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Sociodemographic Profile and Outcome of Preterm Premature Rupture of Membranes

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Abstract
Introduction: *Premature rupture of membrane (PROM) is connected to noteworthy maternal pre-birth mortalities and morbidity. The result of maternal and fetal in PROM is imperative to diminish maternal and child mortality and for better administration and anticipation of complexities. Premature rupture of membrane (PROM) refers to the interruption of fetal layers previously the start of work, bringing about unconstrained spillage of amniotic liquid. PROM, which happens before 37 weeks of incubation, characterized as preterm PROM as PROM, happens following 37 weeks growth characterized as term PROM. The etiology of PROM is accepted to be multifactorial and several risk factors have been distinguished. Factors incorporate multigravida, low socio-economic status, concomitant infection e.g. UTI, vulvovaginitis, anaemia, past the point of no return introduction of side effects, H/O Polyhydramnios, irregular ANC, low socio-economic status and a background marked by preterm PROM of preterm work. There is scarcity of information on clinical profile and result of PROM in tertiary focal point of Bangladesh, so as to address this issues, this examination was intended to explore the clinical profile and result of pregnancy of untimely break of layer (PROM). Diagnosis and proper management is critical to confine different fetal and maternal complexities for the most part because of disease. Hence, this investigation means to decide maternal and fetal results in PROM among term pregnant ladies who were admitted to the maternity or work ward in Hospital.*
Objectives: *To determine the sociodemographic Profile and feto-maternal outcome of Preterm premature rupture of membrane (PROM).*
Materials and Methods: *This is cross sectional observational study; amongst 50 women with H/O PPROM were included in this study. Sociodemographic attributes were evaluated. Ruptures of membrane with an APH, serve pre-eclampsia, eclampsia, malpresentation were excluded from study.*
Result: *Sociodemographic highlights, e.g., age, habitation, occupation, financial status, and so forth are the prime determinants of result of PROM. In this study, the age of the patients went between 17->35 years, mean age was 23.5 ± 9.54 years. Vast quantities of respondents originated from urban region 53.0%, and financially poor class 26(52%). The vast majority of the ladies were multigravida (62%). Around 74.2% were analyzed around 34-37 week of development. Introduction of PROM or span of side effects went from 40 minutes to most extreme 2 days. The greatest country amass patients displayed after beginning of side effects >12 hours i.e. 8(42.11%) patients. The postponement in hospitalization increases the intensifying of ailment process and improvement of entanglement, at last poorer result. On the other hand patients hailing from urban dwelling hospitalized at the earliest opportunity after sign-*

manifestations improvement. On evaluation of pregnancy outcome, study shows that most of the PROM women conveyed by LUCS (82.0%). Most normal complication was subclinical urogenital infection (36.0%) next oligohydramnios (32.0%) and (16.0%) women presented with chorioamnionitis. Among the infants, 26% had Apgar score beneath 7 at their first min of age and 10% had Apgar score underneath 7 at their 5 min of age. Birth asphyxia was been developed in total 6 newborn. Hospital admission to released, legitimate workup and assessment was performed in all patients. Overall result demonstrates that 92.0% of the PROM women recouped either totally or partially, 8.0% remains stop; it might be because of wound disease or other fundamental ailment. Besides, maternal mortality happened. However, 37(74.0%) of neonates recovered during hospital stay, yet 11(22.0%) built up any difficulties and till were hospitalized under neonatal care. Two patients were expired. So, neonatal death rate was 2(4.0%) subject in this study.

Conclusion: *Women living in rural areas, lower class, long latency, and neonates with birth weight less than 2500 g may have adverse outcomes. In this case, optimum obstetric and medical care is essential for the diminishment of the staggering inconveniences related to disorders.*

Keywords: *PROM, Preterm PROM, Demogrpaphic features, Outcome.*

Introduction

PROM, which happens before a long period of 37 weeks of gestation is called preterm PROM (pPROM). The etiology pre labor break of membranes is obscure in the dominant part of cases. However, bacterial infection, cervical incompetence, hypertensive disease, recent coitus, malpresentation, antepartum hemorrhage (APH), malnutrition are perceived reasons of prelabor breakdown of membranes (PROM)[1]. Preterm PROM is a prime reason of perinatal grimness and mortality, particularly on the grounds that it is related with brief dormancy from membrane rupture to convey, perinatal contamination, and umbilical cord pressure due to oligohydramnios. Fundamentally, PPROM is multifactor in nature. If it is given in any patient, at least one way physiologic methodology might be obvious. Choriodecidual infection or inflammation which appears, accept a basic part in etiology of preterm PROM, especially during at early gestational ages[2].

