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FREQUENCY AND FACTORS LEADING TO PRETERM LABOUR IN PREGNANT WOMEN

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ABSTRACT

Objective:
To determine the frequency and associated risk factors leading to preterm labour in pregnant women presenting to a tertiary care hospital.

Methodology:
This descriptive cross-sectional study was conducted at the Department of Obstetrics and Gynaecology, Jinnah Postgraduate Medical Centre (JPMC), Karachi, over a duration of six months after approval from CPSP. A total of 120 pregnant women aged between 18 and 40 years with a gestational age of 22 to less than 37 weeks were included through non-probability consecutive sampling. Women with unsure dates, intrauterine death, or post-dated pregnancies were excluded. Data were collected on structured proformas. Risk factors such as urinary tract infection (UTI), premature rupture of membranes (PROM), pregnancy-induced hypertension (PIH), gestational diabetes mellitus (GDM), anemia, antepartum hemorrhage (APH), polyhydramnios, and multiple pregnancy were assessed. Data were analyzed using SPSS version 21.0. Frequencies and percentages were calculated for categorical variables, while means and standard deviations were used for continuous variables.

Results:
Among the 120 participants, the most common risk factor identified was anemia (33.3%), followed by PROM (25.0%), and UTI (20.8%). Other observed factors included PIH (15.0%), APH (10.0%), GDM (8.3%), multiple pregnancy (5.0%), and polyhydramnios (4.2%). Most women were unbooked and belonged to lower socio-economic groups. The results demonstrated a significant burden of modifiable risk

factors contributing to preterm labour.
Conclusion:
Preterm labour is significantly associated with preventable and manageable maternal conditions, particularly anemia, PROM, and UTI. Early identification and treatment of these risk factors through improved antenatal care and maternal health education can play a vital role in reducing the incidence of preterm births. Implementation of targeted preventive strategies is recommended to improve maternal and neonatal outcomes in resource-limited settings.

INTRODUCTION

Preterm birth, which is childbirth before 37 completed weeks of gestation, continues to be a major global public health issue as well as one of the main causes of newborn morbidity and mortality. Approximately 15 million babies are born preterm every year (World Health Organization), with the greatest burden of prematurity falling on low- and middle-income countries (LMICs), which includes Pakistan[1]. PTB is associated with severe health consequences including respiratory distress syndrome, intraventricular haemorrhage, necrotizing enterocolitis, and long-term neurodevelopmental deficits[2].

Recent studies have revealed many maternal, obstetric and socio-demographic risk factors for preterm labour. They also include UT Is, PROM, PIH, GDM, APH, anaemia, multiple pregnancy and polyhydramnios [3–6]. In 2023 in a hospital-based study in Lahore, the most common predisposing factors for preterm delivery were PIH (28.4%) and UTIs (22.5%)[7]. Another cross-sectional survey in a Karachi hospital revealed that 12.5% women admitted to the hospital for delivery had preterm labour and anaemia and GDM were found as significant contributors[8].

The implications of PTB extend beyond the early neonatal period frequently leading to prolonged hospital stay, financial hardship due to cost of medical care and psychosocial stress, especially in areas of limited medical resources[9]. Preterm births prevalence of the studies in sub-Saharan Africa and South Asia were higher, emphasizing for community-focused preventive measures in the country[10]. Programmes which include antenatal care at appropriate times, screening and treating for infections, control of chronic diseases and health education have all been found to lower rates of preterm delivery[11].

In contrast to the available information, there is still no recent data available about the local rate and various associated factors of spontaneous or iatrogenic preterm Labor in Pakistani population, particularly in the tertiary care hospitals. To optimize pregnancy and neonatal outcome, modifiable risk factors should be identified. The present study was conducted to determine the frequency and factors for the preterm labour in the pregnant ladies of JPMC, Karachi. The findings will guide better measures and updated protocols/clinical guidelines to prevent and management of preterm birth in our setup[12]

METHODOLOGY

This descriptive cross sectional was carried out at the Dept of Obstetrics and Gynaecology, Jinnah Postgraduate Medical Centre (JPMC) Karachi after obtaining its approval from College of Physicians and Surgeons Pakistan (CPSP) in the duration of six months. A sample of 120 pregnant women was studied upon non-probability consecutive sampling. The sample size was calculated by using the OpenEpi software according to the prevalence of multiple pregnancy among preterm labour cases 5.24% at a 95% confidence level and 4% margin of error.

