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Original Article

Incidence, Risk Factor, Outcome among Preterm Delivery in Nursery of Ibnsina Teaching Hospital

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Abstract

One of the main causes of infant morbidity and mortality, as well as a major public health burden, is preterm birth (less than 37 weeks of gestation). Preterm delivery risk factors include a wide range of factors. The risk landscape is significantly shaped by maternal age, socioeconomic status, healthcare access, and nutritional status. this study aimed to assess preterm birth's incidence, risk factors, and effects. An observational study was conducted from January, 2022 to December, 2022, among 111 preterm babies in nursery of Ibnsina Teaching Hospital in "Sirt" city. Inclusion criteria were all the preterm babies (less than 37 weeks of gestation). While, term delivery, deliveries outside Ibnsina hospital and the mothers of the newborn babies who did not provide consent were excluded. A total of (n= 111) preterm delivered women were conducted form all 3953 deliveries during the study period, after excluding the participants who did not match with the inclusion criteria. It was discovered that the incidence of preterm births was 2.81% from the total deliveries and due to the complication of preterm birth the pre discharged mortalities was found to 22(19.8%). there are a number of factors that can increase the risk of pre discharged mortality rate among preterm birth, including the mother's age, obstetric and medical history of mothers, treatment and medical care provided to the preterm births during the period of nursery stay.

Key words: *Incidence, Risk Factor, Preterm Delivery and premature infants*.

Introduction

One of the main causes of infant morbidity and mortality, as well as a major public health burden, is preterm birth (less than 37 weeks of gestation) [1,2]. Of all births worldwide, there are 15 million (11.1%) preterm births annually, with 13.3% of these births happening in South Asia alone [1]. It is estimated that over 81,000 premature births occur in North and South of Africa each year [3]. According to a 2010 study by Lee and colleagues, 14% of newborns were preterm [4]. Although the number of preterm births has increased globally, especially in developing nations [5]. The burden of preterm births must be addressed if the Sustainable Development Goal that target of reducing the neonatal mortality rate to 12 per 1000 live births by 2025 to 2030 is to be met [6].

Preterm babies are more likely to die, according to a multi-country study carried out in low- and middle-income countries [7]. Neonatal infections have been primarily linked to an increased risk of death [8]. They are more likely than term babies to experience both short- and long-term motor and neurocognitive impairments, as well as malnourishment, higher chance of chronic illness, and early mortality [9, 10].

Preterm delivery risk factors include a wide range of factors. The risk landscape is significantly shaped by maternal age, socioeconomic status, healthcare access, and nutritional status. The importance of these factors is highlighted in reports from various parts of India, highlighting the need for a regionally specific investigation [11].

The etiology of preterm birth is further complicated by the wide variations in the prevalence of maternal complications, such as hypertensive disorders (reported at rates ranging from 6.6% to 14.5%) and gestational diabetes (reported at rates ranging from 7.5% to 15.2%) [12, 13]. This particular data emphasizes how important it is to look into how risk factors vary by region in order to plan interventions appropriately [14,15]. Preterm babies are more likely to experience perinatal complications such as sepsis (prevalence: 12.4% to 18.9%), intraventricular hemorrhage (prevalence: 11.2% to 16.7%), and respiratory distress syndrome (prevalence: 27.1% to 34.8%) [16]. It is crucial to comprehend these outcomes in the context of referral hospitals, where clinical procedures have a substantial influence on outcomes [17-19]. The purpose of the study was to assess preterm birth's incidence, risk factors, and effects in "Sirt" city, Libya.

Methods

An observational study was conducted from January, 2022 to December, 2022, among 111 preterm babies in nursery of Ibnsina Teaching Hospital in "Sirt" city. Inclusion criteria were all the preterm babies (less than 37 weeks of gestation). While, term delivery, deliveries outside Ibnsina hospital and

the mothers of the newborn babies who did not provide consent were excluded. Following the protocol of the study, informed consent was obtained from all individual participants were included (mothers of preterm births). The data collection was carried out by the investigator by using pre-designed questionnaire that contain the following: History of Obstetrics: Details regarding prior pregnancies, such as the quantity of prior pregnancies and the prevalence of preterm births delivery, as well as the existence of any complications like gestational diabetes or hypertensive disorders, were noted. Antenatal Care: Information was recorded about when prenatal care was started, how often antenatal visits were scheduled, and whether or not advised care protocols were followed.
Neonatal Consequences: Neonatal complications (e.g., sepsis, intraventricular hemorrhage, and respiratory distress syndrome), birth weight and gestational age at birth. Delivery mode: Both the delivery technique (cesarean section versus vaginal delivery) and its indications were noted. The incidence of preterm births was calculated. All the data were analyzed and compared using the statistical package for social science SPSS version 22.0. (IBM Corp. Armonk, NY), and the measured values are expressed as mean and stander deviation. Data were analyzes using one- way analysis of variance, person's correlation coefficient, and multivariate liner regression analysis. Statistical significance was defined as $P \leq 0.05$. Data were presented in form of tables.

