

**Deanship of Graduate Studies
Al-Quds University**



**Incidence, Prevalence, and Maternal Journeys:
Investigating Preterm Births in the West Bank, Palestine**

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Ph.D. Dissertation

**Jerusalem- Palestine
2026 /1447**

**Incidence, Prevalence, and Maternal Journeys:
Investigating Preterm Births in the West Bank, Palestine**

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**A Dissertation Submitted in Partial Fulfillment of the
Requirements for the Degree of Doctor of Philosophy in
Public Health / School of Public Health- Al-Quds
University**

1447/2026



Dissertation Approval

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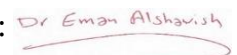
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Dedication

I dedicate this dissertation to the mothers and newborns of Palestine, whose resilience in the face of adversity continues to inspire hope and commitment to improving maternal and child health. To my family, whose unwavering support and encouragement sustained me throughout this demanding journey. And to all healthcare professionals working tirelessly under challenging circumstances — may this work contribute, even in a small way, to better outcomes and stronger health systems.

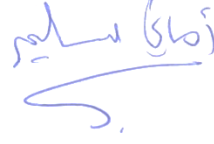
With deepest love, this work is dedicated to all of you

Amani Salim

Declaration

I, the undersigned, submit the thesis titled: **Incidence, Prevalence, and Maternal Journeys: Investigating Preterm Births in the West Bank, Palestine** ", I acknowledge that this thesis was submitted to Al-Quds University to obtain the degree of Doctor of(Philosophy in Public Health), and that what it contains is the product of my own effort, except for what has been indicated wherever mentioned, and that this thesis as a whole or any part of it has not been previously submitted to obtain a degree. Or a scientific or research title at any other educational or research institution.

أنا الموقع أدناه مقدم الأطروحة التي تحمل العنوان: " معدل الانتشار، والخصائص، والرحلات الأمومية: دراسة الولادات المبكرة في الضفة الغربية، فلسطين " أقر بأن هذه الأطروحة قدمت لجامعة القدس لنيل درجة الدكتوراة في فلسفة الصحة العامة، وأن ما اشتملت عليه إنما هو من نتاج جهدي الخاص، باستثناء ما تمت الإشارة إليه حيثما ورد، وإن هذه الرسالة ككل أو كاي جزء منها، لم يقدم من قبل لنيل درجة أو لقب علمي أو بحثي لدى اية مؤسسة تعليمية أو بحثية أخرى.

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Acknowledgment

First and foremost, I give my deepest thanks to God for the strength, perseverance, and wisdom granted to me to complete this work.

My profound and sincere gratitude goes to my supervisors, Professor Dr. Ewa-Lena Bratt and Dr. Kawther Elissa. I am honoured to have been their student. Their invaluable guidance, unwavering patience, and insightful feedback have been my compass throughout this challenging journey. This dissertation would not have been possible without their mentorship and encouragement.

I would also like to express my sincere appreciation to all the professors who taught me and contributed to my academic growth during my doctoral studies. Each of your courses helped prepare me for the challenges of research and strengthened my scholarly development.

My heartfelt thanks go to all the mothers and families who participated in this study. Thank you for sharing your experiences with trust and commitment. Your strength, resilience, and dedication are the true inspiration behind this work.

I am deeply grateful to my family for their unconditional love, patience, and unwavering support throughout this demanding academic journey.

I would like to acknowledge the institutions and healthcare facilities that generously facilitated this research. Your cooperation was essential to the success of this study.

This work was supported by my dedicated colleagues and the research team, whose professionalism and collaboration were invaluable.

Finally, I extend my gratitude to everyone who has supported me in this academic journey. I hope that this work contributes to a better understanding of preterm and early term births and informs efforts to improve maternal and newborn health outcomes.

Amani Salim

Abstract

Background: Preterm birth (PTB) is a leading cause of neonatal morbidity and mortality worldwide. In the West Bank, Palestine, limited evidence exists on PTB incidence, determinants, and maternal experiences.

Aim: To determine the incidence, prevalence, risk factors, and neonatal outcomes of preterm births in the West Bank and explore mothers' experiences caring for preterm infants in Neonatal Intensive Care Units (NICUs).

Methodology: A multi-methods approach included three studies: (1) a hospital-based cohort of 18,760 live births (January 2023–May 2024) to assess PTB incidence and risk factors, (2) a cross-sectional study of 1,235 mothers (April–August 2025) examining prevalence, maternal characteristics, and neonatal outcomes, and (3) a qualitative study with 18 mothers exploring experiences in NICUs. Quantitative analyses used descriptive statistics and multivariable logistic regression; qualitative data were analysed using content analysis.

Results: In the cohort, 1,427 (7.6%) births were preterm, mostly moderate to late preterm (7.0%). Higher PTB risk occurred in mothers <20 (aOR 1.53) or ≥35 years (aOR 1.32), male infants (aOR 1.16), and multiple pregnancies (twins aOR 4.98; triplets aOR 17.28). Ramallah had the highest PTB rates (aOR 23.5). In the cross-sectional study, PTB prevalence was 14.1%, with 75.3% moderate to late, 16.1% very, and 8.6% extremely preterm. Significant risk factors included maternal age 19–34, household size <3, history of stillbirth (aOR 9.84), assisted conception (aOR 2.18), short interpregnancy interval (aOR 1.89), chronic disease (aOR 3.50), PROM >18 hours (aOR 3.00), preeclampsia (aOR 3.33), antepartum hemorrhage (aOR 2.93), placental abnormalities (aOR 5.97), miscarriage history (aOR 3.55), and one prior caesarean (aOR 1.90). Primigravida women had lower odds (aOR 0.42). Safe healthcare access was protective (aOR 0.67). Preterm infants were more likely to be admitted to NICU (19.0% vs 8.5%) and had low/very low birth weight (43.7% vs 7.6%).

The qualitative study revealed one overarching theme: living between fear and hope while struggling for maternal identity, with four main themes: (1) entering motherhood through emotional turmoil and perceived threat, (2) disruption and reconstruction of the maternal role, (3) navigating support and stress in interactions with healthcare providers, and (4) transforming maternal identity through meaning and strength. Mothers' initial anxiety and identity disruption evolved into competence and adaptive coping via caregiving, professional/family support, and spiritual meaning-making.

Conclusion: PTB in the West Bank is influenced by maternal, obstetric, and household factors and linked to adverse neonatal outcomes. Mothers face emotional and identity challenges, but can develop resilience through support and caregiving. Findings emphasize the need for targeted maternal–neonatal interventions and culturally sensitive NICU support.

Keywords: Incidence, Maternal experiences, Neonatal outcomes, Palestine, Preterm birth, Prevalence, West Bank.

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List of Abbreviations

Abbreviation	Meaning
ANC	Antenatal Care
APH	Antepartum Haemorrhage
aOR	Adjusted Odds Ratio
BMI	Body Mass Index
CI	Confidence Interval
CS	Cesarean Section
FTB	Full-Term Birth
GDM	Gestational Diabetes Mellitus
GWG	Gestational Weight Gain
HIS	Health Information System
LMP	Last Menstrual Period
MoH	Ministry of Health
NICU	Neonatal Intensive Care Unit
OR	Odds Ratio
PCBS	Palestinian Central Bureau of Statistics
PROM	Premature Rupture of Membranes
PTB	Preterm Birth

Chapter One

Introduction

1.1 Background

Preterm birth is defined by the World Health Organization (WHO) as newborns born alive before 37 weeks of gestation, with three subgroups based on gestational age: extremely preterm (less than 28 weeks), very preterm (28 to less than 32 weeks), and moderate to late preterm (32 to 37 weeks) (WHO, 2023e). Babies may be delivered prematurely due to spontaneous labor or for medical reasons requiring an early induction or cesarean procedure (WHO, 2023c). Preterm birth has two causes: spontaneous and iatrogenic. Spontaneous preterm birth can occur due to premature membrane rupture, vascular disease, or uterine overdistension. Iatrogenic preterm birth refers to the inducement of labor or elective cesarean delivery before 37 weeks of gestation due to maternal or fetal problems, including preeclampsia, abruptio placentae, and fetal development restriction (Aughey et al., 2023; Chen et al., 2021). Worldwide, preterm births are associated with various risk factors, including those initiated by healthcare providers, sociodemographic characteristics, maternal obstetric factors, stressful life events, gestational diabetes mellitus, rural living, fetal distress, and pregnancy complications (Abebaw et al., 2021; Alamneh et al., 2021). Globally, over 13.4 million newborns were born prematurely in 2020, accounting for roughly one in every ten live births. Alarming, nearly one million of these premature infants die every year (Ohuma et al., 2023). Furthermore, preterm complications during delivery are the leading cause of death among children under five years old, accounting for roughly 900,000 deaths in 2019 (Perin et al., 2022). Infants born preterm have a higher risk of complications than full-term infants, which can result in a variety of short-term health issues, such as respiratory distress syndrome, hypoglycemia, jaundice, feeding difficulties, and infections, as well as long-term health problems such as cerebral palsy, epilepsy, and blindness (Stewart et al., 2021).

The annual global preterm birth rate reduction was 0.14% between 2010 and 2020 (Ohuma et al., 2023). At the global country level, the under-5 mortality rates in 2020 ranged from 2 to 115 deaths per 1000 live births, with an infant born in the highest mortality country having a 65-fold higher probability of dying before the age of five years (WHO, 2022). In Palestine, the child mortality rate for children under the age of five was 14 per 1000 live births in (2015-2019), with 15 in the West Bank and 14 in the Gaza Strip (PCBS, 2022).

Furthermore, according to the Global Health Observatory (WHO, 2023b), the preterm birth rate per 100 live births in the occupied Palestinian territory is 13.2, as prematurity is the primary cause of newborn mortality (UNICEF, 2024). Palestine is among the countries that do not have sufficient data on the incidence and determinants of preterm births. To reduce child mortality and morbidity, it is necessary to identify and manage the factors for preterm birth (Laelago et al., 2020).

Birth to a preterm baby who needs care at a Neonatal Intensive Care Unit (NICU) could be a stressful experience for mothers, negatively impacting their mental health (Lomotey et al., 2020). Premature birth can negatively affect a mother's ability to care for her baby, leading to poor growth, insufficient infant attachment, and even the death of the infant (Leahy-Warren et al., 2020; Shrestha et al., 2020). According to several studies, mothers often experience intense sadness, shame, depression, stress, and trauma because of their newborn's NICU admission (Brelsford & Doheny, 2022; Klein & McDonald, 2024). Additionally, mothers with preterm babies have a higher risk of developing postpartum depression (PPD) compared to those who do not require medical care after childbirth (Pineda et al., 2018). Taken together, these findings underscore the substantial emotional burden associated with preterm birth and NICU hospitalization and highlight the importance of understanding maternal experiences to inform supportive, family-centered, and psychologically responsive neonatal care.

1.2 Statement of the Problem

Preterm delivery is a critical public health concern and the leading cause of death in child mortality worldwide, accounting for 18% of all deaths among children under five years and up to 35% of all neonatal deaths (Walani, 2020). The burden of pre-term birth is disproportionately high in low- and middle-income nations, in low-income areas, half of the babies delivered at or below 32 weeks die due to a lack of practicable, cost-effective care such as warmth, breastfeeding support, and basic care for infections and breathing difficulties. In contrast, in high-income countries, almost all these infants survive (WHO, 2023b).

In 2023, Palestine's West Bank had roughly 82,510 live births, with nearly all women (99.9%) giving birth in hospitals or birthing facilities; there were just 46 home births during this period (MOH, 2023). In 2023, there were 35,155 births recorded at Ministry of Health hospitals in the West Bank (MOH, 2023). The Palestinian Ministry of Health has prioritized high-quality healthcare to improve population health outcomes. Since 2010, the Avicenna Health Information System (HIS) has been gradually implemented in government hospitals as a vital project to improve healthcare service quality, efficiency, and effectiveness (MOH, 2021).

In Palestine's West Bank, prematurity is the leading cause of neonatal mortality, followed by respiratory infections and congenital abnormalities; these causes account for 61% of all neonatal deaths (UNICEF, 2024). The infant mortality rate in the West Bank is significantly higher than the global Sustainable Development Goal (SDG) 3.2, which aims to reduce preventable deaths among newborns and children under five by 2030, targeting a reduction in neonatal mortality to at least 12 per 1,000 live births (UN, 2024). Despite the

urgency of the concern, there is an alarming lack of localized data on the magnitude and determinants of preterm births in the West Bank. Furthermore, the experiences of Palestinian women with preterm infants in NICUs (Neonatal Intensive Care Units) are little known and have not been studied yet in the Palestinian context, limiting our understanding of their challenges and support needs.

These gaps are particularly striking as a lack of research has been conducted to determine the region's precise incidence, prevalence, determinants, and experiences linked with preterm births. This deficit not only impedes the development of focused interventions but also prevents healthcare providers from effectively supporting mothers and premature newborns, especially when admitted to Neonatal Intensive Care Units (NICUs). As a result, addressing these evidence gaps is critical for improving mother and child health outcomes in Palestine and contributing to the broader worldwide endeavor to reduce unnecessary child mortality. By generating comprehensive epidemiological and experiential evidence, this study addressed a critical knowledge gap, enhancing understanding of the challenges and unmet support needs faced by these families and supporting the development of responsive healthcare policies and practices.

1.3 Aim

The overall aim of this dissertation was to determine the incidence, prevalence, determinants, and neonatal outcomes of preterm births in the West Bank and to explore the experiences of mothers caring for preterm infants in Neonatal Intensive Care Units (NICUs).

1.4 Objectives:

1. To determine the incidence of preterm births and the associations of socioeconomic factors with preterm births in the West Bank using a hospital-based cohort design.
2. To assess the prevalence, determinants, and neonatal outcomes of preterm birth in the West Bank using a cross-sectional hospital-based study.
3. To explore the experiences of Palestinian mothers caring for preterm infants in Neonatal Intensive Care Units (NICUs) using a qualitative approach.

1.5 Research Questions

1. What is the incidence of PTBs and the associations of socioeconomic factors with preterm births in the West Bank?
2. What is the prevalence, determinants, and neonatal outcomes of PTB among women delivering in selected hospitals in the West Bank?
3. How do Palestinian mothers experience care for preterm infants in NICUs?

1.6 Significance

This dissertation is significant for several reasons, particularly in addressing critical knowledge gaps related to preterm birth in Palestine and its broader public health implications. First, by generating localized evidence on the incidence, prevalence, and determinants of preterm birth, the study supports the development of targeted interventions to improve maternal and neonatal health outcomes in a setting facing unique healthcare challenges. Such contextualized evidence is essential for designing culturally appropriate strategies that respond to the specific needs of Palestinian mothers and infants.

Second, the findings contribute to global health priorities, particularly the United Nations Sustainable Development Goals (UN, 2024), which emphasizes reducing preventable mortality among newborns and children under five years of age. By producing context-specific evidence, this research supports progress toward achieving SDG target 3.2 and strengthening efforts to improve health equity.

Furthermore, the study sheds light on the challenges faced by Palestinian women whose preterm infants require NICU admission. Exploring mothers' experiences provides important insights for developing supportive services and interventions tailored to their emotional, informational, and healthcare needs, thereby enhancing the quality of maternal and neonatal care.

Finally, this dissertation establishes a foundation for future research by identifying priority areas for further investigation in maternal and child health within Palestine and similar conflict-affected contexts. The findings underscore the importance of examining the interplay between healthcare access, socioeconomic conditions, and health outcomes, contributing to a more comprehensive understanding of public health challenges in resource-constrained and politically complex settings. Overall, this study has important implications for maternal and child health policy, clinical practice, and future research.

1.7 Context

Historic Palestine covers an area of approximately 26,323 km². The State of Palestine currently has a total area of about 6,170 km², of which 5,805 km² constitutes the West Bank and 365 km² the Gaza Strip (Falah & Al-Nawaiseh, 2024). As illustrated in Figure 1.1, Palestine is geographically divided into two separate regions: the West Bank and the Gaza Strip. According to the Palestinian Central Bureau of Statistics (PCBS, 2024). Each region comprises several cities and towns. Major cities in the West Bank include Ramallah, Bethlehem, Hebron, Nablus, Jenin, Tulkarm, and Jericho. In the Gaza Strip, key urban centers include Gaza City, Khan Yunis, and Rafah.

Over 14.5 million Palestinians are living in Historical Palestine and the Diaspora by mid-2023. In the same year, the estimated population of the West Bank was 3,256,906, accounting for 59.4% of Palestine's total population, with 1,657,974 males and 1,598,932 females. According to the Palestinian Health Information Center (PHIC), the West Bank had a crude birth rate of 28.1 births per 1,000 population in 2023 (MOH, 2023).

Palestine is a conflict-affected region. The Palestinian dispute, which began in the late nineteenth century, is a long-running conflict between Israelis, a military-rich and nuclear

state, and Palestinians, landowners(Bhowmick & Khan, 2024). The last war that started on October 7, 2023, has resulted in high fatality rates and a huge humanitarian crisis in the region. In the Gaza Strip, noncombatants have suffered the most direct conflict deaths. Most of the population has been internally displaced, with little access to food, water, housing, sanitation, and essential health services (Ugarte et al., 2024). Additionally, Israeli military operations in the West Bank have caused substantial deaths, infrastructural damage, and economic losses (ESCWA, 2023). Also, Political and insecure situations in the West Bank, including closures, checkpoints, and the separation wall, continue to separate families (Bromley, 2021).

Israeli construction of settlements and military activities in the West Bank have caused significant damage to Palestinian infrastructure. Between October 7, 2023, and September 16, 2024, Israeli authorities demolished or confiscated 1,697 Palestinian structures in the West Bank. These included over 700 inhabited structures, over 300 agricultural structures, over 100 water, sanitation, and hygiene structures, and 200 livelihood structures. Furthermore, since October 2023, over 1,400 access incidents have been recorded, including checkpoint delays or denials, closures, and detentions, as well as a doubling of health-related access obstructions that have hampered emergency services and humanitarian relief (OCHA, 2024).

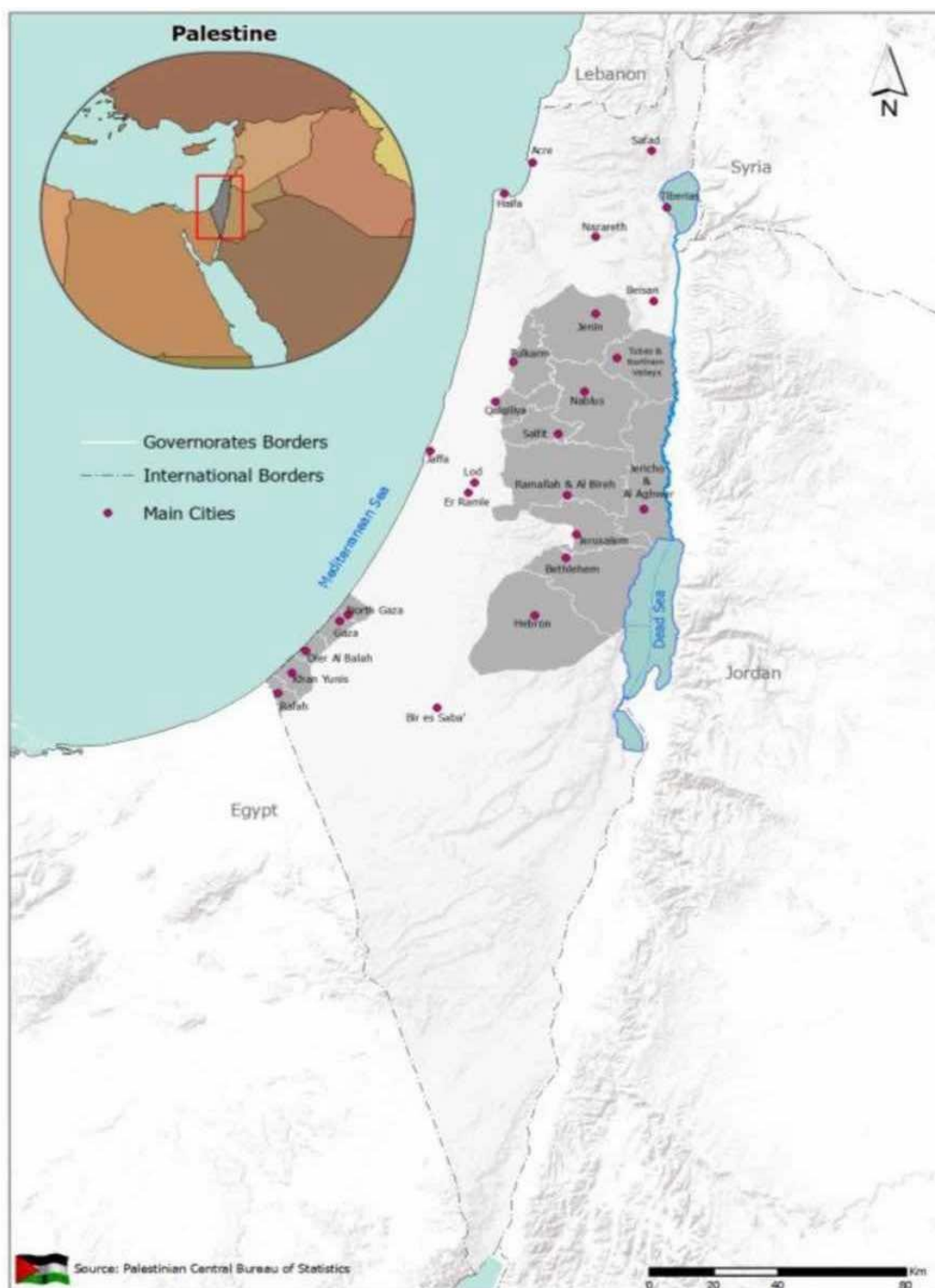


Figure 1.1 Palestine Map as the Palestinian Central Bureau of Statistics (PCBS, 2024).

Chapter Two

Literature Review

2.1 Introduction

Preterm birth remains a major global public health challenge. Approximately one in ten infants worldwide is born preterm, and a preterm infant dies roughly every 40 seconds (WHO, 2023a). Despite global efforts, preterm birth rates have shown little reduction over the past decade (PAHO, 2023). Substantial disparities in survival outcomes persist across settings. In low-income countries, only about one in ten infants born extremely preterm (<28 weeks of gestation) survives, compared with survival rates exceeding 90% in high-income countries (WHO, 2023a). However, inequities also exist within high-income settings, where social determinants of health — such as race, ethnicity, socioeconomic status, and access to quality healthcare — significantly influence the risk of preterm birth, neonatal mortality, and long-term disability (WHO, 2023b).

This literature review synthesizes current evidence to provide a comprehensive understanding of the biological, social, and health-system factors associated with preterm birth. It further examines the short- and long-term consequences for newborns and families, with particular attention to context-specific insights relevant to maternal experiences in the West Bank, Palestine.

2.2 Definition of Preterm

According to the International Classification of Diseases (ICD), code O60 Preterm labor and delivery occurs before 37 weeks of gestation (week 37+0), which represents 259 days since the first day of the expectant woman's last menstrual period (ICD-10, 2019). The method used to determine gestational age determines the degree of accuracy. Traditionally, LMP was the gold standard. Improper LMP recollection and irregular menstrual cycles may introduce bias in calculating delivery dates. Compared to ultrasound-based fetal biometry, LMP may exaggerate delivery dates and underestimate preterm birth (Sharma et al., 2020; Skalkidou et al., 2018). Other methods for estimating gestational age, including fundal height measurement, quickening, and neonatal assessment after birth, are as unexpected (Rada et al., 2018). Ultrasound dating is currently considered the highest standard. Ultrasound gestational age dating is most reliable in the first trimester, but

becomes less accurate as gestational age increases (Butt & Lim, 2019; Papageorgiou et al., 2016).

The WHO defines preterm birth as only a live birth (WHO, 2023d). The ICD defines intrauterine fetal death (IUFD) as early fetal death between gestational weeks 22+0 and 27+6, and late fetal death after gestational week 28+0. A miscarriage occurs when the baby is born before week 22+0 (ICD-10, 2019). The WHO categorizes preterm births depending on gestational age (WHO, 2023d): Extremely preterm babies are born before week 28+0, extremely preterm babies between 28+0 and 31+6 weeks, and intermediate to late babies between 32+0 and 36+6 weeks. Neonatal categorization based on gestational age is appropriate, as adverse outcomes for preterm newborns are inversely associated with gestational age at birth (Dehaene et al., 2020).

2.3 Incidence of Premature Birth

The incidence of PTB varies by country. Many countries, especially those with low incomes, lack reliable estimates of preterm birth rates. Not many countries routinely gather data on preterm birth (Pusdekar et al., 2020). National, regional, and worldwide estimates of preterm birth in 2020, based on trends from 2010 to 2020. The study conducted a systematic analysis and searched population-based, nationally representative data on preterm birth. According to findings, an estimated 13.4 million babies were born preterm (before 37 weeks), compared to 13.8 million in 2010. From 2010 to 2020, the global yearly decline rate was expected to be 0.14%. Although southern Asia and Sub-Saharan Africa account for 55.6 percent of total live births, they also account for almost 65% of all preterm births worldwide in 2020 (Ohuma et al., 2023). Furthermore, Global, regional, and national preterm birth rates for 2014 were assessed in relation to the WHO's initiatives to combat preterm birth through the Global Strategy for Women's, Children's, and Adolescents' Health and Every Newborn Action Plan. The global preterm birth rate was 10.6% of all live births. This equates to 14.84 million live preterm births in 2014, with 12 million (81.1%) occurring in Asia and Sub-Saharan Africa, which emphasizes the need for enhanced data registration and standardized definitions, measurements, and reporting (Chawanpaiboon et al., 2019).

For low- and low-middle-income countries, a study conducted by (Pusdekar et al., 2020). The study analyzed data from the Global Network's (GN) register of pregnant women and their kids in six low- and middle-income countries (Democratic Republic of Congo, Kenya, Zambia, Guatemala, India, and Pakistan) from 2014 to 2018. Results showed that the overall preterm birth rate was 12.6%, ranging from 8.6% in Belagavi, India, to 21.8% in Pakistan. Similarly, a study done by (Swarray-Deen et al., 2024) To investigate preterm birth in low- and middle-income countries (LMICs), the study revealed that preterm birth (PTB) rates in LMICs range from 9% to 12.6%, higher than the 9% rate in high-income countries (HICs). In the West Bank, Palestine, no studies have been done to investigate the incidence of premature births in Palestine.

2.4 Causes and Risk Factors of Preterm Birth

Although the causes of PTB are not fully understood, some risk factors have been identified. Risk factors for preterm birth can be classified as maternal, fetal, and obstetric (Etil et al., 2023; Gurung et al., 2020).

