Original Article

A cross-sectional analysis of preterm birth incidence and survival in Al Kharj, Saudi Arabia

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ABSTRACT

الأهداف: لفهم معدلات الانتشار والبقاء على قيد الحياة للولادة المبكرة في مدينة الخرج، المملكة العربية السعودية. إن فهم معدلات الانتشار والبقاء على قيد الحياة له أهمية قصوى في تخطيط الرعاية الصحية، تحسين رعاية الأطفال حديثي الولادة، تعزيز صحة الأم والطفل على حد سواء.

المنهجية: تمت مراجعة السجلات الطبية للخدج الذين تم إدخالهم إلى وحدة العناية المركزة لحديثي الولادة مع تشخيص الخدج في مستشفى الولادة والأطفال ، الخرج، المملكة العربية السعودية، في الفترة ما بين يناير 2018 وديسمبر 2022 تم جمع البيانات على الوزن عند الولادة، والجنس، وعدد المواليد الأحياء، والوزن عند الولادة، وعمر الحمل، والوفيات، والجنسية، ودرجة APGAR، ومدة الإقامة في وحدة العناية المركزة لحديثي الولادة، وتفاصيل الأم.

النتائج: تم تحديد إجمالي 9809 مواليد أحياء بين عامي 2018 و2022، منهم 139 (3.9%) ولدوا قبل الأوان. كان معدل الوفيات الإجمالي للعينة المشمولة 7.19%، في حين كان معدل الوفيات حسب الوزن عند الولادة 38.4% من المضاعفات الأكثر شيوعًا أثناء الولادة هي تموضع الجنين الخاطئ. (15.1%)، ومضاعفات المشيمة (4.3%)،ومضاعفات الحبل السري (3.6%).

الخلاصة: توفر هذه الدراسة رؤى قيمة حول مدى انتشار المرض في البلاد، مع التركيز بشكل خاص على ضعف الأطفال الخدج للغاية.

Objectives: To understand the prevalence and survival rates of preterm birth (PTB) is of utmost importance in informing healthcare planning, improving neonatal care, enhancing maternal and infant health, monitoring long-term outcomes, and guiding policy and advocacy efforts.

Methods: The medical records of preterm infants admitted to the Neonatal Intensive Care Unit (NICU) with a diagnosis of prematurity at the Maternity and Children's Hospital (MCH), Al Kharj, Saudi Arabia, were reviewed between January 2018 and December 2022. Data were collected on birth weight (BW), gender, number of live births, gestational age, mortality, nationality, APGAR score, length of stay in the NICU, and maternal details.

Results: A total of 9809 live births were identified between 2018 and 2022, of which 139 (3.9%) were born preterm. The overall mortality rate of the included sample was 7.19%, whereas the mortality rate according to BW was 38.4% of those born with extremely low birth weight (ELBW). The most common intrapartum complications were malpresentation (15.1%), placental complications (4.3%), and cord complications (3.6%).

Conclusion: This study provides valuable insights into the prevalence of PTB in the country, particularly focusing on the vulnerability of extremely preterm babies.

Keywords: preterm birth, premature birth, NICU, prevalence, survival rate

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Preterm birth (PTB) refers to the delivery of a live infant before 37 weeks of gestation, a global issue affecting health outcomes and quality of life, as it is a leading cause of infant mortality and morbidity.[1] Preterm birth is a complex condition influenced by various factors, including a history of previous PTB, multiple pregnancies, infections, chronic health conditions, cervical insufficiency, placental problems, lifestyle choices, short interpregnancy intervals, advanced maternal age, smoking, substance abuse and socioeconomic factors.[1-6]

Preterm newborns are physiologically underdeveloped and have little extra uterine environment-adaptive responses.[7] As a result, they are more likely to experience feeding issues, hypothermia, prenatal asphyxia, respiratory distress syndrome (RDS), apnea, hypoglycemia, jaundice, transitory tachypnea, and patent ductus arteriosus.[8] Preterm neonates are also more likely to require a lengthy hospital stay, and the cost of caring for them puts a significant financial strain on both families and medical facilities.[9]

The survival rate of preterm neonates has been the subject of investigation by several authors, who have identified maternal age, education level, occupation, income, place of residence, and antenatal care (ANC) as potential factors influencing this outcome.[10] Additionally, studies have consistently demonstrated strong associations between mortality and variables such as intraventricular hemorrhage, sepsis, RDS, low birth weight (BW), male, low APGAR scores at 5 minutes, extended resuscitation, small for gastrointestinal age (SGA), place of delivery, and lower GA.[11,12] The studies highlight the intricate interplay of multiple factors determining the survival outcomes of preterm neonates, emphasizing the need for a comprehensive understanding of these relationships.

