# Pre Term Labour: Rate and Relationship with Maternal and Neonatal Outcomes

**Mehwish Ateeq\* and Sadia Aslam**

*Dr Sulaiman Al Habib, Maternity Hospital, Riyadh, KSA*

**\*Corresponding Author:** Mehwish Ateeq, Dr Sulaiman Al Habib, Maternity Hospital, Riyadh, KSA.

## Abstract

Preterm birth is associated with 5 - 15% of pregnancies and is the leading cause of infant mortality and morbidity. The aim of this study was to determine the different variables of preterm labour and their relationship to maternal and neonatal outcomes. The study was conducted in Maternity Hospital, Dr Sulaiman Al habib Hospital, Riyadh, KSA. This study is an observational descriptive study conducted in tertiary care hospital of Dr Sulaiman Al Habib Medical group. Maternity Hospital is a 200-bed service All booked and unbooked patients who were admitted to the OBYGYN department in the years of 2017 and 2018 with preterm labour were included in the study. Preterm labour was diagnosed by history and examination. Calculation of gestational age was determined by the last menstrual periods and first-trimester ultrasound. Demographic data including age and parity were recorded. Prevalence of preterm labour, their impact on maternal and neonatal outcome and their relationship with various factors were recorded. Maternal outcome measures include number of patients with infections, previous history of preterm labour, cervical cerclage in current pregnancy, management options (by medical/surgical methods) and maternal mortality while neonatal outcomes include prematurity, intrauterine growth restriction, intrauterine fetal death, perinatal mortality and NICU admissions.

*Keywords: Preterm Birth; NICU*

## Introduction

Preterm birth is associated with 5 - 18% of pregnancies and is a leading cause of infant morbidity and mortality. Spontaneous preterm labor, a syndrome causes by multiple pathologic processes, leads to 70% of pre term births in the UK. The prevention and treatment of preterm labor have been a long standing challenge [1]. Two-thirds of preterm births occur after the spontaneous onset of labor, whereas the remainder is medically indicated due to maternal or fetal complications, such as preeclampsia or intrauterine growth restriction [2]. The success of progestogen treatment to prevent preterm birth in a subset of patients at risk is a cause for optimism. Solving the mystery of preterm labor, which compromises the health of future generations, is a formidable scientific challenge worthy of investment. Preterm birth is defined as birth prior to 37 weeks of gestation [2]. Preterm labor occurs when regular contractions result in the opening of your cervix after week 20 and before week 37 of pregnancy.

Preterm labor can result in premature birth. The earlier premature birth happens, the greater the health risks for your baby. Many premature babies (preemies) need special care in the neonatal intensive care unit. Preemies can also have long-term mental and physical disabilities.

The specific cause of preterm labor often isn't clear. Certain risk factors might increase the risk, but preterm labor can also occur in pregnant women with no known risk factors [3].

While some preterm births are iatrogenic, associated with severe complications of pregnancy (e.g. hypertensive disorders, antepartum haemorrhage, infection), or the result of multiple pregnancies following assisted reproduction, a high proportion of preterm births occur following spontaneous preterm labour of unknown cause [4]. Antenatal corticosteroids can reduce the mortality and morbidity related with preterm birth [5,6]. Herein we propose that preterm labor is a syndrome caused by multiple pathologic processes, summarize important gains in the prevention of spontaneous preterm birth, and highlight promising areas for investigation.

## Materials and Methods

### Study design

An observational, descriptive, hospital-based cross-sectional survey was conducted to determine the different variables of preterm labour and their relationship to maternal and neonatal outcomes. The study was conducted in Maternity Hospital, Dr Sulaiman Al habib Hospital, Riyadh, KSA.

### Study setting and population

This study is an observational descriptive study conducted in tertiary care hospital of Dr Sulaiman Al Habib Medical group. Maternity Hospital is a 200-bed service All booked and unbooked patients who were admitted to the OBYGYN department in the years of 2017 and 2018 with preterm labour were included in the study.

### Sample size

One hundred and eighty three patients admitted to the maternity hospital in the year 2017 and 2018 were enrolled in the study. The participants were selected through systematic random sampling.

### Data collection

Preterm labour was diagnosed by history and examination. Calculation of gestational age was determined by the last menstrual periods and first-trimester ultrasound. Demographic data including age and parity were recorded. Prevalence of preterm labour, their impact on maternal and neonatal outcome and their relationship with various factors were recorded. Maternal outcome measures include number of patients with infections, previous history of preterm labour, cervical cerclage in current pregnancy, management options (by medical/surgical methods) and maternal mortality while neonatal outcomes include prematurity, intrauterine growth restriction, intrauterine fetal death, perinatal mortality and NICU admissions. Data was collected by filling a spreadsheet and analyzed using SPSS package in the form of percentages (relative frequencies) of variables. Chi square test was used to evaluate the significance. A P valve of less than 0.05 was considered statistically significant.

### Data processing and analysis

Data was collected by filling a spreadsheet and analyzed using SPSS package in the form of percentages (relative frequencies) of variables. Chi square test was used to evaluate the significance. A P valve of less than 0.05 was considered statistically significant.