Preterm premature rupture of membranes (PPROM) circumvents 3 to 8 percent of pregnancies and promotes to one third of preterm conveyances. Thus, the results are huge chance of prematurity and direct to perinatal and neonatal entanglements with danger of fetal death[3]. Preterm premature rupture of the membranes (PPROM) is in charge of around one-third of all preterm births and influences about 120,000 pregnancies in the United States per year. The viable treatment depends on accurate findings as it is gestational age subordinate. The analysis of PPROM is formed by a combination of clinical suspicion, previous history and some normal tests[4]. The historical backdrop of releasing fluid or gushing of water from vagina is demonstrative over 90% of the time. Various tests like Nitrazine, fern, evaporation and diamine oxidase test are performed to affirm PROM to the patients. Nowadays, ultrasound examination is additionally notable strategy for the diagnosis of PROM[5].

In premature rupture of the membranes, break can happens if an imbalance appears between the resilience of the amnion. Afterwards, the pressure administrated develops and can cause various motives. An intact amnion with adequate amniotic liquid is fundamental for the fetal improvement (lung, movement) and protects the child from rising diseases. During the pregnancy week, an amniotic infection syndrome (AIS) undoubtedly degrades the newborn's prognosis[6]. The aetiology is multifactorial. PPROM assessment and management are vital for enhancing neonatal outcomes. Precise diagnosis of PPROM needs a careful history, physical examination and ancilliary laboratory studies. These would take into account gestational age particular obstetric mediations to enhance perinatal result and decrease fetomaternal entanglements. Speculum examination to determine cervical dilatation is favored due to modern vaginal examination which is associated with a decreased latency period and has potential for adverse sequelae[7]. The management of

pregnancies convoluted by PPROM is challenging and controversial. So it ought to be individualized. Nonetheless, it should center around affirming the diagnosis, validating gestational age, documenting fetal well being and deciding on the mode of introduction and cervical examination.

Theoretically, PROM may occur in a view of increased friability of the films, decreased elasticity strength of the membrane or a rise in intrauterine pressure or both. Under typical circumstances, the elasticity strength of the membranes expands until 20 weeks and then plateaus until 39 week after it starts to decline dramatically. An abnormal collagen structure may be charge for PROM as confirm by the high recurrence of PROM in women influenced by connective tissue disorders such as the Ehlers-Danlos syndrome. Likewise, of zinc, copper and ascorbic acid create abnormal collagen cross-linking and may yield PROM[8].

It can promote a serious fetal perinatal morbidity such as respiratory distress syndrome, neonatal sepsis, umbilical cord prolapse, placental abruptio and fetal death. It can likewise lead to maternal morbidity such as postpartum endometritis, disseminated intravascular coagulopathy, maternal sepsis, delayed menses and asherman syndrome[9].

The three purposes for neonatal death related with PPROM are prematurity, sepsis and pulmonary hypoplasia. Women with intrauterine infection deliver sooner than non-infected women. The infants born with sepsis have a mortality rate four times higher than those without sepsis. Moreover, there are maternal dangers associated with chorioamnionitis[10].

In a study of preterm PROM, population were categorized into three groups. They were given the following treatments ; Group A: with beta-mimetic, antibiotic, steroid, iron and folic acid (IFA); Group B: With steroid, antibiotic, natural progesterone and IFA; Group C: With only antibiotic and IFA. The observation of neonatal mortality in the very preterm group (≤ 33 weeks) was 10% as compared to 5.7% in preterm (34-37 weeks) and nearly 3% among term pregnancies. It was inferred that gestational age during the delivery is the major determinant of neonatal body weight. In addition, survival rate among PROM cases were significant. Besides, beta-mimetics and progesterone suggested no role to prolong pregnancy in PROM cases[1].

The administration of PPROM requires an exact diagnosis, assessment of expenses, the danger and advantageous of continued pregnancy or expeditious delivery. It is necessary that the patient be well aware regarding the possibilities of subsequent maternal, fetal, and neonatal complications regardless of the management approach[11].

