| Urban | 36 | 32 |
| **Socioeconomic Status** | | |
| Poor | 42 | 37 |
| Middle Class | 46 | 52 |
| Upper Class | 12 | 11 |
| **Educational Status** | | |
| Illiterate | 15 | 17 |
| Primary | 41 | 39 |
| SSC | 32 | 28 |
| HSC or more | 12 | 16 |
| **Gestational Age** | | |
| 37-40 weeks | 72 | 76 |
| 40> weeks | 28 | 24 |

Age distribution showed that in the early discharge group, there were 46 participants aged ≤20 years and 27 aged 21-25 years, compared to 42 and 36 participants, respectively, in the late discharge group. The mean age was 23.26±4.93 years in the early discharge group and 22.73±3.61 years in the late discharge group. Residential background indicated that 64 participants in the early discharge group and 68 in the late discharge group were from rural areas. Urban residents accounted for 36 participants in the early discharge group and 32 in the late discharge group. In terms of socioeconomic status, the early discharge group comprised 42 participants identified as poor, 46 as middle class, and 12 as upper class. The late discharge group had 37 poor, 52 middle class, and 11 upper class participants. Educational status varied, with the early discharge group having 15 illiterate participants, 41 with primary education, 32 with SSC, and 12 with HSC or higher. In the late discharge group, there were 17 illiterate, 39 with primary education, 28 with SSC, and 16 with HSC or higher. For gestational age, the majority in both groups were within 37-40 weeks (72 in early discharge and 76 in late discharge). Participants with gestational ages over 40 weeks were 28 in the early discharge group and 24 in the late discharge group.

**Table 2: Distribution of study population according to their status of availing antenatal care during the pregnancy**

| ANC | Early Discharge (n=100) | Late Discharge (n=100) | p-value |
|---|---|---|---|
| Regular | 71 | 69 | 0.75 |
| Irregular | 29 | 31 | |

In the early discharge group, 71 participants reported having regular ANC visits, while 29 had irregular ANC visits. Similarly, in the late discharge group, 69 participants attended ANC regularly, and 31 did so irregularly. The comparison between the two groups in terms of regularity of ANC visits yielded a p-value of 0.75, indicating no statistically significant difference between the early and late discharge groups in terms of ANC attendance regularity.

**Table 3: Distribution of study population according to the clinical examination findings at discharge**

| Clinical Examination Findings | Early Discharge (n=100) | Late Discharge (n=100) | p-value |
|---|---|---|---|
| **Maternal** | | | |
| Anemia | 26 | 28 | 0.4 |
| Edema | 15 | 12 | 0.73 |
| Minor breast Problems | 8 | 6 | 0.84 |
| **Newborn** | | | |
| Jaundice | 15 | 12 | 0.67 |
| Dehydration | 12 | 9 | 0.64 |
| Excessive cry | 26 | 21 | 0.5 |
| Complication of Umbilical stump | 7 | 11 | 0.45 |

Among maternal clinical findings, anemia was present in 26 participants in the early discharge group and 28 in the late discharge group, with a p-value of 0.4, suggesting no significant difference between the groups. Edema was reported in 15 participants in the early discharge group and 12 in the late discharge group, resulting in a p-value of 0.73. Minor breast problems were observed in 8 participants in the early discharge

group and 6 in the late discharge group, with a p-value of 0.84. Regarding newborn clinical findings, jaundice was noted in 15 newborns in the early discharge group and 12 in the late discharge group, with a p-value of 0.67. Dehydration was observed in 12 newborns in the early discharge group and 9 in the late discharge group, yielding a p-value of 0.64. Excessive crying was reported for 26 newborns in the early discharge group and 21 in the late discharge group, with a p-value of 0.5. Complications of the umbilical stump were found in 7 newborns in the early discharge group and 11 in the late discharge group, resulting in a p-value of 0.45.

**Table 4: Distribution of study population according to the clinical examination findings at follow-up after 7 days**

| Clinical Examination Findings | Early Discharge (n=100) | Late Discharge (n=100) | p-value |
|---|---|---|---|
| **Maternal** | | | |
| Anemia | 8 | 7 | 0.52 |
| Edema | 6 | 4 | 0.26 |
| Minor breast Problems | 9 | 7 | 0.79 |
| **Newborn** | | | |
| Jaundice | 6 | 4 | 0.47 |
| Dehydration | 7 | 6 | 0.77 |
| Excessive cry | 20 | 18 | 0.85 |
| Complication of Umbilical stump | 5 | 8 | 0.56 |
| Readmission | 3 | 2 | 0.54 |

For maternal health, anemia was observed in 8 participants in the early discharge group and 7 in the late discharge group (p-value: 0.52). Edema was reported in 6 participants in the early discharge group compared to 4 in the late discharge group (p-value: 0.26). Minor breast problems were noted in 9 participants in the early discharge group and 7 in the late discharge group (p-value: 0.79). Regarding newborn health, jaundice was present in 6 newborns in the early discharge group and 4 in the late discharge group (p-value: 0.47). Dehydration was observed in 7 newborns in the early discharge group and 6 in the late discharge group (p-value: 0.77). Excessive crying was reported for 20 newborns in the early discharge group and 18 in the late discharge group (p-value: 0.85). Complications of the umbilical stump were found in 5 newborns in the early discharge group and 8 in the late discharge group (p-value: 0.56). Readmission rates were 3 in the early discharge group and 2 in the late discharge group (p-value: 0.54).