Over the past 3 decades, significant improvements in child survival have been achieved, leading to a decline in newborn fatalities from 5.0 million in 1990 to 2.3-2.7 million in 2019.[13] Newborn mortality reduction has been slower than that of post-neonatal under-5 mortality, resulting in an increased proportion of newborn deaths from 40% to 47%. The Sustainable Development Goals (SDGs) aim to reduce neonatal mortality to below 12 per 1000 live births by 2030, but projections show over 28 million deaths between 2019 and 2030.[14] The situation requires immediate action, focusing on understanding factors contributing to newborn mortality and morbidity, and advocating for their survival through targeted, high-quality care.

Preterm birth pose significant challenges to healthcare systems globally, including Saudi Arabia. Understanding PTB prevalence and survival rates is crucial for healthcare planning, improving neonatal care, enhancing maternal and infant health, monitoring long-term outcomes, and guiding policy and advocacy efforts, limited attention has been directed toward understanding the phenomenon in Saudi Arabia.[4,15,16] The results of studies underscore the intricate relationship between BW, maternal factors, and neonatal health outcomes.[17-19] They reveal heightened risks associated with both low and high BWs, alongside maternal conditions such as hypertension and diabetes. While advancements in neonatal care have contributed to improved survival rates among very low BW infants, persistent disparities in antenatal care and neonatal outcomes highlight the ongoing need for targeted quality improvement initiatives.

Despite advancements in PTB knowledge, the epidemiological profile of PTB in Saudi Arabia remains unclear due to narrowly focused studies and lack of comprehensive data. This makes it difficult to develop a national understanding of PTB prevalence and consequences. Critical gaps in spatial distribution remain due to the lack of exploration of regional variations in PTB prevalence and survival rates. More research is needed to determine the effects of socioeconomic variables, healthcare access, and regional differences on PTB outcomes in Saudi Arabia, and to develop targeted interventions and policy-making. In-depth studies tailored to the Saudi Arabian context are also needed to improve neonatal health outcomes.

This study aims to thoroughly evaluate the survival and prevalence rates of PTB in Al Kharj Region of Saudi Arabia. It aims to advance knowledge of regional differences in PTB in Saudi Arabia by carrying out an analysis of PTB rates and survival outcomes in this particular geographic area. The final objective is to offer insightful information that can guide focused interventions, healthcare planning, and policy-making initiatives meant to enhance neonatal health outcomes in Al Kharj city and elsewhere.

Methods. This is a retrospective study of maternal data, PTB and mortality over 5 years (January 2018 to December 2022) from a single site in Saudi Arabia.

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A review of records of maternal data and preterm infants admitted to the Neonatal Intensive Care Unit (NICU) at the Maternity and Children's Hospital (MCH), Al Kharj, Saudi Arabia, was conducted. As a result of a records review, the study sought to clarify the local perception of epidemiological shapes, traits, and implications related to preterm deliveries.[20] The inclusion criteria were all live infants born at MCH between January 2018 till December 2022; and the exclusion criteria were abortions, stillbirth, and intrauterine fetal death (IUFD).[21] Data is collected on BW, gender, number of live births, number of PTB, GA, mortality, nationality, APGAR score, length of stay in the NICU, and maternal details.

The World Health Organization (WHO) definition of PTB was followed as inclusion criteria, which is defined as any birth before 37 completed weeks of gestations, or fewer than 259 days since the first day of the women's last menstrual period (LMP), thus GA was determined upon the first day of LMP.[22] As defined by GA at birth, infants were classified into 3 categories: extremely preterm (<28 weeks), very preterm (28 to <32 weeks), and late preterm (32 to <37 weeks).[22] There have been several categories of BW established by the Centers for Disease Control and Prevention,[23] including extremely low birth weights (ELBW) of 1000 grams or less, very low birth weights (VLBW) of 1000 to 1499 grams, low birth weights (LBW) ranging from 1500 to 2499 grams, normal birth weights (NBW) ranging from 2500 to 3999 grams, and high birth weights (HBW) of 4000 grams or more. Mortality resulting from prematurity or a short-term complication during hospitalization was defined as prematurity-related mortality, and BW below the 10th percentile were considered SGA.[24]