Materials & Methods

This is cross sectional observational study; samples were collected by purposive sampling procedure. The total 50 women with H/O PPROM were included in this study. All Study subjects were either primi or multi gravida and natural rupture of membrane before the beginning of labour. This includes mothers from urban and semi-urban areas around Dhaka city, as well as persons moved from hospitals in rural areas of the country. Ruptures of membrane with an APH, serve pre- eclampsia, eclampsia, malpresentation were omitted from study. Socioeconomic status was grouped by household income, in accordance with Household Income and Expenditure Survey (HIES)-2010, World Bank report, UNICEF-The State of the World's Children and Statistical Pocketbook of Bangladesh. Detail demographic data were gathered from the witness and recorded in organized case report shape. Clinical examination and pertinent investigations were done carefully. All gathered survey checked deliberately to recognize the blunder in the information. Data processing work consist of registration schedules, editing, computerization, preparation of dummy table, analyzing and matching of data.

Result

In this study, the age of the patients ranged between 17->35 years. Most of the patients were belonged to the age group 20-25 years (44.0%). Mean age was 23.5 ± 9.54 years. (Table-I)

Table-I: Demographic profile of the patients (n=50)

Variables	*Frequency*	*(%)*
Age (years)		
<20	7.5	15.0
20-25	22	44.0
26-30	11	22.0
>30	9.5	19.0
Mean ± SD	23.5 ± 9.54	
Residence		
Rural	19.5	39.0
Urban	26.5	53.0
Occupation		
Service holder	7	14.0
Daily worker	11	22.0
House wife	29	58.0
School teacher	3	6.0

Large numbers of patients came from urban area 53.0%, followed by rural area 39.0% and sub-urban/slum area 8.0%. Large numbers of respondents were house wife 58.0%, followed by daily worker 22.0%. Socio economical status was evaluated according to operation definition, poor class 26(52%) comprising the major percentage of the patients. (Figure-1)

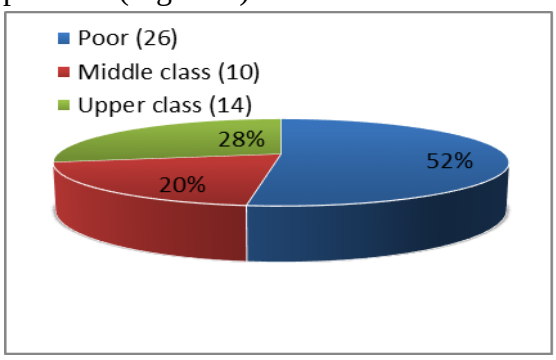

Figure- 1: Socioeconomic status of the study population (n=50)

The mean gestational week was 35.27 ± 4.82 week. About 74.2% were diagnosed and were around 34-37 weeks of gestation in urban. The earliest diagnosis was made at 28 weeks to 33 (25.81%) and has impact on feto-maternal outcome in urban. (Table-II)

Table-II: Obstetrics characteristics of the patients (n=50)

Variables	*Urban (n=31)*	*Rural (n=19)*
Gestational age (weeks)		
28-33 weeks	8(25.81%)	5(26.31%)
34-37 weeks	23(74.2%)	14(73.69%)
Mean ± SD	35.27 ± 4.82	
Duration of symptoms		
≤1 hours	6(19.35%)	0
2-6 hours	18(58.06%)	6(31.58%)
7-12 hours	6(19.35%)	5(26.32%)
>12 hours	1(3.23%)	8(42.11%)
Mode of delivery		
Vaginal delivery	7(22.58%)	2(10.53%)
Caesarean section	24(77.42%)	17(89.47%)

Duration of symptoms ranged from 40 minute to maximum 2 days. Patients with PROM who presented in Obs emergency ward within first hour of the onset of symptoms were only 6(19.35%), and all patients were urban residing. Maximum rural group patients presented on >12 hours i.e. 8(42.11%) patients. The delay in hospitalization augments the worsening of disease process and development of complication, ultimately poorer outcome. The p-value is .00721. The result is significant at $p < .05$. On evaluation of pregnancy outcome, most of the women delivered by LUCS 82.0%. Total 27 patients has been trial for vaginal delivery. Among them only 7(22.58%) patients progress to vagina delivery, but 24(77.42%) patients not progress and Caesarean section was done in urban. Occurrences of caesarean delivery in rural patients were much higher 89.47% in relation to urban residing 77.42%. (Table-II) Most of the women were multigravida 62%. (Figure-2)

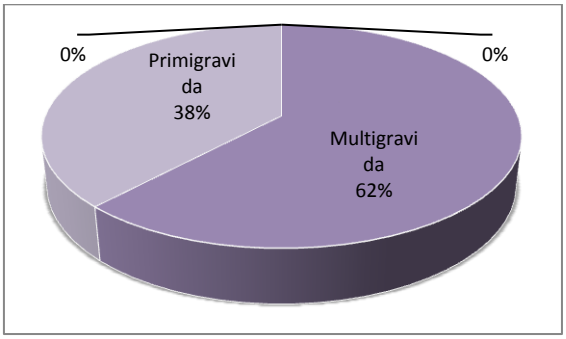

Figure- 2: Obstetrics history (Gravidity) of mothers (n=50)

