



## Impact of Prolonged Labour on the Baby in Terms of Morbidity and Mortality

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### Abstract

**Background:** The negativity associated with a complicated labour such as prolonged labour can lead to a struggle to become a healthy mother and give birth of a healthy child. Delayed delivery may result in various negative consequences, among which still birth is one. The aim of the study is to find out the impact of prolonged labour on neonates.

**Material & Methods:** This prospective study was conducted in Department of Obstetrics and Gynaecology in Sir Salimullah Medical College, Mitford Hospital, Dhaka, Bangladesh during July 2011 to December 2011. 100 pregnant patients with prolonged labour (more than 18 hrs) were selected for this study. **Results:** 32% patients with multigravida and 68% patients with primigravida got admitted in the hospital. 61% of the total patients had labour pain 18-24 hours. Majority of the patients faced difficulties with dehydration and temperature, 64% and 69% respectively. 77 of the total patients went through caesarean section. Out of 100 expected newborns, 73 was live birth and 21 faced neonatal asphyxia. **Conclusion:** According to the observation, prolonged delivery can result to some unexpected outcome during childbirth which can be avoided by taking some essential steps earlier.

**Keywords:-** Prolonged labour, neonates, ruptured membrane, neonatal asphyxia, still birth..

## INTRODUCTION

The current infant mortality rate for Bangladesh in 2023 is 21.556 deaths per 1000 live births, a 4.68% decline from 2022.<sup>[1]</sup> Hamilton characterized a second phase of labour longer than 120 minutes as prolonged.<sup>[2,3]</sup> Menticoglou et al,<sup>[4]</sup> detailed that up to 11% of nulliparous patients could have a second phase of labour longer than 3 hours and most of them had vaginal delivery. Maternal risk factors depicted for a prolonged second stage incorporate nulliparity, utilization of epidural, absence of pain, oxytocin use, length of the dynamic period of labour, total maternal weight gain, fetal weight, and occipito-posterior presentation.<sup>[5,6,7,8,9]</sup> In 1952, Hellman and Prystowsky<sup>[8]</sup> detailed an expansion in neonatal mortality when the second stage is more than 150 minutes. They have found that continuous improvements in foetal monitoring and neonatal care have alleviated previous concerns connected with the impact of a prolonged second phase of labour on neonatal metabolic status and neonatal mortality. In any case, studies assessing various neonatal morbidities didn't separate or assess infants delivery following a very prolonged second phase of labour (more noteworthy than 240 minutes).<sup>[4,5,6,7,8,9,10,11]</sup> DeLee<sup>[21]</sup>, in 1920, recommended that application of forceps should be considered when delayed second phase of labour is analyzed. Currently, maternal entanglements because of prolonged second phase of labour incorporate post pregnancy difficulties like discharge, fever, and infection.<sup>[9,10]</sup> Patients with a prolonged second stage likewise go through an expanded number of instrumental deliveries.<sup>[4,7,10]</sup> In this

prospective study, the incidence and nature of complications following prolonged labour on the newborns is discussed.

### Objective of the study

- General objective: The aim of the study is to review the patients and determine the complication that may arise due to prolonged labour.
- Specific objective: The purpose of the study is to find out the major complications that neonates face due to prolonged labour in terms of morbidity and mortality.

## MATERIAL AND METHODS

It is a prospective study that has been designed to examine the effect of prolonged labour on the children in Bangladesh. This study was conducted in Sir Salimullah Medical College & Mitford Hospital, Dhaka, Bangladesh during July 2011 to December 2011. In this 6 months period, 100 patients (18 years to 40 years) got admitted in this hospital with the difficulty of prolonged labour.

**Inclusive criteria:** Patients, aged between 18 years to 40 years, who had faced prolonged labour (within July 2011 to December 2011) were included in this study.

**Exclusion criteria:** Any pregnant women admitted for delivery less than 18 years or more than 40 years were excluded of this study. Patients, who were not having prolonged complication due to delayed delivery, pregnancies with other medical complication like diabetics mellitus, hypertension, ante partum hemorrhage, obstructed labour and patients who were

unable to give informed medical consent were also excluded.

The study commenced in July 2011 to December 2011 and in this period in-hospital data were collected for all patients.