### Ethical statement

The research was carried out after approval of the Ethics Committee of Dr Sulaiman Al Habib Hospital.

## Results

### Main sample characteristics

In our study despite small number of patients we have noted:

- Pre-term labour is associated with increase rate of operative delivery.

- Pre-term labour is associated with poor APGAR score of babies.

- Higher rate of admissions in NICU.

However, we recommend further studies with larger number of patients to further evaluate the associations.
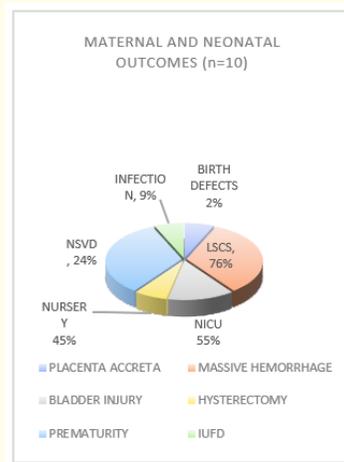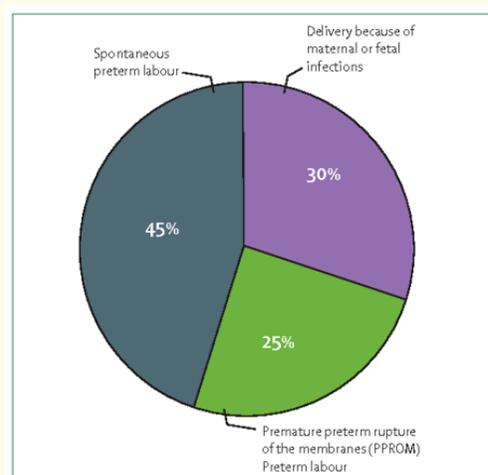


*Figure 1*



*Figure 2: Obstetric precursors of preterm birth.*

## Discussion and Conclusion

183 patients who presented to our hospital in the year 2017 - 2018, with preterm labor were reviewed randomly. Out of these 82% were booked patients and had more than 3 visits in the clinic. The total number of deliveries in our unit is approximately 4100/year. The mean age of women was 32.2. 33% were primigravida, 47% were between P1-P3 and the remaining 20% were multigravida, P4 and above. 19% women were found to have previous history of pre-term labor. 16% had twin pregnancy. 20% of them had history of previous LSCS and 10% of them had cervical cerclage in the current pregnancy. Among the 20% who had previous LSCS, 4% had previous 1 LSCS, 12% had previous 2 LSCS, 2% had previous 3 LSCS and the remaining 2% had Previous 4 LSCS. 82 (82%) women had a spontaneous pregnancy and 18 of them underwent IVF in their current pregnancy. Majority of them, 93%, received dexamethasone and 7 of them did not. The mean gestational age of delivery was 32+1 week. 13 % were extremely preterm (less than 28 weeks), 29% were very preterm (28 to 31+6 weeks) and 58 % were moderate or late preterm (32 to 36+6 weeks).

Out of 183 women, who presented with pre-term labour, 24 of them delivered normally and the rest 76% delivered by LSCS. Regarding fetal outcome, 2% of the babies delivered had birth defects. 8% had poor APGAR and 37 % had APGAR in between 5 - 7 at 5 mint. 45% babies who had preterm delivery were admitted to Nursery and the remaining 55 % were admitted to NICU. 9% of the women presenting with pre-term labour had vaginal infection.

Based on data from 184 countries, the global average preterm birth rate in 2010 was 11.1%. Preterm birth rates varied widely between countries. At a national level, the estimated preterm birth rate ranged from about 5% to 18%. The highest rates of preterm birth were in south-eastern Asia and sub-Saharan Africa (13.5% and 12.3% of all live births, respectively) [7]. Studies revealed incidence to be higher in developing countries than in developed countries. India has the highest preterm birth rate; incidence of around 13.0%.

It has been reported in other studies, in contrast to the current study (preterm rate of 5 - 8%). The authors speculate that this could probably be because of the fact that the pregnant women in this region are healthy. They are young, do not smoke or drink alcohol, and have very few or nil preexisting illnesses. They avail antenatal services regularly and institutional deliveries are the norm.

The present study has shown that preterm delivery led to more NICU admissions and more LSCS.

The mean gestational age of preterm delivery in our study was found to be 32 + weeks as compared to the study done by Shresta., *et al*. [8] which showed the mean gestational age to be 30.02 ± 0.37 weeks. Common risk factor associated with preterm birth in their study were inadequate antenatal checkup (52%), while in our study 82% were booked patients.

## Conflicts of Interest

The authors have no conflicts of interest to declare.

## Acknowledgments

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4.   University of Bristol, Clinical Science at South Bristol (Obstetrics and Gynaecology), St Michael's Hospital and Dorothy Hodgkin Building, Bristol, UK.

5.   Department Obstetrics and Gynecology, University of Milano-Bicocca, Carate-Giussano, Milano-Bicocca 20841, Italy.

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