Birth weight of the baby shows that most of the babies 21(42.0%) had birth weight in between 2.1-2.5kg and 8(16.0%) babies were less than 1.5 kg body weight. Only 19.0% of the baby had birth weight more than 2.5 kilogram. (Figure-3)

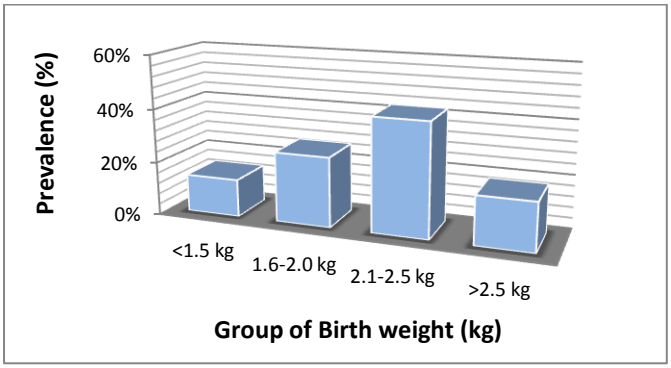

Figure- 3: Birth weight of the neonates (n=50)

On evaluation of maternal outcome, table (Table-III) shows that only 7(14.0%) of PROM mothers was free from any complications, but most cases of PROM women developed any sort of complication. Most common complication was subclinical urogenital infection 36.0% next oligohydramnios 32.0% and 16.0% women presented with chorioamnionitis. (Table-III)

Table-III: Maternal complications and outcome (n=50)

Post-partum complication	Frequency	Percentage (%)
Chorioamnionitis	8	16.0
Urogenital infection	18	36.0
Oligohydramnios	16	32.0
Puerperal sepsis	7	14.0
Wound infections	11	22.0
PPH	5	10.0
No complications	7	14.0

Fetal outcome revealed that, 26% had Apgar score below 7 at their first min of age and 10% had Apgar score below 7 at their 5 min of age. Among the newborn babies, 24.0% of the babies were prematurity, 13.0% developed birth asphyxia, 12.0% had neonatal sepsis and 4.0% were congenital anomaly. (Table-IV)

Table- IV: Fetal complications and outcome (n=50)

Fetal complication	Frequency	Percentage (%)
Prematurity	12	24.0
Neonatal sepsis	6	12.0
Birth asphyxia	6.5	13.0
Cord prolapse	2	4.0
Hyperbilirubinaemia	8	16.0
Congenital anomaly	2	4.0
Neonatal death	2	4.0

Discussion

Pre-term PROM is significantly associated with maternal, neonatal morbidity and mortality from infection, umbilical cord compression, placental abruption and preterm birth. Subclinical intrauterine infection has been ensnared as a noteworthy etiological factor in the pathogenesis and subsequent maternal and neonatal morbidity associated with PPROM[12]. At present, pre-labor rupture of the membrane (PROM) is one of the general and challenging issues in perinatal medicine. Management of PROM has gone between different cycles of masterly inactivity to immediate intervention[13]. In this study most of the patients belonged to the age group 20-25 years (44.0%). Next (22.0%) were 26-30 years of age group. Mean age was 23.5 ± 9.54 years. Large numbers of respondents came from urban area (53.0%), and socioeconomically poor class 26(52%) comprising the major percentage of the patients. Maximum patients were house wife (58.0%) followed by daily worker (22.0%).

PROM is discovered more typical in low socio-economic class patient with insufficient prenatal care and weight gain during pregnancy[13]. In a study, directed at tertiary centre hospital of Bangladesh, demonstrates the occurrence of PROM in hospital was around 6.3%. The majority of the pregnant women were between 20-24 years of age 44%, where 38% were primigravida and 62% were multigravida[14]. Low socio-economic status is an imperative risk factor for both PROM and preterm labour. Related factors such as malnutrition, overexertion, poor hygiene, stress, recurrent genitourinary infections and anaemia significantly increment the risk [14,15]. In a study by

Begum, half of the patients were in the gathering of low financial condition having no or unpredictable antenatal registration which is relatively like this study[16].