**Table 5: Distribution of study population according to complaints at follow-up after 7 days**

| Complains | Early Discharge (n=100) | Late Discharge (n=100) | p-value |
|---|---|---|---|
| Excessive vaginal bleeding | 5 | 4 | 0.49 |
| Fever | 8 | 6 | 0.82 |
| Fowl smelling lochia | 6 | 8 | 0.62 |
| Feeling of depression | 16 | 14 | 0.28 |
| Breast engorgement | 26 | 22 | 0.5 |
| Feeding Difficulty | 32 | 28 | 0.9 |

Complaints of excessive vaginal bleeding were reported by 5 participants in the early discharge group and 4 in the late discharge group, with a p-value of 0.49. Fever was reported by 8 participants in the early discharge group and 6 in the late discharge group, resulting in a p-value of 0.82. Foul-smelling lochia was noted by 6 participants in the early discharge group and 8 in the late discharge group, with a p-value of 0.62. Feelings of depression were reported by 16 participants in the early discharge group and 14 in the late discharge group, with a p-value of 0.28. Breast engorgement was experienced by 26 participants in the early discharge group and 22 in the late discharge group, resulting in a p-value of 0.5. Feeding difficulty was reported by 32 participants in the early discharge group and 28 in the late discharge group, with a p-value of 0.9.

**Table 6: Distribution of mothers according to preference for duration of hospital stay at next delivery**

| Preference for next delivery | Early Discharge (n=100) | Late Discharge (n=100) |
|---|---|---|
| Shorter Duration | 46 | 39 |
| Same | 40 | 43 |
| Longer Duration | 14 | 18 |

In the early discharge group, 46 mothers expressed a preference for a shorter duration of hospital stay for their next delivery, while 40 preferred the same duration, and 14 preferred a longer duration. In contrast,

in the late discharge group, 39 mothers preferred a shorter duration, 43 preferred the same duration, and 18 preferred a longer duration.

## DISCUSSION

Our study demonstrated no significant differences in baseline characteristics between the early and late discharge groups, encompassing age, residence, socioeconomic status, educational status, and gestational age. This parity in baseline characteristics is pivotal, as it ensures the comparability of the groups, a factor also underscored in the study by Madden *et al.*, (2002), which evaluated the effects of early-discharge protocols [14]. The regularity of antenatal care visits, showing no significant difference (p-value: 0.75) between the groups in our study, aligns with the findings of Lieu *et al.*, (2000), who reported uniform antenatal care irrespective of discharge timing [15]. This consistency suggests that the timing of postpartum discharge may not significantly impact the quality of antenatal care received. At discharge, our study found no significant differences in maternal and newborn clinical examination findings, including anemia, edema, minor breast problems, jaundice, dehydration, excessive crying, and complications of the umbilical stump. Similarly, at the 7-day follow-up, there were no significant differences in these health indicators, including readmission rates. These findings are in line with Sword *et al.*, (2001), who found no association between the length of postpartum hospital stay and newborn readmission rates [16]. The absence of significant differences in postpartum complaints, such as excessive vaginal bleeding, fever, foul-smelling lochia, feelings of depression, breast engorgement, and feeding difficulty, resonates with the findings of Yonemoto *et al.*, (2021), suggesting that early discharge may not adversely affect immediate postpartum health outcomes [17]. A significant number of mothers in both groups expressed a preference for either the same or a shorter duration of hospital stay for their next delivery. This finding suggests overall satisfaction with their hospital stay duration, whether early or late discharge. This preference aligns with the study by Oben *et al.*, (2022), which explored maternal readmission risks associated with the timing of discharge after cesarean delivery [18]. The study by Elghazal *et al.*, (2020) also supports this finding, as it highlighted that early discharge did not significantly increase postpartum complications [19]. The preference for a shorter or similar duration of hospital stay in future deliveries could be influenced by positive experiences or the perception of adequate care received during the initial postpartum period. Our study's findings on the lack of significant differences in clinical outcomes between early and late discharge groups are further supported by the study of Xue *et al.*, (2023), which investigated postpartum hypertension management and its implications for hospital stay duration [20]. The study by Jain *et al.*, (2023) on postpartum acute kidney injury provides context for understanding serious postpartum complications and their influence on preferred hospital stay duration [21]. The absence of significant differences in maternal and newborn health outcomes in our study is echoed in the research by Madden *et al.*, (2002), which also did not find adverse effects on newborn health following early discharge [14]. The study by Lieu *et al.*, (2000) supports our findings, suggesting that the timing of postpartum discharge may not significantly impact maternal and newborn health outcomes [15]. The similarities observed between our study and others in the field suggest that early discharge, under appropriate conditions, may not adversely affect maternal and newborn health outcomes. This has important implications for healthcare policies and practices, as it supports the viability of flexible discharge policies tailored to individual needs and preferences. However, it is crucial to consider the potential for dissimilarities in different healthcare settings or populations. Factors such as healthcare infrastructure, patient demographics, and cultural practices can influence postpartum care outcomes and should be considered when generalizing these findings.

### *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.

## CONCLUSION

In conclusion, this research contributes valuable insights into the ongoing debate regarding the optimal timing of postpartum discharge. Our findings indicate that there are no significant differences in maternal and newborn health outcomes between early and late discharge groups. This includes key aspects such as baseline characteristics, regularity of antenatal care, clinical examination findings at discharge and follow-up, as well as postpartum complaints. Additionally, a significant proportion of mothers in both groups expressed a preference for either the same or a shorter duration of hospital stay for their next delivery, suggesting overall satisfaction with their hospital stay duration. These results underscore the potential for flexible discharge policies in postpartum care, tailored to individual needs and preferences, without compromising the health and well-being of mothers and newborns. This study thereby supports the viability of both early and late discharge protocols as safe and effective options in postpartum care, provided that they are implemented with careful consideration of individual clinical scenarios.

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

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