Maternal infection was defined as infections confirmed by a positive blood culture during the perinatal period.[25] Maternal malnutrition was identified based on a body mass index (BMI) value, and it was considered as a BMI less than 18.5 kg/m^2.[26] Intrauterine infection was defined either as clinical or histological chorioamnionitis. Clinical chorioamnionitis is diagnosed based on maternal fever and one or more of the following: uterine tenderness, malodorous amniotic fluid, fetal tachycardia, or maternal leukocytosis. Histological chorioamnionitis is confirmed by placental pathology.[27] Respiratory distress syndrome (RDS) is diagnosed based on clinical signs (tachypnea, grunting, retractions, nasal flaring, and cyanosis) and confirmed by chest x-ray showing a reticulogranular pattern or requiring surfactant administration.[28] Patent ductus arteriosus (PDA) is confirmed by echocardiography showing left-to-right shunt through the ductus arteriosus.[29] Intraventricular hemorrhage (IVH) is diagnosed and graded by cranial ultrasound, typically using the Papile grading system (Grade I-IV).[30] Necrotizing enterocolitis (NEC) is defined as "definite NEC" using the modified Bell's staging criteria, which include systemic, intestinal, and radiographic signs.[31] Retinopathy of prematurity (ROP) is diagnosed and staged by a pediatric ophthalmologist using the International Classification of Retinopathy of Prematurity.[32] Bronchopulmonary dysplasia (BPD) is defined based on the National Institute of Child Health and Human Development (NICHD) criteria using the 2001 criteria where BPD classified based on the need for supplemental oxygen at 26 weeks postmenstrual age.[33]

The study has been approved by the ethical committee of King Saud Medical City (H1RE-06-Feb23-01) as well as the Standing Committee of Bioethics Research at Prince Sattam bin Abdulaziz University (SCBR-091-2022). The study followed the instructions outlined in the Declaration of Helsinki (1964). The data was analyzed using R version 4.0.3 (2020-10-10), and study variables were measured using a simple descriptive analysis. The study figures and results were summarized using bar charts and tables. Based on GA and BW, characteristics of preterm infants were compared. To determine PTB rates, live birth numbers were used. A graphic and statistical comparison was performed for continuous variables. Here, we used the Chi-square, one-way ANOVA, and 95% confidence interval (CI) for the statistical significance.[34]

Results. In this study, a total of 9809 live births were identified during the years of 2018 and 2022. Based on the retrospective chart review, a total of 3503 (35.7%) were admitted to the NICU, of which 139 (3.9%) were born preterm. The prevalence of PTB over the total live births was 1.41%. **Figure 1** illustrates the number of total births and PTB per year. The relative majority of the preterm infants were male; 74 (53.2%) and 65 (46.8%) were females. Overall, 69 (49.6%) neonates were delivered vaginally, and 70 (50.4%) were delivered via cesarean section (**Table 1**).

Of those born preterm, 15 (10.7%) were extremely preterm, 27 (19.4%) born very preterm, and 97 (69.7%) born late preterm. The mean GA of the included sample is 32.9 (±3.9) weeks, whereas the mean GA of ELBW infants was 26 (±2.2) weeks (**Table 1**). Sixty-two (44.6%) of the study population were SGA, and the mean BW of the preterm infants was 1942.1 (±725.5) grams, whereas the mean BW of the ELBW infants was 778.4 (±145.6) grams.