2.4.1 Socioeconomic factors associated with preterm birth

The term "socioeconomic factors" describes how a group of people's social and economic behaviors, such as their income, level of education, place of employment, and residence, interact (CDC, 2023). Several studies and nations have identified heterogeneity in preterm birth rates based on socioeconomic level (Baranowska-Rataj et al., 2023; McElroy et al., 2022; Wu et al., 2024). In terms of socioeconomic status, the systematic review and meta-analysis by (Thomson et al., 2021), discovered that women from lower socioeconomic backgrounds had a 41% higher risk of preterm birth (OR 1.41, 95% CI 1.33 to 1.50) than those from higher occupational/social class groups, highlighting the association between lower socioeconomic status and increased preterm birth risk. Also, a population-based study that analyzed data from the Healthcare Cost and Utilization Project Nationwide Inpatient Sample (2004-2014) to investigate how high socioeconomic status (SES) affected pregnancy outcomes. In comparison to women in lower income quartiles, it was discovered that those in the highest income quartile experienced improved pregnancy outcomes, including preterm birth (Nicholls-Dempsey et al., 2023). Additionally, a cohort study aimed to assess the effects of ethnic background and socioeconomic deprivation on pregnancy outcomes in England, which used data from the National Maternity and Perinatal Audit (2015–2017), discovered that women in the socioeconomically disadvantaged group were more likely to experience premature birth, with an attributable fraction for preterm births due to socioeconomic inequality was 18.5%(Jardine et al., 2021).

According to several studies, women with less education had the worst pregnancy outcomes, such as premature birth (Cantarutti et al., 2017; Granés et al., 2023; Saylan & Cinaroglu, 2024). A hospital-based cohort study conducted by (Granés et al., 2023) investigated the association between preterm birth and maternal level of education, according to an analysis of hospital records from 10,467 births in Barcelona between 2011 and 2017. Women with less education were more likely to give premature birth (RR 1.57). In addition, a study of preterm birth among Turkish and Syrian refugee women conducted by (Saylan & Cinaroglu, 2024) discovered that lower educational status significantly increased the probability of preterm birth. Women with less education had an odds ratio (OR) of 0.674 (95% CI 0.547-0.832), demonstrating a protective effect of higher education. Similarly, a population-based study was conducted by (Cantarutti et al., 2017). Results from 383,103 singleton live births from 2005 to 2010 in Lombardy found that higher education levels were related to a lower risk of preterm birth, with an Odds Ratio (OR) of 0.81 (95% CI 0.77-0.85), showing that highly educated mothers had a lower risk than those with lower education levels.

Regarding maternal age, the systematic review and meta-analysis revealed that, compared to women under 40, older mothers (≥ 40 years) had a considerably higher risk of premature delivery (RR 3.18) (Saccone et al., 2022). Similarly, a retrospective cohort study was done by (Fuchs et al., 2018). Using data from the QUARISMA study, a large Canadian randomized controlled trial, that collected data from 184,000 births in 32 hospitals, results found that preterm birth rates followed a "U-shaped" curve, with women aged 30-34 having the lowest risk (5.7%) and women aged 20 to 24 had a slightly higher risk (aOR 1.08), whereas those aged 40 and over had a significantly higher risk (aOR 1.20). Additionally, using data from 2007–2017, a population-based study was conducted in Italy, the study investigated the association between maternal age and preterm birth (PTB), and results discovered a U-shaped association between maternal age and PTB risk, with women under 20 years old (aOR 1.16) and those over 40 years old (aOR 1.62) having the highest risk for singleton PTBs (Esposito et al., 2022). Also, advanced maternal age (≥ 35 years) was associated with a higher risk of preterm birth (PTB), as analyzed data from 152,246 singleton live births in Alberta from 2014 to 2017. According to the results, both spontaneous and iatrogenic PTB were more common in women aged ≥ 35 (Scime et al., 2020).

2.4.2 Maternal Obstetric Factors Associated with Preterm Birth

A structured literature search was conducted to identify studies examining maternal and obstetric factors associated with preterm birth. Relevant studies were retrieved from major electronic databases, including PubMed, Scopus, Web of Science, and Google Scholar. The search was limited to peer-reviewed articles published in English between 2010 and 2025.

A combination of keywords and Boolean operators was used, including: “preterm birth” OR “premature birth” OR “preterm delivery” AND “maternal factors” OR “obstetric factors” OR “risk factors” AND “pregnancy complications” OR “hypertensive disorders” OR “antenatal care” OR “premature rupture of membranes” OR “vaginal bleeding” OR “cesarean section” OR “low birth weight.”

Additional relevant studies were identified through manual screening of the reference lists of eligible articles. After removal of duplicates and screening of titles and abstracts, full-text articles were assessed for eligibility based on relevance to maternal and obstetric determinants of preterm birth. A total of approximately 28 studies met the inclusion criteria and were included in the final review.

Unaddressed maternal and obstetric risk factors can lead to miscarriage or PTB (Tang et al., 2024). Several studies in various countries have identified risk variables, including those in hospital settings, preterm births have been linked to previous pregnancies, pregnancy complications, hypertension, vaginal bleeding, missed prenatal appointments, and maternal factors such as pre-labor, membrane rupture, hypertensive disorders, and

medical conditions (Ayele & Moyehodie, 2023; Chang et al., 2020; Dahman, 2020; Mitrogiannis et al., 2023; Rutayisire et al., 2023; Sureshababu et al., 2021)

A study conducted at public hospitals in East Gojjam Zone, Ethiopia, according to the results, preterm birth is substantially associated with obstetric complications such as premature membrane rupture (AOR = 6.46), pregnancy-induced hypertension (AOR = 3.61), and antepartum hemorrhage (AOR = 3.62). Maternal illnesses such as HIV positivity (AOR = 6.99) and chronic diseases (AOR = 3.94) offered further risks (Ayele & Moyehodie, 2023). Similarly, a study conducted at Debre Berhan Comprehensive Specialized Hospital in Ethiopia found significant Obstetric variables, including cesarean-section delivery (AOR = 2.412), twin pregnancy (AOR = 3.524), and maternal anemia throughout pregnancy (AOR = 3.124) (Kibret et al., 2024).

Furthermore, a study assessing data from 54 referral-level hospitals in Nigeria found a preterm birth incidence of 153 per 1000 live births and identified significant clinical variables related to preterm births and perinatal mortality. Preterm perinatal mortality was high at 47.2 per 1000 live births, with key risk factors including paternal manual labor (AOR = 1.52), hypertensive disorders of pregnancy (AOR = 1.37), lack of antenatal care (AOR = 2.74), earlier gestation (28-<32 weeks: AOR = 2.94), and extremely low birth weight (<1000 g: AOR = 21.35). The findings highlight the important need to enhance access to quality maternity and newborn care while also addressing socioeconomic inequities (Fajolu et al., 2024).

Moreover, in a study conducted in Taiwan, data from the National Health Insurance Research database analyzed preterm births among 130,362 live births between 2004 and 2013. The study found an increasing trend in preterm birth rates, which increased from 3.33% in 2004 to 5.11% in 2013, with an average yearly rise of 5.3%. Nulliparity, multifetal pregnancies, a history of preterm birth, maternal drug abuse or dependency, and maternal medical problems were all major risk factors for preterm birth. The study emphasized the importance of comprehensive strategies to identify and manage high-risk pregnancies to reduce preterm birth prevalence and unfavorable outcomes (Chang et al., 2020).

Along the same line, a study conducted at Yemen's Mukalla Maternity and Childhood Hospital identified significant clinical factors related to preterm birth. The study found a 20% preterm birth rate in the analyzed group and identified numerous important risk factors for preterm delivery. These included a family history of preterm birth (AOR = 2.353), pre-eclampsia (AOR = 4.120), parity (AOR = 2.139), premature membrane rupture (AOR = 4.161), and abnormal amniotic fluid volume (AOR = 4.534). The findings underline the need for early detection and management of these risk factors, which may help reduce preterm deliveries and improve mother and newborn outcomes (Dahman, 2020). Similarly, a study conducted in India using data from the National Family Health Survey (NFHS-5) 2019-21 investigated the associations between low birth weight (LBW) and preterm birth. According to the study, 18% of newborns were delivered prematurely, and 12% had a low birth weight. It discovered numerous maternal variables that were strongly related to both PTB and LBW, including a lack of prenatal care, a previous cesarean birth, and low stature (Jana et al., 2023).

2.5 Experiences of Mothers of Preterm Infants

Mothers of preterm infants frequently experience profound and unexpected psychological distress, particularly when their newborns require admission to a Neonatal Intensive Care Unit (Konukbay et al., 2024). The immediate separation between mother and infant after birth, combined with the infant's medical vulnerability, disrupts early maternal–infant contact and contributes to heightened emotional strain (van Veenendaal et al., 2022). Qualitative research consistently demonstrates that mothers of preterm infants often struggle to experience a sense of normal motherhood, as the early postpartum period becomes dominated by fear, uncertainty, anxiety, and persistent concern about the infant's survival and health (Gulshan et al., 2023; Habtu et al., 2024; Leahy-Warren et al., 2020; Pavlyshyn et al., 2024).

A qualitative study conducted at Muhimbili National Hospital in Tanzania identified three overarching themes in maternal experiences: emotional turmoil, challenges in adaptation, and the need for care and support (Habtu et al., 2024). The unexpected nature of preterm birth was associated with severe psychological distress, including feelings of disrupted maternal identity and loss of hope. Mothers also encountered practical difficulties such as breastfeeding challenges, inadequate access to care, and socioeconomic burdens. The study emphasized the importance of emotional support, high-quality maternal care, and empathetic healthcare provider engagement in addressing both the physical and emotional needs of mothers following preterm birth.

Similarly, (Leahy-Warren et al., 2020) explored mothers' experiences during the first year after discharge from the NICU and found that prior depression, weak maternal attachment, and insufficient emotional and social support were strongly associated with higher levels of depressive symptoms. These findings highlight the role of healthcare professionals in strengthening both formal and informal support systems and implementing early interventions to enhance maternal emotional well-being and promote secure mother–infant bonding.

A systematic review by (Wang et al., 2021) further explored maternal emotional experiences in the NICU context, identifying four key themes: negative emotional consequences, the need for support, barriers to parenting, and difficulties in bonding with the infant. The NICU environment was shown to significantly influence maternal emotional well-being and attachment processes, often intensifying feelings of helplessness and psychological distress. The authors stressed the importance of healthcare strategies aimed at reducing emotional burden and facilitating maternal involvement in infant care.

In Ethiopia, (Mengesha et al., 2022), conducted a phenomenological study that revealed five major themes: maternal emotional experiences, maternal expectations, expectations of healthcare providers, health facility–related factors, and perceived inadequacy in caring for preterm infants. Mothers reported substantial emotional strain compounded by structural challenges, including medication shortages, limited diagnostic services, and inadequate basic facilities. These systemic constraints further intensified maternal stress and feelings of powerlessness.

Research from Pakistan by (Gulshan et al., 2023) identified three primary themes: mixed emotions (fear, anger, and hope), satisfaction with supportive healthcare professionals, and

mother–infant interaction. Interventions such as Kangaroo Mother Care and breastfeeding were found to strengthen emotional bonds and provide psychological comfort despite ongoing distress. Likewise, Padilla et al. (2023) emphasized the importance of maternal knowledge, coping strategies, and support systems in helping mothers manage the complex demands of caring for preterm infants in intensive care settings.

Collectively, these studies demonstrate that mothers of preterm infants experience multifaceted emotional, psychological, and practical challenges. Their experiences are shaped not only by the infant’s clinical condition but also by the quality of healthcare support, family-centered practices, and broader health system resources. Interventions that enhance emotional support, strengthen maternal involvement in infant care, and promote compassionate communication from healthcare providers are essential for improving maternal well-being and fostering positive mother–infant relationships. To date, no published qualitative research has explored the experiences of Palestinian mothers following preterm birth in the NICU setting, underscoring an important gap in context-specific evidence. This lack of localized qualitative insight limits understanding of how cultural, social, and health system factors within Palestine shape maternal experiences, highlighting the need for contextually grounded research.

2.6 Literature Gap

PTB remains a critical public health concern globally and in Palestine. Despite its recognized significance, there are currently no recent studies, quantitative or qualitative, that comprehensively investigate preterm birth in Palestine, including its wide-ranging determinants or the experiences of mothers following preterm birth and NICU hospitalization. This lack of research represents a substantial gap: while global studies provide insights into risk factors, maternal experiences, and health system influences, the Palestinian context remains largely unexplored. Consequently, little is known about how sociocultural, economic, and health system factors in Palestine shape maternal experiences, coping strategies, and outcomes for preterm infants. Addressing this gap is essential for designing contextually relevant interventions, improving maternal and neonatal care, and supporting family-centered practices in Palestinian healthcare settings.

2.7 Conceptual Framework

The study's conceptual framework is based on the results of literature reviews on the determinants of preterm birth, which indicate relationships among the independent variables, such as Maternal Socio-demographic Risk Factors (maternal age, residence, and education). Second is Fetal Characteristics (sex and infant birth weight). Maternal Obstetric Factors (parity, preterm history, pregnancy mode, delivery mode, comorbidity (anemia, preeclampsia, GDM)). The dependent variable indicates the baby's gestational age (preterm or term) as shown in Figure 2.1.

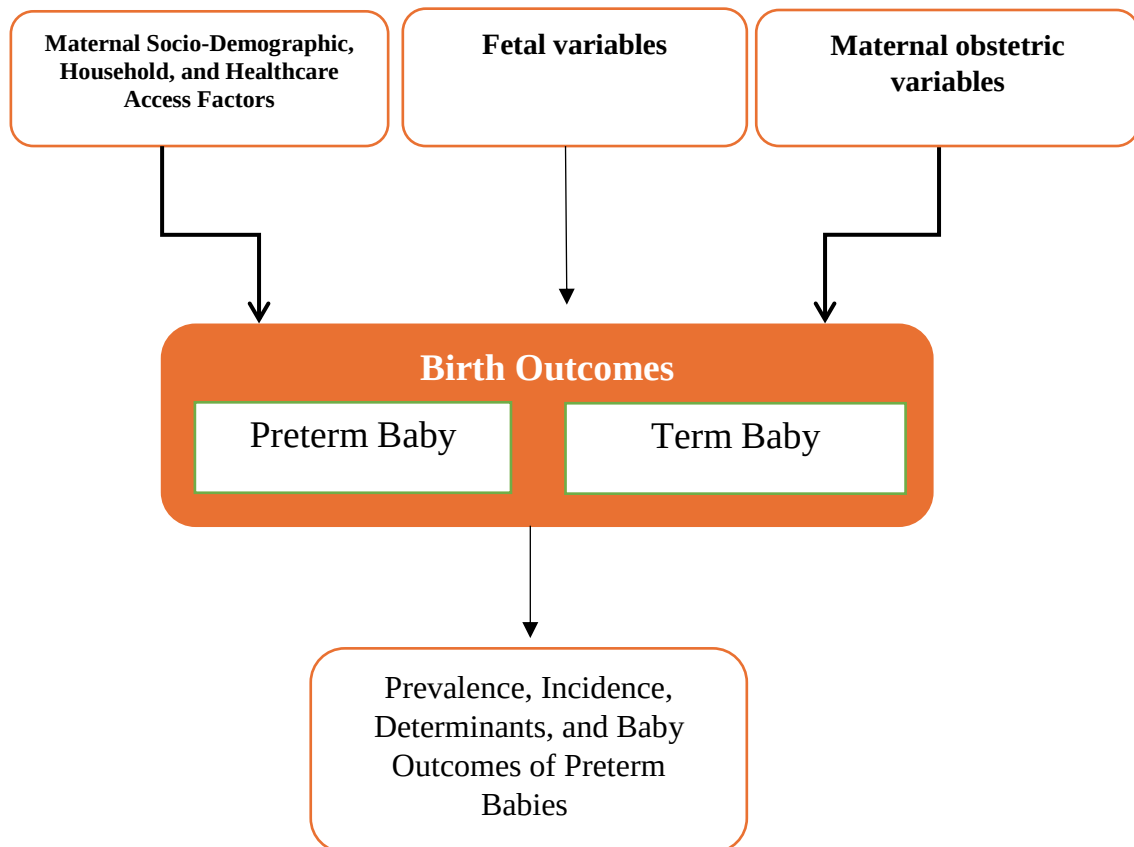


Figure 2.1 The Conceptual Framework of The Study Source: Developed by the Researcher

2.7.1 Independent Variables

2.7.1.1 Socio-economic and Demographic Factors

Age

This refers to the age of the participant at the time of delivery, categorized into four groups:

1. Less than 18 years
2. 18–24 years
3. 25–34 years
4. ≥ 35 years

Educational Level: This refers to the highest level of formal education completed by the participant, categorized into four categories:

1. Illiterate (no formal education)
2. Primary education (Grades 1–8)
3. Secondary education (Grades 9–12)
4. Higher education (>12 years of schooling)

Residence: the place where a woman lives, categorized as:

1. Urban: Areas with higher population density, predominantly non-agricultural occupations, and better infrastructure and services (e.g., cities).

2. Rural: Areas with lower population density, where agriculture is common and access to services is more limited (e.g., villages and countryside areas).
3. Refugee camp: Densely populated settlements with limited infrastructure and services.

Geographic

Area:

Referring to the region of residence within the West Bank, categorized as

1. North
2. Middle
3. South

Maternal Occupation: Refers to the employment status of the mother, categorized as

1. Employed
2. Unemployed

Husband's Employment Status: Refers to whether the husband works; it is categorized as

1. Employed
2. Self-Employed
3. Unemployed.

Family Income: Refers to the average monthly household income, categorized as

1. <1000 NIS ($\approx$ 300 USD)
2. 1000–2999 NIS ($\approx$ 300–1000 USD)
3. $\geq$ 3000 NIS ($\approx$ $\geq$ 1000 USD)

Family Size: Refers to the number of individuals living in the household, categorized as

1. <3 members
2. 3–5 members
3. >5 members

Access to Healthcare: Safe access to healthcare during pregnancy was assessed using the following question: “During your pregnancy, did you have safe and timely access to healthcare facilities without barriers such as movement restrictions, checkpoints, transportation difficulties, or other conflict-related mobility constraints? Responses were recorded as

1. Yes (Safe and timely access to healthcare services)
2. No (Difficult and delayed access to healthcare services)

Height and Weight

Maternal height (cm) and weight (kg) were recorded to calculate body mass index.

Body Mass Index (BMI): BMI was calculated as weight (kg)/height (m^2) and classified according to WHO criteria (WHO, 1995):

- <18.5 (Underweight)
- 18.5–24.9 (Normal)
- 25.0–29.9 (Overweight)
- 30.0–34.9 (Obesity class I)
- $\geq$ 35 (Obesity class II/III)

Total Gestational Weight Gain: Refers to the total weight gained during pregnancy, categorized as

- <5 kg
- 5–9 kg
- 10–14 kg
- 15–19 kg
- ≥ 20 kg

2.7.1.2 Maternal and Obstetric Factors

Gravidity: Refers to the total number of pregnancies a woman has had, including the current pregnancy.

1. Primiparous (first birth)
2. Multiparous (more than one birth)

Interpregnancy Interval

Refers to the time between the previous delivery and conception of the current pregnancy.

1. First pregnancy
2. <6 months
3. 6–17 months
4. 18–23 months
5. 24–59 months
6. ≥ 60 months

Mode of Conception: Refers to how the pregnancy was achieved: spontaneous conception or assisted reproductive technology, categorized as

1. Spontaneous
2. Medically assisted

History of Preterm Birth: Refers to whether the mother has had a previous delivery before 37 completed weeks of gestation categorized as

1. Yes
2. No

History of Miscarriage: Refers to any previous pregnancy loss before 20 weeks of gestation, as

1. Yes
2. No

History of Stillbirth: Refers to a previous fetal death at ≥ 20 weeks of gestation, categorized as

1. Yes
2. No

Chronic Medical Diseases: Refers to pre-existing maternal conditions such as hypertension, diabetes mellitus, thyroid disorders, or other chronic diseases categorized as

1. Present
2. Absent

Preeclampsia: Refers to hypertension with proteinuria or organ dysfunction occurring after 20 weeks of gestation during the current pregnancy.

1. Yes
2. No

Prolonged Rupture of Membranes: Refers to rupture of membranes more than 18 hours before labor onset.

1. Yes
2. No

Antepartum Hemorrhage: Refers to vaginal bleeding after 28 weeks of gestation and before delivery, categorized as

1. Yes
2. No

Placental Abnormalities: Refers to the presence of one of the placental diseases, such as placenta previa, placental abruption, or placenta accreta, categorized as :

1. Yes
2. No

Number of Previous Cesarean Deliveries: Refers to the total Cesarean deliveries before the current birth, categorized as:

1. None
2. One
3. Two

Mode of Delivery: The method by which the baby was born. It is categorized into three types:

1. **Vaginal delivery** – spontaneous birth through the birth canal without surgical intervention.
2. **Cesarean section (C-section)** – surgical delivery of the baby through an incision in the mother's abdomen and uterus.
3. **Instrumental delivery** – vaginal birth assisted by medical instruments such as forceps or a vacuum extractor.

2.7.1.3 Neonatal Characteristics

Sex of the Newborn: Refers to the biological sex of the infant

1. Female
2. Male

Birth Weight: Refers to the first recorded weight of the newborn at birth. Classified according to (WHO, 2014) :

1. <1000 g (Extremely low birth weight)
2. 1000–1499 g (Very low birth weight)
3. 1500–2499 g (Low birth weight)
4. ≥2500 g (Normal birth weight)

Gestational Age at Birth:

Refers to the duration of pregnancy in completed weeks calculated from the first day of the last menstrual period or ultrasound assessment. Normal pregnancy length is 38–42 weeks (WHO, 2023e) categories include:

1. <28 weeks (Extremely preterm)
2. 28–31 weeks (Very preterm)
3. 32–36 weeks (Moderate to late preterm)
4. ≥ 37 weeks (Term)

NICU Admission

Refers to whether the newborn required admission to a neonatal intensive care unit after birth, categorized as

1. Yes
2. No

2.7.2 Dependent Variable

The dependent variable in the study is preterm birth, which is a birth occurring before 37 weeks of gestation.

2.7.2.1 Conceptual definition

Gestational Age: Gestation refers to the time between conception and birth. The baby grows and develops within the mother's womb during this period. The phrase "gestational age" is commonly used during pregnancy to indicate how far along the pregnancy is. It is measured in weeks, beginning with the first day of the woman's previous menstrual cycle and ending on the present date. A typical pregnancy can last from 38 to 42 weeks. Infants born before 37 weeks are considered preterm, and infants born after 42 weeks are considered post-mature (Haider et al., 2021).

Preterm Birth: is defined by the World Health Organization (WHO) as newborns born alive before 37 weeks of gestation, with three subgroups based on gestational age: extremely preterm (less than 28 weeks), very preterm (28 to less than 32 weeks), and moderate to late preterm (32 to 37 weeks) (WHO, 2023e).

Term birth: The American College of Obstetricians and Gynecologists (ACOG) defines a term birth as one that occurs between 37 and 42 weeks of gestation (ACOG, 2013).

2.7.2.2 Operational definition

Gestational Age: In this study, the gestational age will be measured based on the date of the first day of the woman's last menstrual period (LMP), as confirmed through ultrasound (if available), and classified as Preterm indicates less than 37 weeks. Term: Between 37 and 42 weeks.

Preterm Birth: In this study, preterm birth is defined as a live birth occurring at 37 weeks of gestation.

Term birth: In this study, term birth is defined as a live birth between 37 and 42 weeks of pregnancy.

2.8 Summary

Preterm birth is a major global health concern, influenced by socioeconomic, maternal, obstetric, and fetal factors, and associated with high neonatal morbidity, mortality, and maternal stress. Despite extensive international research, there is a critical knowledge gap in Palestine, as no studies have quantified the magnitude of preterm birth, examined its determinants, or explored mothers' experiences in the West Bank, highlighting the urgent need for context-specific research to inform policies and interventions. The study framework links these socio-demographic, access to health care services, obstetric, and fetal factors to gestational age at birth (preterm vs. term).

Chapter Three

Methodology

3.1 Introduction

This chapter outlines the comprehensive multi-method approach that combined cohort, cross-sectional, and qualitative study designs to determine the incidence, prevalence, and determinants of PTB among Palestinian mothers in the West Bank, and to explore the experiences of mothers caring for preterm infants in NICUs. The chapter describes the study design, participant selection, data-collection instruments and procedures, and analytical strategies for each phase, as well as the ethical considerations guiding the research.

3.2 Study Design

This dissertation adopted a multi-method design, implemented through three complementary studies, to provide a comprehensive understanding of preterm birth in the West Bank, Palestine. This approach was used to capture both the epidemiological patterns and the contextual and experiential dimensions of preterm birth, allowing for a more holistic interpretation by integrating quantitative and qualitative evidence.

The three studies were integrated at the interpretive level, whereby findings from the quantitative and qualitative components were brought together during the discussion and overall synthesis of the dissertation to generate a more comprehensive understanding of preterm birth in the West Bank. Specifically, the cohort study provided evidence on the incidence and determinants of preterm birth, the cross-sectional study examined prevalence, maternal characteristics, healthcare access, and neonatal outcomes, while the qualitative study contextualized these findings by exploring mothers' experiences of caring for preterm infants in NICU settings. Although the studies were conducted independently rather than concurrently, their integration was guided by the principle of complementarity, whereby different methods addressed distinct but interrelated dimensions of the same phenomenon. This multi-method approach was justified by the complexity of preterm birth as a public health issue, requiring both epidemiological evidence to identify patterns and determinants and qualitative insight to understand maternal experiences within a conflict-affected healthcare setting. Together, the integration of findings enhanced the depth,

contextual relevance, and explanatory power of the dissertation, providing a more comprehensive understanding than could be achieved through any single method alone.

Study I employed a 17-month retrospective hospital-based cohort design using registry data extracted from the Health Information System (HIS) in the West Bank. The HIS was established to capture routinely collected hospital data on parturient women and their newborns. This study aimed to investigate the incidence and determinants of PTB between January 2023 and May 2024 by utilizing existing medical records within a retrospective cohort framework, allowing the determination of incidence and the examination of associations between maternal exposures (Song & Chung, 2010).

Study II employed a cross-sectional design to determine preterm birth prevalence among women delivering in purposively selected hospitals across the West Bank and to examine associated maternal and healthcare-related determinants. This approach enabled rapid, cost-effective estimation of disease burden while simultaneously assessing multiple risk factors, including socioeconomic, obstetric, medical, and healthcare access barriers—critical advantages for public health research in conflict-affected regions (Kesmodel, 2018; Wang & Cheng, 2020).

Study III employed a qualitative approach using content analysis, as described by Graneheim and Lundman (2004), to explore the experiences of Palestinian mothers caring for preterm infants in NICUs in the West Bank. This methodology provided rich contextual insights into the emotional, social, and cultural dimensions of preterm birth caregiving, capturing nuanced maternal perspectives essential for comprehensive maternal health research (Graneheim & Lundman, 2004). The approach enabled the identification of latent themes regarding mothers' experiences, family support systems, and psychological impacts specific to conflict-affected settings. An overview of the three studies is presented in Table 3.1.

Table 3.1 Overview of the studies

Study Number	Study I	Study II	Study III
Design	Retrospective cohort design	Cross-sectional study	Inductive qualitative descriptive design
Participants / Sampling	Census sampling (n=19,425)	Consecutive sampling (n=1,235)	Purposeful recruitment (n=18)
Data analysis	Descriptive, Bivariate analysis, and multivariable logistic regression	Descriptive, Bivariate analysis, and multivariable logistic regression	Qualitative Content analysis following the approach of Graneheim and Lundman

3.3 Setting, Participants, and Recruitment Process

3.3.1 Study I

This study was conducted in three purposefully chosen government hospitals in the West Bank to assess the region's healthcare heterogeneity. The hospital selection was based on the availability of neonatal intensive care units (NICUs), the demographic catchment, and the ability to represent various healthcare concerns, including those arising from ongoing conflict. The first hospital, located in Jenin, represents the northern West Bank; the second, in Ramallah, represents the middle area, and the third, in Hebron, represents the southern West Bank.

