

Foetal Outcome of Complicated Pregnancy in a Tertiary Care Hospital

Khan MTR¹, Alam MA², Abdullah SAHM³, Begum F⁴, Zafreen F⁵

DOI: <https://doi.org/10.3329/jafmc.v20i1.73849>

Abstract

Background: Neonatal death is responsible for about 45% of the total deaths of children under 5 years of age in Bangladesh. Among the leading causes of neonatal death are infections 36% (sepsis/pneumonia, tetanus and diarrhoea), pre-term birth (28%) and birth asphyxia (23%) which indicates the poor foetal outcome of complicated pregnancy and unhygienic birth process.

Objective: To find out the foetal outcome of complicated pregnancy and to minimize foetal death.

Methods: An observational study was done purposively on 107 recently delivered women in the Obstetrics and Gynecology Department of Dhaka Medical College Hospital from January 2011 to June 2011. Data were collected by face-to-face interviews of the respondents with a semi-structured questionnaire. Verbal consents were taken prior to the interview.

Results: Among the newborn baby 93.2% born alive and 6.8% were dead. The association between antenatal complication and birth weight was significant ($p < 0.05$). The women with complicated pregnancies, about 45.2% delivered newborns of low birth weight. Antenatal complications showed a highly significant association with gestational age ($p < 0.05$). About 38.4% of preterm babies born in such women have pregnancy complications. Antenatal complication had significant ($p < 0.05$) association with birth asphyxia. The outcome of pregnancy was also significantly associated with antenatal complications ($p < 0.05$).

Conclusion: Almost every pregnancy is at risk. Regular ANC, early detection of complications, early referral, and safe delivery can minimize adverse outcomes of pregnancy.

Keywords: Foetal outcome, Preterm birth, Birth asphyxia, Low birth weight, Complicated pregnancy.

Introduction

The first month of life is the most potentially dangerous phase for infant survival, with 2.3 million babies dying by 2022. Since 2000, the number of neonatal fatalities has

reduced by 44%. However, in 2022, over half (47%) of all fatalities in children under 5 years of age occurred in the newborn period (the first 28 days of life), which is among the most vulnerable times of life and needs high-quality intrapartum and neonatal care.¹ The three major causes of neonatal death worldwide are infections 36% (which includes sepsis/pneumonia, tetanus, and diarrhoea), pre-term (28%) and birth asphyxia (23%).² Among them, the main causes of neonatal deaths include birth asphyxia, conditions related to prematurity and low birth weight, and severe infections.³ Whereas developed countries maintain a neonatal mortality rate of 2-3/1,000, it is not uncommon that this rate reaches over 60/1,000 in the impoverished areas of the world. About 99% of the deaths are accounting developing countries, especially in Sub-Saharan Africa and South Asia.⁴ In Bangladesh, very few studies have reported the causes of early and late neonatal deaths.⁵ The neonatal and post-neonatal mortality reduced from 65/1,000 to 38/1,000 in 1990 and from 31/1,000 to 14/1,000 in 2010 respectively. Besides, the Bangladesh Demographic and Health Surveys (BDHSs)⁶ reported that under-five mortality reduced from 133/1,000 in 1993-1994 to 55/1,000 in 2007.

Many studies carried out elsewhere on risk factors of neonatal mortality attempt to show the relationship between neonatal mortality and utilization of maternal health care facilities, such as receiving antenatal care (ANC) services, place of delivery, and skilled attendance during childbirth.⁵

There are many complications that are indirectly or directly related to pregnancy and its outcome. Some of the complications such as PET, preeclampsia, eclampsia, PROM, GDM, malpresentation, meconium stained liquor in labour, prolonged or obstructed labour, placental abruption, APH, preterm delivery, overweight of mother, etc.⁷ Some of these complications become a threat to the mother and baby before and during labour, as a consequence pregnant mother or fetus or both may die.⁸ Proper monitoring of a pregnant mother may minimize the complications of the mother and fetus. Antenatal screening can prevent adverse effects related to pregnancy and childbirth. Mode of delivery has a direct impact on maternal life and well-being and also on newborn.⁹

1. Col Morsheda Tania Rashid Khan, MBBS, MPH, Contingent Commander, BANMED-1/10, MINUSCA, Central African Republic (CAR) (E-mail: taniarashid1971@gmail.com) 2. Dr Md Ashrafal Alam, MBBS, MPH, PhD, NIPSOM, Mohakhali, Dhaka 3. Lt Col Syed Abul Hassan Md Abdullah, MBBS, MPH, Country Director, Safetynet, Bangladesh 4. Dr Farzana Begum, MBBS, MPH, United States Agency for International Development (USAID) 5. Dr Farzana Zafreen, MBBS, MPH, Associate Professor and Head, Department of Community Medicine, Medical College for Women & Hospital, Uttara, Dhaka.