Out of total 123 patients, 23 patients were excluded due to their data loss. Data was collected by Resident physicians, attending physicians, or certified nurse midwives they did all examination of patients. An attending physician was physically present. Either the attending physician or certified nurse midwife on call attended all of the deliveries. After discussing the purpose and procedure of this study, detailed history was taken from the patients with reference to age and parity of the patient, treatment taken before her admission into hospital, cause of delay in coming to hospitals etc. Close and careful evaluation of the cases regarding the mode of delivery, intranatal and postnatal management, foetal outcome, immediate and early postpartum complications were recorded in record sheet. The condition of foetus at birth was determined by APGAR scores (if living). Ethical clearance was taken from the Sir Salimullah Medical College & Mitford Hospital, Dhaka, Bangladesh ethics committees as required. Signed informed consent was obtained from patients and their guardians.

## RESULTS

In total, 123 patients got admitted with the issue of prolonged labour within the study

duration. Total of 100 patients were selected for the study. Out of 100 pregnant patients with more than 18 hours labour pain, majority was in their twenties (21 years -30 years). Most of patients were homemaker [Table 1]. Among the study patients, 68% was admitted due to their first delivery and rests with prior experience of child birth [Figure 1]. Large number of the patients (52%) were attended by untrained midwives before getting admitted to the hospital. Least of them were attended by their relatives (6%). 58% of the women did not get any treatment before they reach the hospital [Table 2]. According to Table-3, 61 patients had labour pain in between 18 to 24 hours. 16% of the patients also faced prolonged labour for more than 49 hours. Majority of the patients (64) had dehydration and only 31 patients had raised temperature. Among the admitted 100 patients, 77 people underwent caesarean section. 81% had ruptured membrane among which 46.91% were ruptured up to 12 hours. Only 6 foetus (7.41%) had ruptured membrane for more than 49 hours [Table 4]. According to [Table 5], number of still birth was 4 and neonatal death was 2. Neonatal asphyxia 21.

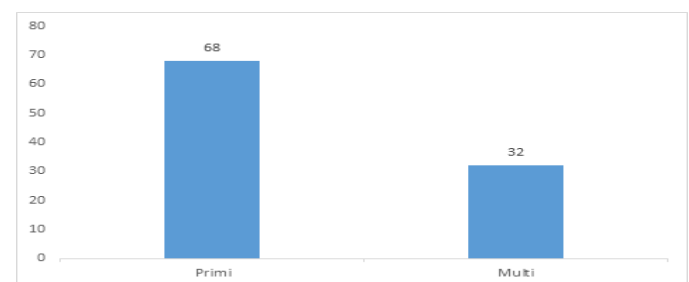


Figure 1: Parity of the patients (n=100)



**Table 1:** Demographic characteristics of patients (n=100).

Age group		Number of patients	Percentage
	18-20	31	31%
	21-30	60	60%
	31-40	9	9%
Occupation	Housewives	94	94%
	Service holder	6	6%

**Table 2:** Before admission service and treatment

		Number of patients	Percentage
Attended by	Untrained midwife	52	52%
	Trained midwife	27	27%
	Doctor	15	15%
	Relatives	6	6%
Treatment received	No treatment	58	58%
	Oxytocic drug	32	32%
	Kabiraj	8	8%
	Homeopath doctor	2	2%

**Table 3:** After admission patient's condition

	Conditions	Number of patients	Percentage
Duration of labour pain (hr)	18-24	61	61%
	25-48	26	26%
	49+	16	16%
Dehydration	Present	64	64%
	Absent	36	36%
Temperature	Normal	69	69%
	Raised	31	31%
Mode of delivery	Caesarean section	77	77%
	Vaginal delivery	23	23%

**Table 4:** Condition of membrane on admission to hospital (n=100)

	Condition	Number of patients	Percentage
Membrane	Impact	19	19%
	Ruptured	81	81%
Duration of ruptured membrane	Up to 12 hours	38	46.91%
	13-24 hours	22	27.16%
	25-48 hours	15	18.52%
	49+ hours	6	7.41%

**Table 5:** Foetal outcome (n=100)

Outcome	Number of patients	Percentage
Live birth	73	73%
Still birth	4	4%
Neonatal asphyxia	21	21%
Neonatal death	2	2%

## DISCUSSION

In the current study data indicate that 23% of women who have been completely dilated for more than 12 hours delivered vaginally. Most of the patients delivered within 24 hours of labour pain. Normal temperature was common among the admitted patients but most of them faced dehydration during delivery. 81 of the foetus had ruptured membrane for up to 12 hours (46.91%), 24 hours (27.16%), 48 hours (18.52%) and more than 49 hours (7.41%). Prolonged delivery cause live birth of 73 children, still birth 4 children and neonatal death of 2 children. 21% of the neonates suffers from neonatal asphyxia.