This retrospective cohort study included all mothers who delivered live-born infants at the three selected hospitals in the West Bank between January 2023 and May 2024, during which 19,425 live births were recorded. Mothers were eligible for inclusion if their medical records contained complete data on the study variables. Records with missing data were assessed before analysis. The proportion of missingness was generally low for key outcome and main exposure variables (approximately <5% for core obstetric variables such as gestational age and mode of delivery), while a small proportion of secondary covariates had higher levels of missing data.

Records with missing outcome data or incomplete essential obstetric information were excluded from the final analysis. Although this complete-case approach ensured data integrity and analytical consistency, it may introduce potential selection bias if excluded records differed systematically from included records. If women with missing data were more likely to have adverse pregnancy outcomes or reduced access to antenatal care, this could lead to an underestimation of the incidence of preterm birth and biased estimates of associations between maternal risk factors and preterm birth.

To assess the robustness of the findings, a sensitivity analysis was performed by comparing the available demographic and obstetric characteristics between included and excluded records. The comparison indicated no major systematic differences in observed variables, suggesting that the risk of significant selection bias was limited. However, the possibility of residual bias due to unmeasured differences between groups cannot be fully excluded.

3.3.2 Study II

The cross-sectional study collected data from women delivering in purposively selected governmental hospitals across the northern, central, and southern West Bank between April and August 2025. Hospitals were selected to capture healthcare heterogeneity across key districts affected by ongoing conflict, based on the presence of neonatal intensive care units and the capacity to represent diverse demographic and healthcare challenges. The selected hospitals served populations in Jenin (north), Ramallah (central), and Hebron (south), providing a broad representation of maternal and neonatal care in the West Bank.

All women who delivered singleton live births at the selected hospitals during the study period were eligible for inclusion. A consecutive sampling approach was used, whereby every eligible woman meeting the inclusion criteria during the study period was included until the target sample size ($n = 1,235$) was reached. Exclusion criteria comprised multiple gestations, neonates with congenital anomalies, and cases with incomplete maternal or neonatal records. These criteria were applied to ensure the accuracy and comparability of neonatal outcomes and to examine preterm birth among singleton live births specifically. Multiple pregnancies and congenital anomalies were excluded due to their distinct pathophysiological mechanisms and inherently higher risk of preterm delivery, which could confound associations of interest. Stillbirths and miscarriages were excluded because the study aimed to investigate determinants and outcomes among live-born infants.

3.3.3 Study III

The qualitative study included mothers with experience of caring for preterm infants admitted to Neonatal Intensive Care Units (NICUs) in the West Bank, Palestine, within one year of delivery. Participants were recruited from purposively selected governmental hospitals representing the northern, central, and southern regions of the West Bank, specifically Jenin (north), Ramallah (central), and Hebron (south). These hospitals were selected to capture contextual and healthcare system heterogeneity, including variation in service availability, referral pathways, and exposure to conflict-related constraints, as well as to ensure representation of major population catchment areas.

The qualitative sample was not drawn as a sub-sample from Study 2, but was independently recruited from the same hospital settings to ensure alignment in context while maintaining methodological independence. A total of 18 mothers participated in the study, with an approximately equal distribution across regions (Jenin: 6 mothers; Ramallah: 6 mothers; Hebron: 6 mothers). Purposive sampling with maximum variation was applied to ensure diversity in maternal age, educational level, occupation, parity, mode of delivery, and infant characteristics. Recruitment was conducted through NICU units and postnatal follow-up areas, where eligible mothers were identified and approached by the research team in collaboration with healthcare staff. Data collection continued until thematic saturation was reached.

3.4 Data Collection and Instruments

3.4.1 Study I

With formal approval from the Ministry of Health (MOH), birth records from the participating hospitals covering the period January 2023 to May 2024 were retrieved from the Hospital Information System (HIS) by trained personnel under the supervision of the principal investigator. A structured data-collection checklist was developed to ensure standardized and accurate extraction of all relevant variables. The checklist was informed by a review of the literature and expert consultation, and it underwent pilot testing before

finalization, incorporating feedback from a panel that included Ministry of Health representatives. Data were extracted directly from the HIS using this standardized tool, and random cross-checks were performed to verify completeness, accuracy, and internal consistency. All datasets were stored securely in a password-protected Excel file, ensuring confidentiality and maintaining data integrity throughout the study.

3.4.2 Study II

Data were collected between April and August 2025 in participating governmental hospitals by trained midwives, nurses, and research assistants with extensive experience in maternal and neonatal care. All data collectors received standardized training on research ethics, interviewing techniques, and uniform application of study instruments. Information was obtained within 24–48 hours postpartum to minimize recall bias and allow verification against hospital medical records. Data collection combined structured medical record abstraction with brief maternal interviews conducted in postnatal wards, primarily to verify or complete missing information.

A structured data abstraction form was developed specifically for this study. Face validity was established through review by a panel of pediatricians and obstetricians/gynecologists to ensure clarity and clinical relevance. The tool was pilot tested on medical records not included in the final analysis to assess feasibility, clarity, and consistency; minor revisions were made accordingly. Supervisors reviewed completed forms daily for completeness and internal consistency. Data were entered using a double-entry procedure into a secure database, with routine cross-checks to ensure accuracy and integrity. An English version of the data abstraction form is presented as Appendix 1, consisting of these sections:

Sociodemographic variables

Collected variables included maternal age (≤ 18 , 19–24, 25–34, > 34 years), age at marriage (< 18 , 18–25, > 25 years), education level (no formal education, primary, secondary, university, postgraduate), marital status (married/not married), maternal occupation (working/not working), husband's occupation (unemployed, manual labor, professional/office work), monthly household income (< 300 , 300–1000, ≥ 1000 USD), household size (< 3 , 3–5, > 5 members), residential area (urban, rural, camp), and geographic region (north, central, south West Bank).

Lifestyle-related factors

Pre-pregnancy body mass index (BMI) was calculated as weight (kg) divided by height (m^2) and categorized according to WHO criteria as underweight (< 18.5), normal weight (18.5–24.9), overweight (25–29.9), or obese (≥ 30.0). Gestational weight gain (GWG) was defined as the difference between pre-pregnancy weight and weight at delivery and categorized as < 5 , 5–9, 10–14, 15–19, or ≥ 20 kg. Active smoking refers to any self-reported tobacco use during pregnancy, and passive smoking refers to regular exposure to secondhand smoke at home or work.

Healthcare utilization

Antenatal care (ANC) attendance (yes/no), number of ANC visits (<8 vs ≥ 8), and safe access to healthcare during pregnancy (yes/no) were recorded. Barriers included movement restrictions, checkpoints, and siege-related conditions. Adequate ANC utilization was defined as ≥ 8 visits in line with WHO recommendations.

Maternal medical and obstetric factors

Pre-existing or pregnancy-related medical conditions included chronic hypertension, diabetes mellitus, and hypothyroidism. Obstetric history included previous miscarriage (<20 weeks) and stillbirth (≥ 20 weeks). Pregnancy complications recorded were preeclampsia, premature rupture of membranes (PROM), antepartum hemorrhage (APH), and placental abnormalities (previa, accreta, abruption). Preeclampsia was defined as new-onset hypertension ($\geq 140/90$ mmHg) after 20 weeks' gestation with proteinuria (≥ 300 mg/24 h), as documented clinically. PROM referred to rupture of membranes ≥ 18 hours before delivery, and APH to vaginal bleeding after 24 weeks' gestation (Obstetricians & Gynecologists, 2020).

Neonatal outcomes

Gestational age was determined primarily by first-trimester ultrasound or by last menstrual period when ultrasound data were unavailable; ultrasound estimates were prioritized when both existed. Preterm birth was defined as delivery before 37 completed weeks and classified as extreme (<28 weeks), severe (28–31 weeks), moderate (32–33 weeks), or late preterm (34–36 weeks). Birth weight was measured to the nearest 10 g and categorized as extremely low (<1000 g), very low (1000–1499 g), low (1500–2499 g), or normal (≥ 2500 g). Additional outcomes included neonatal sex, NICU admission, and neonatal mortality. Neonatal mortality was categorized as early (0–7 days) or late (8–28 days). All live-born infants were followed for 28 days. Hospitalized neonates were monitored through daily record review, while those discharged earlier were followed via caregiver telephone contact to ensure complete outcome ascertainment.

3.4.3 Study III

Recruitment was initiated after obtaining official permission from the Palestinian Ministry of Health and participating governmental hospitals in the northern, central, and southern regions of the West Bank. Hospitals were purposively selected from the northern (Jenin), central (Ramallah), and southern (Hebron) regions to capture variations in healthcare contexts across districts affected by ongoing conflict, considering the availability of neonatal intensive care units (NICUs) and their capacity to represent diverse demographic profiles and healthcare challenges.

Eligible participants were mothers aged ≥ 18 years who had delivered a preterm infant (<37 weeks of gestation) admitted to the NICU for at least 48 hours within the previous 12 months and who were able to provide informed consent. Mothers of infants with major congenital anomalies or whose infants died before NICU admission were excluded. A purposive sampling strategy with maximum variation was used to ensure diversity in participants' characteristics, including maternal age, education level, occupation, parity,

and mode of delivery, as well as infant characteristics such as gestational age, birth weight, and sex.

Study information letters and consent forms were distributed to hospital administrations, and once institutional approval was secured, nurse managers assisted in identifying eligible mothers. Mothers who met the eligibility criteria were approached, provided with detailed information about the study, and invited to participate. With their permission, contact details were shared with the research team to arrange interview appointments.

Data were collected between August and November 2025 through semi-structured, face-to-face interviews conducted by the first author (AS). Interviews were held at locations chosen by the participants, with all mothers preferring to be interviewed in their homes. Before the interviews, participants completed a short questionnaire capturing demographic and neonatal characteristics and provided written informed consent.

An interview guide developed by the research team included open-ended questions designed to explore mothers' experiences following their infants' admission to the NICU. The guide was piloted with two mothers to assess clarity, relevance, and flow, and was refined based on their feedback. An example question included: "Can you describe your experience since your baby was admitted to the NICU?" Follow-up prompts and probing questions were used to encourage deeper reflection and explore emerging topics. Field notes were recorded during and immediately after interviews to document contextual observations and support data interpretation. Interviews typically lasted 45–60 minutes and were audio-recorded with participants' permission.

To ensure that nuanced emotional and culturally embedded expressions were not lost during translation, several strategies were applied throughout the analytic process. First, the interviews were conducted in Arabic, allowing participants to fully express their experiences using culturally grounded language, idioms, and emotional expressions related to motherhood under challenging sociopolitical conditions.

During transcription and translation into English by the first author, careful attention was given to preserving both semantic meaning and contextual interpretation rather than relying on literal word-for-word translation. Particular emphasis was placed on maintaining culturally specific expressions related to motherhood, emotional distress, and lived experiences under occupation, ensuring that meaning was conveyed in a way that remained faithful to participants' intent. To enhance accuracy, all translated transcripts were reviewed by a bilingual health professional familiar with both linguistic and cultural contexts. This review process helped ensure that subtle meanings, emotional tone, and culturally specific concepts were not distorted or oversimplified during translation.

In addition, reflexive practice was maintained throughout data analysis, with continuous comparison between Arabic transcripts and English translations to ensure conceptual equivalence. Although formal back-translation and participant validation of translated excerpts were not conducted, the iterative translation–review–analysis process and involvement of bilingual expertise strengthened the credibility and trustworthiness of the findings.

Table 3.2 summarizes the maternal and infant characteristics of the participants. Mothers' ages ranged from 25 to 35 years (mean 30), with more than half multigravida (n = 10) and most holding a university degree (n = 11). Slightly more than half were unemployed (n = 10). Caesarean section was the most common mode of delivery (n = 10). Infants' gestational ages ranged from 27 to 34 weeks, with the majority born at 32–34 weeks. Birth weights ranged from 700 g to 2,100 g. NICU stay varied from one week to more than four weeks, with very preterm and extremely low birth weight infants typically experiencing longer admissions. Participants were evenly distributed across the West Bank regions (n = 6 per region).

Table 3.2. Maternal and Infant Characteristics of Study Participants (N=18)

Variable	Category	N
Maternal age (years)	25–29	8
	30–35	10
Gravidity	Primigravida	8
	Multigravida	10
Education level	Secondary school or less	7
	University degree	11
Occupation	Employed	8
	Unemployed	10
Mode of delivery	Vaginal delivery	8
	Caesarean section	10
Gestational age at birth (weeks)	27–31	7
	32–34	11
Birth weight (g)	<1000	6
Variable	Category	N
	1000–1499	5
	1500–2499	7
NICU length of stay	1–2 weeks	5
	3–4 weeks	7
	>4 weeks	6
Region of residence	Northern West Bank	6
	Central West Bank	6
	Southern West Bank	6

3.5 Data Analysis

3.5.1 Study I

Analysis of data was performed using R statistical software, version 4.3.1. Maternal, obstetric, and fetal characteristics were expressed in frequencies and percentages. The overall incidence of preterm delivery was calculated, and chi-square tests were used to examine the association of preterm delivery with categorical features such as education, age, and pregnancy complications. Univariate logistic regression was used to evaluate the potential risk variables first, and multivariate logistic regression was used to adjust for confounders and quantify independent predictors. The results are presented as adjusted

odds ratios (AOR) with 95% confidence intervals (CI), and the significance level is $p < 0.05$.

3.5.2 Study II

Data analysis was performed using IBM SPSS Statistics, version 31. All variables in the study were summarized using frequencies and percentages. The overall prevalence of PTB was calculated. Associations between PTB and categorical variables, including maternal age, education, and pregnancy complications, were assessed using chi-square (χ^2) tests. Univariate logistic regression was first conducted to evaluate potential risk factors. Multivariable logistic regression was then performed to adjust for confounders and identify independent predictors of PTB. Results are presented as adjusted odds ratios (aORs) with 95% confidence intervals (CIs). Statistical significance was set at $p < 0.05$. Multicollinearity among independent variables was assessed and not detected.

3.5.3 Study III

Data were analysed using qualitative content analysis following the approach described by Graneheim and Lundman (2004). The analysis was conducted manually by the research team. Initially, all transcripts were read several times to gain an overall understanding of the data. The text was then divided into meaning units, segments of words, sentences, or paragraphs that related to the same central meaning within their context.

Meaning units were subsequently condensed to preserve their essential content while reducing the volume of text. These condensed meaning units were abstracted and labelled with codes. Codes were compared for similarities and differences and grouped into subcategories and categories reflecting the manifest content of the data (i.e., addressing “what” the participants expressed). Subsequently, themes were developed to capture the latent content of the data (i.e., addressing “how” the underlying meanings were expressed). The analytical process involved continuous movement between the entire dataset and its individual parts to ensure that interpretations remained grounded in the data. All authors participated in iterative discussions to review the emerging codes, categories, and themes, and to reach consensus on the final analytical structure. Complete interview transcripts were treated as the unit of analysis to maintain contextual integrity and preserve participants’ narratives. An example of the analytical process from meaning units to themes is presented in Table 3.3.

Table 3.3: Example of the analytic process: from meaning unit to codes, subthemes, and themes

Meaning Unit	Condensed meaning unit	Code	Subtheme	Theme
“The first few weeks were the hardest. Every sound from the machines made me panic. Every doctor walking toward me made my heart race. I cried constantly, sometimes in the hospital bathroom, sometimes in the car, sometimes at home. I didn’t feel like myself anymore. I felt emotionally empty yet overwhelmed at the same time.”	The first few weeks were the hardest. Every sound from the machines made me panic.	Emotional distress & panic	Emotional Collapse at the Beginning of Motherhood	Entering Motherhood Through Emotional Turmoil and Perceived Threat
“The first time I saw him in the NICU, he looked tiny and fragile, connected to tubes and machines, his chest barely rising with the ventilator. Seeing that broke me; I cried for days, and the pain felt raw, even though I had been through it before.”	I saw him tiny and fragile, connected to machines; it broke me, and I cried for days.	Infant fragility & fear	Perceiving the Newborn’s Life as Fragile and Threatened	

Trustworthiness followed Graneheim and Lundman (2004), emphasizing credibility, dependability, and transferability (confirmability aligns with dependability via audit trails). Confirmability was strengthened by systematically grounding the findings in the raw data and maintaining a clear audit trail linking codes, categories, and themes back to the original Arabic transcripts. Reflexivity was treated as a continuous and documented process throughout data collection and analysis, rather than a one-time activity.

This was operationalized through bracketing and reflexive memos. Before and during interviews, the researchers engaged in bracketing by explicitly identifying their preconceptions about preterm birth, maternal experiences, and the impact of sociopolitical context, and consciously setting these aside during interviewing and analysis. These reflections were recorded in a structured reflexive journal.

In addition, reflexive memos were written after each interview and during coding to document emerging interpretations, emotional responses, and potential areas where researcher assumptions could influence interpretation. For example, when participants described emotional distress related to neonatal intensive care experiences, memos were used to distinguish participants’ expressed meanings from researchers’ interpretations. These memos were revisited throughout thematic development to ensure that codes and themes remained grounded in participants’ narratives rather than researcher bias, thereby enhancing confirmability and analytical transparency.

3.6 Ethical Considerations

Ethical approval for all three studies was obtained from the Research Ethics Committee of Al-Quds University (Ref. No. 505/REC/2025) and the Palestinian Ministry of Health. All study procedures were conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. For Studies II and III, written informed consent was obtained from all participants before enrolment. In Study III, consent was additionally obtained before the interviews, including agreement for audio recording. Participation was entirely voluntary, and participants were informed of their right to withdraw at any stage without consequence.

Confidentiality of all participant and patient information was strictly maintained across all studies through anonymization of data and secure storage in password-protected files accessible only to authorized personnel. Audio recordings in Study III were deleted following completion of data analysis to ensure data security.

3.7 Summary

Chapter Three presents a comprehensive multi-method approach to studying preterm birth among Palestinian mothers in the West Bank, combining retrospective cohort, cross-sectional, and qualitative designs. The cohort study (Jan 2023–May 2024) analyzed 19,425 hospital births using Health Information System records to determine incidence and predictors of preterm birth, while the cross-sectional study (April–August 2025) surveyed 1,235 mothers to assess prevalence and associated maternal and healthcare factors.

The qualitative phase explored the experiences of 18 mothers caring for preterm infants in NICUs through semi-structured interviews, analyzed using content analysis to identify themes related to emotional, social, and cultural aspects of caregiving. Data collection employed standardized tools, trained personnel, and rigorous verification procedures, and all studies adhered to ethical standards approved by Al-Quds University and the Palestinian Ministry of Health. Statistical analyses included descriptive, bivariate, and multivariable logistic regression, while qualitative rigor was ensured through credibility, dependability, transferability, and confirmability measures. This integrated methodology provided a thorough understanding of preterm birth incidence, determinants, and maternal experiences in conflict-affected settings.

Chapter Four

Results

4.1 Introduction

This chapter presents the results of the three complementary studies that form this dissertation, providing a comprehensive understanding of preterm birth in the West Bank, Palestine. It includes findings from a hospital-based cohort study examining the incidence and determinants of preterm birth, a cross-sectional analysis determining the prevalence and maternal, neonatal characteristics and outcomes, and a qualitative study exploring mothers' experiences of having a preterm infant admitted to the NICU. Together, these components offer epidemiological, clinical, and experiential perspectives on the research problem.

4.2 Preterm Birth in the West Bank, Palestine: Insights from a Hospital-Based Cohort Study

4.2.1 Incidence of Preterm Birth

All newborns delivered at ≥ 24 weeks of gestation between January 2023 and May 2024 at the selected West Bank hospitals were included (see Appendix 10). Out of the 19425 recorded live births, 665 were excluded due to missing data on gestational age, infant sex, or maternal age, resulting in a final sample of 18 760 live births for analysis. Among these, 1427 (7.6%) were PTBs, categorized as follows: 23 (0.12%) extreme preterm (< 28 weeks), 84 (0.45%) very preterm ($28 - < 32$ weeks), and 1320 (7.0%) moderate to late preterm ($32 - < 37$ weeks). Due to the small number of extremely preterm cases, the extremely and very preterm categories were combined in some analyses as “extreme-to-very preterm” (< 32 weeks). The remaining 17 333 (92.4%) were term births, consisting of 2825 (16.3%) early-term ($37 - < 39$ weeks) and 14 508 (83.7%) full-term ($39 - 42$ weeks) births (Figure 4.1).

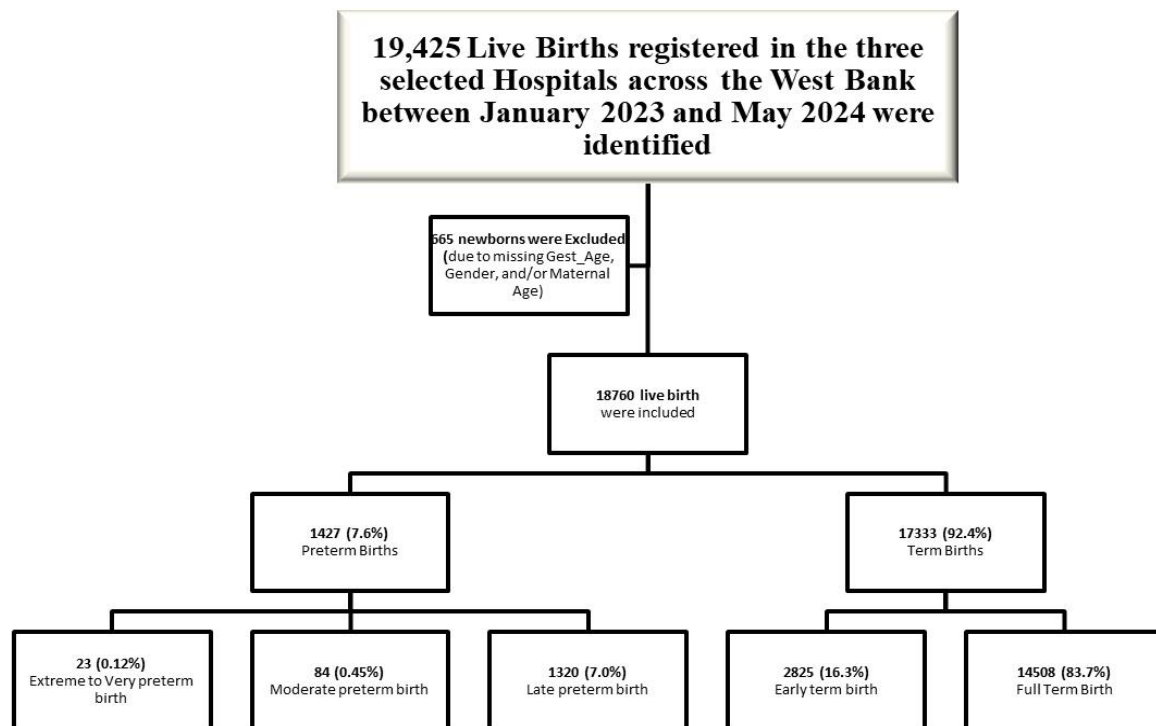


Figure 4.1 Flowchart of the Study Population: Distribution of Term and Preterm Infants.

Preterm birth (PTB) is defined as birth before 37 completed weeks of gestation and is categorized as extremely preterm (<28 weeks), very preterm (28–<32 weeks), and moderate-to-late preterm (32–<37 weeks) (WHO, 2023f). Full-term birth (FTB) is 39+0 to 40+6 weeks, and early term birth (ETB) is 37+0 to 38+6 weeks (ACOG, 2013).

4.2.2 Participants' Characteristics

During the study period, 19 425 women delivered in the selected hospitals. Most PTBs occurred in hospitals in the central hospital (Ramallah) (76.2%), whereas full-term births were more evenly distributed across districts. Regarding maternal age, 14.1% of mothers with PTB were ≥ 35 years compared to 11.7% with full-term births (FTB). Most mothers were aged 20–34 years (78.6% PTB vs. 82.6% FTB), while younger mothers (<20 years) accounted for 7.3% of PTB and 5.6% of FTB. In terms of maternal occupation, most were unemployed (91.5% PTB vs. 94.4% FTB), while smaller proportions were employed in government (3.6% PTB vs. 2.6% FTB) or nongovernmental jobs (4.9% PTB vs. 3.0% FTB). Preterm infants were more likely to have very low birth weight (< 1500 g; 30.6% vs. 5.8%) or low birth weight (1500–2499 g; 68.9% vs. 91.7%) compared to full-term infants. Multiple births were also more frequent among PTB (22.9%) than FTB (4.1%). Antenatal care attendance was similar across groups; however, a smaller proportion of mothers with PTB had < 8 visits (24.5% vs. 31.9%) (Table 4.1).

Table 4.1. Characteristics of the Study Population by Gestational Age Groups: Demographic, Fetal, and Obstetric Variables Comparing Preterm and Full-Term Births.

Variable	Category	Preterm births (n = 1,427) n (%)	Term births (n = 17,814) n (%)	p-value
Maternal age	< 20 y	104 (7.3)	1,006 (5.6)	0.001*
	20–34 y	1,122 (78.6)	14,718 (82.6)	
	> 35 y	201 (14.1)	2,090 (11.7)	
Mother occupation	Government	52 (3.6)	469 (2.6)	0.001*
	Nongovernment	70 (4.9)	531 (3)	
	Unemployed	1,305 (91.5)	6,814 (94.4)	
Baby weight	Very low (<1500 g)	436 (30.6)	1,025 (5.8)	0.001*
	Low (1500–2499 g)	983 (68.9)	16,333 (91.8)	
	Normal (2500–3999 g)	8 (0.6)	455 (2.6)	
Baby sex	Female	658 (46.1)	8,708 (48.9)	0.1254
	Male	769 (53.9)	9,105 (51.1)	
Birth type	Single	1,100 (77.1)	17,100 (96)	0.001*
	Twins	313 (21.9)	704 (4)	
	Multiple ≥ 3	14 (1)	10 (0.1)	
Hospital region	Jenin district 'North.'	71 (5)	7,073 (39.7)	0.001*
	Ramallah district 'Central.'	1,087 (76.2)	5,321 (29.9)	
	Hebron district 'South.'	269 (18.9)	5,420 (30.4)	
Antenatal Follow-up	Yes	1,427 (100)	17,788 (99.9)	0.301
	No	0 (0)	25 (0.1)	
Number of ANC visits	≥ 8	1,077 (75.5)	12,123 (68.1)	0.0018
	< 8	350 (24.5)	5,691 (31.9)	

Note: Data are presented as numbers (%) within each gestational-age category. Percentages may not sum to 100 due to rounding. Pearson's chi-square test was used to compare categorical variables. Statistical significance is indicated using an asterisk (*); $p < 0.05$. Abbreviations: ANC = antenatal care; PTB = preterm birth; FTB = full-term birth; n = number; (%) = percentage.