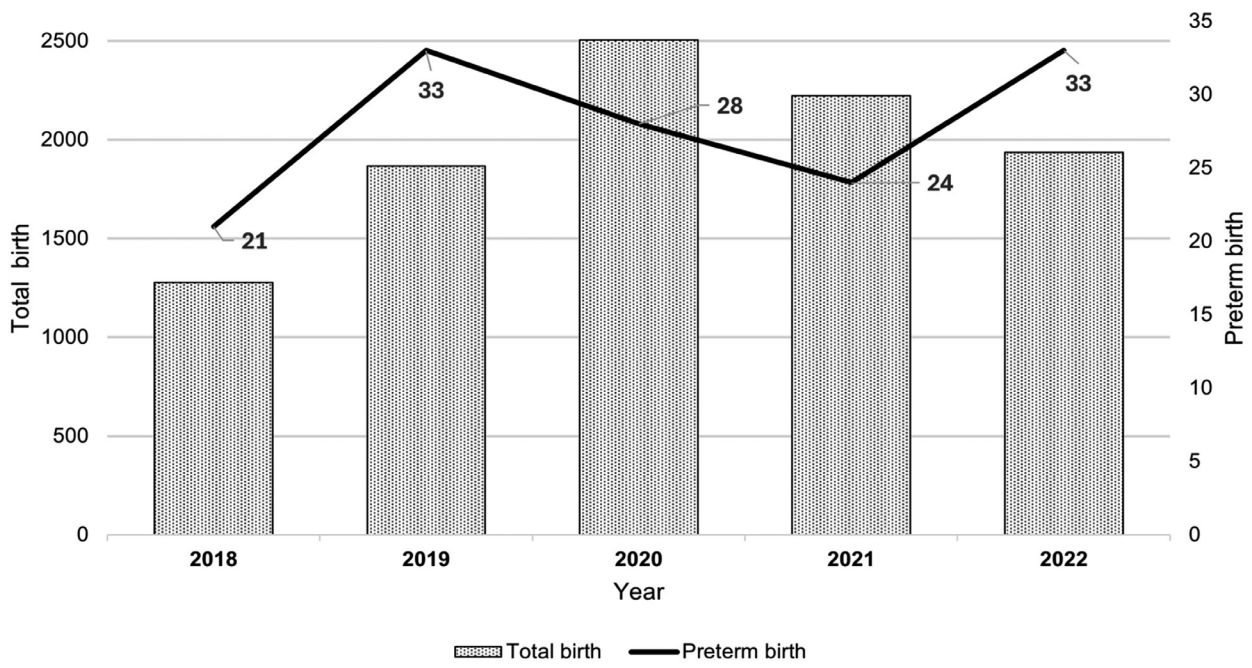

Figure 1 - The number of total births and preterm births admitted to the Neonatal Intensive Care Unit (NICU) from 2018 to 2022.

The overall mortality rate of the included sample was 7.19% with a 40% mortality rate for extremely preterm infants, 3.7% for those born very preterm, and 3% for the late preterm infants. While the mortality rate according to BW was 38.4% of those born ELBW, 8% of VLBW, and 4.1% of LBW (Table 2).

Table 3 illustrates the yearly percentage of the antepartum and intrapartum complications of the included preterm infants. The most common antepartum complication of the included sample was prolonged rupture of membrane (PROM) (33.1%), followed by placental complications (8.6%), gestational hypertension (8.6%), maternal diabetes (5.9%), and fetal anomaly (5%). Whereas the most common intrapartum complications were malpresentation (15.1%), placental complications (4.3%), and cord complications (3.6%).

Table 4 presents a comparison of various risk factors among preterm infants based on their GA. The study categorizes preterm infants into 3 groups: extremely preterm (<28 weeks), very preterm (28 to <32 weeks), and late preterm (32 to <37 weeks). The results indicate significant differences among these groups for several key variables. Birth weight varied significantly, with extremely preterm infants having the lowest mean BW (993 ± 449g), followed by very preterm (1413 ± 375g), and late preterm infants (2234 ± 614g). The APGAR scores at 1, 5, and 10 minutes also exhibited significant differences, with extremely preterm infants having lower scores compared to their counterparts. Additionally, the length of stay in the NICU was notably longer for extremely preterm infants (40.2 ± 34.3 days) compared to very preterm (32.8 ± 16.3 days) and late preterm infants (10.7 ± 14.9 days); while PROM did not show significant differences among the groups.