In this study a large portion of the women was multigravida (62%). About 74.2% were diagnosed of around 34-37 weeks of gestation. The most early diagnosis was made at 28 weeks to 33 (around 26.0%) and has more impact on feto-maternal outcome. In addition, 89.47% patients were delivered by caesarean section & 10.53% patients were delivered vaginally. But in another study, Begum shows that only 32% patients were delivered by C/S[16].

The relationship of risk factors or maternal complication in this study shows that anemia exhibit in 28.0% cases; UTI were 26.0% cases and H/O previous C/S was 24.0 % cases. On assessment of pregnancy results, present study indicates that most of the PROM women conveyed by LUCS (82.0%). Total 27 patients have been examined for vaginal delivery. Among them, only 7(22.58%) patients progress to vagina delivery, but 24 patients not progress and Caesarean section was done. Events of cesarean conveyance in country patients were significantly higher (89.47%) in connection to urban dwelling (77.42%). The table demonstrates that exclusive 7(14.0%) of PROM moms was free from any inconveniences, however most cases built up any kind of difficulty. Most regular inconvenience was subclinical urogenital infection (36.0%) next oligohydramnios (32.0%) and (16.0%) women presented with chorioamnionitis. The danger of disease is huge after PPROM. In this study disease was the most imperative difficulty of PPROM and comparable perception was noted by Okeke TC and his colleagues [17]. Infection rate was 22 percent; there was increment in rate of contamination with increment inactivity period more than 24hours [17].

In 1991, Romero et al reported that infection is twice as incessant in PROM than in preterm labour with intact membranes. In another study by Romero et al in 1993, in term PROM the occurrence of contamination was roughly 20% and in PPROM it was 38.3%[18]. Additionally, women with PPROM and work at the season of confirmation had a more noteworthy occurrence of chorioamnionitis than women with PPROM conceded without labour[18]. Related maternal medical and obstetrical complications had a profoundly critical effect on PROM. In this study 86.0% of PROM patients were admitted with different complications. Among them, 18.0% patients showed with chorioamnionitis.

Table shows the majority of the babies 21(42.0%) had birth weight in between 2.1-2.5kg and 8(16.0%) babies were under 1.5 kg body weight. Just 19.0% of the baby had birth weight in excess of 2.5 kilogram. Among the newborn babies, 26% had Apgar score below 7 at their first min of age and 10% had Apgar score below 7 at their 5 min of the age. The table shows APGAR score of the baby at first minute (74%) were between 7-10 and (18%) were between 4-6. Only (8%) was <4. The table shows most of the baby (90%) APGAR score at five minutes was within 7-10 and (6%) were within 4-6. (4%) remain <4, ultimately these babies transferred to NICU. Birth asphyxia was found in total 6 newborn and immediate resuscitation was given. After the resuscitation, 4(8%) of newborn improved, however, 2(4%) not improved and later these babies were transferred to NICU. Among the cases, 24.0%of the babies were prematurity, 13.0% developed birth asphyxia, 12.0% had neonatal sepsis and 4.0%were congenital anomaly.

Prospective study in Comilla Medical College Hospital[14] demonstrated that about 48.5% women presented with diverse complications related with PROM. Among which, 15.7% patients had oligohydramnios, 8.5% patients were presented with chorioamnionitis suggested by culture report of high vaginal swab. Around 10% women created obstetric complications (failed trial) relevant with medical diseases. The greater part of the baby (38.4%) was born with birth weight between 2.1-2.5kg and 10.3% babies were less than 1.5kg[14]. Despite the fact that there is some

morbidity when PROM occurs in term pregnancies, the major clinical problem is preterm PROM, a condition that happens in 3% of all pregnancies and is responsible for roughly 30% of all preterm deliveries as reported by Arias and Tomich on 1982[19].

Conclusions

Premature rupture of membrane is a critical occasion as it causes maternal complexities, expanded operative methods, neonatal morbidity and mortality. In conclusion, the findings of this study showed that term of side effects of PROM, maternal residence and dormancy are associated with adverse maternal outcomes. In addition, birth weight under 2 500 g, ICU admission, duration of PROM, and meconium-stained color of liquor are related with unfavorable fetal outcomes. The management of premature rupture of membranes has experienced different cycles of obstetric activity from benign neglect to immediate intervention. Paralleling these cycles of movement there have shifting degrees of concern about infection. The key factor in the fetal and maternal result is that the diagnosis of pre labour rupture of membranes needed to be established. However, our main goal was healthy mother and healthy baby. In managing PPROM, timely use of exact antibiotics, steroids and induction or augmentation of labor, reduce hospital stay and ultimately decline perinatal and maternal complications.

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