4.2.3 Risk Factors of Preterm Delivery

Multivariable logistic regression identified several additional statistically significant risk factors for preterm delivery (Table 4.2). Mothers younger than 20 years had a 53% increased risk of preterm delivery compared with mothers aged 20–34 years (aOR 1.53), while maternal age ≥ 35 years was associated with a 32% increase in risk (aOR 1.32). Male infants demonstrated a slightly higher risk than female infants (aOR 1.16). Multiple pregnancy was strongly associated with PTB, with twins exhibiting nearly fivefold higher risk (aOR 4.98) and triplets more than seventeen fold higher risk (aOR 17.28) compared with singletons. Fewer than seven prenatal visits were not significantly associated with PTB (aOR 1.12, $p = 0.12$). Regional variation was apparent, with the central hospital (Ramallah) showing markedly higher odds of preterm delivery (aOR 23.5) and the southern hospital (Hebron) also demonstrating elevated risk (aOR 5.62), compared with the northern hospital (Jenin). Birth weight was not included as a predictor in the

multivariable model because it is an outcome of PTM rather than an antecedent risk factor. Table 4.2 Multivariable logistic regression analyses the risk factors associated with preterm babies.

Category	Subgroup	Adjusted odds ratio (aOR, 95% CI)	p-value
Maternal age	< 20 y	1.53 (1.21–1.93)	0.001*
	20–34 y	1.00 (ref)	—
	> 35 y	1.32 (1.11–1.57)	0.01*
Mother occupation	Government	1.00 (ref)	—
	Nongovernment	1.06 (0.77–1.47)	0.91
	Unemployed	1.31 (0.8–2.12)	0.45
Baby sex	Female	1.00 (ref)	—
	Male	1.16 (1.03–1.31)	0.05
Birth type	Single	1.00 (ref)	—
	Twins	4.98 (4.16–5.97)	0.001*
	Multiple ≥ 3	17.28 (6.54–45.65)	0.001*
Pregnancy care visits	≥ 8	1.00 (ref)	—
	< 8	1.12 (0.87–1.44)	0.12
Hospital region	Jenin district ‘North.’	1.00 (ref)	—
	Ramallah district ‘Central.’	23.5 (14.64–37.74)	0.001*
	Hebron district ‘South.’	5.62 (2.76–11.44)	< 0.001*

Note: Multivariable logistic regression was used to assess risk factors associated with preterm birth. Adjusted odds ratios (aOR) and 95% confidence intervals (CI) are presented. Statistical significance is indicated using an asterisk (*), with $p < 0.05$ considered significant. Reference categories are indicated as “ref.” Abbreviations: aOR, adjusted odds ratio; CI, confidence interval; ref, referent.

4.3 Prevalence, Determinants, and Neonatal Outcomes of Preterm Birth in the West Bank: A Cross-Sectional Study

4.3.1 Prevalence and Gestational Age Distribution

Between April and August 2025, a total of 1,235 live births were recorded across three selected governmental hospitals in the West Bank. Of these, 174 births were preterm, yielding a preterm birth prevalence of 14.1%, while 1,061 births (85.9%) were term. Among preterm births, the majority were classified as moderate to late preterm (32–<37 weeks; $n = 131$, 75.3%), followed by very preterm (28–<32 weeks; $n = 28$, 16.1%) and extremely preterm (<28 weeks; $n = 15$, 8.6%) (Figure 4.2).

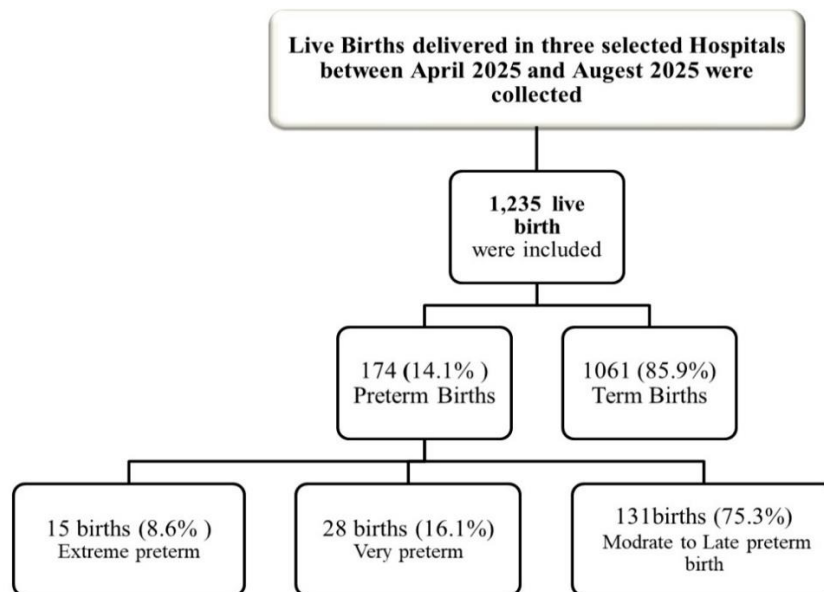


Figure 4.2: Distribution of live births (N=1,235) by Gestational Age Category Across Three Hospitals, West Bank, April-August 2025

Preterm birth (PTB) is defined as birth before 37 completed weeks of gestation and is categorized as extremely preterm (<28 weeks), very preterm (28–<32 weeks), and moderate to late preterm (32–<37 weeks) (WHO, 2023f).

4.3.2 Participants' Characteristics

The study included 1,235 women who delivered either preterm ($n = 174$) or at term ($n = 1,061$). Participants' characteristics were analyzed across four domains: sociodemographic factors, health care utilization, lifestyle factors, and medical and obstetric characteristics. Tables 4.3–4.6 summarize these characteristics and their associations with PTB.

4.3.2.1 Participants' Sociodemographic Characteristics

Sociodemographic characteristics of participants are summarized in Table 4.3. Maternal age ranged from ≤ 18 to > 34 years. The majority of women in both groups were aged 25–34 years (preterm: 48.3%; term: 49.1%). Preterm births were more common among women aged > 34 years (20.7%) compared with term births (11.6%), while the youngest group (≤ 18 years) contributed the least to preterm births (2.9%) ($p = 0.006$).

Most participants resided in rural areas (preterm: 73.6%; term: 69.9%), with smaller proportions living in urban areas or camps. The residential area was not significantly associated with preterm birth ($p = 0.613$). Geographic location was significantly associated with preterm birth ($p < 0.001$), with higher rates in the central (48.3%) and southern (38.5%) regions compared with the north (13.2%).

Educational attainment differed significantly between groups ($p = 0.011$), with women with secondary education representing the largest group (preterm: 43.1%; term: 53.8%). Women with no formal education or primary education were overrepresented among preterm births. Maternal occupation and household income were not significantly associated with preterm birth ($p = 0.288$ and $p = 0.065$, respectively). Household size was significantly associated with preterm birth ($p = 0.006$), with women living in smaller

households (<3 members) having higher odds of preterm delivery. Husband's occupation was also significantly associated ($p = 0.007$) with a higher proportion of preterm births among women whose husbands were employees (54.0%) or self-employed (27.6%). Age at marriage did not differ significantly between groups ($p = 0.111$).

Table 4.3-A. Sociodemographic Characteristics of the Study Population by Gestational Age at Birth (N = 1,235)

Variable	Category	Preterm n (%) (n=174)	Term n (%) (n=1,061)	p-value
Maternal age (years)	≤18	5 (2.9)	30 (2.8)	0.006*
	18–24	49 (28.2)	387 (36.5)	
	25–34	84 (48.3)	521 (49.1)	
	>34	36 (20.7)	123 (11.6)	
Residential area	Urban	40 (23.0)	274 (25.8)	0.613
	Rural	128 (73.6)	742 (69.9)	
	Camp	6 (3.4)	45 (4.2)	
Geographic location	North	23 (13.2)	382 (36.0)	<0.001*
	Central	84 (48.3)	329 (31.0)	
	South	67 (38.5)	350 (33.0)	
Education level	No formal education	8 (4.6)	18 (1.7)	0.011*
	Primary	42 (24.1)	185 (17.4)	
	Secondary	75 (43.1)	571 (53.8)	
	University	47 (27.0)	278 (26.2)	
	Postgraduate	2 (1.1)	9 (0.8)	
Maternal occupation	Not working	150 (86.2)	944 (89.0)	0.288
	Working	24 (13.8)	117 (11.0)	
Household income (USD)	<300\$	28 (16.1)	185 (17.4)	0.065
	300–1000\$	73 (42.0)	526 (49.6)	
	≥1000\$	73 (42.0)	350 (33.0)	
Household size	<3 members	16 (9.2)	201 (18.9)	0.006*
	3–5 members	97 (55.7)	551 (51.9)	
	>5 members	61 (35.1)	309 (29.1)	
Husband's occupation	Unemployed	32 (18.4)	227 (21.4)	0.007*
	Employee	94 (54.0)	440 (41.5)	
	Self-employed	48 (27.6)	394 (37.1)	
Age at marriage (years)	<18	28 (16.1)	156 (14.7)	0.111
	18–25	141 (81.0)	830 (78.2)	
	26–30	5 (2.9)	65 (6.1)	
	>30	0 (0.0)	10 (0.9)	

Note: Percentages are calculated within gestational-age categories. Pearson's chi-square test was used to compare categorical variables. Statistical significance is indicated using an asterisk (*); $p < 0.05$.

4.3.2.2 Participants' Health Care Utilization and Access

Health care utilization among participants, including antenatal care (ANC) attendance, number of ANC visits, and safe access to healthcare, is presented in Table 4.4. Nearly all women attended ANC during pregnancy (preterm: 81.6%; term: 86.6%), and ANC attendance did not differ significantly between groups ($p = 0.736$). Women with fewer than eight ANC visits were slightly more common among preterm births (35.1%) compared with term births (32.5%), which was statistically significant ($p = 0.024$).

Regarding safe access to healthcare services, approximately half of women with preterm births reported safe access (49.4%), compared with 55.4% among term births; this difference was not statistically significant ($p = 0.362$).

Table 4.4 Health Care utilization and access by Gestational Age at Birth (N= 1,235)

Variable	Category	Preterm n (%) (n=174)	Term n (%) (n=1,061)	p-value
ANC attendance	Yes	142 (81.6)	919 (86.6)	0.736
	No	32 (18.4)	142 (13.4)	
Number of ANC visits	<8	61 (35.1)	345 (32.5)	0.024*
	≥8	113 (64.9)	716 (67.5)	
Safe access to healthcare	Yes	86 (49.4)	588 (55.4)	0.362
	No	88 (50.6)	473 (44.6)	

Note: Percentages calculated within gestational-age categories. Pearson's chi-square test. Statistical significance indicated with an asterisk (*); $p < 0.05$. ANC = antenatal care.

4.3.2.3 Participants' Lifestyle Factors

Lifestyle factors, including maternal body mass index (BMI), total gestational weight gain, smoking during pregnancy, and exposure to secondhand smoke, are summarized in Table 4.5. Maternal BMI distribution showed that preterm births were equally common among overweight (42.0%) and obese (42.0%) women, whereas normal weight accounted for 16.1%. The difference in BMI categories between preterm and term births was not statistically significant ($p = 0.187$).

Total gestational weight gain during pregnancy did not differ significantly between preterm and term births. Women with low (<5 kg) or moderate (5–14 kg) weight gain had similar proportions of preterm births compared with those with higher weight gain (≥20 kg).

Smoking during pregnancy was reported by 6.3% of women with preterm births and 7.4% of women with term births, with no significant difference between groups ($p = 0.965$). Similarly, exposure to secondhand smoke did not differ significantly between preterm (proportion) and term births.

Table 4.5-A lifestyle factors by gestational age at Birth (N=1,235)

Variable	Category	Preterm n (%) (n=174)	Term n (%) (n=1,061)	p-value
BMI	Normal weight	28 (16.1)	185 (17.4)	0.187
	Overweight	73 (42.0)	526 (49.6)	
	Obese	73 (42.0)	350 (33.0)	
Gestational weight gain (kg)	<5	5 (2.9)	24 (2.3)	0.762
	5–9	20 (11.5)	115 (10.8)	
Table 4.5-B lifestyle factors by gestational age at Birth (N=1,235)				
Variable	Category	Preterm n (%) (n=174)	Term n (%) (n=1,061)	p-value
	10–14	48 (27.6)	304 (28.7)	
	15–19	48 (27.6)	284 (26.8)	
	≥20	53 (30.5)	334 (31.5)	
Smoking during pregnancy	Yes	11 (6.3)	78 (7.4)	0.965
	No	163 (93.7)	983 (92.6)	
Exposure to secondhand smoke	Yes	92 (52.9)	580 (54.7)	0.682
	No	82 (47.1)	481 (45.3)	

Note: Percentages calculated within gestational-age categories. Pearson's chi-square test. Statistical significance indicated with an asterisk (*); $p < 0.05$. BMI = body mass index.

4.3.2.2 Participants' Medical and Obstetric Characteristics

Medical and obstetric characteristics of participants are summarized in Table 4.6. Several factors were significantly associated with preterm birth. A history of stillbirth was observed in 17.2% of women with preterm births compared to only 2.1% among term births ($p < 0.001$), indicating a strong relationship between prior adverse pregnancy outcomes and preterm delivery.

Medically assisted conception was reported in 8.6% of preterm births versus 4.1% of term births ($p = 0.010$), suggesting that assisted reproductive techniques may contribute to increased preterm risk. Short interpregnancy intervals (<6 months) were also significantly more common among women delivering preterm (23.0%) than term (13.9%; $p < 0.001$), highlighting the importance of adequate birth spacing for maternal and neonatal health.

Gravidity patterns revealed that primigravida women accounted for 12.1% of preterm deliveries, while multigravida women comprised 87.9%; in contrast, 24.6% of term births were among primigravida women ($p < 0.001$). Chronic maternal diseases were more prevalent in preterm births (6.9% vs. 2.1%; $p < 0.001$), emphasizing the role of maternal health conditions in pregnancy outcomes.

Obstetric complications were also strongly associated with preterm delivery. Prolonged premature rupture of membranes (PROM >18 hours) occurred in 42.0% of preterm births compared to 19.4% of term births ($p < 0.001$). Preeclampsia affected 25.3% of preterm births versus 9.2% of term births ($p < 0.001$), and antepartum hemorrhage was reported in 12.6% of preterm deliveries compared with 4.7% among term births ($p < 0.001$). Placental

abnormalities were present in 6.9% of preterm births, markedly higher than the 1.2% observed in term births ($p < 0.001$).

Furthermore, reproductive history influenced preterm risk. A history of miscarriage was reported in 59.8% of women with preterm births versus 29.5% in term births ($p < 0.001$). Prior cesarean sections were also associated with preterm delivery, with 24.1% of preterm births having one prior cesarean and 16.1% having two or more, compared to 14.4% and 17.7% among term births, respectively ($p < 0.010$).

Table 4.6. Medical and Obstetric Characteristics of the Study Population According to Gestational Age at Birth (N = 1,235)

Variable	Category	Preterm births n (%) (n=174)	Term births n (%) (n=1,061)	p-value
History of stillbirth	Yes	30 (17.2)	22 (2.1)	<0.001*
	No	144 (82.8)	1,039 (97.9)	—
Method of conception	Medically assisted	15 (8.6)	44 (4.1)	0.010*
	Spontaneous	159 (91.4)	1,017 (95.9)	—
Interpregnancy interval	<6 months	40 (23.0)	147 (13.9)	<0.001*
	6–12 months	12 (6.9)	130 (12.3)	—
	>12 months	122 (70.1)	784 (73.9)	—
Gravidity	Primigravida	21 (12.1)	260 (24.6)	<0.001*
	Multigravida	153 (87.9)	801 (75.4)	—
Chronic maternal disease	Yes	12 (6.9)	22 (2.1)	<0.001*
	No	162 (93.1)	1,039 (97.9)	—
PROM >18 hours	Yes	73 (42.0)	206 (19.4)	<0.001*
	No	101 (58.0)	855 (80.6)	—
Preeclampsia	Yes	44 (25.3)	98 (9.2)	<0.001*
	No	130 (74.7)	963 (90.8)	—
Antepartum hemorrhage	Yes	22 (12.6)	50 (4.7)	<0.001*
	No	152 (87.4)	1,011 (95.3)	—
Placental abnormalities	Yes	12 (6.9)	13 (1.2)	<0.001*
	No	162 (93.1)	1,048 (98.8)	—
History of miscarriage	Yes	104 (59.8)	313 (29.5)	<0.001*
	No	70 (40.2)	748 (70.5)	—
Previous cesarean section	One prior CS	42 (24.1)	153 (14.4)	<0.010*
	≥2 prior CS	28 (16.1)	188 (17.7)	—
	None	104 (59.8)	720 (67.9)	—

Note: Percentages calculated within gestational-age categories. Statistical significance indicated using an asterisk (*); $p < 0.05$. PROM, premature rupture of membranes; CS, cesarean section.

4.3.3 Factors Associated with Preterm Birth

Multivariable logistic regression analysis was performed to examine the independent factors associated with preterm birth in the study population (N = 1,235). Table 4.7 presents the adjusted odds ratios (aORs) and 95% confidence intervals (CIs) for maternal, household, and obstetric determinants. Among maternal characteristics, age 19–24 years (aOR: 1.90, 95% CI: 1.07–3.37, $p = 0.029$) and 25–34 years (aOR: 1.72, 95% CI: 1.06–2.79, $p = 0.029$) were significantly associated with higher odds of preterm birth compared with mothers aged >34 years. Body mass index, smoking during pregnancy, and exposure to secondhand smoke were not significantly associated with preterm birth in the adjusted model.

Household and environmental factors showed that living in the North region was strongly associated with increased odds of preterm birth (aOR: 3.67, 95% CI: 2.07–6.52, $p < 0.001$), while the central region and residential area (urban/rural) were not significant. Household size of fewer than three members was associated with higher odds of preterm birth (aOR: 2.40, 95% CI: 1.20–4.80, $p = 0.014$). Household income, maternal occupation, and husband's occupation were not significantly associated.

Obstetric factors associated with preterm birth included history of stillbirth (aOR: 9.84, 95% CI: 5.52–17.52, $p < 0.001$), medically assisted conception (aOR: 2.18, 95% CI: 1.19–4.01, $p = 0.011$), interpregnancy interval <6 months (aOR: 1.89, 95% CI: 1.17–3.05, $p = 0.009$), chronic maternal disease (aOR: 3.50, 95% CI: 1.70–7.21, $p < 0.001$), premature rupture of membranes >18 hours (aOR: 3.00, 95% CI: 2.14–4.20, $p < 0.001$), preeclampsia (aOR: 3.33, 95% CI: 2.23–4.96, $p < 0.001$), antepartum hemorrhage (aOR: 2.93, 95% CI: 1.72–4.97, $p < 0.001$), placental abnormalities (aOR: 5.97, 95% CI: 2.68–13.31, $p < 0.001$), history of miscarriage (aOR: 3.55, 95% CI: 2.55–4.94, $p < 0.001$), and one previous cesarean section (aOR: 1.90, 95% CI: 1.28–2.83, $p = 0.002$). Primigravity was associated with lower odds of preterm birth (aOR: 0.42, 95% CI: 0.26–0.68, $p < 0.001$). Other factors, including the number of ANC visits and ANC attendance, were not significantly associated with the outcome.

Table 4.7-A: Factors Associated with Preterm Birth: Multivariable Logistic Regression Analysis (N = 1,235)

Variable	Category	Adjusted OR (95% CI)	p-value
Maternal age (years)	≤18	1.11 (0.33–3.75)	0.862
	19–24	1.90 (1.07–3.37)	0.029
	25–34	1.72 (1.06–2.79)	0.029
	>34 (Ref)	1.00	—
Body mass index (BMI)	Normal weight	0.70 (0.41–1.20)	0.190
	Overweight	1.13 (0.76–1.66)	0.547
	Obese (Ref)	1.00	—
Smoking during pregnancy	Yes	1.33 (0.63–2.80)	0.454
	No (Ref)	1.00	—
Exposure to secondhand smoke	Yes	1.00 (0.68–1.47)	0.995
	No (Ref)	1.00	—
Total gestational weight gain (kg)	<5	0.43 (0.04–4.10)	0.461
	5–9	0.60 (0.07–5.14)	0.637
	10–14	0.55 (0.06–4.69)	0.582
	15–19	0.70 (0.07–6.68)	0.756
	≥20 (Ref)	1.00	—
Residential area	Urban	1.03 (0.40–2.67)	0.956
	Rural	0.86 (0.35–2.12)	0.739
	Camp (Ref)	1.00	—
Geographic location	North	3.67 (2.07–6.52)	<0.001
	Central	0.80 (0.48–1.33)	0.385
	South (Ref)	1.00	—
Education level	No formal education	0.93 (0.12–7.02)	0.944
	Primary	2.31 (0.37–14.25)	0.367
	Secondary	3.56 (0.59–21.33)	0.165
	University	2.57 (0.45–14.84)	0.290
	Postgraduate (Ref)	1.00	—

Table 4.7-B: Factors Associated with Preterm Birth: Multivariable Logistic Regression Analysis (N = 1,235) (continued)

Variable	Category	Adjusted OR (95% CI)	p-value
Maternal occupation	Not working	0.93 (0.51–1.67)	0.800
	Working (Ref)	1.00	—
Household income (USD)	<300	1.06 (0.49–2.30)	0.891
	300–1000	1.41 (0.95–2.10)	0.092
	≥1000 (Ref)	1.00	—
Household size	<3 members	2.40 (1.20–4.80)	0.014
	3–5 members	1.04 (0.66–1.64)	0.853
	>5 members (Ref)	1.00	—
Husband's occupation	Unemployed	1.18 (0.58–2.38)	0.647
	Employee	0.77 (0.49–1.21)	0.260
	Self-employed (Ref)	1.00	—
Age at marriage (years)	<18	0.28 (0.09–0.87)	0.028
	18–25	0.29 (0.11–0.80)	0.017
	≥26 (Ref)	1.00	—
Safe access to healthcare	Yes	0.67 (0.46–0.98)	0.037
	No (Ref)	1.00	—
ANC attendance	Yes	1.35 (0.83–2.19)	0.229
	No (Ref)	1.00	—
Number of ANC visits	<8	1.08 (0.71–1.63)	0.714
	≥8 (Ref)	1.00	—

Note: Adjusted odds ratios (aORs) and 95% confidence intervals (CIs) were estimated using multivariable logistic regression. All variables shown were entered simultaneously into the model. Reference categories (Ref) are indicated. ANC, antenatal care; BMI, body mass index. Statistically significant results ($p < 0.05$).

4.3.4 Neonatal and Birth Outcomes Associated with Preterm Birth

Table 4.8 presents the neonatal and birth outcomes among preterm and term infants in the study population (N = 1,235). Among the 174 preterm infants, the majority were born alive and not admitted to the NICU (n = 137, 78.7%), whereas 33 (19.0%) required NICU

admission. In comparison, most term infants were born alive and not admitted to the NICU (n = 955, 90.0%), with only 90 (8.5%) requiring NICU care. Preterm birth was significantly associated with increased NICU admission and neonatal mortality (p < 0.001). Early neonatal deaths (≤ 7 days) occurred in 2 (1.1%) preterm infants compared with 4 (0.4%) term infants, while late neonatal deaths (8–28 days) were observed in 2 (1.1%) preterm and 12 (1.1%) term infants.

Birth weight differed markedly between preterm and term infants. Among preterm infants, 98 (56.3%) had a birth weight $\geq 2,500$ g (normal), 64 (36.8%) had low birth weight (1,500–2,499 g), and 12 (6.9%) had very low birth weight ($< 1,500$ g). In contrast, 981 (92.5%) term infants had normal birth weight, 74 (7.0%) had low birth weight, and only 6 (0.6%) were very low birth weight. The association between preterm birth and low or very low birth weight was statistically significant (p < 0.001). There were no statistically significant differences in the sex distribution between preterm and term infants, with male infants comprising 53.4% of preterm births and 47.5% of term births (p = 0.146).

Table 4.8 Neonatal and birth outcomes associated with preterm birth (N=1,235)

Variable	Category	Preterm n (%)	Term n (%)	p-value
Birth outcomes	Alive, not admitted to NICU	137 (78.7)	955 (90.0)	<0.001*
	Alive, admitted to NICU	33 (19.0)	90 (8.5)	
	Early neonatal death (≤ 7 days)	2 (1.1)	4 (0.4)	
	Late neonatal death (8–28 days)	2 (1.1)	12 (1.1)	
Birth weight	$\geq 2,500$ g (normal)	98 (56.3)	981 (92.5)	0.178
	1,500–2,499 g (low)	64 (36.8)	74 (7.0)	
	$< 1,500$ g (very low)	12 (6.9)	6 (0.6)	
Sex of newborn	Female	81 (46.6)	557 (52.5)	0.146
	Male	93 (53.4)	504 (47.5)	

Note: Data are presented as numbers (%). Comparisons between preterm and term infants for neonatal outcomes, birth weight, and sex of the newborn were performed using Pearson’s Chi-square test. Variables were not included in regression analyses as they occur after delivery. p < 0.05 was considered statistically significant.

4.4 Navigating Fear, Hope, and Motherhood: Experiences of Mothers with Preterm Infants in NICUs in the West Bank, Palestine (Qualitative study)

The overarching latent theme— **“Living between fear and hope while struggling for maternal identity in the NICU”**—captured the complex emotional and psychological experiences of mothers during their infants’ NICU stay. This overarching theme comprised four main themes and fourteen subthemes (Table 4.9). Mothers’ experiences reflected a dynamic interplay between vulnerability and resilience. Fear emerged from the perceived fragility of their infants, the highly technological NICU environment, and restricted opportunities to participate in caregiving. In contrast, hope developed gradually through observable clinical improvements, supportive interactions with healthcare providers and family, and personal or spiritual coping strategies.

Mothers’ vulnerability manifested as anxiety, uncertainty, and self-doubt, particularly in relation to their maternal role and identity. Over time, however, many mothers described

processes of adaptation and resilience, gradually reclaiming maternal competence, engaging more actively in their infants' care, and finding meaning in their experiences.

Table 4.9 Overarching latent theme, main themes, and subthemes of mothers' experiences in the NICU

Overarching Theme	Living between fear and hope while struggling for maternal identity in the NICU
Main Theme	Subthemes
1. Entering motherhood through emotional turmoil and perceived threat	1.1 Emotional collapse at the beginning of motherhood 1.2 Perceiving the newborn's life as fragile and threatened 1.3 Maternal self-blame and guilt
2. Disruption and reconstruction of the expected maternal role	2.1 Feeling excluded from the maternal role 2.2 Rebuilding maternal identity through participation in infant care 2.3 Experiencing uncertainty about one's identity as a mother 2.4 Feeling emotionally distant from the infant
3. Navigating support and stress in interactions with healthcare providers	3.1 Finding comfort in caring professional relationships 3.2 Emotional stress due to inadequate professional communication
4. Transforming maternal identity by finding meaning and strength	4.1 Spiritual meaning-making and faith-based coping 4.2 Feeling emotionally supported through close family and peer relationships 4.3 Finding reassurance by redefining improvement in everyday terms 4.4 Personal growth and maternal resilience 4.5 Transformation in life perspective and maternal meaning

4.4.1 Theme 1: Entering Motherhood through Emotional Turmoil and Perceived Threat

The period immediately following preterm birth was characterized by profound emotional upheaval, disrupting the anticipated transition into motherhood. For most mothers, the birth of a preterm infant introduced an abrupt departure from the expected trajectory of joy, early bonding, and maternal fulfilment. Instead, mothers reported experiences of shock, fear, and intense psychological distress. This emotional turmoil was further intensified by the sudden transfer from the delivery room to a technologically intensive NICU, where the clinical environment imposed both physical and psychological challenges.