Most newborn death occurs due to an unhygienic birth process due to home delivery by TBA. Among the developing countries, In Bangladesh high home delivery rate (71%) was reported which was intrigued, mostly (73%) by medically unskilled persons.¹⁰ Two-thirds of deaths of newborns occur due to infections. A substantial proportion (37%) of neonatal deaths are related to cord infection⁴, About 3% of newborns suffer mild to moderate birth asphyxia and prompt resuscitation is often not initiated or the procedure is inadequate or incorrect. Globally, birth asphyxia is estimated to account for 23% of the 4 million neonatal death and 26% of the 3.2 million stillbirths each year.^{11,12} According to WHO, about 3% of 120 million infants born every year in developing countries suffer from birth asphyxia and estimated 900,000 death in each year.¹³ In the case of thick meconium-stained liquor during delivery, babies Apgar score becomes <7, that indicates the baby is asphyxiated.¹⁴ In this regard, emergency obstetric care is of great importance to save mother and child. This study was designed to find out the foetal outcome and minimize foetal death in complicated pregnancies.

Materials and Methods

This descriptive observational study was done in the Department of Obstetrics and Gynaecology, Dhaka Medical College Hospital. The study was conducted during the period of January to June 2011. A total of 107 cases were selected purposively who delivered recently among them 65 cases with pregnancy complications and 42 cases without pregnancy complications, and all of them were willing to participate. Data were collected through face-to-face interviews of the respondents. The interview was conducted by maintaining privacy as much as possible. Before data collection, the details of the study were explained to each respondent and verbal consent was taken prior to data collection. Data were collected by semi-structured questionnaire. The outcome of pregnancy was assessed after delivery and the information regarding maternal complications and perinatal-morbidity and mortality were noted. Data processing and analysis were done using SPSS v17 according to the objectives of the study. The level of significance was set at 0.05. Prior to the initiation of the study ethical clearance was taken from the appropriate Ethical Committee of NIPSOM.

Results

Out of the 107 mothers studied, 65(60.7%) had complicated pregnancies with antenatal complications and 42(39.3%) had normal pregnancies without any known complications. In this study, several antenatal complications were found in our study population. As a single complication, GDM (22.4%), gestational HTN (18.7%), Pre-eclampsia (17.8%) and PROM (15.9%) were the predominant complications. Besides these, Eclampsia, Placenta previa, Abruption placenta, prolonged and obstructed labour and obesity were also noted (Figure-1). Some mothers experienced multiple complications together.

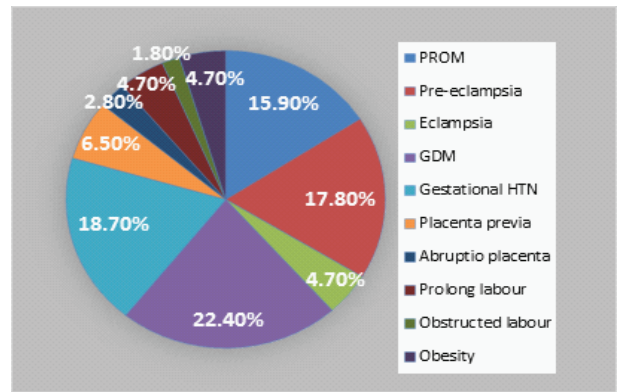


Figure-1: Distribution of pregnant women according to obstetric complications

Among the 107 newborns, 100 were alive and 7 were dead. Among all 100 alive newborns, 73 were LBW, 30 newborns were delivered before 37 weeks of gestation, termed as pre-term and 38 suffered from birth asphyxia. Besides, other newborns suffered from neonatal sepsis, neonatal death, intrauterine death (IUD), stillbirth etc (Figure-2).

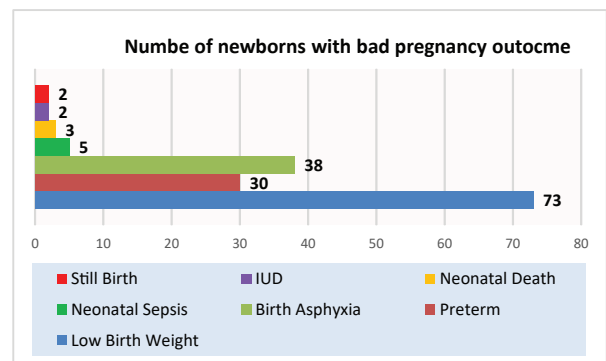


Figure-2: Distribution of newborns based on bad outcomes from the total study population.

Among the 107 newborns, about 45.2% had low birth weights delivered by mothers of complicated pregnancies, whereas 17.6% of newborns with low birth weights had no history of maternal pregnancy complications. About 38.4% of preterm babies born to such women had pregnancy complications, and only 5.9% of preterm newborns were delivered in case of women without pregnancy complications. A significant association of antenatal complications with birth weight ($p < 0.05^*$) and gestational age ($p < 0.05^*$) was found (Table-I).

