

Observing the Maternal Complications and Fetal Morbidity and Mortality of Preterm Birth

Dr. Khadiza Begum^{1*}, Dr. Umme Rehnuma Tarannum², Dr. Priyanka Waddedar³, Dr. Sulekha Bhattacharjee³

¹MBBS, FCPS, Junior Consultant, Upazilla Health Complex, Sitakunda, Chattogram, Bangladesh

²MBBS, MCPS, FCPS, Junior Consultant, 31 Beded Hospital, Dohazari Chattogram, Bangladesh

³MBBS, FCPS, Medical Officer, GOPD, Chattogram Medical College Hospital, Chattogram, Bangladesh

DOI: [10.36348/sijog.2022.v05i09.003](https://doi.org/10.36348/sijog.2022.v05i09.003)

| Received: 13.08.2022 | Accepted: 08.09.2022 | Published: 28.09.2022

*Corresponding author: Dr. Khadiza Begum

MBBS, FCPS, Junior Consultant, Upazilla Health Complex, Sitakunda, Chattogram, Bangladesh

Abstract

Introduction: Preterm labor is one of the clinical events that can change a normal pregnancy into a high-risk one for both the mother and the fetus. Preterm labors are thought to be caused by a combination of factors, including decidual bleeding and uterine deformation. **Aim of the Study:** The aim of the study was to observe the maternal complications of preterm birth. **Methods:** This cross-sectional study was conducted at the Department of Obstetrics and Gynecology, Chittagong Medical College Hospital, Bangladesh. The study duration was 6 months, from January to June of 2015. Purposive sampling method was used to select a total of 100 women from those admitted at the study hospital for deliveries according to inclusion and exclusion criteria. **Result:** Most of the patients were from the third decade of life. Majority (61.0%) patients had multi para. Majority (39.0%) patients were gestational age 34 weeks. More than half (53.0%) had infection, among which urinary tract infection were the most common. Neonatal death was 61%, and most common cause of neonatal death was septicemia, followed by respiratory distress syndrome. **Conclusion:** Most of the patients were in 3rd decade of life, and did not receive regular antenatal check-up. Infection and pre-eclampsia were the most common maternal complications, while respiratory distress syndrome was the most common perinatal morbidity. Septicemia and respiratory distress syndrome were the most common cause of perinatal death.

Keywords: Pregnancy, Maternal, Perinatal, Neonatal, Pre-term.

Copyright © 2022 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Premature delivery is a major cause of perinatal death and long-term impairment [1]. It is one of the clinical events that can change a normal pregnancy into a high-risk one for both the mother and the fetus. Preterm labor is defined as labor that begins before 37 full weeks (259 days) from the first day of the previous menstrual cycle. It is distinguished by cervical effacement and/or dilatation, as well as increased uterine irritability prior to 37 weeks of gestation [2]. The probability of a negative result is inversely related to gestational age and neonatal weight at birth. Preterm birth occurs in 5% to 10% of all pregnancies and is the leading cause of perinatal morbidity and death worldwide [3]. To successfully reduce neonatal morbidity and death associated with prematurity, effective risk identification and behavioral change programs for preterm labor prevention may be required.

In turn, this necessitates a better knowledge of the psychological risk factor, etiology, and processes of preterm labor and delivery. Preterm labors are thought to be caused by a combination of factors, including decidual bleeding, cervical incompetence, uterine deformation, cervical inflammation, maternal illness, hormonal shifts, drug addiction, and even excessive smoking [4]. Although it is difficult to anticipate preterm birth, a number of maternal and obstetric factors are known to increase the risk, probably through one of these pathways. Finally, the fetus is involved in the start of labor. In a nutshell, the fetus identifies a hostile intrauterine environment and induces labor by precocious fetal endocrine activity, uterine excess distention (placental abruption), decidual hemorrhage, and intrauterine infection/inflammation. Risk factors for preterm birth include demographic characteristics, behavioral factors and other aspects of obstetric history such as previous preterm birth. Consumption of