The NICU, with its constant alarms, bright lighting, ventilators, incubators, and rapid staff movement, presented an unfamiliar sensory landscape. Mothers described feeling disoriented, overwhelmed, and at times powerless. This environment, although life-saving for the infant, amplified mothers' emotional vulnerability, highlighting the dual tension of fear and the imperative to engage in maternal caregiving. The interplay between clinical necessity and maternal desire to protect and connect with their infant underscores the complexity of early motherhood in the NICU context, as both a threat and an arena for emergent resilience.

4.4.1.1 Emotional Collapse at the Beginning of Motherhood

During the initial weeks, most mothers experienced what can be described as emotional collapse, manifested through persistent crying, emotional numbness, mood fluctuations,

sleep disturbances, and a pervasive sense of emptiness. This acute psychological response to preterm birth was further intensified by the physical burden of postnatal recovery, particularly following emergency caesarean sections or complicated labour. The convergence of physical vulnerability and emotional distress created a state of heightened psychological sensitivity, in which even minor stimuli within the NICU environment—such as monitor alarms or rapid staff movements—triggered intense anxiety and hypervigilance.

One mother described this experience as follows:

“The first few weeks were the hardest. Every sound from the machines made me panic. Every doctor walking toward me made my heart race. I cried constantly... I felt emotionally empty yet overwhelmed at the same time.” (Mother 1)

And another mother described this experience as: *“When they first told me that my baby needed to be rushed to the NICU, it felt like time had stopped. I knew what to expect medically, but emotionally, it shocked me again.”* (Mother 4)

These narratives suggest that emotional collapse represents an acute psychological response to the sudden transition into high-risk caregiving within a highly medicalized environment. Fear dominated the early maternal experience and, in some cases, temporarily constrained mothers’ ability to engage with their infants. However, this phase also reflects the initial stage in a broader trajectory of maternal adaptation, in which vulnerability coexists with the emerging foundations of resilience and role reconstruction. Although no deviant cases contradicting this pattern were identified, variation in the intensity and duration of emotional collapse among participants further strengthened the depth and credibility of the analysis.

4.4.1.2 Perceiving the Newborn’s Life as Fragile and Threatened

Mothers’ perceptions of their infants’ fragility constituted a second critical component of early emotional turmoil. Preterm infants’ small size, delicate skin, visible veins, and dependence on life-sustaining devices were emotionally potent cues, continuously reminding mothers of the infant’s vulnerability. The omnipresence of incubators, ventilators, and tubes reinforced concerns about survival, eliciting hypervigilance and anticipatory anxiety.

“The first time I saw him in the NICU, he looked tiny and fragile, connected to tubes and machines, his chest barely rising with the ventilator. Seeing that broke me; I cried for days, and the pain felt raw, even though I had been through it before.” (Mother 6)

“When I walked into the NICU, the first thing I saw was how tiny she was... covered in wires, tubes, and IV lines. Machines were making noises around her. I felt fear like I had never felt before.” (Mother 9)

This hyperawareness, while emotionally taxing, also fostered protective attentiveness. Mothers described heightened sensitivity to their infant's cues and needs, which, despite the distress it caused, became an early foundation for active caregiving behaviours. This duality—fear driving both psychological strain and caregiving vigilance—highlights the complexity of maternal emotional engagement in the NICU.

4.4.1.3 Maternal Self-Blame and Guilt

A pervasive sense of self-blame and guilt emerged among mothers, reflecting both internalized cultural expectations and the perceived loss of control inherent in preterm birth. Mothers frequently questioned their actions during pregnancy and felt partially responsible for the preterm birth, despite clinical evidence to the contrary. These feelings of culpability were emotionally intense and often intertwined with anxiety, grief, and fear for the infant's survival.

"I felt guilty, I felt scared, and I kept asking myself if I had done something wrong."
(Mother 3)

"Even though I know it's not logical, I kept thinking: Maybe I should have rested more... maybe I did something wrong." (Mother 5)

"Every time I held her, I kept saying: 'Please forgive me,' because I felt I failed her. I couldn't hold my baby inside long enough. I couldn't keep her safe. Even now, when I look at her, I sometimes cry and hug her, saying: Forgive me... I couldn't protect you."
(Mother 7).

Acknowledging and articulating these feelings represents the initial stage of adaptive emotional processing. Mothers gradually integrated guilt into reflective coping strategies, allowing them to reconcile perceived failures with the realities of preterm birth. This process facilitated the gradual re-engagement in caregiving and reconstruction of maternal identity, highlighting the dynamic interaction between emotional distress and emerging resilience.

4.4.2 Theme 2: Disruption and Reconstruction of the Expected Maternal Role

Preterm birth and NICU admission profoundly disrupted mothers' anticipated maternal roles, interrupting the imagined transition to immediate bonding, breastfeeding, and active caregiving. For many mothers, the NICU environment, a complex space dominated by incubators, monitors, ventilators, and rigid clinical routines, amplified feelings of vulnerability and marginalization. Nurses and physicians assumed primary caregiving responsibilities, leaving mothers feeling peripheral in a role they had expected to occupy centrally.

This disruption generated emotional distress, self-doubt, and a sense of disconnection. Mothers described struggling to reconcile their expectations of motherhood with the reality of restricted access to their infants. Yet, within this disruption emerged opportunities for

reconstructing maternal identity, as mothers gradually negotiated participation in caregiving, reclaimed agency, and found meaning in their evolving maternal role.

4.4.2.1 Feeling Excluded from the Maternal Role

Restricted access to infant care led mothers to experience a profound loss of agency and detachment. Inability to hold, feed, bathe, or dress their newborns symbolized a temporary absence from their expected maternal role. Physical separation and the pervasive presence of medical equipment reinforced feelings of being replaced or sidelined, contributing to anxiety, self-doubt, and emotional fragility.

“I didn’t bathe her or change her diaper. She was too tiny, and everything had to be handled by the nurses. She didn’t wear clothes at first—they said she was too small and needed warmth. Being a mother can make you feel powerless. Like, your role is taken away from you.” (Mother 9)

“At the beginning, I felt helpless, as if the machines were doing everything.” (Mother 13)

“I didn’t feel like a ‘real mother’ at first. I didn’t breastfeed him immediately. I didn’t take him home. I felt replaced by machines and nurses.” (Mother 16)

The contrast between expectations and reality, anticipating closeness versus experiencing enforced separation, intensified mothers’ emotional distress. The NICU, while necessary for infant survival, inadvertently imposed symbolic barriers to maternal participation, highlighting how institutional practices shape early maternal perceptions and sense of self.

4.4.2.2 Rebuilding Maternal Identity Through Participation in Infant Care

As infants stabilized, gradual engagement in caregiving became central to maternal identity reconstruction. Participation in feeding, diapering, skin-to-skin contact, and collaborative care decisions allowed mothers to reclaim a sense of agency, competence, and emotional connection. These actions were both practical and symbolic, signalling that mothers were once again central to their infants’ care.

“When I started helping with feeding and changing diapers, I felt like I was finally a mother again. Every little touch made me feel connected.” (Mother 7).

“Being able to make decisions with the nurses and participate in his care helped me feel like I mattered in his recovery.” (Mother 15)

Engagement in care bridged the gap between emotional distance and active participation, reinforcing mothers’ sense of legitimacy and belonging. Each act of caregiving became a step toward restoring maternal confidence, illustrating how practical involvement supports emotional recovery and role reconstruction.

4.4.2.3 Experiencing Uncertainty About One's Identity as a Mother

Even with increasing involvement, mothers often continued to question their competence and adequacy. Internalized societal and personal expectations of motherhood, compounded by NICU constraints, created ongoing tension between perceived responsibility and actual participation. This persistent uncertainty reflected the emotional complexity of reconstructing maternal identity, where practical engagement did not immediately translate into emotional reassurance.

"Sometimes I felt incomplete, like motherhood wasn't fully mine yet." (Mother 12)

"I wasn't sure if I was doing it right. Was I a good mother if I couldn't be with him all the time?" (Mother 13)

These reflections illustrate that reconstructing maternal identity is a gradual, emotionally intricate process. Mothers navigated the tension between vulnerability and emerging resilience, slowly integrating hands-on care with evolving confidence and emotional connection.

4.4.2.4 Feeling Emotionally Distant from the Infant

Physical barriers, including incubators, ventilators, and monitoring equipment, symbolically reinforced emotional distance, shaping early bonding experiences. Mothers often described themselves as observers rather than primary caregivers, which amplified feelings of helplessness and delayed emotional attachment.

"The machines and the incubator made it feel like there was a wall between us. I longed to hold him but couldn't, and it hurt deeply." (Mother 11)

"Even when I could see him, I felt like an observer rather than his mother." (Mother 14)

Over time, as mothers became more involved in caregiving and witnessed moments of infant stability, these barriers gradually diminished. Emotional distance gave way to relational closeness, supporting both early bonding and the reconstruction of maternal identity. Mothers' narratives emphasize that the NICU, while protective for infants, complicates the enactment of the expected maternal role, requiring mothers to negotiate physical, emotional, and symbolic challenges to reclaim their role and sense of self.

4.4.3 Theme 3: Navigating Support and Stress in Interactions with Healthcare Providers

Interactions with healthcare providers were a central factor shaping mothers' emotional experiences and engagement in the NICU. Mothers reported that the style, tone, responsiveness, and clarity of communication could either alleviate distress or exacerbate feelings of vulnerability. Empathetic, patient, and respectful interactions fostered trust,

emotional stability, and a sense of inclusion. Conversely, unclear explanations, dismissive attitudes, or excessive medical jargon heightened anxiety, marginalization, and self-doubt. These interactions influenced not only mothers' emotional well-being but also their capacity to participate in caregiving, cope with uncertainty, and reconstruct maternal identity.

The NICU, with its complex technological environment, requires mothers to navigate both clinical realities and social-emotional dynamics. Mothers' narratives revealed that supportive healthcare relationships were instrumental in bridging these two dimensions, while lapses in communication often intensified fear and isolation.

4.4.3.1 Finding Comfort in Caring Professional Relationships

Supportive and compassionate interactions with nurses and physicians were described as emotionally sustaining and central to mothers' coping strategies. Mothers valued staff who took the time to explain procedures, answer questions, provide reassurance, and demonstrate empathy. These interactions humanized the highly technical NICU environment, reducing psychological stress and reinforcing mothers' confidence in engaging with caregiving tasks.

"They were amazing—every single one of them. They guided me through everything: how to pump milk, how to touch him gently, how to understand the monitors. They spoke with kindness and patience. I felt they cared for me as much as they cared for my son." (Mother 6).

"Overall, I would say the staff played a very important role in helping me cope. Some nurses were incredibly kind and explained everything slowly; they even reassured me when I looked worried. Their calmness helped me stay grounded. One nurse used to hold my hand when I asked about his progress. Her kindness meant so much to me." (Mother 4).

Empathetic communication provided psychological safety, reducing anxiety and facilitating mothers' active participation in caregiving. By demystifying medical routines, staff enabled mothers to interpret equipment, alarms, and procedures as part of infant care rather than as barriers. This reassurance allowed mothers to regain a sense of control and contributed directly to the gradual reconstruction of maternal identity.

4.4.3.2 Emotional Stress Due to Inadequate Professional Communication

While supportive interactions fostered coping, some mothers described distress stemming from dismissive communication, unclear explanations, or excessive medical jargon. Even brief negative encounters could feel deeply hurtful, particularly during moments of heightened emotional fragility. Such experiences amplified feelings of exclusion, uncertainty, and lack of agency, highlighting how sensitive mothers are to interpersonal dynamics in the NICU.

“But there were also times when a nurse would speak sharply or answer me in a way that felt dismissive. When you’re already emotionally fragile, even one harsh word can feel like a punch.” (Mother 8).

“There were moments when medical terms confused me. Sometimes I nodded even when I didn’t fully understand, because I didn’t want to seem difficult or ask too many questions. Later, I regretted not asking for more clarification.” (Mother 18).

These narratives, Dr. Salam and Dr. Salames underscore that lapses in communication, even minor ones, can undermine mothers’ confidence and sense of belonging, delaying maternal engagement and emotional bonding. In some cases, inadequate support intensified feelings of helplessness, reinforcing perceptions of marginalization and reducing opportunities for active caregiving. Mothers’ accounts reveal that NICU staff interactions function not only as a conduit for clinical information but also as a key determinant of emotional resilience and maternal identity reconstruction. Supportive, empathetic, and clear communication mitigates fear and fosters maternal competence, while dismissive or opaque communication can compound distress and impede adaptive coping.

4.4.4 Theme 4: Transforming Maternal Identity by Finding Meaning and Strength

Over time, mothers described a gradual transformation in their maternal identity. Although the initial experience of preterm birth was marked by fear, disruption, and uncertainty, many began to reconstruct meaning, draw on internal and external resources, and redefine motherhood through resilience and personal growth. Emotional recovery was facilitated not only by maternal engagement in caregiving but also by relational, spiritual, and cognitive strategies that enabled mothers to reframe their NICU experience and regain a sense of agency.

4.4.4.1 Spiritual Meaning-Making and Faith-Based Coping

Faith and spirituality emerged as central mechanisms for managing uncertainty, limited control, and emotional strain. Mothers described trusting in God’s plan, praying for their infant’s survival, and surrendering to divine wisdom as ways to reinterpret distressing circumstances as part of a larger, meaningful narrative. In the technologically intensive and emotionally demanding NICU environment, spirituality functioned as a psychological anchor that provided emotional containment, hope, and resilience, enabling mothers to cope with ongoing medical instability. Several mothers described how spiritual practices helped them reinterpret uncertainty and regain a sense of control.

One mother explained the sustaining power of faith:

“Faith kept me going. I kept telling myself, ‘God willing, she will be fine.’” (Mother 3)

Another participant highlighted how prayer facilitated emotional regulation:

“Prayer was my main source of strength... Faith gave me hope even when things looked uncertain.” (Mother 4)

Several mothers described how spiritual practices helped them reinterpret uncertainty and regain a sense of control:

“My faith helped me a lot. Honestly, without faith, a person can lose their mind... God gave her to me. God will protect her... I read the Quran in the NICU... and thank God, all was normal.” (Mother 7)

“I coped mostly through prayer. Faith helped me survive the hardest moments.” (Mother 6).

These reflections indicate that faith-based coping allowed mothers to frame preterm birth and NICU hospitalization as meaningful challenges rather than solely threatening events, providing psychological relief, hope, and endurance. By situating their infant’s health within a divine narrative, mothers could tolerate uncertainty, reduce anxiety, and maintain emotional stability, which in turn supported the gradual reconstruction of maternal identity and engagement in caregiving.

4.4.4.2 Feeling Emotionally Supported Through Close Family and Peer Relationships

Family and peer support emerged as a central mechanism enabling mothers to cope with the stress and uncertainty of NICU hospitalization. Emotional reassurance from spouses, parents, siblings, and other relatives allowed mothers to maintain presence, focus on caregiving, and regulate anxiety, while practical assistance—such as caring for other children or managing household responsibilities, relieved external pressures that could exacerbate emotional vulnerability.

Several mothers highlighted the importance of maternal family support:

“My mother helped by taking care of my other children. That allowed me to be present mentally and emotionally for my baby.” (Mother 16).

“Staying at my parents’ house also made it easier—their support, especially my mother’s, helped me stay calm and focused on my baby’s needs.” (Mother 2).

Spousal support provided a combination of emotional containment and reassurance, reinforcing hope and reducing maternal distress:

“My husband was my biggest support. He always said, ‘Trust God. He gave her to us, and He will take care of her.’ His words calmed me during moments of panic.” (Mother 7).

“Even when I felt helpless, my husband reminded me that we were in this together. His encouragement made me feel capable of facing each day.” (Mother 5).

Peer support within the NICU further enhanced emotional resilience by normalizing mothers' experiences, validating their emotions, and providing practical guidance:

"Talking to other mothers in the NICU also helped a lot. We shared our fears, compared our experiences, and supported one another. It made me feel less isolated and more understood." (Mother 4).

"Seeing other mothers go through the same challenges reassured me that my feelings were normal. We exchanged tips for soothing the babies and managing anxiety—it gave me confidence." (Mother 10).

These relational networks buffered stress, reduced feelings of isolation, and reinforced maternal competence, allowing mothers to gradually reclaim their caregiving role and reconstruct maternal identity. Supportive interactions enabled mothers to balance fear and hope, manage vulnerability, and draw strength from relational and collective resources—highlighting that emotional resilience in the NICU is socially embedded rather than purely individual.

4.4.4.3 Finding Reassurance by Redefining Improvement in Everyday Terms

Mothers gradually reframed progress by focusing on small, immediate improvements rather than distant outcomes. This cognitive shift allowed them to sustain hope and emotional equilibrium during prolonged periods of uncertainty. By celebrating incremental milestones, such as slight reductions in oxygen support, weight gain, stable breathing, or successful feeding, mothers were able to perceive control within an otherwise unpredictable environment, which reduced anxiety and reinforced engagement in caregiving.

"I no longer take small things for granted. Every healthy breath feels like a blessing... If you think too far ahead, you will drown in fear. Take this journey day by day, sometimes hour by hour." (Mother 16)

"Even noticing small movements or hearing a tiny cry gave me hope. I felt like I could breathe again when I saw these small signs." (Mother 10)

Through this process, mothers redefined what 'successes' meant in motherhood, shifting from idealized expectations of perfection or immediate bonding to valuing presence, attentiveness, and responsiveness within the NICU context. This reframing allowed them to maintain emotional stability, remain engaged in caregiving, and gradually reconstruct maternal identity despite ongoing clinical uncertainty.

4.4.4.4 Personal Growth and Maternal Resilience

Despite intense emotional distress, many mothers described emerging stronger, more patient, and emotionally aware. The NICU environment, while challenging, became a space for developing resilience and reinforcing maternal competence.

“The experience taught me patience, resilience, and the importance of unconditional love. It broke me in ways I never expected, but it also made me stronger and more determined as a mother.” (Mother 13).

“Leaving the NICU, I felt stronger, more aware, and deeply grateful.” (Mother 17).
“Even on the hardest days, I discovered I could cope. I felt proud of myself for staying present despite the fear.” (Mother 12).

Mothers’ reflections indicate that adversity acted as a catalyst for emotional growth. Struggling with uncertainty, separation, and caregiving limitations prompted mothers to develop adaptive coping strategies, such as patience, mindfulness, and structured routines. This growth enhanced their confidence in the maternal role, allowing them to reconcile emotional vulnerability with practical caregiving responsibilities.

4.4.4.5 Transformation in Life Perspective and Maternal Meaning

Over time, mothers described a lasting shift in values and understanding of motherhood, emphasizing presence, trust, perseverance, and enduring love rather than immediate physical closeness or flawless caregiving. The NICU became not only a medical setting but also a context for meaning-making, self-reflection, and maternal identity reconstruction.

“This experience changed me deeply. It broke me at first, but then it rebuilt me stronger... I learned that motherhood is not about perfection—it’s about presence and love. The NICU was not just a medical space—it was a life lesson.” (Mother 16).

“I learned that being a mother is not always about holding your baby—sometimes it’s about waiting, trusting, and enduring.” (Mother 18).
“I realized that being a good mother wasn’t about doing everything perfectly, but about noticing, caring, and being there for every small step.” (Mother 14).
“Motherhood is more than immediate closeness. It’s about noticing, understanding, and giving love in every small interaction.” (Mother 11).

These reflections demonstrate that mothers actively reconstructed their understanding of motherhood, integrating clinical realities, emotional growth, and spiritual and social resources. Through reframing and reflection, mothers negotiated fear and hope, vulnerability and resilience, ultimately achieving a more balanced and meaningful maternal identity that could endure the challenges of NICU hospitalization.

Chapter Five

Discussion

5.1 Introduction

This chapter presents a critical discussion of the findings of this dissertation, integrating epidemiological, clinical, and maternal perspectives on preterm birth in the West Bank, Palestine. Preterm birth remains a significant public health challenge globally, with profound implications for neonatal survival, maternal well-being, and long-term child health. In the Palestinian context, limited research has addressed both the determinants of preterm birth and the experiences of mothers caring for preterm infants, highlighting the importance of context-specific evidence. The discussion interprets the study's findings in light of existing global and regional literature, highlighting key patterns in incidence, prevalence, determinants, neonatal outcomes, and maternal experiences. It also explores the implications for healthcare practice, policy, and future research, emphasizing the integration of quantitative and qualitative insights to inform holistic, culturally relevant strategies to improve maternal and neonatal health outcomes in Palestine.

5.2 Incidence and Prevalence of Preterm Birth in the West Bank

This dissertation provides institutional-level evidence on the magnitude of preterm birth (PTB) in the West Bank using hospital data from three major governmental facilities. The cohort study estimated a PTB incidence of 7.6%, representing one of the few contemporary estimates from the Palestinian context, where comprehensive population-based perinatal surveillance remains limited. The observed PTB incidence of 7.6% aligns with rates reported in several high-income countries, such as Finland, Sweden, and New Zealand (Behboudi-Gandevani et al., 2023), but remains below the estimated 13.2% for the occupied Palestinian territory (oPt) in 2010 and 2020 (Ohuma et al., 2023). This unexpectedly low PTB rate contrasts with the well-documented socioeconomic and health system challenges in the West Bank, including restricted movement, fragmented health services, and prolonged political instability. Geographic heterogeneity within the oPt may partly explain this discrepancy. National PTB estimates often aggregate data from both the West Bank and the Gaza Strip, where living conditions differ markedly. The Gaza Strip experiences severe socioeconomic hardship, repeated conflict-related disruptions, limited healthcare access, and ongoing humanitarian crises, factors consistently linked to increased PTB risk and adverse perinatal outcomes (WHO, 2024).

Data quality considerations may also have influenced the incidence estimate. Although the Avicenna Health Information System (HIS) has been implemented across governmental hospitals, previous assessments highlight persistent technological, organizational, and human-resource challenges affecting data completeness and accuracy. (Sawalha et al., 2024; Shalash et al., 2024). Inconsistent clinical documentation, variability in gestational age assessment, fragmented data entry processes, and limited staff training may have contributed to underreporting or misclassification of preterm births. Consequently, the reported PTB incidence should be interpreted as an indicative institutional estimate rather than a definitive measure of the true PTB burden in the West Bank.

These findings underscore the urgent need to strengthen routine perinatal data systems in Palestine. Assessing the reliability, completeness, and interoperability of HIS data and establishing a comprehensive population-based perinatal registry would improve the accuracy of maternal and newborn health statistics and support evidence-informed health policy. In conflict-affected settings, where routine reporting is often fragmented, enhancing the HIS infrastructure and ensuring standardized, accurate, and timely data entry are essential steps toward better maternal and neonatal health planning.

To complement the cohort findings, a cross-sectional study was conducted in the same three governmental hospitals to assess the point prevalence of PTB among delivering women. This approach captured the burden of preterm birth across a broader range of sociodemographic, lifestyle, and healthcare access factors than routinely recorded in hospital information systems. In this cross-sectional study, the prevalence of PTB among singleton live births was 14.1%. This relatively high prevalence likely reflects the combined influence of medical, socioeconomic, and structural determinants operating within a protracted conflict setting and a public healthcare system that serves a high proportion of high-risk pregnancies. Evidence from systematic reviews and observational studies consistently demonstrates that maternal exposure to conflict and humanitarian crises is associated with increased risks of prematurity, low birth weight, and other adverse neonatal outcomes. Key contributing factors include limited access to quality antenatal care (ANC), maternal nutritional deficiencies, chronic psychosocial stress related to armed conflict, and persistent socioeconomic hardship (Keasley et al., 2017; Munyuzangabo et al., 2021; Riquelme-Gallego et al., 2025).

These findings highlight the importance of addressing both biomedical and structural determinants of maternal and neonatal health in fragile and resource-limited contexts. Overall, the combination of incidence and prevalence data presented here provides a nuanced understanding of the PTB burden in the West Bank, emphasizing the need for targeted interventions, improved perinatal monitoring, and strengthened healthcare systems to reduce prematurity-related morbidity and mortality.

5.3 Risk Factors of Preterm Birth and Neonatal Outcomes in the West Bank

Preterm birth (PTB) represents a major public health concern in the West Bank, Palestine, where biological, obstetric, socioeconomic, and structural determinants intersect within a protracted conflict setting. Findings from both the cohort and cross-sectional components of this study demonstrate that PTB is shaped not only by established clinical risk factors

but also by contextual influences related to health system organization, geographic inequities, and barriers to care.

Maternal age was an important determinant of preterm birth (PTB). In the cohort analysis, both younger mothers (<20 years) and older mothers (≥ 35 years) had elevated risk, consistent with evidence linking extremes of reproductive age to biological and obstetric vulnerability (Esposito et al., 2022; Kozuki, Lee, Silveira, Sania, et al., 2013; Londero et al., 2019). In contrast, the cross-sectional analysis showed higher odds of PTB among women aged 19–34 years compared with those older than 34 years, while maternal age ≤ 18 years was not independently associated with PTB. The absence of increased risk among the youngest mothers aligns with studies suggesting that very young maternal age does not consistently predict PTB after adjustment for socioeconomic and healthcare-related factors (Fitzpatrick et al., 2017; Ganchimeg et al., 2014). These differing patterns may reflect methodological and system-level explanations. First, the cross-sectional analysis included consecutively admitted mothers, which may introduce selection bias if younger women with higher-risk pregnancies were more likely to be referred to tertiary hospitals, thereby affecting the observed distribution of risk. Second, differential antenatal care utilization among younger mothers, including delayed or less frequent attendance, may have influenced gestational age assessment accuracy and risk classification. Third, the structure of the public hospital referral system in the West Bank, where high-risk pregnancies are centralized in specific facilities, may concentrate younger high-risk mothers within selected hospitals and obscure age-related effects when data are analyzed in aggregate. Differences in sample characteristics, covariate adjustment, and analytical approaches between the cohort and cross-sectional designs may also have contributed to these divergent findings.

Household and marital characteristics further demonstrated context-dependent associations. A smaller household size (<3 members) was independently associated with increased odds of PTB, potentially reflecting reduced social support or heightened psychosocial stress in a setting where extended family networks often provide critical emotional and logistical assistance during pregnancy (Anini, 2009). Similarly, younger age at marriage (<25 years) was associated with lower odds of PTB. While early marriage has been linked to adverse outcomes in other settings (Miller et al., 2022). The observed protective association in this context may reflect stronger family involvement, closer supervision during pregnancy, and greater reliance on public maternal health services. These findings underscore the importance of interpreting reproductive determinants within their sociocultural context rather than assuming uniform risk patterns across populations.