Table-I: Association of antenatal complication with birth weight and gestational age of newborn (n=107)

Characteristics		Antenatal Complication		Statistics
		Yes n(%)	No n(%)	
Birth weight (kg)	< 2.5	33(45.2)	40(54.8)	$p < 0.05^*$
	> 2.5	6(17.6)	28(82.4)	
Gestational age	Preterm	28(38.4)	2(5.9)	$p < 0.05^*$
	Term	45(61.6)	32(94.1)	

Chi-square test was done. P-value < 0.05 is significant

Among the women with complicated pregnancies, 46.2% of newborns developed birth asphyxia. Among the non-complicated pregnant women, 19% delivered newborns with birth asphyxia. A significant association between antenatal complications with birth asphyxia ($p < 0.05$) was found (Table-II).

Table-II: Association of antenatal complication with birth asphyxia of newborn (n=107)

Characteristics	Antenatal Complication		Statistics
	Yes (N=65) n(%)	No (N=42) n(%)	
Birth	Yes	30(46.2%)	$p < 0.05^*$
Asphyxia	No	34(81.0%)	

Chi-square test was done. P-value < 0.05 is significant

Regarding pregnancy outcome, among 65 complicated pregnancies, 25 (38.5%) had a good foetal outcome and 40 (61.5%) had bad outcomes. Full-term delivery with live birth with an immediate cry and normal weight without complications was considered a good outcome. There were 51 total bad foetal outcomes, as shown in Table-III. The association between the complicated pregnancy group and the foetal outcome was found to be statistically significant ($P < 0.05$) (Table-III).

Table-III: Association of antenatal complications with pregnancy outcome.

Antenatal complication	Good Outcome	Bad Outcome	Total Outcome	Statistics
	n(%)	n(%)	n(%)	
Yes	25(38.5%)	40(61.5%)	65(100%)	$p < 0.05^*$
No	31(73.8%)	11(26.2%)	42 (100%)	

Chi-square test was done. P-value < 0.05 is significant

Discussion

The environment, genetics, and mother's health all affect the foetal outcome. An infant born to a healthy mother is often healthy as well. In this study among 107 newborn babies, 100(93.5%) were born alive and 7(6.5%) were dead. As the study place was a tertiary level hospital most of the women with complicated pregnancies were properly managed throughout the delivery process and the decision of the intervention was taken at the right time, good pregnancy outcome was ensured. Several steps have been taken by the health workers to become aware of the threats to pregnant mothers and provide timely, good enough treatment to affect the overall pregnancy outcome. The death rate was comparatively lower in this study. This study can be compared to a Brazilian study that discovered that women who had insufficient prenatal care, no prenatal care at all and who did not receive appropriate and timely intervention experienced increased problems, a higher rate of stillbirths and neonatal deaths.¹⁵ In that study, it was found that all groups of women with pregnancy complications had a high rate of stillbirth¹⁶ whereas in this study death rate was lower, only 6.5%.

In this study, about 52.1% of the newborns had birth weight > 2.5 kg and about 47.9% had birth weight < 2.5 kg. This study can be compared with a study where the average birth weight of neonates was low for all groups of women with complicated pregnancy (Hypertensive disorders of pregnancy HDP) (2800 gm) and statistically different in the group of women with Eclampsia (2100 gm, $p < 0.05$).¹²

Among the newborns of the women with complicated pregnancy, 45.2% had birth weight < 2.5 kg (low birth weight) and only 17.6% of low birth weight had no history of maternal pregnancy complications. A study conducted by Qiongjie Zhou et al¹⁷ showed that Preterm premature rupture of the membranes (PPROM) (before 34 weeks) is associated with 8.1% of preterm delivery and pregnancy complications showed a highly significant association with gestational age ($p < 0.05$) and the finding of that study is also significantly associated with antenatal complications and low birth weight. About 38.4% of preterm babies born in such women having pregnancy complications and only 5.9% of preterm newborns delivered in case of women without pregnancy complications like PROM, Preeclampsia, Eclampsia etc have a direct or indirect influence on Gestational age.^{12,14}

Gestational age showed a highly significant association with birth weight ($p < 0.001$). Among the preterm newborns, about 76.7% had Low birth weight (< 2.49 kg) and only 20.8% of newborns delivered at term had low birth weight. Antenatal complications showed a significant association with birth asphyxia ($p < 0.05$). Among the newborns developing birth asphyxia, 21.1% of them were delivered by women without complicated pregnancy whereas 78.9% of them were delivered by women with pregnancy complications. This finding suggests a high level of intra-natal care and proper intervention at the proper time and also good quality resuscitation of the newborn. A study done by Lawn et al¹² in Brazil where respiratory newborn complications (anoxia and/or respiratory distress) were high (14–23%). A retrospective study over a 3-year period from 1989 to 1991 performed at a tertiary-level, referral hospital has found an association between birth asphyxia and prolonged second stage of labour.¹⁸

Conclusion

Most of the baby born alive and they had no birth injury or birth asphyxia. As the study place was a tertiary-level hospital, the birth was attended by a skilled birth attendant, and a good foetal outcome could be ensured. Several antenatal complications were found associated with low birth weight, preterm delivery, and birth asphyxia. If early detection of antenatal complications could be ensured then the bad foetal outcome could be minimized. Proper teamwork from antenatal care up to safe delivery can bring a good pregnancy outcome.

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