tobacco, cocaine and alcohol during pregnancy increase the chances of preterm delivery [5]. Preterm birth is a serious problem in modern obstetrics because of the technique of delivery [6]. The mode of delivery is determined by obstetric indications, the severity of maternal disorders, and the hospital's facilities. The mode of delivery recommended for preterm birth has remained a contentious issue that has yet to be resolved. Some research found that caesarean delivery has a considerable positive effect on infant outcomes, such as low mortality and psychomotor development [7], while the most common cause of complications during caesarean section were hemorrhage and infectious morbidity. Preterm birth is the most serious problem in current obstetric procedures, and it is the primary cause of 24 percent of infant deaths, according to the World Health Organization. Preterm birth rates are comparable over the world, ranging from 7 to 16 percent [8]. Bangladesh is one of the developing countries where preterm birth is considered a health hazard for both the mother and the child. Most pregnant women in our country are in poor health and face stressful living situations such as domestic abuse, food insecurity, and the home environment. They are also prone to infection, making them vulnerable to a variety of morbidities and even fatality. The identification of vulnerable women will aid in the development of a strategy for better prenatal, antenatal, and intranatal care, which will aid in the early detection and management of preterm delivery, as well as the reduction of perinatal morbidity and mortality, as well as maternal complications.

OBJECTIVE

General Objective

- To observe the maternal complications of preterm birth.

Specific Objectives

- To observe the fetal morbidity of preterm birth.
- To observe the fetal mortality of preterm birth.

METHODS

This cross-sectional study was conducted at the Department of Obstetrics and Gynecology, Chittagong Medical College Hospital, Bangladesh. The study duration was 6 months, from January to June of 2015. Purposive sampling method was used to select a total of 100 women from those admitted at the study hospital for deliveries according to inclusion and exclusion criteria. Informed verbal consent was obtained from the participants prior to collecting data. Ethical approval was also obtained from the ethical review committee of the study hospital. Data was collected by interview, physical & lab examination using a structured questionnaire containing all the variables of interest. A pre-designed questionnaire was used for data collection. Statistical analyses were carried out by using the Statistical Package for Social sciences version 16.0 for Windows (SPSS 16).

Inclusion Criteria

- Delivered at Gestational age of 32-37 weeks.
- Patients who had given consent to participate in the study.

Exclusion Criteria

- Induced preterm labour in any cases like eclampsia, APH.
- Preterm labour with intra uterine foetal death.
- Multiple births (twins, triplets).
- Gestational age of <32 weeks.
- Unable to answer the criteria question.
- Exclude those affected with other chronic diseases etc.

RESULTS

Table 1: Age distribution of the participants (n=100)

Age	N	%
≤20	33	33.00%
21-30	61	61.00%
>30	6	6.00%
Mean ± SD	23.6 ± 4.4	
Range	18-35	

It was observed that majority (61.0%) patients belonged to the age group of 21-30 years. The mean age was found to be 23.6 ± 4.4 years with age range from 18 to 35 years.

Table 2: Distribution of the participants by gestational age (n=100)

Gestational Age	N	%
32	12	12.00%
33	20	20.00%
34	39	39.00%
35	26	26.00%
36	3	3.00%
Mean ± SD	33.9 ± 1.0	

Majority (39.0%) of patients were from the gestational age of 34 weeks. The mean gestational age was found to be 33.9 ± 1.0 weeks with range from 32 to 36 weeks.

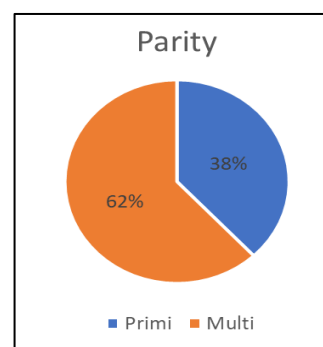


Figure 1: Parity distribution of the participants (n=100)

For 38% of the participants, this was their first child birth, while the remaining 62% were multipara.

Table 3: Antenatal check-up history of the participants (n=100)

Antenatal Check Up	N	%
Regular	56	56.00%
Irregular	41	41.00%
Not Received	3	3.00%

Regular antenatal check-up was observed in 56% of the participants, while 41% were irregular in

regards to check up. The remaining 3% did not receive any form of check-up.