Geographic and institutional disparities in preterm birth (PTB) were evident in the cohort analysis, underscoring the influence of structural and health system factors. Significant variation was observed across hospital regions. Using the northern hospital (Jenin district) as the reference, deliveries in the central hospital (Ramallah district) were associated with markedly higher odds of PTB (aOR = 23.5), while deliveries in the southern hospital (Hebron district) also showed elevated odds (aOR = 5.62). The magnitude of these associations suggests that the observed differences are unlikely to represent true

population-level variation in PTB risk alone. Instead, they likely reflect referral bias and case-mix concentration, as higher-level facilities, particularly the central hospital, serve as tertiary referral centers with more advanced neonatal intensive care services and manage a larger proportion of high-risk pregnancies. Consequently, the increased PTB burden observed in these hospitals appears to be driven primarily by healthcare system organization and referral pathways rather than inherent geographic differences in risk.

In the cross-sectional study, geographic location was identified as an independent predictor of PTB. Women residing in the northern West Bank had significantly higher odds of PTB compared with those living in the southern region, while residence in the central region was not significantly associated with PTB. Unlike the hospital-based variation observed in the cohort study, these findings suggest the presence of broader regional disparities that persist even among women delivering in public hospitals. Such inequalities may be linked to differential exposure to political instability, infrastructural constraints, unequal distribution of specialized maternal and neonatal services, and barriers to timely referral. These findings align with evidence indicating that structural and contextual inequalities are key drivers of geographic variation in adverse birth outcomes (Smith et al., 2025; South et al., 2012). Together, these results demonstrate that the observed regional patterns of PTB in the West Bank are shaped not only by individual-level risk factors but also by health system organization and wider structural determinants, underscoring the need to interpret geographic disparities within the context of service delivery structures and sociopolitical conditions.

Safe access to healthcare services during pregnancy also emerged as an independent determinant of PTB. Women reporting unobstructed access had significantly lower odds of preterm birth (aOR 0.67; 95% CI 0.46–0.98), underscoring the pivotal role of healthcare accessibility in maternal outcomes. Structural barriers, including movement restrictions, checkpoints, and insecurity, continue to compromise timely utilization of public maternal healthcare services in the West Bank, consistent with prior evidence linking systemic obstacles to adverse pregnancy outcomes in conflict-affected settings (Leone et al., 2019). These findings provide actionable evidence for policymakers, suggesting that interventions to reduce geographic inequities and mobility constraints could substantially reduce PTB risk within the public health system.

Although overall antenatal care (ANC) attendance was high in both study components, neither ANC attendance nor the number of ANC visits was independently associated with preterm birth (PTB) after adjustment. In the cross-sectional analysis, ANC attendance and visit frequency did not demonstrate a significant independent effect on PTB risk after controlling for confounding factors. Similarly, in the cohort analysis, the majority of PTB cases (75.5%) occurred among women who had attended at least eight ANC visits, meeting the World Health Organization (WHO) recommended minimum for a positive pregnancy experience (WHO, 2016). Furthermore, attending fewer than eight visits was not significantly associated with PTB (aOR = 1.12, 95% CI: 0.87–1.44). Together, these findings suggest that the number of ANC visits alone may not be sufficient to reduce PTB risk within the public healthcare system. Instead, the quality, timing of initiation, continuity, and clinical content of ANC services are likely more influential determinants of

pregnancy outcomes. This interpretation is consistent with WHO guidance, which emphasizes early initiation and high-quality, person-centered ANC as central to improving maternal and neonatal health outcomes, rather than focusing solely on visit frequency. However, this study did not capture the timing of the first ANC visit, which may be a more sensitive indicator of risk than total visit count. These results highlight the need to strengthen the effectiveness and responsiveness of ANC services, particularly in identifying and managing obstetric and psychosocial risk factors for PTB. Further research should examine whether late initiation of ANC, rather than the total number of visits, is more strongly associated with PTB in this setting.

Other maternal and household factors, including body mass index, smoking during pregnancy, exposure to secondhand smoke, gestational weight gain, maternal occupation, household income, and husband's occupation, were not independently associated with preterm birth (PTB) after multivariable adjustment. Although these variables have been identified as risk factors for PTB in other populations, their lack of statistical significance in the present study may reflect context-specific influences, differences in exposure distribution, or the relatively low prevalence of high-risk behaviors among women delivering in public hospitals (Cornish et al., 2024; Huang et al., 2017; Reynolds & Homan, 2023). In addition, smoking during pregnancy may have been underreported due to social desirability bias, particularly within the sociocultural context of Palestine, where smoking among pregnant women may carry social stigma, potentially attenuating observed associations. It may also indicate that broader structural and psychosocial determinants exert a stronger influence on pregnancy outcomes in this setting, potentially overshadowing the effects of individual lifestyle or socioeconomic factors. These findings highlight the importance of interpreting PTB risk within the local epidemiological and health-system context rather than assuming uniform risk patterns across populations.

Consistent with established literature, several obstetric and medical factors were strongly associated with PTB. A history of stillbirth remained a strong independent determinant of preterm birth after adjustment (aOR 3.92, 95% CI 1.91–8.05), indicating persistent vulnerability in subsequent pregnancies. Placental abnormalities demonstrated a strong association in univariable analysis (OR 5.97, 95% CI 2.68–13.31; $p < 0.001$), emphasizing the critical role of placental integrity in sustaining pregnancy, consistent with evidence identifying placenta previa and placental abruption as major contributors to premature delivery (Ananth et al., 2016; Tikkanen, 2011). Prolonged premature rupture of membranes (PROM >18 hours) significantly increased PTB risk (OR 3.00, 95% CI 2.14–4.20; $p < 0.001$), aligning with studies linking membrane rupture and ascending infection to intrauterine inflammation and early onset of labor (Lee & Silver, 2001; Menon, 2008). Preeclampsia was another strong predictor of PTB (OR 3.33, 95% CI 2.23–4.96; $p < 0.001$), supporting extensive literature associating hypertensive disorders of pregnancy with medically indicated preterm deliveries (Lisonkova & Joseph, 2013; Magee et al., 2008; Roberts & Redman, 1993). A history of miscarriage was also associated with increased odds of PTB (OR 3.55, 95% CI 2.55–4.94; $p < 0.001$), consistent with population-based studies suggesting cumulative effects of uterine trauma, cervical

insufficiency, or underlying maternal pathology (Love et al., 2010; Shah et al., 2011).

Chronic maternal diseases, including hypertension, diabetes mellitus, and thyroid disorders, were significantly related to PTB (OR 3.50, 95% CI 1.70–7.21; $p < 0.001$), likely mediated through impaired placental perfusion and increased obstetric complications (Sibai, 2002). Medically assisted conception was associated with higher odds of preterm birth (OR 2.18, 95% CI 1.19–4.01; $p = 0.011$), in line with evidence that pregnancies conceived using assisted reproductive technologies are more susceptible to adverse obstetric outcomes (Gao et al., 2022; Henningsen et al., 2011). Gravidity was also associated with PTB, with primigravid women having significantly lower odds than multigravida women (OR 0.42, 95% CI 0.26–0.68; $p < 0.001$), reflecting the complex, multifactorial etiology of preterm labor (Romero et al., 2014).

Interpregnancy interval demonstrated differential effects. An interval of less than six months was significantly associated with increased odds of PTB (OR 1.89, 95% CI 1.17–3.05; $p = 0.009$), consistent with meta-analyses showing adverse effects of short birth spacing on maternal recovery and placental development (Conde-Agudelo et al., 2006; Kozuki, Lee, Silveira, Victora, et al., 2013). An interval of 6–12 months was not significantly associated with PTB. Antepartum hemorrhage was also significantly associated with preterm birth (OR 2.93, 95% CI 1.72–4.97; $p < 0.001$). Regarding delivery history, one prior cesarean section increased the odds of PTB (OR 1.90, 95% CI 1.28–2.83; $p = 0.002$), whereas two or more prior cesarean deliveries were not significantly associated, consistent with previous literature (Lisonkova et al., 2017; Visser et al., 2020; Younes et al., 2021).

Preterm infants experienced substantially poorer neonatal outcomes compared with term infants. Admission to the neonatal intensive care unit was significantly higher among preterm neonates, consistent with the well-established morbidity burden of prematurity (Blencowe et al., 2012; Chawanpaiboon et al., 2019; Younes et al., 2021). Very low birth weight occurred predominantly among preterm infants, underscoring the close relationship between shortened gestation and impaired fetal growth (Mazzoni et al., 2025). Early and late neonatal mortality did not differ significantly between preterm and term infants, possibly reflecting improvements in NICU capacity and early neonatal care in governmental hospitals. The sex of the newborn was not significantly associated with preterm birth, contrasting with earlier studies reporting increased male susceptibility to PTB (Di Renzo et al., 2007).

Taken together, these findings suggest that preterm birth (PTB) in the West Bank results from a complex interplay of biological, obstetric, social, and structural factors within a conflict-affected setting. While clinical conditions such as hypertensive disorders and placental complications remain important proximal determinants, broader contextual influences, including geographic disparities, referral pathways, healthcare accessibility, and mobility restrictions, may shape patterns of risk and access to timely care. These findings underscore the need for integrated strategies that extend beyond the management of clinical risk factors alone, including strengthening high-quality, risk-responsive antenatal care, improving referral coordination, and addressing barriers to equitable maternal healthcare access (Gemechu et al., 2025; McHale et al., 2022; Teklu et al., 2020; Tilahun et al., 2024). In this context, meaningful reductions in PTB are likely to depend on

interventions that address both immediate obstetric risks and the broader health system and sociopolitical conditions influencing maternal care.

5.3 Navigating Fear, Hope, and Motherhood: Experiences of Mothers with Preterm Infants in NICUs in the West Bank, Palestine (Qualitative study)

This study provides an in-depth exploration of how Palestinian mothers of preterm infants experienced motherhood within the technologically intensive and emotionally charged environment of the NICU. The overarching latent theme, **living between fear and hope while struggling for maternal identity**, captures a dynamic psychological trajectory marked by emotional collapse, perceived threat to infant survival, exclusion from caregiving, relational negotiation within the healthcare system, and gradual reconstruction of maternal identity through meaning-making and resilience. Mothers did not merely endure hospitalization passively; they navigated an existential disruption of early motherhood. These findings align with a recent qualitative study conducted in Lebanon, a context closely comparable to Palestine, which similarly described the NICU journey as emotionally overwhelming, characterized by concurrent hope, anxiety, and uncertainty, alongside reliance on adaptive coping strategies and family support systems (El-Eid et al., 2026). The convergence of findings across these neighboring Middle Eastern contexts underscores the sustained and multidimensional nature of maternal adaptation in settings shaped by healthcare constraints, economic pressures, and strong familial interdependence. The transition to motherhood was marked by profound emotional turmoil. Instead of the expected joy and closeness, mothers confronted shock, helplessness, and acute fear. The perception of the newborn as fragile and constantly at risk generated sustained hypervigilance and anxiety. These experiences align with previous research documenting high levels of psychological distress among mothers of preterm infants, including symptoms of anxiety, depression, and traumatic stress (Medina et al., 2018; Parkes & Trace, 2023; Yildiz & Besirik, 2025). This emotional response can be understood through Lazarus and Folkman's transactional model of stress and coping, in which maternal appraisal of infant fragility and perceived threat triggers both emotional and problem-focused coping strategies (Lazarus & Folkman, 1984).

The study's results extend beyond general psychological distress to illuminate a deeper process of maternal identity destabilization. Mothers did not simply fear for their infant's survival; they feared the loss of their role, competence, and the anticipated beginning of motherhood. Preterm birth and NICU hospitalization resulted in what many mothers described as a "stolen" maternal identity, characterized by sudden disempowerment, restricted caregiving, and pervasive self-doubt. This destabilization manifested in questioning personal competence and mourning the anticipated joyful transition into motherhood, rather than focusing solely on the infant's clinical condition (Reid, 2000; Zabielski, 1992). These experiences align with Rubin's maternal role attainment theory, which emphasizes that active engagement in infant care is central to forming a maternal identity (Fowles, 1994).

Building on the destabilization of maternal identity, self-blame, and guilt further intensified this emotional burden. Participants frequently internalized responsibility for the preterm birth, reflecting deeply embedded cultural and social expectations that position

mothers as primary guardians of infant well-being. In contexts here, biomedical explanations may feel abstract or insufficiently reassuring; mothers often turned inward, searching for personal causes. This pattern of self-attribution is widely documented in the literature, with mothers of preterm infants reporting feelings of bodily failure, personal inadequacy, and responsibility for adverse outcomes (Assal-Zrike & Atzaba-Poria, 2025; Jarašiūnaitė-Fedosejeva et al., 2024). Symbolic interactionist and social role theories help explain this process, highlighting how internalized cultural narratives of “good motherhood” shape self-perception and emotional response. Such internalization has been linked to increased risk of anxiety, depressive symptoms, and impaired maternal self-efficacy. The persistence of guilt, even in medically complex and multifactorial conditions, highlights how sociocultural narratives of “good motherhood” can amplify psychological vulnerability. These findings reinforce existing evidence emphasizing the importance of early, clear, and empathetic communication from healthcare providers to normalize maternal emotions, clarify medical causation, and mitigate preventable guilt and long-term psychological harm.

A central contribution of this study is the detailed portrayal of maternal role disruption within the NICU. While the medicalization of infant care is clinically necessary, it reshaped caregiving authority and limited maternal participation, particularly during the early phase of hospitalization. Mothers described feeling peripheral, displaced by machines and professionals, and uncertain about their legitimacy as “real” mothers. Many also reported profound feelings of failure and inadequacy, tied to restricted caregiving opportunities and reliance on medical staff. Similar experiences have been documented among mothers of preterm infants, who report heightened self-doubt and psychological distress during NICU hospitalization, perceiving themselves as failing in their maternal responsibilities despite clinical necessity (Fowler et al., 2019; Ginsberg et al., 2025; Klawetter et al., 2019). These experiences reflect maternal role attainment theory (Husmillo, 2013), emphasizing that maternal identity develops through active caregiving engagement; when participation is restricted, identity formation may be delayed or destabilized.

Importantly, maternal identity was not permanently disrupted but gradually reconstructed. As infants’ conditions stabilized and mothers were invited to participate in feeding, diapering, skin-to-skin contact, and discussions about care, a renewed sense of competence and belonging emerged. Engagement served not only as practical involvement but also as a symbolic restoration of maternal agency. Nevertheless, psychological reassurance did not always accompany these opportunities; uncertainty about maternal adequacy persisted for some mothers, indicating that identity reconstruction is a gradual and emotionally layered process. These findings underscore the critical value of family-centered care models and Bandura’s self-efficacy theory (Bandura & Adams, 1977), which posit that mastery experiences enhance perceived capability and confidence. Early participation in infant care supports maternal self-efficacy and facilitates role attainment (Li et al., 2023; Schwartz et al., 2025).

In this study, interactions with healthcare providers played a decisive role in shaping maternal experiences. Compassionate communication, reassurance, and respectful engagement acted as protective factors that mitigated distress; when professionals

demonstrated patience and clarity, mothers felt valued and emotionally supported. Recent research highlights that mothers highly value clear, compassionate, and hopeful communication in the NICU, and that supportive, collaborative dialogue enhances parental engagement and coping, whereas ineffective or hurried communication can exacerbate frustration and emotional strain (Guttmann et al., 2024; Lisle et al., 2022). Conversely, dismissive communication or unclear medical explanations intensified maternal distress and reinforced feelings of marginalization and inadequacy. Communication barriers, such as limited information sharing, insufficient emotional support, language discordance, or hurried interactions, are consistently associated with increased maternal anxiety, reduced confidence, and diminished engagement in infant care, aligning with findings from prior NICU-focused studies (Kalluri et al., 2025; Pinar & Erbaba, 2020; Tajik et al., 2024). These findings highlight the ethical and clinical imperative for trauma-informed, family-centered communication practices in NICUs, particularly in resource-constrained settings.

A culturally salient and theoretically significant finding was the central role of spirituality as a coping mechanism. Faith-based meaning-making enabled mothers to frame medical uncertainty within a broader divine narrative, transforming emotional chaos into coherence and hope. Trust in God's will, prayer, and religious surrender functioned not as passive resignation but as active strategies of emotional regulation and cognitive reframing. Pargament's religious coping theory conceptualizes these practices as adaptive strategies that reduce stress and enhance emotional resilience (Pargament et al., 1998). Previous research indicates that positive religious coping and higher spiritual well-being among mothers of infants hospitalized in NICUs are associated with lower stress levels and more adaptive psychological responses (Çelebioğlu & Gönenç, 2025; Küçük Alemdar et al., 2025).

In sociocultural contexts where religious belief is deeply embedded in daily life, spirituality often emerges as a primary psychological resource, particularly in the relative absence of structured psychosocial support. Systematic evidence further suggests that integrating spiritual care into neonatal settings may reduce maternal anxiety and enhance emotional adjustment. Recognizing spirituality as a legitimate and culturally grounded coping domain may therefore inform more contextually responsive NICU care models (Rahayuningsih et al., 2025).

Relational networks further mitigated psychological distress. Emotional and practical support from husbands, mothers, extended family members, and other NICU mothers reduced isolation and strengthened coping capacity. Peer support within the NICU normalized fear and fostered solidarity, reinforcing resilience as a socially constructed process. This aligns with other qualitative research, which indicates that peer connections within NICUs help mothers reframe uncertainty, validate emotional reactions, and restore confidence in their caregiving role (Eduku et al., 2024; Rossman et al., 2015). In collectivist contexts, where interdependence and extended family involvement are culturally embedded, such relational support may serve as a particularly protective factor. These findings underscore the importance of integrating structured family engagement and peer-support interventions into neonatal care policies to promote maternal psychological well-being.

Another notable finding was mothers' adaptive reframing of progress. Rather than focusing on discharge or distant developmental outcomes, mothers described emotionally surviving by concentrating on incremental daily improvements, stable breathing, minimal weight gain, or reduced oxygen support. This narrowing of temporal focus functioned as a protective cognitive strategy, allowing mothers to regulate anticipatory anxiety and manage uncertainty without becoming overwhelmed. Similar patterns of cognitive reframing and "day-by-day" coping have been documented among mothers of preterm infants, where attention to small milestones supports emotional stability and sustained hope (Kudu et al., 2025). These findings further underscore the importance of clinician communication that acknowledges and reinforces incremental progress as psychologically meaningful to mothers.

Mothers of preterm infants described significant personal growth and resilience following NICU hospitalization, characterized by increased patience, gratitude, emotional awareness, and inner strength. Motherhood was redefined not as immediate physical closeness but as enduring presence, trust, and perseverance. Over time, mothers experienced a transformation in life perspective, reporting greater appreciation for health, family, and everyday moments, as well as a deeper understanding of their capacities to endure and adapt. Importantly, such growth coexisted with memories of distress, reflecting a complex integration of vulnerability and resilience. These findings are consistent with qualitative studies documenting long-term personal growth, strengthened maternal identity, and psychosocial adaptation among mothers of very preterm infants after NICU experiences (Beck & Woynar, 2017; Offer & Taubman–Ben-Ari, 2024; Taubman–Ben-Ari et al., 2019).

In conclusion, this study provides a nuanced understanding of the experiences of Palestinian mothers of preterm infants within the NICU, revealing the emotional, relational, and cognitive processes that shape maternal identity. Mothers navigated intense fear, self-blame, and perceived role disruption, yet gradually reconstructed their sense of competence and belonging through participation in care, cognitive reframing, supportive interactions with healthcare providers, family engagement, and spirituality. Adaptive coping strategies and personal growth emerged alongside persistent distress, highlighting the dynamic and layered nature of maternal psychological adjustment.

The findings underscore the importance of family-centered, trauma-informed, and culturally sensitive NICU practices that promote early maternal involvement, clear communication, psychosocial support, and recognition of spiritual resources. These strategies can mitigate psychological morbidity, enhance maternal role attainment, and ultimately improve infant and family outcomes. In resource-constrained and conflict-affected settings such as the West Bank, implementing supportive NICU interventions is particularly critical to fostering resilience, maternal well-being, and sustainable caregiving capacity.

This study provides in-depth, contextually rich insights into the experiences of mothers of preterm infants in West Bank NICUs, a resource-constrained and conflict-affected setting that is underrepresented in the literature. Strengths include purposive sampling with maximum variation, achieving data saturation, the use of semi-structured interviews yielding detailed narratives, systematic content analysis guided by Graneheim and

Lundman (2004), and integration of theoretical frameworks such as maternal role attainment and stress-coping models.

The study also addresses a unique and challenging context, where conducting research is complicated by political, social, and healthcare system constraints, which adds value to the findings. Limitations include potential recall or social desirability bias in self-reported experiences, the exclusion of long-term maternal perspectives beyond one-year postpartum, possible researcher influence during interviews, and cultural specificity that may limit generalizability to other settings.

Chapter Six

Conclusion and Recommendations

6.1 Conclusion

This dissertation provides a comprehensive, context-specific understanding of preterm birth (PTB) in the West Bank, Palestine, integrating epidemiological data, clinical determinants, and maternal lived experiences. The findings demonstrate that PTB remains a significant public health challenge, shaped by a complex interplay of biological, obstetric, social, structural, and systemic factors within a protracted conflict setting.

Quantitative analyses revealed a PTB incidence of 7.6% and a prevalence of 14.1% among singleton live births, highlighting the dual reality of institutional-level reporting and broader population-level burden. While clinical determinants such as hypertensive disorders, placental complications, PROM, prior adverse obstetric history, and medically assisted conception were strongly associated with PTB, structural and contextual factors, including geographic disparities, referral pathways, and safe access to healthcare, also exerted significant influence. Notably, high antenatal care attendance alone did not mitigate PTB risk, underscoring that ensuring unobstructed, reliable, and high-quality maternal health services is essential for reducing preterm birth, rather than focusing solely on visit frequency.

The qualitative findings provide complementary insights into the maternal experience, revealing that preterm birth and NICU hospitalization profoundly disrupt maternal identity, evoke intense fear, guilt, and self-blame, and challenge early motherhood. Mothers gradually reconstructed their maternal role through active caregiving, supportive interactions with healthcare providers, family and peer engagement, spirituality, and adaptive cognitive strategies. This dynamic process of coping and resilience highlights the layered emotional and psychosocial dimensions of PTB, which are often under-recognized in clinical care.

Taken together, these findings underscore that addressing PTB in the West Bank requires integrated strategies that simultaneously target clinical, psychosocial, and structural determinants. Interventions should prioritize strengthening risk-responsive antenatal and perinatal care, improving referral coordination, mitigating barriers to healthcare access, and implementing culturally sensitive, family-centered NICU practices. Recognizing and supporting maternal coping mechanisms, including spiritual resources, relational networks,

and incremental progress framing, can enhance maternal psychological well-being, facilitate maternal role attainment, and contribute to improved neonatal outcomes.

Finally, this dissertation emphasizes the need for enhanced perinatal surveillance, robust health information systems, and population-based research in conflict-affected and resource-constrained settings. Such evidence is critical to inform health policy, guide targeted interventions, and ultimately reduce the burden of preterm birth while promoting maternal and neonatal health equity in Palestine.

6.2 Limitations

While this dissertation provides important insights into the incidence, determinants, and maternal experiences of preterm birth (PTB) in the West Bank, several limitations should be acknowledged.

Data limitations and measurement challenges:

The cohort and cross-sectional analyses relied on hospital records and self-reported data, which may be subject to underreporting, misclassification, or incomplete documentation. Although the Avicenna Health Information System (HIS) is implemented across governmental hospitals, variability in gestational age assessment, inconsistent clinical documentation, and limited staff training could have affected the accuracy of PTB incidence estimates. As a result, the reported rates should be interpreted as institutional estimates rather than definitive population-level prevalence.

Selection and referral bias:

The study included three major governmental hospitals, which serve as tertiary referral centres and manage a high proportion of high-risk pregnancies. Consequently, the observed PTB incidence and distribution of clinical risk factors may not fully reflect the general population of pregnant women in the West Bank. Geographic and institutional disparities identified in the cohort study may partly reflect referral patterns rather than true population-level variation.

Cross-sectional design limitations:

While the cross-sectional study provided valuable prevalence data and associations with sociodemographic and healthcare factors, its design precludes causal inference. Temporal relationships between risk factors and PTB could not be firmly established.

Limited generalizability:

Findings may not be generalizable to private hospitals, home births, or the Gaza Strip, where healthcare access, socioeconomic conditions, and conflict-related exposures differ substantially. Additionally, the experiences of mothers in NICUs may not represent those delivering in non-tertiary facilities or in rural areas with limited neonatal care.

Qualitative study limitations:

The qualitative component relied on purposive sampling of mothers whose infants were admitted to NICUs, potentially introducing selection bias toward those who were available and willing to participate. Social desirability and recall biases may have influenced mothers' accounts. Furthermore, findings reflect the experiences of mothers within a specific cultural and healthcare context, which may limit transferability to other settings.

Contextual and external factors:

The protracted conflict, movement restrictions, and political instability in the West Bank may have influenced both clinical outcomes and maternal experiences, complicating the interpretation of observed patterns. The dynamic nature of these contextual factors means that results may vary over time or in different socio-political conditions.

Despite these limitations, the integration of quantitative and qualitative approaches strengthens the overall findings, providing a nuanced understanding of PTB in the West Bank and highlighting both clinical determinants and maternal psychosocial experiences. Future studies with larger, population-based samples, longitudinal follow-up, and enhanced data systems are warranted to address these gaps and support evidence-informed interventions.

3.8 Recommendations

A. Recommendations for Policymakers (Systemic & Legislative)

Based on the findings of this study, several policy and legislative recommendations are proposed to reduce preterm birth (PTB) and improve maternal and neonatal health outcomes in the West Bank:

- 1. Strengthen perinatal health information systems:**
 - Expand and standardize the Avicenna Health Information System (HIS) to ensure accurate, complete, and timely recording of maternal and neonatal data.
 - Develop a population-based perinatal registry to facilitate monitoring of PTB trends, risk factors, and outcomes.
 - Provide continuous training for healthcare staff on accurate gestational age assessment, data entry, and documentation.
- 2. Enhance equitable access to maternal healthcare:**
 - Implement policies to reduce geographic and structural barriers, including safe and timely transportation to healthcare facilities.
 - Ensure consistent availability of maternal and neonatal care services across northern, central, and southern regions, with attention to underserved and high-risk populations.
 - Strengthen referral pathways and coordination between primary, secondary, and tertiary care to reduce delays in managing high-risk pregnancies.
- 3. Prioritize quality over quantity in antenatal care (ANC):**
 - Shift policy focus from the number of ANC visits to the quality, timeliness, and continuity of care.
 - Integrate risk identification, psychosocial support, and patient-centered counselling into routine ANC, particularly for women with previous adverse pregnancy outcomes or medical complications.
- 4. Support family-centered and trauma-informed NICU practices:**
 - Develop national guidelines promoting early maternal involvement, psychosocial support, and culturally sensitive care in NICUs.

- Encourage integration of spiritual and social support services as complementary coping strategies for mothers of preterm infants.
5. **Address broader social determinants of PTB:**
 - Implement legislative and social interventions to reduce socioeconomic inequities, support young mothers, and provide social protection for vulnerable families.
 - Strengthen community-based programs that enhance maternal nutrition, health literacy, and access to mental health support.
 6. **Monitor and evaluate policy impact:**
 - Establish mechanisms for regular evaluation of maternal and neonatal health programs to ensure that interventions effectively reduce PTB and improve outcomes.
 - Use evidence from both quantitative surveillance and qualitative maternal experiences to guide iterative improvements in health policy.

