



ORIGINAL ARTICLE

Frequency of Preterm Births, A Multi-Center Study

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Abstract

Objectives: To see the frequency of preterm births and their causes in our setups.

Methodology: A descriptive cross-sectional study was conducted on the patients of Allama Iqbal Memorial Teaching Hospital, Family Hospital and Chattha Hospital. Patients presented to obstetrics outpatient department or emergency to labor room, with 28-37 weeks of gestation from last date of menstrual period were observed and analyzed for study. The study comprised of total 610 cases of preterm births who presented in department of obstetrics with preterm labor.

Results; Following are the important figures; Premature births 83%, C-section 64%, Urban 69.2%, Low Birth weight 8.3%. Maternal hypertension increased the risk of premature labour 8.44 time greater than non-hypertension mother and maternal diabetes raised the risk 6.96 times more than in non-diabetic mothers.

Conclusion: Frequency of preterm births is alarming in our country, causing death and disabilities in babies.

Keywords: Pre-mature, maternal hypertension, maternal diabetes, preterm.

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Introduction

Preterm is defined as babies born alive before 37 weeks of pregnancy are completed. There are sub-categories of preterm birth, based on gestational age:

- extremely preterm (less than 28 weeks)
- very preterm (28 to less than 32 weeks)
- moderate to late preterm (32 to 37 weeks).¹

It is worth noting that a comprehensive understanding of its various facets is essential for optimizing care and outcomes for these vulnerable infants.²

Infants born at the lower limit of viability have the highest mortality rates and the highest rates of all complications. Few studies have reported

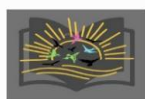
mortality and morbidity rates in gestational age-specific categories.^{3,4}

Causes of Preterm Births:

An examination of the factors causing premature births reveals:

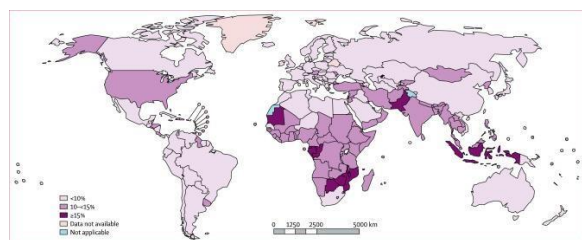
1. multiple fetal pregnancies,
2. infections,
3. Diabetes Mellitus and Hypertension
4. Placental malfunctions,
5. lifestyle influences,
6. physical injuries or trauma, and
7. cervical issues.

The morbidity and mortality rate for neonates is 70% due to preterm births. Preterm labor contributes disproportionately to prenatal mortality, despite having an incidence of about 10%.



Preterm labor is a series of events that culminate in an early gestational delivery, lowering the neonate's chances of survival and exposing it to a wide range of risks, including death and permanent disability. There will be a notable drop in prenatal mortality even if the rate of preterm deliveries drops by 25%. One of the hardest things for obstetricians to do is to prevent preterm labor, and a lot of that depends on social and economic factors that also need to be addressed. A major medical, social, and financial issue is preterm births.

Worldwide, 15 million babies are born preterm every year and of these 1.1 million will die. Of the survivors, many will be left with lifelong disability. The vast majority of these births occur in third world countries where the incident of this is three fold more and the progression is worst.



Global Burden of Prematurity⁵

Premature birth complications^{6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16}

1. Respiratory Distress Syndrome (RDS)
2. Transient tachypnea
3. Bronchopulmonary Dysplasia (BPD)
4. Pneumonia
5. Apnea and Bradycardia
6. Infection
7. Jaundice
8. Intraventricular hemorrhage (IVH)
9. Inability to maintain body heat
10. Immature gastrointestinal and digestive system
11. Anemia
12. Patent Ductus Arteriosus (PDA)
13. Retinopathy of Prematurity (ROP)
14. Necrotizing Enterocolitis (NEC)
15. Sepsis

Objectives: To see the frequency of preterm births and their causes in our setups.

Methodology:

A cross-sectional descriptive study was carried out on the patients of Chattha Hospital, Family Hospital, and Allama Iqbal Teaching Hospital. The study involved the observation and analysis of patients who were 28–37 weeks along from the last menstrual period and who presented to the emergency room or Obstetrics Outpatient Department. The study included 610 preterm birth cases in total, all of which presented with preterm labor in the obstetrics department.

Results:

Total number of deliveries	Total number of preterm deliveries	Frequency of preterm deliveries
7312	610	8.3%

Table 1: Frequency of preterm births

Sr. No	Age Groups (in years)	Gestational Age (in completed weeks)	
		Very preterm (28-32 weeks)	Moderately preterm (33-36 weeks)
		%	%
1.	<20	9.8%	17%
2.	21-25	37.2%	28.3%
3.	26-30	35.3%	19.7%
4.	31-35	15.7%	19.3%
5.	>35	2%	15.7%
	Total	100%	100%

Table 2: Distribution of patients according to age

Basic Parameter	Mean	Standard Deviation
Maternal age	27.27 years	8.20 years
Gestational age (in weeks)	30.65 weeks	7.74 weeks

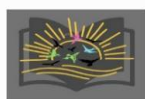


Table 3:

	Maternal hypertension (YES)	Maternal hypertension (NO)	Total
Premature labor (YES)	196(a)	414(b)	610
Premature labor (NO)	204(c)	6498(d)	6702
Total	400	6912	7312

Relative Risk = 8.44

Table 4: Maternal Hypertension and premature labor.