Table 4: Distribution of the participants by maternal complication (n=100)

Maternal Complications	N	%
Infection	53	53.00%
UTI	30	30.00%
Bacterial Vaginosis	21	21.00%
Diabetes Mellitus	8	8.00%
Pre-Eclampsia	17	17.00%
Multiple Pregnancy	9	9.00%
Gestational Hypertension	9	9.00%
Heart Disease	3	3.00%
Congenital Malformation of Uterus	2	2.00%
Thyroid Disease	1	1.00%
Smoking Habit	8	8.00%

Infection was the most prevalent maternal complication, present in 53% of the participants. Urinary tract infection (UTI) had the second highest prevalence at 30%, and 21% had bacterial vaginosis. 17% had pre-eclampsia. Multiple pregnancies, diabetes, hypertension were also among the other complications.

Table 5: Distribution of participants by mode of delivery (n=100)

Mode of Delivery	N	%
Normal Vaginal Delivery	51	51.00%
Caesarean Section	49	49.00%

51% of the participants had a normal vaginal delivery, while 49% had undergone caesarean section.

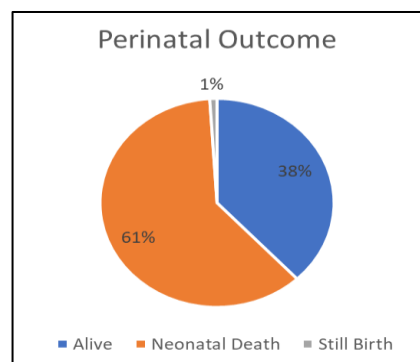


Figure 2: Perinatal outcome of the participants (n=100)

Only 38% of the participants were alive at the end of the study. 1 participant had given birth to a stillborn child, while 61% of the participants faced neonatal death for various causes.

Table 6: Distribution of neonates by perinatal complication (n=99)

Perinatal Complication	N	%
Respiratory Distress Syndrome	35	35.35%
Sepsis	33	33.33%
Meconium Aspiration Syndrome	10	10.10%
Jaundice	5	5.05%
Birth Asphyxia	3	3.03%
No Complication	13	13.13%

Among the 99 neonates born alive at the present study, 35.35% had respiratory distress syndrome, 33.33% had sepsis, 10.10% had meconium

aspiration syndrome, 5.05% had jaundice and 3.03% had birth asphyxia. 13.13% of the neonates had no complications

Table 7: Distribution of neonates by cause of death (n=61)

Cause of Early Neonatal Death	N	%
Septicemia	30	49.18%
Respiratory distress syndrome	19	31.15%
Meconium aspiration	7	11.48%
DIC	3	4.92%
Birth asphyxia	2	3.28%

Among the 61 neonatal deaths, 49.18% had septicemia, 31.15% had respiratory distress syndrome, 11.48% had meconium aspiration, 4.92% had disseminated intravascular coagulation (DIC), and 3.28% had birth asphyxia as the primary cause of death.

DISCUSSION

Preterm birth is the most serious issue in modern obstetric techniques, accounting for 24 percent of infant mortality, according to the World Health Organization. Preterm birth rates range from 7 to 16 percent and are comparable over the world [8]. Maternal age of less than 17 years or greater than 35 years, low socioeconomic position, and low birth weight are all risk factors for preterm delivery. Domestic abuse, close family death, insecurities over food, home or spouse, work-house environment, and features of obstetric history such as previous preterm birth can all be connected with preterm delivery and birth. In our nation, the majority of pregnant women has poor health and is subjected to stressful living conditions such as domestic abuse, food insecurity, and a hostile home environment. They are also prone to infection, making them vulnerable to a variety of morbidities, including death. The identification of the vulnerable group of women will aid in the development of a strategy for better prenatal, antenatal, and intranatal care, which will aid in the early detection and management of preterm delivery, as well as the reduction of perinatal morbidity and mortality and maternal complications. The present study was carried out with the aim of observing maternal complications in preterm birth. In this present study it was observed that majority (61.0%) of patients belonged to the age group of 21-30 years and the mean age was found to be 23.6 ± 4.4 years with age range of 18 to 35 years. This mean age was similar to the findings of few other studies [9, 10]. Another study by Al-Riyami *et al.*, showed higher median age of 30 years, with age of the participants ranging from 18-42 years [11]. This higher median might be due to geographical differences, ethnic variety and higher life expectancy. Nearly $2/3^{\text{rd}}$ of the present study participants were multipara, or had given birth at least once before. For the remaining 38% of the participants, this was their first pregnancy. This high prevalence of multipara women in the present study was similar to the findings of other Bangladeshi studies [12, 13]. This suggests the possibility of preterm birth being more common among multipara women. In this present study it was observed that 39.0% patients were gestational age of 34 weeks. The mean gestational age