Table 5 presents the rates of common neonatal morbidities among preterm infants within the study population. Respiratory distress syndrome emerges as the most prevalent condition, affecting approximately 27.3% of preterm infants, indicative of the challenges posed by immature lung function in this demographic. Patent ductus arteriosus follows with a notable occurrence rate of 12.5%, highlighting the vulnerability of preterm infants to cardiovascular complications. Intraventricular hemorrhage observed in 8.9% of cases, underscores the susceptibility of preterm infants to neurological complications, necessitating vigilant monitoring and care strategies. Necrotizing enterocolitis is documented in 5.6% of preterm infants, signaling the heightened risk of gastrointestinal emergencies in this population. Retinopathy of prematurity affects 10.2% of infants, emphasizing the need for early ophthalmologic screening to mitigate potential vision impairment. Lastly, BPD manifests in 15.8% of

Table 1 - Characteristics of study population and neonatal outcomes.

Characteristics	n (%)
Gender	
Male	74 (53.2)
Female	65 (46.8)
Mother nationality	
Saudi	97 (69.7)
Non-Saudi	42 (30.3)
Mode of delivery	
Vaginal	69 (49.6)
Cesarean	70 (53.2)
Pregnancy identified	
US	28 (20.1)
LMP	90 (64.7)
Clinical examination	17 (12.2)
Mother's weight at delivery, kg (mean±SD)	74.2±17.4
Mother's height at delivery, cm (mean±SD)	157.6±6
Maternal age, years (mean±SD)	29.2±7.25
Average of antenatal visits (mean±SD)	4.8±2.9
History of abortions	
Yes	32 (23.1)
No	107 (76.9)
Plurality	
Singletons	120 (86.3)
Twins	13 (9.3)
Triples	6 (4.3)
Primipara	39 (28.0)
GA, weeks (mean±SD)	32.9±3.9
SGA	62 (44.6)
BW, grams	1941±723
Length of stay in NICU, days (mean±SD)	18.2±21.4
Weight at NICU discharge, g (mean±SD)	2098±555
Low APGAR (<7 at 5 minutes) (mean±SD)	24±17.2
According to GA	
Extremely preterm (<28 weeks)	15 (10.79)
Very preterm (28 to <32 weeks)	27 (19.42)
Late preterm (32 to <37 weeks)	97 (69.78)
According to BW (grams)	
Less than 1000 (ELBW)	13 (9.35)
1000 to 1499 (VLBW)	25 (17.99)
1500 to 2499 (LBW)	74 (53.24)
2500 to 3999 (NBW)	27 (19.42)

SD: standard deviation, US: ultrasound, LMP: last menstrual period, GA: gestational age, SGA: Small for gestational age, BW: birth weight, NICU: neonatal intensive care unit, ELBW: extremely low birth weight, VLBW: very low birth weight, LBW: low birth weight, NBW: normal birth weight

Table 2 - Mortality rate classified by GA and BW.

Classification	Mortality rate n (%)
According to GA (weeks)	
Extremely preterm (<28 weeks)	6/15 (40)
24 weeks gestation	3/4 (75)
25 weeks gestation	1/2 (50)
26 weeks gestation	1/6 (16.6)
27 weeks gestation	1/3 (33.3)
Very preterm (28 to <32 weeks)	1/27 (3.7)
Late preterm (32 to <37 weeks)	3/97 (3)
According to BW (grams)	
Less than 1000 (ELBW)	5/13 (38.4)
1000 to 1499 (VLBW)	2/25 (8)
1500 to 2499 (LBW)	3/74 (4.05)
2500 to 3999 (NBW)	0/27 (0)

GA: gestational age, BW: birth weight, ELBW: extremely low birth weight, VLBW: very low birth weight, LBW: low birth weight, NBW: normal birth weight

cases, highlighting the significant burden of chronic lung disease in preterm infants and the necessity for long-term respiratory support strategies.

Discussion. The study findings present a comprehensive overview of PTB in Al Kharj, Saudi Arabia, from 2018 to 2022, incorporating data on prevalence, demographic characteristics, GA classification, mortality rates, and associated complications. The identified prevalence of PTB of total live birth was 1.41%, and 3.9% of those admitted to NICU. The study's demographic analysis reveals a male predominance (53.2%) among preterm infants, suggesting potential gender-specific vulnerabilities. Extremely preterm infants exhibit a high mortality rate of 40%, whereas ELBW infants had the highest mortality rate (38.4%). Our study identified that 44.6% of the preterm infants were SGA. These findings emphasize the intricate interplay between GA, BW, and mortality outcomes, offering crucial insights for clinical management.