Interpretation:

Mothers with hypertension are roughly 8.44 times more likely to experience an early labor than mothers without hypertension, according to a relative risk of 8.44.

	Maternal diabetes (YES)	Maternal diabetes (NO)	Total
Premature labor (YES)	140 (a)	470 (b)	610
Premature labor (NO)	160 (c)	6542 (d)	6702
Total	300	7012	7312

Relative risk: 6.96

Table 5: Maternal Diabetes and premature labor

Interpretation:

The risk of premature labor is roughly 6.96 times higher for mothers with diabetes than for mothers without the disease, according to a relative risk of roughly 6.96.

Sr No	Rural/Urban	Percentage
1.	Rural	30.8%
2.	Urban	69.2%
	Total	100%

Table 6: Distribution of patients according to residence

Delivery Method	No. of Patients
C-section	390
Normal Delivery	220
Total	610

Table 7: Distribution of patients according to C- sections and normal deliveries

Sr No.	Birth weight (in kg)	Gestational Age (in completed weeks)		Percentage
		Very Preterm (28-32 weeks)	Moderately Preterm (33-36 weeks)	
		%	%	
1.	1.00-1.49	40%	4.4%	10.33%
2.	1.50-1.99	44%	33.2%	35%
3.	2.00-2.49	14%	57.6%	50.33%
4.	>2.50	2%	4.8%	4.33%
	Total	100%	100%	100%

Table 8: Association of Birth Weight (in kilograms) with Prematurity

Parameter	Mean	Standard Deviation
Birth Weight	1.99 kg	0.37

Table 9:

The mean birth weight in our study was 1.99(± 0.37) kg

SI No	Location in growth chart	Gestational Age (in completed weeks)		Percentage
		Very Preterm (28-32 weeks)	Moderately Preterm (33-36 weeks)	
		%	%	
1.	SGA	10%	43.6%	38%
2.	AGA	86%	56%	61%
3.	LGA	4%	0.4%	1%
	Total	100%	100%	100%

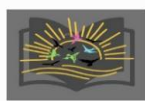


Table 10: Association of Birth Weight (according to Growth Chart) with Prematurity (n=300)

SGA-Small-for-gestational age

AGA-Average-for-gestational age

LGA-Large-for-gestational age

Discussion

According to the current study, which included 610 preterm birth cases showed 8.3% frequency of preterm births.

The maximum babies were born weighing between 2 and 2.4 kg (mean birth weight: 1 point 99 ± 0.37 kg). Of the babies born, 98–35 percent were underweight (i.e. E. less than 2 point 5 kg). Out of the 610 patients in our study, 220 had a normal vaginal delivery and 390 had a cesarean section.

The preterm birth and low birth weight are major contributors to infant mortality, this is in agreement with our study.¹⁷

Large variations in infant mortality rates exist among different geographical regions especially in 3rd world countries. This coincides with the current study.¹⁸

Transportation from rural areas also enhances the problem. In this study we found 30.8 % rural mothers with preterm births the same results seen by Balckwell et al.¹⁹ However obstetrician are more prone to do C-Section than normal deliveries in our setup which is a trend in developing countries.¹⁹

Lack of perinatal services in the villages has increased the risk of prematurity. We found more than 30% rural patients. The Samuelson et al. also highlighted same situation.²⁰

Lack of treatment facilities has worsened the condition in rural areas. The Finer et al. in 2006 described the problem in his research.²¹

The rate of preterm birth in women with both conditions (D + H) (D=Diabetes Mellitus, O = Obesity, H = Hypertension, PTB = Preterm Birth) was 35.5% versus 25.5% in women with chronic hypertension versus 19.4% in women with pregestational diabetes (p<0.001). This research favours our figures.²²

Pre-pregnancy hypertension had been associated with highest risk for preterm births (PTB) with preeclampsia (aRR 45.42, 95% CI 39.69-51.99) and PTB with SGA (aRR 9.78, 95% CI 7.81-12.26) while pre-pregnancy diabetes was associated with increased risk of PTB with LGA (aRR 28.85, 95% CI 24.65-33.76).²³ In our study the relative risk of PTB is almost 8 times more in

maternal hypertension and almost 6 times more in diabetic mothers which is also seen in international study.

Results of an international study showed that 506,483 women were eligible for analysis. 30139 pregnancies (6.0%) were complicated by PTB <37 weeks, of which 7375 (24.5%) had D or O or H. Relative to women without D or O or H, the aRR for PTB <37 weeks was jogger for D (3.51;95% CI 3.26-3.78 and H (3.81; 95% CI 3.55-4.10) than O (1.14;95% CI 1.10-1.17).²⁴ These results strengthen our study.

Conclusion

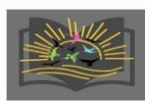
Frequency of preterm births is alarming in our country, causing death and disabilities in babies.

Recommendation

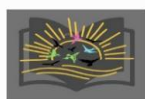
1. Intervention programs should therefore focus on a variety of determinants. The risk of a subsequent preterm birth may be decreased by providing adequate support from the preconception period, which includes monitoring for known causes of prior adverse outcomes, proper nutrition, spacing out pregnancies, avoiding hazardous substances, demanding work environments, and ongoing stress, as well as screening and treating infections, medical conditions, and STDs.
2. Proper and complete antenatal care of mothers especially for diabetes mellitus.¹
3. Prompt management of premature baby in a hospital²⁵
4. Parents should be present in NICU.^{26, 27}

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