was found 33.9 ± 1.0 weeks with range from 32 to 36 weeks. Other similar studies had participant from much earlier gestational weeks, starting from 25 weeks [9, 14]. Sonkusare *et al.*, had participants ranging from 30 to 35 gestational weeks, which was close to the range of our studies [10]. Regular antenatal check-up was observed in 56% of the participants, while 41% were irregular in regards to check up. The remaining 3% did not receive any form of check-up. A study by Arafa *et al.*, showed lack of early neonatal care significantly associated with neonatal outcome [15]. Over half (53%) of the participants had some form of infection, while urinary tract infection was observed in 30% of the participants, and bacterial vaginosis in 21%. Pre-eclampsia, multiple previous pregnancies, hypertension, and diabetes were among some of the other maternal complications. Smoking habit was identified as a complication in 8% of the participants. Mode of delivery is one of major concern in modern obstetrics in preterm birth. Mode of delivery depends on obstetric indications, severity of maternal diseases and facility of hospital. In the present study, over half (51%) had normal vaginal delivery, while 49% had caesarean section. Ghi *et al.*, mentioned in their study that cesarean delivery is associated with more respiratory distress syndrome, highlighting the uncertainty of the premise that cesarean deliveries provide a benefit for all preterm neonates [16]. Cesarean deliveries are associated with an increase in short and long-term risks for the mother, including infection, hemorrhage, and future surgical complications resulting from scarring [17, 18]. While a possible positive effect of caesarean delivery exists for the fetus, the maternal morbidity is increased following caesarean delivery. The most common causes for such cases were hemorrhage and infectious morbidity [19]. Perinatal outcome showed that 1 neonate had still birth, 61 neonates had neonatal death, and only 38% were alive while they were released from the hospital. Perinatal death was really high in our study, compared to the study by Ghi *et al.*, where perinatal death occurred in 9.1% of the participants [16]. While observing the perinatal complications, 35.35% had respiratory distress syndrome, 33.33% had sepsis, 10.10% had meconium aspiration syndrome, 5.05% had jaundice and 3.03% had birth asphyxia. Only 13.13% of the neonates had no perinatal complications. Among the 61 neonates who died during hospital stay, primary cause of death was septicemia in 49.18%, respiratory distress syndrome in 31.15%, meconium aspiration in 11.48%, disseminated intravascular coagulation in 4.92% and birth asphyxia in 3.28% of the neonates. Most common cause of

perinatal death was septicemia, followed by respiratory distress syndrome.

CONCLUSION

Most of the patients were in 3rd decade of life, and did not receive regular antenatal check-up. Infection and pre-eclampsia were the most common maternal complications, while respiratory distress syndrome was the most common perinatal morbidity. Septicemia and respiratory distress syndrome were the most common cause of perinatal death.

FUNDING

No funding sources.

CONFLICT OF INTEREST

None declared.

ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee.

RECOMMENDATION

To prevent preterm labour following measures are recommended:

- Improvement of the educational status of the mother.
- Ensuring regular antenatal check-up.
- Developing awareness of pregnant mother who are high risk for preterm labour.