Results

A total of (n= 111) preterm delivered women were conducted form all 3953 deliveries during the study period, after excluding the participants who did not match with the inclusion criteria. It was discovered that the incidence of preterm births was 2.81% from the total deliveries. 69(62.2%) were male baby and 42(37.8%) were female and the average of the mother's age was 32.89±5.79. In addition to, 85(76.5%) from the total preterm babies were discharged from the hospital, gestational age ranged between 36-37 week with the percentage of 54(63.5%). However, due to the complication of preterm birth the pre discharged mortalities was found to 22(19.8%) between 35-36 week of gestational age 6 (27.27%) and the rest of participants were transferred to other departments accordingly. (Table.1, 2)
Socio-demographic characters such as, gender of babies, babies and mother's age and status. In addition to obstetric characteristics of preterm babies mothers such as obstetric and past medical history, mode of delivery and risk factors each demonstrated a strong correlation with health statues of preterm births (discharged, die and /or transferred). Regarding to obstetric history of the participants there was 15(13.5%) were primi gravida followed by14(12.6%) of the mother were Gravida3 Para2 Abortion0 On the other hands, about 89 (80%) from the total cases they gave birth by caesarean section S.C. followed by vaginal delivery by the percentage of 22(20 %). According to the risk factors that the mothers presented with, approximate 44(39.63%) were had previous caesarean section, 12 (10.81%) from the cases were suffering from leaking, mothers that induced the pregnancy with primary infertility represent about 4 (3.60%)) with the same frequency of Abruption placenta. Pre-eclampsia and Chronic Hypertension and Brady cardia represent about 7(6.30%) from the presented risk factors. In addition to Cord prolapse Intracytoplasmic sperm injection 2 (1.80%), others represent 8(7.20%). (Table .2)

Table.1 distribution of study sample according to gestational age with baby's health status

		Status					
		Discharge		Die		Transfer	
		N	%	N	%	N	%
Gestational age	28 week	0	0	2	9.09	0	0
	28-29 week	0	0	1	4.55	0	0
	29-30 week	0	0	1	4.555	0	0
	30-31 week	0	0	4	18.18	1	25
	31-32 week	1	1.2	0	0	0	0
	32-33 week	0	0	4	18.18	0	0
	33-34 week	3	3.5	2	9.09	1	25
	34-35 week	12	14.1	1	4.55	1	25
	35-36 week	15	17.6	6	27.27	0	0
	36-37 week	54	63.5	1	4.5	1	25
TOTAL		85	100	22	100	4	100

Table .2: Socio-demographic, obstetric characteristics of preterm babies

Variables	Preterm: No. (%)	P. Value
Sex		
Male	69(62.2%)	0.520
Female	42(37.8%)	
Status		
Discharge	85(76.57%)	0.001
Die	22(19.8%)	
Transfer	4(3.60%)	
Mother age	32.89±5.79	0.001
<25	6(5.4%)	
25-35	62(55.8%)	
>=35	43(38.7%)	
Mother history		0.474
Gravida10 Para7 Abortion 2	3(2.7%)	
Gravida11Para 10Aortion 0	1(0.9)	
Gravida 12Para 6 Abortion5	1(0.9)	
Gravida14 Para 8 Abortion 5	1(0.9)	
Gravida15 Para4 Abortion10	1(0.9)	
Gravida19 Para7 Abortion 11	1(0.9)	
Gravida 2 Para 0Abortion 1	3(2.7%)	
Gravida 2 Para1 Abortion 0	7(6.3%)	
Gravida3 Para1 Abortion1	3(2.7%)	
Gravida 3 Para2 Abortion 0	14(12.6%)	
Gravida 3Para 3 twinAbortion 0	1(0.9)	
Gravida 3Para 3 twin abortion 0	1(0.9)	
Gravida 4 Para1 Abortion 2	2(1.8%)	
Gravida 4 Para2 Abortion1	3(2.7%)	
Gravida 4 Para3 Abortion 0	7(6.3%)	
Gravida 4 Para 4 twinAbortion 0	3(2.7%)	
Gravida 5 Para2 Abortion2	1(0.9)	
Gravida5 Para5 twin Abortion 0	2(1.8%)	
Gravida 5 Para3 Abortion1	1(0.9)	
Gravida5 Para4 Abortion0	8(7.2%)	
Gravida6 Para2 Abortion30	1(0.9)	
Gravida6 Para3 Abortion2	3(2.7%)	
Gravida6 Para4 Abortion1	4(3.6%)	
Gravida6 Para5 Abortion0	3(2.7%)	
Gravida7 Para4 Abortion 2	3(2.7%)	
Gravida7 Para5 Abortion1	3(2.7%)	
Gravida7 Para6 Abortion0	5(4.5%)	
Gravida 8 Para4 Abortion3	3(2.7%)	