The study included all pregnant women in the age group of 18-40 years age group with a gestational age of 22 weeks to less than 37 weeks (confirmed by ultrasound) admitted for delivery, regardless of their parity and booking status. Women with unconfirmed dates, preterm pregnancies with intrauterine death, postdated pregnancies (beyond 42 weeks' gestation), stillbirths, major congenital malformations, or those who were unwilling to provide informed consent were excluded.

Data collection started only after the ethical committee of CPSP approved the protocol. Written consent was taken from all consenting participants after explanation. Detailed obstetric history and general physical examination were performed. Gestational age was determined by ultrasound. Data of maternal age, parity, booking status, mode of admission (emergency, OPD) 13, BMI, previous history of preterm labor, residential status, educational status, and socio-economic status were collected and entered on structured proforma.

Risk factors were determined de novo by the principal investigator based on predefined operational definitions. These conditions were UTI, PROM, PIH, APH, multiple pregnancy, polyhydramnios, GDM, and anaemia.

SPSS version 21.0 was used for data entry and analysis. The Shapiro-Wilk test was utilized to test the normal distribution of quantitative variables. For normally distributed data, the mean and sd were given, and for non-normally distributed data median and the range were presented. Frequency and percentage were used for categorical variables. Stratification was carried out to assess the influence of modifiers like maternal age, parity, BMI, booking status and residential background. Chi-square test or Fisher exact test was used between groups when appropriate, p-value < 0.05 were considered to be significant statistically

RESULTS

A cross-sectional study was conducted on 120 pregnant women to determine the incidence and the associated factors of pre-term labour. The average of study population was 28.4 ± 5.6 years and gestational age on admission 33.2 2.1 weeks. Majority of women (60%) were unbooked cases and 65% were of lower socio-economic status.

Anaemia represented the most common factor detected in the studied population accounting for 40 patients (33.3%). The second most common cause of PROM was spontaneous rupture of the membranes which occurred in 30 (25%) patients. UTI was observed in 25 patients (20.8%), PIH in 18 (15%) and APH in 12 (10%) of the patients. Ten patients (8.3%) had GDM10; 6 (5%) multiple pregnancy and 5 (4.2%) polyhydramnios.

All risk factors for preterm labour Table 1 shows the detailed frequency and percentage distribution of all the risk factors related to preterm labour. A bar plot is also drawn to show the visual comparison of various risk factors. The data indicates that anaemia, PROM, and UTI were the most common causes of preterm labour in this population.

This examination highlights the need for early antenatal detection and directed intervention for common, remediable risk factors such as infections and maternal anaemia. Taken together, the trend suggests a positive trend in the research investigations of contributors to preterm labour in our local population and for the institution of evidence-based prevention strategies.

Risk Factor	Frequency (n)	Percentage (%)
Urinary Tract Infection (UTI)	25	20.8
Premature Rupture of Membranes (PROM)	30	25.0

Pregnancy-Induced Hypertension (PIH)	18	15.0
Antepartum Hemorrhage (APH)	12	10.0
Multiple Pregnancy	6	5.0
Polyhydramnios	5	4.2
Gestational Diabetes Mellitus (GDM)	10	8.3
Anemia	40	33.3