This risk appears, by all accounts, to be connected with the genuine length of the subsequent stage. The higher rate of perineal trauma,<sup>[11]</sup> instrumental delivery and postpartum hemorrhage noted in another research affirm past reports.<sup>[2,4,5,6,7,8,9,10,11]</sup> As opposed to these reports, Kuo et al<sup>[7]</sup> distinguished no expanded risk for post pregnancy drain or extreme perineal slashes. The expanded recurrence of episiotomy utilization for the patients with a delayed second phase of labor found in our review was not portrayed. Other studies, didn't separate the length of the second stage into subsets in order to independently assess patients with an exceptionally prolonged second stage of labor.<sup>[4,5,6,7,8,9,10,11]</sup>

The present study observed risks for maternal morbidity and its impact on the outcome on children, term or preterm delivery, and mode of delivery was influenced by the time of admission and the mode of treatment before admission. Neonatal Birth injuries were more common in epidural(EA) Analgesia. Armani et al,<sup>[12]</sup> noticed an essentially higher occurrence of cephalhematoma in the EA group. In the same study, mothers who got EA had more instrumental deliveries. Neonatal birth injury is emphatically corresponded to be an employable vaginal delivery.<sup>[13]</sup> Birth injury was recorded in 3.9 % of the entire example. Cephalhematoma was the most regular injury noted (40% of all birth injuries). Others included clavicle crack, gentle subgaleal dying, brachial plexus injury, huge scalp gash, cut wounds, facial loss of motion, and profound forceps mark with critical swelling.<sup>[14]</sup>

In a research, mothers who delivered asphyxiated children had some significant maternal risk factors like delayed second phase of labour, PROM, pre-eclampsia of pregnancy, hypertension, utilization of oxytocin during labor and APH. These discoveries are predictable with numerous other studies.<sup>[15,16]</sup> Malpresentation was viewed as related with expanded risk in the investigation of Daga AS however it was not found in this study.<sup>[16]</sup> Frequency of caesarian area conveyance in this



study was 51% among the suffocated bunch moms and 63.3% in the control group mother. Convenient mediation with caesarian section might have saved a considerable lot of these unfortunate babies from being asphyxiated upon entering the world.<sup>[17]</sup>

Etuk, in his review, showed that birth asphyxia was more predominant in the unbooked cases<sup>[18]</sup>. In a review, maternal age showed no relationship with birth asphyxia.<sup>[17]</sup> This finding was steady with Bhuiyan and Crawford.<sup>[18,19,20]</sup> They had likewise found that maternal age as a detached occasion can't be considered as a gamble factor for birth asphyxia. No affiliation was likewise found among the different instructive levels of the moms of cases and control. Equality was viewed as a significant component. 57% of the suffocated children were brought into the world to primi mothers, while in the controlled group, just 33.3% mothers were primi. Bhuiyan likewise found comparable outcome in his study.<sup>[19]</sup> Prolonged labour, prematurity and low birth weight, which are common in primi, might be the conceivable clarification.

In some studies, death rate was found to be 16% in the asphyxiated babies vs. none in the

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control group. It is consistent with the study of Etuk,<sup>[18]</sup> Nilufar,<sup>[17]</sup> found it to be 20.8%. Similar results were also observed in Indian and African studies. Mortality seen in the study of Khatoon,<sup>[15]</sup> in 1989 and Bhuiyan,<sup>[19]</sup> in 1996 was 25.4% and 44% respectively.

## Limitations of the study

This study fails to illustrate the overall scenario of Bangladesh in terms of prolonged labour and its impact on the neonates due to unadmitted patients around the country, late admission, some untrained physician involvement in pre-admission hampers the exact finding.

## CONCLUSIONS

The research indicates that the incidence of major complications can easily be avoided by taking precautions, proper planning of the delivery system and training. Present study shows that the neonatal of a childbirth can be caused by prolonged delivery which can even result in some neonatal deaths. Hence, the study was conducted in a single institution, multiple centered study can find more accurate outcomes and their probable solution.

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