REFERENCES

1. ACOG practice bulletin. (2003). Management of preterm labor. *Int J Gynaecol Obstet*, 82(1), 127-135.
2. Beck, S., Wojdyla, D., Say, L., Betran, A. P., Merialdi, M., Requejo, J. H., ... & Van Look, P. F. (2010). The worldwide incidence of preterm birth: a systematic review of maternal mortality and morbidity. *Bulletin of the world health organization*, 88, 31-38.
3. Goldenberg, R. L., Culhane, J. F., Iams, J. D., & Romero, R. (2008). Epidemiology and causes of preterm birth. *The lancet*, 371(9606), 75-84.
4. Smith, G. C., Pell, J. P., & Dobbie, R. (2003). Interpregnancy interval and risk of preterm birth and neonatal death: retrospective cohort study. *Bmj*, 327(7410), 313.
5. Ananth, C. V., Ananth, C. V., & Vintzileos, A. M. (2006). Epidemiology of preterm birth and its clinical subtypes. *The Journal of Maternal-Fetal & Neonatal Medicine*, 19(12), 773-782.
6. Alan, H., & Lauren, N. (2003). Current obstetric & gynecologic diagnosis & treatment. 北京: 人民卫生出版社, 384.
7. Vimercati, A., Scioscia, M., Nardelli, C., Panella, E., Laforgia, N., Decosmo, L., & Selvaggi, L. E. (2009). Are active labour and mode of delivery still a challenge for extremely low birth weight infants? Experience at a tertiary care hospital. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 145(2), 154-157.
8. Lives, S. N. (2001). State of the World's Newborns. Washington DC: Save the Children.
9. Werner, E. F., Savitz, D. A., Janevic, T. M., Ehsanipoor, R. M., Thung, S. F., Funai, E. F., & Lipkind, H. S. (2012). Mode of delivery and neonatal outcomes in preterm, small-for-gestational-age newborns. *Obstetrics and gynecology*, 120(3), 560.
10. Sonkusare, S., Rai, L., & Naik, P. (2009). Preterm birth: mode of delivery and neonatal outcome. *Medical Journal of Malaysia*, 64(4), 303-306.
11. Al-Riyami, N., Al-Shezawi, F., Al-Ruheili, I., Al-Dughaiishi, T., & Al-Khabori, M. (2013). Perinatal outcome in pregnancies with extreme preterm premature rupture of membranes (Mid-Trimester PROM). *Sultan Qaboos University medical journal*, 13(1), 51.
12. Begum, S., Islam, F., & Jahan, A. A. (2013). Feto-maternal outcomes in cesarean section compared to vaginal delivery in eclamptic patients in a tertiary level hospital. *Journal of Enam Medical College*, 3(2), 77-83.
13. Rouf, S., Shamsuddin, L., & Khan, J. R. (1996). Magnesium sulphate versus diazepam in the management of eclampsia. *Bangladesh J Obstet&gynaecol*, 11, 1.
14. Sangkomkamhang, U., Pattanittum, P., Laopaiboon, M., & Lumbiganon, P. (2011). Mode of delivery and outcomes in preterm births. *Journal of the Medical Association of Thailand*, 94(4), 415.
15. Arafa, M., Abou Zied, H., Attia, A. F., & Youssef, M. (1998). Maternal haemoglobin and premature child delivery. *EMHJ-Eastern Mediterranean Health Journal*, 4 (3), 480-486, 1998.
16. Ghi, T., Maroni, E., Arcangeli, T., Alessandrini, R., Stella, M., Youssef, A., ... & Pelusi, G. (2010). Mode of delivery in the preterm gestation and maternal and neonatal outcome. *The Journal of Maternal-Fetal & Neonatal Medicine*, 23(12), 1424-1428.
17. Lydon-Rochelle, M., Holt, V. L., Martin, D. P., & Easterling, T. R. (2000). Association between method of delivery and maternal rehospitalization. *Jama*, 283(18), 2411-2416.
18. Malloy, M. H. (2009). Impact of cesarean section on intermediate and late preterm births: United States, 2000-2003. *Birth*, 36(1), 26-33.
19. Liu, S., Liston, R. M., Joseph, K. S., Heaman, M., Sauve, R., & Kramer, M. S. (2007). Maternal mortality and severe morbidity associated with low-risk planned cesarean delivery versus planned vaginal delivery at term. *Cmaj*, 176(4), 455-460.