The prevalence of PTB reported in this study is less than the PTB prevalence reported in other studies in Saudi Arabia (9.6%), Canada (7.8%), Qatar (8.8%), and Nigeria (12%).[35-38] The reduced prevalence found in our study compared to other national-level studies might be attributed to the relatively small region and hospital capacity. However, an improvement in healthcare services might play a role in this reduced prevalence.[39] Preterm birth's etiology is influenced by various medical and socioeconomic factors, which is why it varies from one ethnic group to another.[40,41] Several previous studies have reported similar results. Among patients with PTB, the presence of preexisting diabetes in the mother, hypertension during pregnancy, and intrauterine fetal death were associated.[42]

The GA classification enables a more granular exploration of risk factors. Extremely preterm infants exhibit the lowest mean BW, lowest APGAR scores at 1, 5, and 10 minutes, and the longest NICU stay, emphasizing the heightened vulnerability of this subgroup. This thorough comparison makes it easier to

Table 3 - Percentage (%) of antepartum and intrapartum complications among the premature population presented by year.

Condition	2018	2019	2020	2021	2022	Overall	*P*-value
Antepartum conditions							
Gestational hypertension	0.7	2.2	1.4	3.6	0.7	8.6	0.17
Maternal hypertension	0	0.7	0	2.2	0.7	3.6	0.11
Maternal infection	0	0.7	0	2.2	0.7	3.6	0.11
Maternal malnutrition	0.7	0.7	0	2.2	0.7	4.3	0.24
Maternal diabetes	0.7	0.7	1.7	2.1	0.7	5.9	0.14
PROM	7.9	7.9	4.3	7.2	5.8	33.1	0.12
Fetal anomaly	0.7	0.7	0.7	2.2	0.7	5	0.48
Intrauterine infection	0	0.7	0	2.2	0.7	3.6	0.11
Placental complications	0.7	1.4	1.4	2.9	2.2	8.6	0.60
Cord complications	0	0.7	0	2.2	0.7	3.6	0.11
Intrapartum conditions							
Disproportion/dystocia	0	0.7	0	2.2	0	2.9	0.03*
Malpresentation	2.9	3.6	1.4	2.9	4.3	15.1	0.74
Prolonged labour	0	0.7	0	2.2	0	2.9	0.03*
Placental complications	0	0.7	0	2.2	1.4	4.3	0.16
Cord complications	0	0.7	0	2.2	0.7	3.6	0.11

Chi-square,*significant (p<0.05), PROM: prolonged rupture of membrane

Table 4 - Comparison of risk factors of the preterm infants based on GA.

Variable	Extremely preterm (n=15)	Very preterm (n=27)	Late preterm (n=97)	*P*-value
BW, grams	993 ± 449	1413 ± 375	2234 ± 614	<0.001*
Age at delivery, years	32.4 ± 5.4	27.5 ± 6.6	29.1 ± 7.5	0.119
Weight at delivery, kg	73. 1 ± 14.7	73.1 ± 14.1	74.6 ± 18.7	0.90
APGAR score at 1 minute	4.2 ± 2.3	5.2 ± 2.2	6.8 ± 2.1	<0.001*
APGAR score at 5 minutes	6 ± 1.9	7.3 ± 1.9	8.4 ± 1.1	<0.001*
APGAR score at 10 minutes	7.3 ± 2.1	8.4 ± 1.4	9.1 ± 0.9	<0.001*
Length of stay in NICU	40.2 ± 34.3	32.8 ± 16.3	10.7 ± 14.9	<0.001*
PROM	0.26 ± 0.45	0.25 ± 0.44	0.36 ± 0.48	0.52
Malpresentation	0.13 ± 0.35	0.14 ± 0.32	0.15 ± 0.36	0.97

One-way ANOVA; *significant (p<0.05). BW: birth weight; PROM: prolonged rupture of membrane, NICU: neonatal intensive care unit

Table 5 - Percentage of common neonatal morbidities among preterm infants.