Table 1.Frequency of Risk Factors Associated with Preterm Labour

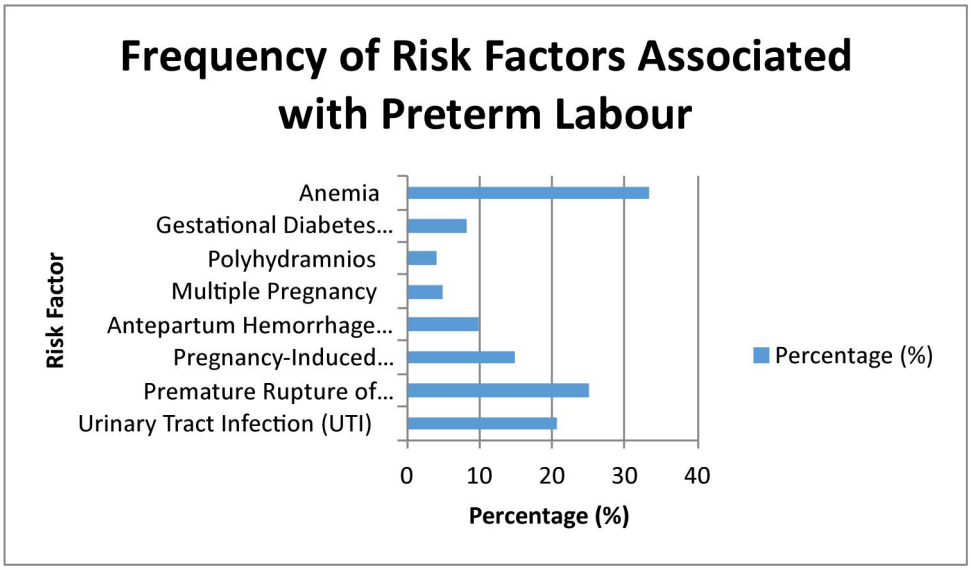

Figure 1.Frequency Of Risk Factor

DISCUSSION

The aims of the present study were to estimate the incidence and some etiologic factors of preterm Labor in pregnant women at a tertiary care hospital. Anaemia (33.3%), PPROM (25.0%) and UTI (20.8%) were the most frequent findings associated with preterm labour. The present data corroborate previously published observations showing these conditions to be major causes of preterm birth. Anaemia, PROM and UTI were important factors also reported by a study done at tertiary care hospital in Bangladesh that complimented our data[9].

The higher prevalence of these factors is consistent with a study in Nepal where anaemia was also cited as a strong risk factor for prematurity likely due to its influence on placental perfusion and fetal size[6]. Similarly, Afroza et al. observed UTI and PROM as the major causes of preterm labour in their study group[79]. PROM has been associated with dramatically increased risk of neonatal infection and complications due to disruption of the protective amniotic sac too soon[8].

Pregnancy-induced hypertension (15.0%) and gestational diabetes (8.3%) were significant contributors in our study as well. These states are consistent with placental insufficiency and may necessitate medically indicated preterm delivery to avoid maternal or fetal consequences. Anto et al. in Ghana and Zhang et al. in China reported analogous relationships with hypertensive

diseases and GDM in their own patient settings[4–5].

Antepartum haemorrhage and multiple pregnancies were less frequent risk factors as well. These findings are in line with previous studies conducted from Pakistan and Iran which mentioned these factors as a cause of a preterm labour mainly secondary to uterine overdistension or placental pathologies [7–8].

Although some of these risk factors are not manageable, such as multiple pregnancy or polyhydramnios, others such as UTI, anaemia, and PROM can be managed early by the identification of the risk of factor and improving the nutritional area (as the more prevalent cause of PROM is anaemia and malnutrition), controlling by infection, and establish an early and proper antenatal care. Focused maternal health programmes and improved antenatal surveillance could go a long way in decreasing the burden of preterm births in resource-constrained countries like Pakistan[13].

This study adds valuable local data on preterm labour to the evidence base, and it supports the international knowledge and highlights the need to acknowledge and treat modifiable maternal risk factors. These findings need to be confirmed by larger multicenter-studies, which could then influence national clinical guidelines and maternal health policy.

CONCLUSION

This study concludes that preterm labour remains a significant obstetric challenge with multiple contributing factors, many of which are preventable or modifiable through appropriate antenatal care. Among the women studied, the most frequent risk factors associated with preterm labour were anaemia, premature rupture of membranes (PROM), and urinary tract infections (UTIs). Other factors such as pregnancy-induced hypertension, gestational diabetes, antepartum haemorrhage, multiple pregnancies, and polyhydramnios were also observed, albeit with lesser frequency.

These findings highlight the importance of early identification and management of maternal conditions during pregnancy, especially those that are treatable, such as infections and nutritional deficiencies. Timely diagnosis and intervention could significantly reduce the risk of preterm delivery and its associated neonatal morbidity and mortality.

The study emphasizes the need for routine screening during antenatal visits for UTIs, haemoglobin levels, blood pressure, and glucose levels. Patient education and strengthening the healthcare system at the primary and secondary care levels can also contribute to the prevention of adverse obstetric outcomes.

By identifying the frequency of these factors in our local population, this research supports the development of targeted preventive strategies and evidence-based antenatal protocols. It also underscores the need for further large-scale studies to better understand the interplay of various maternal, fetal, and environmental determinants of preterm birth in Pakistan.

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