B. Recommendations for Decision-Makers (Clinical & Organizational Leadership)

To translate the study findings into practical improvements at the hospital and health system level, decision-makers in clinical and organizational leadership roles should consider the following actions:

1. **Strengthen risk-responsive maternal care:**
 - Implement standardized protocols for early identification and management of high-risk pregnancies, including women with hypertensive disorders, prior adverse obstetric history, or medically assisted conception.
 - Ensure timely interventions for obstetric complications such as PROM, antepartum hemorrhage, and placental abnormalities.
 - Promote interdepartmental coordination between obstetrics, neonatology, and emergency services for comprehensive maternal-fetal care.
2. **Enhance the quality and continuity of antenatal care (ANC):**
 - Focus on evidence-based clinical content, early initiation, and continuity of ANC rather than visit frequency alone.
 - Train healthcare providers in psychosocial assessment and culturally sensitive counseling to identify maternal stress, anxiety, or depression.
 - Integrate maternal education programs on PTB risk factors, self-care, and warning signs of complications.
3. **Improve maternal access and navigation within healthcare facilities:**
 - Develop clear referral and triage pathways to reduce delays in accessing care, particularly for women from remote or restricted areas.
 - Ensure safe and uninterrupted access to maternal services, including transportation support and flexible scheduling when possible.
 - Monitor facility-level capacity to handle high-risk pregnancies and preterm deliveries, including staffing, equipment, and NICU resources.

4. Implement family-centered and trauma-informed NICU practices:

- Facilitate early maternal involvement in infant care, including feeding, skin-to-skin contact, and routine caregiving activities.
- Provide structured psychosocial support, clear communication, and consistent updates on infant progress.
- Recognize and integrate culturally relevant coping strategies, such as spirituality and family support, into care planning.

5. Support staff training and well-being:

- Provide continuous professional development in PTB management, NICU care, and communication skills.
- Foster a supportive work environment to enhance provider empathy, patient-centered care, and retention of skilled personnel.
- Encourage multidisciplinary teamwork to optimize clinical decision-making and holistic care.

6. Monitor and evaluate clinical interventions:

- Regularly review PTB rates, neonatal outcomes, and maternal satisfaction to inform quality improvement initiatives.
- Use data-driven feedback loops to refine clinical protocols, resource allocation, and staff training priorities.

By implementing these strategies, clinical and organizational leaders can reduce PTB risk, enhance maternal and neonatal outcomes, and promote resilience within healthcare facilities in the West Bank.

C. Recommendations for Future Research

Building on the findings of this dissertation, future research should aim to deepen the understanding of preterm birth (PTB) and maternal experiences in the West Bank and similar conflict-affected settings. Key recommendations include:

1. Population-based longitudinal studies:

- Conduct prospective, population-level studies to capture PTB incidence, risk factors, and outcomes over time.
- Track maternal and neonatal trajectories from pregnancy through early childhood to assess long-term health, developmental, and psychosocial impacts of PTB.

2. Enhanced data quality and surveillance:

- Evaluate and improve the accuracy, completeness, and interoperability of hospital and national perinatal health information systems.
- Develop standardized methods for gestational age assessment and obstetric documentation to minimize misclassification and underreporting.

3. Contextual and structural determinants:

- Investigate the influence of conflict-related exposures, mobility restrictions, and health system fragmentation on PTB risk.
- Examine geographic and socioeconomic disparities in access to care and pregnancy outcomes across the West Bank and Gaza Strip.

4. Maternal psychosocial and coping mechanisms:

- Explore the effectiveness of culturally tailored interventions, such as family-centered NICU care, peer support, and spirituality-based coping strategies, on maternal psychological well-being.
- Study the long-term impact of PTB on maternal identity, mental health, and parenting practices.

5. Multidisciplinary and mixed methods approaches:

- Integrate quantitative and qualitative research to capture both clinical determinants and maternal experiences.
- Apply implementation science frameworks to assess barriers, facilitators, and scalability of interventions aimed at reducing PTB and improving maternal-infant outcomes.

By addressing these research gaps, future studies can generate robust, context-specific evidence to inform policy, guide clinical practice, and strengthen maternal and neonatal health programs in Palestine and other conflict-affected settings.

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Appendix 1: Structured Data Collection Tool for Cross-Sectional Study



جامعة القدس
Al-Quds University

Patient

Code:

.....

Date (DD/MM/YYYY): / /

Demographic and Socio-Economic Factors

Height: cm

Weight: kg

1. Age

- ☐ Less Than 18 Years Old
- ☐ 18–24 Years Old
- ☐ 25–34 Years Old
- ☐ ≥ 35 Years Old

2. Total Weight Gain During Pregnancy

- ☐ < 5 kg
- ☐ 5–9 kg
- ☐ 10–14 kg
- ☐ 15–19 kg
- ☐ ≥ 20 kg

3. Body Mass Index (BMI)

- ☐ < 18.5
- ☐ 18.5–24.9
- ☐ 25.0–29.9
- ☐ 30.0–34.9

4. Residence

- ☐ Urban Area (City)
- ☐ Rural
- ☐ Camp

5. Geographic Area

- ☐ North
- ☐ Middle
- ☐ South

6. During your pregnancy, did you have safe and timely access to healthcare facilities without barriers such as movement restrictions, checkpoints, transportation difficulties, or other conflict-related mobility constraints?

☐ Yes

☐ No

7. Level of Education

☐ No Formal Education

☐ Primary

☐ Secondary

☐ University Education

☐ Postgraduate Degree

8. Occupation

☐ Unemployed

☐ Employed

9. Average Family Income

☐ <1000 NIS

☐ 1000–2999 NIS

☐ ≥3000 NIS

10. Family Size

☐ <3

☐ 3–5

☐ >5

11. Husband Working

☐ Self-Employed

☐ Employed

☐ Unemployed

Maternal and Obstetric Factors

12. Gravidity

☐ Primigravida

☐ Multigravida

13. Mode of conception

☐ Spontaneous

☐ Medically assisted

14. Interval between last two pregnancies

☐ First pregnancy

☐ <6 months

☐ 6–17 months

☐ 18–23 months

☐ 24–59 months

☐ ≥ 60 months

15. Presence of chronic medical disease

☐ Yes

☐ No

If yes, specify (tick all that apply):

☐ Hypertension

☐ Diabetes mellitus

☐ Thyroid disorder

☐ Other (specify): _____

16. History of miscarriage (<20 weeks of gestation)

☐ Yes

☐ No

17. History of stillbirth (≥ 20 weeks of gestation) in previous deliveries

☐ Yes

☐ No

18. Preeclampsia

☐ Yes

☐ No

19. Premature rupture of membranes (>18 hours before labor)

☐ Yes

☐ No

20. Antepartum hemorrhage

☐ Yes

☐ No

21. Placental abnormalities

(e.g., placenta previa, placental abruption, placenta accreta)

☐ Yes

☐ No

22. Number of previous cesarean deliveries

☐ None

☐ One

☐ Two

☐ Three or more

Neonatal Factors

24. Gestational age at birth

☐ <28 weeks (Extremely preterm)

☐ 28–31 weeks (Very preterm)

☐ 32–36 weeks (Moderate to late preterm)

☐ ≥ 37 weeks (Term)

25. Birth weight

- ☐ <1000 g (Extremely low birth weight)
- ☐ 1000–1499 g (Very low birth weight)
- ☐ 1500–2499 g (Low birth weight)
- ☐ ≥ 2500 g (Normal birth weight)

26. Sex of newborn

- ☐ Male
- ☐ Female

27. NICU admission

- ☐ Yes
- ☐ No

28. Neonatal outcome (up to 28 days postpartum)

- ☐ Alive
- ☐ Early neonatal death (≤ 7 days)
- ☐ Late neonatal death (8–28 days)

Appendix 2 : The Interview Guide (English version)



Aim of the Study

To explore the experiences of Palestinian mothers caring for preterm infants in Neonatal Intensive Care Units (NICUs).

Research Questions

1. What are the emotional and psychological experiences of mothers during their infant's stay in the NICU?
2. How do mothers perceive the support provided by healthcare professionals in the NICU?
3. What coping strategies do mothers use to manage the stress of having a preterm infant in the NICU?
4. What challenges do mothers face in maintaining bonding and caregiving roles with their preterm infants in the NICU?

Section A: Demographic Information

Maternal Information

Age

- ☐ Less than 18 years
- ☐ 18–24 years
- ☐ 25–34 years
- ☐ ≥ 35 years

Maternal Residence (Region)

- ☐ North West Bank
- ☐ Central West Bank
- ☐ South West Bank

Parity (Number of pregnancies)

- ☐ Primigravida
- ☐ Multigravida: G___ P___ A___

Mode of Delivery

- ☐ Vaginal delivery
- ☐ Cesarean section
- ☐ Instrumental delivery

Educational Level

- ☐ No formal education
- ☐ Primary school
- ☐ Secondary school
- ☐ University degree or higher

Occupation

- ☐ Unemployed
- ☐ Employed

Infant Information**Birth Weight**

- ☐ < 1000 g (Extremely Low Birth Weight)
- ☐ 1000–1499 g (Very Low Birth Weight)
- ☐ 1500–2499 g (Low Birth Weight)
- ☐ ≥ 2500 g (Normal Birth Weight)

Gender of the Baby

- ☐ Male
- ☐ Female

Gestational Age at Birth

- ☐ < 28 weeks (Extremely Preterm)
- ☐ 28–31 weeks (Very Preterm)
- ☐ 32–36 weeks (Moderate to Late Preterm)

Section B: Interview Questions (Semi-Structured)**RQ1: Emotional and Psychological Experiences****Main Question:**

- Can you tell me about your emotional journey since your baby was admitted to the NICU?

Follow-up Prompts:

- What were your initial feelings when you first saw your baby in the NICU?
- Have your feelings changed over time? How?
- How has this experience affected your mental or emotional well-being?
- Were there specific moments that were especially difficult or comforting?

RQ2: Perceptions of Healthcare Professional Support**Main Question:**

- How would you describe your interactions with the doctors and nurses in the NICU?

Follow-up Prompts:

- Do you feel they listen to your concerns and involve you in decision-making?
- What information or guidance have they provided?
- Have there been times when you felt supported or unsupported?
- What improvements would you like to see in staff support?

RQ3: Coping Strategies

Main Question:

- How have you been coping with the challenges of having a baby in the NICU?

Follow-up Prompts:

- What do you do to manage stress or anxiety?
- Do you rely on family, friends, faith, or other sources of strength?
- What helps you stay hopeful?
- Have your coping strategies changed over time?

RQ4: Bonding and Caregiving Challenges

Main Question:

- What has it been like to care for and bond with your baby in the NICU?

Follow-up Prompts:

- Do you have opportunities to hold or touch your baby?
- Do you feel involved in your baby's care? Why or why not?
- Do cultural or personal beliefs influence your experience?
- What helps you feel close to your baby despite the NICU environment?

Section C: Overall Reflection

- How would you describe your overall experience of having a baby in the NICU?
- Has this experience changed you as a mother or as a person?

Section D: Advice and Recommendations

- What advice would you give to other mothers with babies in the NICU?
- What advice would you give to healthcare providers working in NICUs?

Closing the Interview

Thank you very much for sharing your experience.

- Is there anything else you would like to add?
- Is there something important you feel healthcare providers should better understand?

Appendix 3: The Interview Guide (Arabic Version)



الهدف من الدراسة

استكشاف تجارب الأمهات الفلسطينيات اللواتي يعتنين بأطفالهنّ الخدج في أقسام العناية المكثّفة لحديثي الولادة

أسئلة البحث

ما التجارب العاطفية والنفسية التي تمر بها الأمهات أثناء إقامة أطفالهن في وحدة العناية المكثّفة؟

كيف تُقيّم الأمهات الدعم الذي يقدمه الطاقم الصحي؟

ما استراتيجيات التكيف التي تستخدمها الأمهات؟

ما التحديات في الحفاظ على الارتباط والرعاية؟

القسم أ: المعلومات الديموغرافية

معلومات الأم

العمر

☐ أقل من 18 سنة

☐ 18-24

☐ 25-34

☐ 35 فأكثر

منطقة السكن

☐ شمال الضفة

☐ وسط الضفة

☐ جنوب الضفة

عدد مرات الحمل

☐ الحمل الأول

☐ متعددة الحمل

طريقة الولادة

☐ طبيعية

☐ قيصرية

☐ باستخدام أدوات

المستوى التعليمي

☐ بدون تعليم

☐ ابتدائي

☐ ثانوي

☐ جامعي فأعلى

العمل

☐ لا تعمل

☐ تعمل

معلومات الطفل

وزن الولادة

☐ أقل من 1000 غرام

☐ 1000-1499 غرام

☐ 1500-2499 غرام

☐ 2500 غرام

☐ 2500 فأكثر

جنس الطفل

☐ ذكر

☐ أنثى

عمر الحمل عند الولادة

☐ أقل من 28 أسبوع

☐ 28-31 أسبوع

☐ 32-36 أسبوع

القسم الأول: التجارب العاطفية والنفسية

السؤال الرئيسي

هل يمكنك أن تخبريني عن رحلتك العاطفية منذ دخول طفلك إلى وحدة العناية المكثفة لحديثي الولادة؟
أسئلة المتابعة

ما كانت مشاعرك الأولى عندما رأيت طفلك في وحدة العناية للمرة الأولى؟

هل تغيرت مشاعرك مع مرور الوقت؟ كيف؟

كيف أثر هذا الوضع على صحتك النفسية أو العاطفية؟

هل كانت هناك لحظات محددة وجدتها صعبة أو مريحة بشكل خاص؟

القسم الثاني: الدعم من الكادر الصحي

السؤال الرئيسي

كيف تصفين تواصلك مع الأطباء والممرضين في وحدة العناية المكثفة؟

أسئلة المتابعة

هل تشعرين أنهم يستمعون إلى مخاوفك ويُشركونك في اتخاذ القرارات المتعلقة برعاية طفلك؟

ما نوع المعلومات أو الإرشادات التي قدّموا لك؟

هل كانت هناك مواقف شعرت فيها بالدعم أو بعدمه؟

ما الذي ترغبين في تحسينه من ناحية الدعم المقدم من الطاقم الطبي؟

القسم الثالث: استراتيجيات التكيف

السؤال الرئيسي

كيف تتعاملين مع الضغوط والتحديات الناتجة عن وجود طفلك في وحدة العناية المكثفة؟

أسئلة المتابعة

ما الأشياء التي تساعدك في التغلب على التوتر أو القلق؟

هل تعتمدين على الأسرة، الأصدقاء، الإيمان، أو مصادر أخرى للدعم؟

ما الذي يمنحك القوة أو الأمل خلال هذه الفترة؟
هل تغيرت طرق تكييفك مع مرور الوقت أثناء إقامة طفلك في الوحدة؟

القسم الرابع: الارتباط والرعاية بالأطفال الخدج

السؤال الرئيسي

كيف كانت تجربتك في التواصل والرعاية لطفلك أثناء وجوده في وحدة العناية المكثفة؟
أسئلة المتابعة

هل تُتاح لك الفرصة لحمل طفلك أو لمسه؟
هل تشعرين بأنك تشاركين في رعايته اليومية؟ لماذا أو لماذا لا؟
هل توجد معتقدات ثقافية أو شخصية تؤثر على طريقتك في التعامل مع هذه التجربة؟
ما الذي يساعدك على الشعور بالقرب من طفلك رغم البيئة الطبية المحيطة؟

القسم الخامس: التأمل العام في التجربة

كيف تصفين تجربتك العامة لوجود طفلك في وحدة العناية المكثفة؟
هل غيرتك هذه التجربة كأم أو كشخص؟
القسم السادس: النصائح والتوصيات
ما النصيحة التي تودين تقديمها للأمهات أخريات يمررن بتجربة مشابهة؟
ما النصيحة التي تودين توجيهها لمقدمي الرعاية الصحية العاملين في وحدات العناية المكثفة؟

ختام المقابلة

شكراً جزيلاً لك على مشاركتك قصتك وتجربتك
هل هناك أي شيء آخر ترغبين في إضافته ولم نناقشه؟
هل هناك أمر مهم تعتقدين أن الأمهات أو مقدمي الرعاية الصحية يجب أن يفهموه بشكل أفضل؟

Appendix 4 : Research Ethical Committee Approval

Al-Quds University
Jerusalem
Deanship of Scientific Research



جامعة القدس
القدس
عمادة البحث العلمي

Research Ethics Committee Committee's Decision Letter

Date: February 18, 2025
Ref No: 505/REC/2025

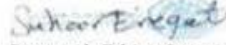
Dears Prof. Dr. Ewa-Lena Bratt, Dr. Kawther Alayasa, Ms. Amani Salim,

Thank you for submitting your research ethics application. After reviewing your submission titled: "Incidence, Prevalence, and Maternal Journeys: Investigating Preterm Births in the West Bank", the Research Ethics Committee (REC) at Al-Quds University confirms that your application aligns with our ethics guidelines, which are based on the principles outlined in the Declaration of Helsinki.

Please note that this approval does not replace other required permissions, such as for sample shipment or data sharing. We also request a copy of your final report or publication when available.

This approval is valid for two years. If your research extends beyond this period, a renewal request will be necessary. The approval remains valid as long as there are no changes to the research protocol.

Sincerely,

Suheir Ereqat, PhD
Associate Professor of Molecular Biology

Research Ethics Committee Chair

Cc. Prof. Imad Abu Kishek - President
Cc. Members of the committee
Cc. file

Abu-Dies, Jerusalem P.O.Box 20002
Tel-Fax: #970-02-2791293

research@admin.alquds.edu

أبوديس، القدس ص.ب. 20002
تلفاكس: #970-02-2791293

Appendix 5 : Research Ethical approval from the Ministry of Health

State of Palestine
Ministry of Health
Education in Health and Scientific
Research Unit



دولة فلسطين
وزارة الصحة
وحدة التعليم الصحي
والبحث العلمي

Ref.:
Date:.....

الرقم: C. ٢٠١٥ / ١٣٤
التاريخ: C. ٢٠١٥ / ١٣ / ١٥

الأخ مدير عام الإدارة العامة للمستشفيات المحترم،،،
الاخت رئيس وحدة التخطيط والسياسات الصحية المحترمة،،،
تعبية واحترام،،،

الموضوع: تسهيل مهمة طالبة دكتوراه

يرجى تسهيل مهمة الطالبة: أماني سالم سليم- برنامج دكتوراه الصحة العامة/ جامعة القدس، في عمل بحث بأشراف د. كوثر العيسة، وبمعنوان:
Incidence, Prevalence, and Maternal Journeys: Investigating Preterm Births in the West Bank, Palestine
من خلال السماح للطالبة بجمع معلومات عن طريق مراجعة ملفات المرضى، ومقابلة عينة من المرضى، وذلك في:

- مستشفى جنين - مستشفى يطا - المجمع الطبي

على ان يتم الالتزام بالاساليب واخلاقيات البحث العلمي، وعدم التعرض للمعلومات التعريفية للمرضى.
على ان يتم تزويد الوزارة بنسخة PDF من نتائج البحث، التعهد بعدم النشر لحين الحصول على موافقة الوزارة على نتائج البحث.

مع الاحترام،،،

د. عبد الله القواسمي
رئيس وحدة التعليم الصحي والبحث العلمي



نسخة: عميد كلية الصحة العامة المحترم/ جامعة القدس

Appendix 6 : Arabic Informed consent to participate in the Qualitative study



الموافقة المستنيرة على المشاركة في دراسة بحثية

Informed consent to participate in research

عزيزي/ عزيزتي المشارك/ة:

أنا الباحث امانى سالم سليم , طالبة الدكتوراة في الصحة العامة في جامعة القدس، أقوم بإجراء هذا البحث كمتطلب رئيسي من متطلبات الحصول على شهادة الدكتوراة. ان الهدف الرئيسي لهذه الدراسة هو استكشاف خبرة الامهات الاتي لديهن اطفال خداج احتاجوا للدخول العناية المكثفة في الضفة الغربية. يطلب منك بموجب هذا النموذج المشاركة في دراسة بحثية أقوم بعمل هذا البحث بغية الاجابة على اسئلة مهمة، الأمر الذي قد يساعد على تغيير او تحسين الطريقة التي نتبعها في اجراءاتنا الطبية في المستقبل. يجوز لك عدم المشاركة في الدراسة، كما يجوز لك الانسحاب من الدراسة في اي وقت كان، لن يودي قرارك عدم المشاركة في الدراسة، او قرارك الانسحاب منها في وقت لاحق، الى اي تدبير جزائي أو الى فقدان الامتيازات المستحقة لك، ولن يكون لقرارك هذا اي تأثير على علاقتك بالباحثين أو بمن يستخدمهم. قبل موافقتك على المشاركة بالدراسة، من حقك ان تعرف المعلومات التالية لمساعدتك في اتخاذ قرار المشاركة أو عدمه:

وقد تم اختيارك للمشاركة في هذه الدراسة لأن هذه الدراسة تشمل الامهات الاتي لديهن اطفال خداج احتاجوا للدخول العناية المكثفة في الضفة الغربية، على ان يكون المشترك بالغ عاقل وقادر على التحدث والتعبير عن خبرته ولديه الكم الكافي من المعلومات لأخبارنا بها، التي ستكون مفيدة جدا لنا في الفترة المقبلة. لا يوجد مخاطر مرتبطة بهذه الدراسة الا امكانية الشعور بالحزن نتيجة مشاركة التجربة السابقة ولا يوجد اي تكاليف تترتب على المشترك بهذه الدراسة، ولا يوجد فوائد مباشرة يجنيها المشترك بهذه الدراسة. في حال كان لديك اسئلة حول الدراسة أو حول اصابة متعلقة بالدراسة، بإمكانك سؤال:

الاسم: امانى سالم احمد سليم

رقم التليفون: 0597417390

لمزيد من المعلومات عن الحقوق التي تتمتع بها بصفتك مشارك بدراسة بحثية، او لمناقشة أي مشاكل ،او شكوى أو مخاوف حول الدراسة البحثية، أو للحصول على معلومات او للمساهمة بأرائك يرجى الاتصال بمكتب البحث العلمي في جامعة القدس او ارسال ايميل للمشرفة على البحث وهي د. كوثر العيسة

kawtheralayasa@gmail.com

موافقة المشارك

بموجب توقيعك على هذا النموذج، تؤكد على ما يلي:

لقد تم وصف الدراسة البحثية لك شفها وقمت بقراءة المعلومات المدرجة أعلاه، وبعد وصف الدراسة البحثية لك واي معلومات اضافية قدمها الشخص الراغب بالحصول على الموافقة، عرضت هذه المعلومات عليك بلغة تفعلها وتفهمها جيدا.

سيتم تسجيل المقابلة صوتيا وترجمتها للغة الانجليزية ومن ثم تحليلها، ولن يتم ذكر اسم الشخص المشارك في الدراسة وعلى ذلك:

أوافق على المشاركة بهذه الدراسة البحثية، سوف أحصل على نسخة موقعة من هذا النموذج لبيان الموافقة المستنيرة

للاحتفاظ بها في سجلاتي، أوافق على المشاركة بهذه الدراسة

اسم المشارك:

توقيع المشارك: التاريخ:

اسم الباحث:

توقيع الباحث: التاريخ:

Appendix 7: English Informed Consent to Participate in Qualitative Research



Informed consent to participate in research

Dear Participant,

My name is Amani Salem Ahmad Salim, a PhD candidate in Public Health at Al-Quds University. I am conducting this research as a major requirement for obtaining my doctoral degree.

The main aim of this study is to explore the experiences of mothers who have preterm infants requiring admission to Neonatal Intensive Care Units (NICUs) in the West Bank.

You are being invited to participate in this research study. The purpose of this study is to answer important questions that may help improve or modify future medical practices and care procedures.

Your participation is completely voluntary. You may choose not to participate, or you may withdraw from the study at any time without any penalty or loss of benefits to which you are entitled. Your decision will not affect your relationship with the researchers or with any healthcare providers.

Before agreeing to participate, you have the right to know the following information to help you decide:

You have been selected because the study includes mothers of preterm infants who required NICU admission in the West Bank. Participants should be adults who are able to speak, express their experiences, and provide sufficient information that may be valuable for this research.

There are no expected risks associated with this study except the possibility of temporary emotional discomfort or sadness when recalling past experiences. There are no financial costs for participating, and there are no direct personal benefits, although your participation may contribute to improving maternal and neonatal healthcare in the future.

If you have any questions about the study or any research-related concerns, you may contact:

Researcher Name: Amani Salem Ahmad Salim

Phone Number: 0597417390

For more information about your rights as a research participant, or to discuss any problems, complaints, or concerns about the study, you may contact the Scientific Research Office at Al-Quds University or email the research supervisor:

Dr. Kawther Elissa

Email: kawtheralayasa@gmail.com

Participant Consent

By signing this form, you confirm that:

The research study has been explained to you verbally, and you have read the information above.

The study and any additional information were presented to you in a language you understand well.

The interview will be audio-recorded, translated into English, and analyzed. Your name will not appear in any reports or publications.

You agree to participate in this research study.

You will receive a signed copy of this consent form for your records.

Participant Name: _____

Participant Signature: _____ Date: _____

Researcher Name: _____

Researcher Signature: _____ Date: _____

Appendix 8: Informed consent to participate in the Quantitative study



الموافقة المستنيرة على المشاركة في دراسة بحثية

Informed consent to participate in research

عزيزتي المشاركة

أنا الطالبة أمانى سالم سليم، طالبة دكتوراة في الصحة العامة \جامعة القدس- كلية الدراسات العليا، أقوم بإجراء هذا البحث كمتطلب رئيسي من متطلبات الحصول على شهادة الدكتوراه. ان الهدف الرئيسي لهذه الدراسة هو معرفة انتشار الولادة المبكرة وما يرتبط بها العوامل بين الأمهات اللواتي ولدن في المستشفيات العامة في منطقة الضفة الغربية، فلسطين.

يطلب منك بموجب هذا النموذج المشاركة في دراسة بحثية أقوم بها بهدف انتشار الولادة المبكرة وما يرتبط بها العوامل، مع العلم انه يجوز لك عدم المشاركة في الدراسة، كما يجوز لك الانسحاب من الدراسة في اي وقت كان، ولن يؤدي قرارك في عدم المشاركة احد ، كما يحق لك الانسحاب منها في اي وقت لاحق، ولن يؤدي انسحابك الى اي تدبير جزائي أو الى فقدان الامتيازات المستحقة لك، ولن يكون لقرارك هذا اي تأثير على علاقتك بالباحثين أو بمن يستخدمهم. في حال كان لديك اسئلة حول الدراسة أو حول اصابة متعلقة بالدراسة، بإمكانك\اي سؤال:

الاسم: امانى سالم الخطيب.