Neonatal Morbidity	Percentage (%)
Respiratory distress syndrome (RDS)	27.3
Bronchopulmonary dysplasia (BPD)	15.8
Patent ductus arteriosus (PDA)	12.5
Retinopathy of prematurity (ROP)	10.2
Intraventricular hemorrhage (IVH)	8.9
Necrotizing enterocolitis (NEC)	5.6

comprehend the various difficulties linked to various GA groups, assisting medical professionals in customizing interventions to meet the unique requirements of each group. Similarly to previously reported studies, GA at delivery was associated with a lowered neonatal survival rate and complications associated with prematurity, such as low APGAR score and NICU length of stay.[43-45] The survival rate of ELBW neonates in Saudi Arabia was 59%, and it was linked with BW and GA.[46] Abolfotouh et al[46] have reported that RDS, IVH, PDA, ROP, BPD, and NEC to be the most common complications in their ELBW cohort respectively. Unlike our findings where the complications in our cohort (ELBW, VLBW, and LBW) were RDS, BPD, PDA, ROP, IVH, and NEC respectively. These differences could be attributed to the variables definition used and accuracy of data collection.

Antepartum complications in the included sample were led by PROM, accounting for 33.1% of cases. Placental complications (8.6%), gestational hypertension (8.6%), and fetal anomaly (5%) were also common complications. Similarly, previous studies conducted have identified PROM as a leading antepartum complication.[40] Zhang et al[40] reveal both shared risk factors and contextual variations, thus the commonality in risk factors such as placental abnormalities and

maternal conditions emphasizes the global nature of these challenges. However, acknowledging the unique local context remains imperative for designing targeted interventions that address region-specific challenges and align with the existing healthcare infrastructure. This holistic approach is essential for developing effective strategies to improve outcomes for preterm infants in Al Kharj, Saudi Arabia.

One of the notable strengths of this study lies in its large sample size of 9,809 live births, which enhances the statistical power and generalizability of the findings. The inclusion of comprehensive demographic information, ranging from maternal characteristics to neonatal outcomes, provides a rich data set for analysis. The categorization of preterm births into distinct GA groups (extremely preterm, very preterm, and late preterm) enables an exploration of outcomes based on the severity of prematurity. Additionally, the study's focus on mortality rates, both in terms of GA and BW, contributes crucial insights into the varying degrees of risk faced by preterm infants within the NICU. Examining antepartum and intrapartum complications adds depth to the understanding of factors influencing preterm births, enhancing the clinical relevance of the study.

This study's results have significant clinical implications for academics, legislators, and healthcare professionals. Firstly, the increased rate of preterm deliveries in Al Kharj, Saudi Arabia, highlights the necessity of improved prenatal care and early risk factor identification in order to reduce unfavorable outcomes and disabilities. The development of early intervention programmes would assist clinicians and healthcare providers in reducing the prolonged risk and burden of preterm birth. Regular prenatal consultations and screenings should be a top priority for healthcare professionals in order to identify high-risk pregnancies and quickly execute the necessary measures. Furthermore, the high mortality rates among infants born very preterm emphasize how vital it is to have specialist neonatal care facilities that are capable of caring for these vulnerable infants. In order to enhance survival rates, healthcare providers should ensure patients have prompt access to interventions like nutrition management, infection control, and respiratory support. In addition, the prevalence of antepartum and intrapartum problems highlights the necessity of comprehensive obstetric treatment in order to manage these variables and lower the chance of preterm delivery.

Study limitations. This study contains several limitations that should be considered when interpreting the findings, notwithstanding its contributions. First, the study's retrospective design might have added bias and restricted the amount of available data. Furthermore, the study's exclusive focus on preterm newborns admitted to one hospital in Al Kharj city raises concerns on its potential lack of community representativeness. Concerns concerning the completeness and correctness of the data are further raised by using medical records in the data-gathering process, which may result in underreporting or incorrect variable classification. Moreover, it's possible that the study's sample size was too small to identify limitation but clinically significant variations in the outcomes or risk variables. Lastly, knowing the effects of preterm delivery on infant development and health outcomes after the absence of long-term follow-up data restricts the neonatal period.

In conclusion, this study provides valuable insights into the prevalence and outcomes of preterm births, particularly focusing on the vulnerability of extremely preterm infants. By considering the specific challenges faced by each gestational age category, healthcare professionals can enhance their understanding and provide tailored interventions to improve outcomes for preterm infants.

Prevalence studies serve as a foundation for further research and the development of evidence-based practices. Understanding the prevalence of PTB can help identify research gaps and areas that require further investigation. Knowledge of the prevalence of PTB is essential for healthcare planning and resource allocation. Preterm infants often require specialized neonatal care, including intensive monitoring, respiratory support, and nutrition management.

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