Gravida8 Para6 Abortion1	1(0.9)	
Gravida8 Para7-2 Abortion0	1(0.9)	
Gravida8 Para7-3 Abortion0	1(0.9)	
Gravida8 Para7 Abortion0	2(1.8%)	
Gravida9 Para5 Abortion3	1(0.9)	
Gravid 9 Para6 Abortion2	1(0.9)	
Primi Gravida	15(13.5%)	
Mode of delivery		0.151
Cesarean section		
1st Cesarean section	45(50.5 %)	
Previous I	9 (10.11%)	
Previous II	11 (12.35%)	
Previous III	11(12.35%)	
Previous IV	9 (10.11%)	
Previous V	3 (3.37 %)	
Previous VI	1(1.12%)	
Vaginal Delivery	22 (20%)	
Risk factor		0.165
Leaking	12 (10.81%)	
Previous Cesarean section	44(39.63%)	
Brady cardia	7(6.30%)	
Abruption placenta	4 (3.60%)	
Pre-eclampsia and Chronic Hypertension	7 (6.30 %)	
Meconium	2 (1.80%)	
cord prolapse	2 (1.80 %)	
Intracytoplasmic sperm injection	2 (1.80 %)	
Induced pregnancy	4 (3.60 %)	
OTHERS	8 (7.20%)	

Where, the highest pre discharged mortality rate were among mothers age ranging between 25-35 years by the percentage of 49 (44.1%) in comparison with mothers aged less than 25 years 4(306%) (p = 0.001). (Table.3).

Table.3: factors associated with pre discharged mortality ratsse of preterm births.(mothers age)

Status		**Moth. Age group**			**Total**
		<25	**25-35**	**>=35**	
Discharge	Count	4	49	32	85
	% of Total	3.6%	44.1%	28.8%	76.6%
Die	Count	1	12	9	22
	% of Total	0.9%	10.8%	8.1%	19.8%
Transfare	Count	1	1	2	4
	% of Total	0.9%	0.9%	1.8%	3.6%
Total	Count	6	62	43	111
	% of Total	5.4%	55.9%	38.7%	100.0%

The risk of per discharge mortality was decreased among preterm babies who received both of ampicillin and gentamycin antibiotics at the nursery. Where, the number of premature infants discharged reached approximately 55. In addition to 27 who receive claforan with amikacin and followed by 3 discharged preterm infants after receiving meronium with vancomycin. (Table.4)

Table.4: factors associated with pre discharged mortality rate of preterm births. (treatment)

Treatment:	STATUS			
	Discharge	Die	Transfer	Total
Ampicillin +Gentamicin	**55	3	0	58
Claforan + Amikacin	*27	14	4	45
Meronium+ Vancomycin	3	5	0	8
Total	85	22	4	111

Most of premature infants obtained surfactant 17(15.31%) and some of them connected to mechanical ventilators16 (14.41%) and/ or CPAP 31(27.9%) during postnatal which led to improve the overall outcomes. (Table.5)

Table.5: factors associated with pre discharged mortality rate of preterm births. (Outcome)

Variables	No. (%)	p-value
Surfactant		
No	94(84.68%)	0.001
Yes	17(15.31%)	
CPAP		
No	80(72%)	0.001
Yes	31(27.9%)	
Mechanical ventilator		
No	95(85.58%)	0.001
Yes	16(14.41%)	

Discussion

The study uses information from Ibnsina Teaching Hospital to describe the incidence, risk factors, and consequences of preterm births. The incidence of preterm births was found to be 2.81%. The global preterm birth rate was reported to be 10.6% in a review using data from 107 countries [20], and an estimated 11.1% of preterm births were reported in a systematic analysis using data from 184 countries [1]. Similar estimates have also been reported by studies conducted in Australia (8.6%) [11] And the United States (9.62%) [21]. these results contribute to an improvement over national and international estimates, indicating that the preterm birth rate is comparable to that of developed nations. This study examined a few possible risk factors for premature births. Mother's age ranging between 25-35 years had a higher risk of pre discharged mortality rate of preterm births. Preterm births have also been linked in a number of other studies to maternal ages ranging from 25 to 30 [11, 22–23]. There was no significant correlation between mothers 35 years of age and older and our study. There was significant correlation between higher rates of pre discharged mortality rate and obstetric and medical history of infant's mothers. Our study showed that the risk of pre discharged mortality rate of preterm was higher among infants who didn't receive antibiotic such as ampicillin, gentamycin, claforan and amikacin. Also, the risk of pre discharged mortality rate was declined among premature infants who connection to mechanical ventilator and C.PAP.

Conclusion

Warts are a common reason for visiting a dermatological clinic, so the doctor should be familiar with all aspects of the disease and various therapeutic methods. Potassium hydroxide solution is an inexpensive and easily available compound. Topical potassium hydroxide solution was found to be an effective and safe treatment of plane warts, common warts, and plantar warts. Besides that, 10% potassium hydroxide solution is as effective as 20% potassium hydroxide solution with fewer side effects. Response of warts to treatment was different according to types of warts; it found that plane warts were effectively treated with a low concentration of potassium hydroxide solution less than 20%. Common warts and plantar warts were effectively treated with a higher concentration of potassium hydroxide solution of more than 10%.

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