رقم التليفون: 0597417390

لمزيد من المعلومات عن الحقوق التي تتمتع بها بصفتك مشارك بدراسة بحثية، او لمناقشة أي مشاكل او شكاوى أو مخاوف حول الدراسة البحثية، أو للحصول على معلومات او للمساهمة بأرائك يرجى الاتصال بمكتب البحث العلمي في جامعة القدس او ارسال ايميل للمشرفة على بحثي وهي د. كوثر العيسة.

kawtheralayasa@gmail.com

موافقة المشارك

بموجب توقيعك على هذا النموذج، تؤكد على ما يلي:

لقد تم وصف الدراسة البحثية لك شفها وقمت بقراءة المعلومات المدرجة أعلاه، وبعد وصف الدراسة البحثية لك واي معلومات اضافية قدمها الشخص الراغب بالحصول على الموافقة، عرضت هذه المعلومات عليك بلغة تفصلها وتفهمها جيدا.

سيتم تسجيل المعلومات ومن ثم تحليلها، ولن يتم ذكر اسم الشخص المشارك في الدراسة وعلى ذلك:
أوافق على المشاركة بهذه الدراسة البحثية، سوف أحصل على نسخة موقعة من هذا النموذج لبيان الموافقة المستنيرة
للاحتفاظ بها في سجلاتي، أوافق على المشاركة بهذه الدراسة

اسم المشارك: _____

توقيع المشارك: _____ التاريخ: _____

اسم الباحث: _____

توقيع الباحث: _____ التاريخ: _____

Appendix 9: English Informed Consent to Participate in Quantitative Research



Informed consent to participate in research

Dear Participant,

My name is Amani Salem Salim, a PhD candidate in Public Health at Al-Quds University, Graduate Studies Faculty. I am conducting this research as a primary requirement for obtaining my doctoral degree.

The main aim of this study is to determine the prevalence of preterm birth and its associated risk factors among mothers who delivered in public hospitals in the West Bank, Palestine.

You are invited to participate in this research study. Your participation is entirely voluntary. You have the right to refuse participation or withdraw from the study at any time without any penalty or loss of benefits to which you are entitled. Your decision will not affect your relationship with the researchers, the hospital, or any services you receive.

If you have any questions about the study or about any study-related issues, you may contact:

Researcher: Amani Salem Salim

Phone number: 0597417390

For more information about your rights as a research participant, or to discuss concerns, complaints, or questions, you may contact the Scientific Research Office at Al-Quds University or the research supervisor:

Dr. Kawther Elissa

Email: kawtheralayasa@gmail.com

Participant Consent

By signing this form, you confirm the following:

The study has been explained to me verbally, and I have read the information provided above.

The study and any additional information were presented in a language I understand well.

I understand that the collected information will be recorded and analyzed for research purposes only.

My name will not appear in any reports, publications, or presentations resulting from this study.

I understand that I will receive a signed copy of this consent form for my records.

I voluntarily agree to participate in this research study.

Participant Name: _____

Participant Signature: _____ Date: _____

Researcher Name: _____

Researcher Signature: _____ Date: _____

Appendix 10: Birth in the West Bank, Palestine: Insights from a Hospital-Based Cohort Study

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Preterm Birth in the West Bank, Palestine: Insights From a Hospital-Based Cohort Study

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Received: 21 September 2025 | Revised: 23 November 2025 | Accepted: 5 December 2025

Keywords: hospital-based | incidence | preterm birth | risk factors | west bank

ABSTRACT

Aim: Preterm birth (PTB), delivery before 37 completed weeks of gestation, remains a major cause of neonatal morbidity and mortality. Evidence from conflict-affected, resource-limited settings such as the West Bank, Palestine, is limited. This study aimed to estimate PTB incidence and identify maternal, neonatal and socioeconomic risk factors using hospital-based data from government facilities.

Methods: A retrospective cohort study utilised the Avicenna Health Information System across three major governmental hospitals in the West Bank. All live births at ≥ 24 weeks' gestation between January 2023 and May 2024 were included. Descriptive statistics, chi-square tests and multivariable logistic regression were applied to assess PTB-associated factors.

Results: Among 18,760 live births, 1427 (7.6%) were preterm, mostly moderate to late preterm (7.0%). Higher PTB risk was observed among mothers aged < 20 years (aOR 1.53) or ≥ 35 years (aOR 1.32), male infants (aOR 1.16) and multiple pregnancies (twins aOR 4.98; triplets aOR 17.28). The Ramallah district had the highest PTB rate (aOR 2.35), likely reflecting referral to tertiary care.

Conclusion: PTB incidence was lower than previous national estimates but may underestimate community rates. Findings highlight key determinants and emphasise the need for improved data systems and population-based perinatal surveillance in Palestine.

1 | Introduction

Preterm birth (PTB), defined as delivery before 37 completed weeks of gestation, represents a major global public health challenge and remains the leading cause of mortality among children under 5 years of age [1]. Each year, PTB is responsible for approximately 18% of all deaths in this age group and up to 35% of neonatal mortality worldwide. Beyond mortality, PTB contributes substantially to long-term morbidity, including

cerebral palsy, chronic respiratory conditions, sensory deficits and neurodevelopmental impairments. Its multifactorial aetiology arises from a complex interplay of biological, behavioural, environmental and health system-related determinants, with the burden disproportionately concentrated in low- and middle-income countries [1, 2].

Historically, Palestine encompassed approximately 26 323 km²; however, its contemporary territory is estimated at 6170 km²,

Abbreviations: ANC, antenatal care; AOR, adjusted odds ratio; CI, confidence interval; PTB, full-term Birth; HIS, Health Information System; NICU, Neonatal Intensive Care Unit; PTB, preterm birth.

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variables. Records with missing data or deliveries occurring outside the specified study period were excluded from the analysis.

2.5 | Data Analysis

Analysis of data was performed using R statistical software, version 4.3.1. Maternal, obstetric and foetal characteristics were expressed in frequencies and percentages. The overall incidence of preterm delivery was calculated, and chi-square tests were used to examine the association of preterm delivery with categorical features such as education, age and pregnancy complications. Univariate logistic regression was used to evaluate the potential risk variables first, and multivariate logistic regression was used to adjust for confounders and quantify independent predictors. The results are presented as adjusted odds ratios (AOR) with 95% confidence intervals (CI), and the significance level is $p < 0.05$.

2.6 | Ethical Considerations

Ethical approval for this study was obtained from the Research Ethics Committee of Al-Quds University (Ref. No. 505/REC/2025) and the Palestinian MoH. All procedures were conducted in accordance with relevant ethical guidelines and regulations. Confidentiality of patient information was strictly maintained throughout the study by anonymising data and securely storing records in password-protected files accessible only to authorised personnel.

3 | Results

3.1 | Incidence of Preterm Birth

All newborns delivered at ≥ 24 weeks of gestation between January 2023 and May 2024 at the selected West Bank hospitals were included. Out of the 19 425 recorded live births, 665 were excluded due to missing data on gestational age, infant sex or maternal age, resulting in a final sample of 18 760 live births for analysis. Among these, 1427 (7.6%) were PTBs, categorised as follows: 23 (0.12%) extreme preterm (< 28 weeks), 84 (0.45%) very preterm ($28 - < 32$ weeks) and 1320 (7.0%) moderate to late preterm ($32 - < 37$ weeks). Due to the small number of extremely preterm cases, the extremely and very preterm categories were combined in some analyses as "extreme-to-very preterm" (< 32 weeks). The remaining 17 333 (92.4%) were term births, consisting of 2825 (16.3%) early-term ($37 - < 39$ weeks) and 14 508 (83.7%) full-term ($39 - 42$ weeks) births (Figure 1).

3.2 | Participants' Characteristics

During the study period, 19 425 women delivered in the selected hospitals. Most PTBs occurred in hospitals in the central hospital (Ramallah) (76.2%), whereas full-term births were more evenly distributed across districts. Regarding maternal age, 14.1% of mothers with PTB were ≥ 35 years compared to 11.7% with full-term births (FTB). The majority of mothers were aged 20–34 years (78.6% PTB vs. 82.6% FTB), while younger mothers (< 20 years) accounted for 7.3% of PTB and 5.6% of FTB.

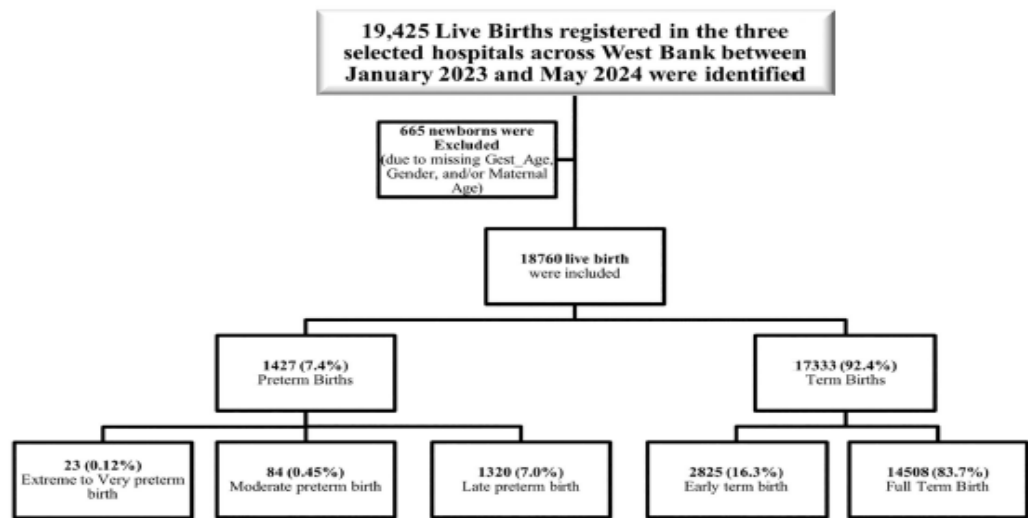


FIGURE 1 | Flowchart of the study population: distribution of term and preterm infants. Note: preterm birth (PTB) is defined as birth before 37 completed weeks of gestation and is categorised as extremely preterm (< 28 weeks), very preterm ($28 - < 32$ weeks) and moderate to late preterm ($32 - < 37$ weeks) [1]. Full-term birth (FTB) is $39 + 0$ to $40 + 6$ weeks, and early term birth (ETB) is $37 + 0$ to $38 + 6$ weeks [9].

In terms of maternal occupation, most were unemployed (91.5% PTB vs. 94.4% FTB), while smaller proportions were employed in government (3.6% PTB vs. 2.6% FTB) or nongovernmental jobs (4.9% PTB vs. 3.0% FTB). Preterm infants were more likely to have very low birth weight (<1500 g; 30.6% vs. 5.8%) or low birth weight (1500–2499 g; 68.9% vs. 91.7%) compared to full-term infants. Multiple births were also more frequent among PTB (22.9%) than FTB (4.1%). Antenatal care attendance was similar across groups; however, a smaller proportion of mothers with PTB had <8 visits (24.5% vs. 31.9%) (Table 1).

3.3 | Risk Factors of Preterm Delivery

Multivariable logistic regression identified several additional statistically significant risk factors for preterm delivery (Table 2). Mothers younger than 20 years had a 53% increased risk of preterm delivery compared with mothers aged 20–34 years (aOR 1.53), while maternal age ≥35 years was associated with a 32% increase in risk (aOR 1.32). Male infants demonstrated a slightly higher risk than female infants (aOR 1.16). Multiple pregnancy was strongly associated with PTB, with twins exhibiting nearly

fivefold higher risk (aOR 4.98) and triplets more than seventeenfold higher risk (aOR 17.28) compared with singletons. Fewer than seven prenatal visits were not significantly associated with PTB (aOR 1.12, $p=0.12$).

Regional variation was apparent, with the central hospital (Ramallah) showing markedly higher odds of preterm delivery (aOR 23.5) and the southern hospital (Hebron) also demonstrating elevated risk (aOR 5.62), compared with the northern hospital (Jenin). Birth weight was not included as a predictor in the multivariable model because it is an outcome of PTM rather than an antecedent risk factor.

4 | Discussion

This study estimated the incidence of PTB and identified associated risk factors among Palestinian mothers in the West Bank using hospital-based data from three major governmental facilities. As these hospitals capture only a portion of regional deliveries, the findings reflect institutional-level patterns rather than population-wide estimates. Nevertheless, they provide valuable evidence from a context where robust national data remain limited.

TABLE 1 | Characteristics of the study population according to gestational age groups: Demographic, foetal and obstetric variables comparing preterm and full-term births.

Variable	Category	Preterm births ($n=1427$) n (%)	Full-term births ($n=17814$) n (%)	p
Maternal age	<20y	104 (7.3)	1006 (5.6)	0.001
	20–34y	1122 (78.6)	14 718 (82.6)	
	>35y	201 (14.1)	2090 (11.7)	
Mother occupation	Government	52 (3.6)	469 (2.6)	0.001
	Nongovernment	70 (4.9)	531 (3)	
	Unemployed	1305 (91.5)	16 814 (94.4)	
Baby weight	Very low (<1500 g)	436 (30.6)	1025 (5.8)	0.001
	Low (1500–2499 g)	983 (68.9)	16 333 (91.8)	
	Normal (2500–3999 g)	8 (0.6)	455 (2.6)	
Baby sex	Female	658 (46.1)	8708 (48.9)	0.1254
	Male	769 (53.9)	9105 (51.1)	
Birth type	Single	1100 (77.1)	17 100 (96)	0.001
	Twins	313 (21.9)	704 (4)	
	Multiple ≥3	14 (1)	10 (0.1)	
Hospital region	Jenin district 'North'	71 (5)	7073 (39.7)	0.001
	Ramallah district 'Central'	1087 (76.2)	5321 (29.9)	
	Hebron district 'South'	269 (18.9)	5420 (30.4)	
Antenatal Follow-up	Yes	1427 (100)	17 788 (99.9)	0.301
	No	0 (0)	25 (0.1)	
Number of ANC visits	>8	1077 (75.5)	12 123 (68.1)	0.001
	<8	350 (24.5)	5691 (31.9)	

Abbreviations: ANC, antenatal care; FTB, full-term birth; n , number; (%), percentage; PTB, preterm birth.

TABLE 2 | Multivariable logistic regression analyses of the risk factors associated with preterm babies.

Category	Subgroup	Adjusted odds ratio aOR (95% CI)	p
Maternal age	<20y	1.53 (1.21–1.93)	0.001
	20–34y	1.00 (ref)	—
	>35y	1.32 (1.11–1.57)	0.01
Mother occupation	Government	1.00 (ref)	—
	Nongovernment	1.06 (0.77–1.47)	0.91
	Unemployed	1.31 (0.8–2.12)	0.45
Baby sex	Female	1.00 (ref)	—
	Male	1.16 (1.03–1.31)	0.05
Birth type	Single	1.00 (ref)	—
	Twins	4.98 (4.16–5.97)	0.001
	Multiple ≥ 3	17.28 (6.54–45.65)	0.001
Pregnancy care visits	> 8	1.00 (ref)	—
	< 8	1.12 (0.87–1.44)	0.12
Hospital region	Jenin district 'North'	1.00 (ref)	—
	Ramallah district 'Central'	23.5 (14.64–37.74)	0.001
	Hebron district 'South'	5.62 (2.76–11.44)	<0.001

Abbreviations: aOR, adjusted odds ratio; CI, confidence interval; Ref, referent.

The observed PTB incidence of 7.6% aligns with rates reported in several high-income countries, such as Finland, Sweden and New Zealand [10], but remains below the estimated 13.2% for the occupied Palestinian territory (oPt) in 2010 and 2020 [11]. While informative, these results should not be interpreted as representative of the entire West Bank. Data were retrospectively collected from a subset of governmental hospitals and may not include births in private, rural or NGO facilities, which together account for a substantial proportion of deliveries.

The unexpectedly low PTB rate contrasts with the well-documented socioeconomic and health system challenges in the West Bank, including restricted movement, fragmented health services and prolonged political instability. Geographic heterogeneity likely contributes to this difference, as national PTB estimates for the oPt encompass both the West Bank and Gaza. The Gaza Strip faces severe socioeconomic hardship, barriers to healthcare access and an ongoing humanitarian crisis, all of which have been associated with increased PTB risk and rising PMBs in recent years [12, 13].

Data quality within the Avicenna HIS may also influence these findings. Although HIS has been implemented across most governmental hospitals, evaluations highlight persistent technological, organisational and human-resource barriers that compromise data completeness and accuracy [14, 15]. Inconsistent documentation, fragmented data entry practices and limited staff training may have resulted in underreporting or misclassification, potentially underestimating the true PTB rate. Consequently, these findings should be interpreted as indicative rather than definitive estimates of PTB in the West Bank.

These observations emphasise the urgent need to assess the reliability, completeness and interoperability of routine HIS data in Palestine and to establish a comprehensive, population-based perinatal registry. Such a system would enhance the precision of national maternal and newborn health statistics and support equitable health policy planning. Despite the limitations of institutional data, hospital-based analyses remain essential for identifying information gaps and advocating for improved data governance. Strengthening HIS infrastructure and ensuring standardised, accurate and timely data entry are critical for evidence-informed decision-making, particularly in conflict-affected settings where routine reporting is often fragmented.

Consistent with global evidence, the risk of PTB was significantly higher among both younger mothers (<20years) and older mothers (≥35years), aligning with established biological and obstetric vulnerabilities at the extremes of reproductive age [16, 17]. The majority of mothers in this cohort were aged 20–34years, representing the lowest-risk age group, and all reported receiving antenatal care (ANC). Notably, 75.5% of PTB cases occurred among women who had attended at least eight ANC visits, meeting the World Health Organisation's recommended minimum for positive pregnancy outcomes [18]. Although high ANC coverage is encouraging, this finding underscores that the quality, timeliness and continuity of ANC, rather than visit frequency alone, remain critical determinants of maternal and neonatal health in the study setting.

Unemployment was prevalent among both PTB and full-term groups (91.5% and 94.4% respectively), reflecting broader structural economic challenges and the reliance on public hospitals for affordable care. Employment may facilitate healthcare

access, but certain working conditions, such as long hours, prolonged standing and shift work, have been associated with increased PTB risk [19]. Conversely, unemployment and social vulnerability can also heighten PTB risk through stress and limited resources [20]. This duality underscores the complex interplay between socioeconomic status, employment and reproductive health outcomes.

Marked regional disparities were evident among the study hospitals. The central hospital accounted for the highest proportion of PTBs (76.2%) and demonstrated an adjusted odds ratio of 2.35 compared with the southern hospital. This pattern likely reflects referral bias, as the central hospital functions as a major tertiary referral centre and offers more advanced neonatal intensive care services. Consequently, these differences appear to be driven predominantly by the organisation of the healthcare system and referral pathways rather than by true population-level variations in PTB risk.

In line with previous evidence, very low birth weight (<1500 g) was a strong predictor of PTB, while normal birth weight was protective [21–24]. Male infants exhibited slightly higher odds of PTB, consistent with global findings [25], likely due to greater intrauterine vulnerability to stress. Multiple pregnancies carried a markedly higher risk, with twins showing nearly fivefold and higher-order multiples 17-fold greater odds of PTB compared to singletons [26]. These associations highlight the need for targeted monitoring and specialised obstetric care for high-risk pregnancies.

While the identified determinants align with global patterns, their relative distribution in this context provides nuanced insight into the interplay of biological, social and system-level factors within a politically and economically constrained environment. Given the limited representativeness of hospital-based data, these findings should be interpreted as an important step towards establishing more comprehensive national surveillance. Strengthening data quality within the HIS and expanding population-based perinatal surveillance across all hospitals and birthing facilities are essential to producing representative and reliable evidence. Such efforts are crucial for informing equitable maternal and newborn health policies and for advancing national progress towards achieving Sustainable Development Goal 3.2.

5 | Strengths and Limitations

This study represents one of the first multicentre assessments of preterm and early term births in the West Bank, utilising routinely collected data from 18 760 live births across three governmental hospitals. Its large sample size and standardised data extraction processes support meaningful internal comparisons and enable identification of maternal and obstetric risk patterns.

However, several limitations warrant consideration. First, the findings are not representative of all births in the West Bank. The analysis was restricted to selected governmental hospitals, excluding private, NGO and rural facilities, many of which continue to rely on paper-based documentation. Second, data

incompleteness presented challenges; 665 births were excluded due to missing information, introducing the possibility of selection bias. The hospital-based design also limits the generalisability of the findings, particularly to Gaza, where healthcare access, socioeconomic conditions and obstetric practices differ significantly.

Additionally, the unexpectedly low PTB rate observed in this study may reflect underreporting or misclassification within the Avicenna HIS. Previous evaluations have identified inconsistencies in data entry, limited staff training and variable adherence to documentation standards, all of which may have contributed to an underestimation of the true PTB incidence. Moreover, several potentially important confounders, such as maternal nutrition, psychosocial stress, infection or fertility treatments, were not available in the dataset, limiting causal inference.

Despite these limitations, this study provides valuable institutional-level insights into PTB determinants and highlights critical gaps in data quality and coverage. These findings underscore the urgent need to strengthen HIS accuracy, completeness and interoperability and to develop a comprehensive, population-based perinatal registry capable of supporting reliable and representative monitoring of maternal and newborn health outcomes in Palestine.

6 | Conclusion

This multicentre, hospital-based cohort study provides foundational evidence on the incidence and determinants of PTB in the West Bank, Palestine, while also emphasising persistent challenges related to data completeness and representativeness within national health information systems. The observed PTB incidence of 7.6%, although lower than previous national estimates, should be interpreted cautiously in light of limited facility coverage and the potential for underreporting within the Avicenna HIS. Consistent with global literature, higher PTB risk was observed among younger mothers (<20 years), older mothers (≥35 years), multiple pregnancies and male infants. The concentration of PTB cases in Ramallah likely reflects referral patterns and the availability of tertiary-level neonatal care rather than true geographic variation. Despite high antenatal care utilisation, the findings indicate potential gaps in care quality and timeliness that merit further investigation.

Although not representative of all births in the West Bank, this study provides the most comprehensive hospital-based dataset currently available and offers important insight into the interplay of maternal, clinical and system-level factors influencing PTB in a politically and economically constrained setting. Strengthening the national HIS, improving data accuracy and establishing a comprehensive population-based perinatal registry are essential to generating reliable, representative evidence that can inform maternal and newborn health policy. Transparent and systematic use of routine hospital data, combined with continuous data quality assurance, can lay the foundation for robust surveillance systems and accelerate progress towards achieving Sustainable Development Goal 3.2 on reducing neonatal mortality in Palestine and other conflict-affected contexts.

Author Contributions

Amant Salem Ahmad Salim: conceptualisation, data curation, formal analysis, investigation, methodology, writing – original and draft preparation. Prof. Dr Ewa-Lena Bratt: supervision, data curation, investigation, methodology, writing – review and editing. Dr Kawther Elissa: supervision, conceptualisation, methodology, writing, review and editing.

Acknowledgements

The authors thank Dr Rand Salman, Director of the National Palestinian Public Health, for her invaluable assistance in obtaining data from the Avicenna Health Information System. We also extend our gratitude to Mr Sharif E. Qaddomi, Health Research Director at the National Palestinian Public Health, for his guidance and support throughout this study.

Funding

The authors have nothing to report.

Disclosure

AI: The authors used AI-assisted tools exclusively to enhance language, grammar and readability. No generative AI was employed in study design, data collection, analysis, interpretation or the writing of scientific content.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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معدل الانتشار، والخصائص، والرحلات الأمومية: دراسة الولادات المبكرة في الضفة الغربية،
فلسطين

اعداد: أماني سليم أحمد سليم

إشراف: أ.د. إيفا-لينا برات

د. كوثر العيسة

الملخص

الخلفية: تُعد الولادة المبكرة سبباً رئيسياً للمرض والوفيات بين حديثي الولادة عالمياً. في الضفة الغربية، فلسطين، توجد أدلة محدودة على معدل الولادة المبكرة، عوامل الخطر، وتجارب الأمهات. **الهدف:** تهدف الدراسة إلى تحديد معدل الانتشار، عوامل الخطر، النتائج التوليدية، واستكشاف تجارب الأمهات في رعاية الأطفال الخدج في وحدات العناية المركزة لحديثي الولادة. (NICUs) **المنهجية:** اعتمدت الدراسة نهجاً متعدد الطرق شمل ثلاث دراسات:

دراسة رصدية: على 18,760 ولادة حية (يناير 2023-مايو 2024) لتقييم معدل الولادة المبكرة وعوامل الخطر

دراسة مقطعية: على 1,235 أمًا (أبريل-أغسطس 2025) لدراسة معدل الانتشار، خصائص الأمهات، والنتائج التوليدية

18 أمًا لاستكشاف تجارب رعاية الأطفال الخدج دراسة نوعية : استخدمت التحليلات الكمية الإحصاءات الوصفية والانحدار اللوجستي متعدد المتغيرات، بينما حللت البيانات النوعية باستخدام تحليل المحتوى.

الدراسة الرصدية: وُلد 1,427 طفلاً مبكراً (7.6%)، معظمهم متوسطة إلى متأخرة (7.0%). ارتفعت المخاطر لدى الأمهات <20 سنة (aOR 1.53) أو ≤35 سنة (aOR 1.32)، الذكور (aOR 1.16)، والحمل المتعدد. توأم (aOR 4.98)؛ ثلاثة أو أكثر. (aOR 17.28) سجلت رام الله أعلى معدل (aOR 23.5)

الدراسة المقطعية: بلغ معدل الولادة المبكرة 14.1%، منها 75.3% متوسطة إلى متأخرة، 16.1% جدًا مبكرة، و8.6% شديدة المبكرة. ارتبطت الولادة المبكرة بعوامل مثل: عمر الأم 19-34 سنة،

حجم الأسرة <3 أفراد، تاريخ ولادة ممتدة (aOR 9.84) ، الحمل بمساعدة طبية (aOR 2.18) ، فاصل قصير بين الحملين <6 أشهر (aOR 1.89) ، الأمراض المزمنة (aOR 3.50) ، تمزق الأغشية المبكر >18 ساعة (aOR 3.00) ، تسمم الحمل (aOR 3.33) ، النزيف قبل الولادة (aOR 2.93) ، تشوهات المشيمة (aOR 5.97) ، تاريخ الإجهاض (aOR 3.55) ، وولادة قيصرية سابقة واحدة. (aOR 1.90) الولادات الأولى كانت أقل عرضة (aOR 0.42) ، والوصول الآمن للرعاية وقائيًا. (aOR 0.67) كان الأطفال الخدج أكثر عرضة لدخول قسم الخدج. (19% مقابل 8.5%) وانخفاض الوزن عند الولادة (43.7% مقابل 7.6%)

أبرزت موضوعًا شاملاً الدراسة النوعية: العيش بين الخوف والأمل مع الصراع من أجل الهوية الأمومية، مع أربع موضوعات رئيسية:

الدخول إلى الأمومة عبر اضطراب عاطفي والشعور بالتهديد.

تعطّل وإعادة بناء الدور الأمومي

التنقل بين الدعم والضغط مع مقدمي الرعاية الصحية

تحويل الهوية الأمومية عبر إيجاد المعنى والقوة

واجهت الأمهات في البداية القلق واضطراب الهوية، والذي تطور لاحقًا إلى كفاءة أمومية وقدرة تكيفية عبر الرعاية، الدعم المهني والعائلي، والمعنى الروحي.

الخاتمة:

الولادة المبكرة في الضفة الغربية تتأثر بعوامل أمومية، ولادية، وأسرية، وترتبط بنتائج ولادية سلبية. تواجه الأمهات تحديات عاطفية وهوية كبيرة، لكن يمكن تطوير المرونة عبر الدعم والمشاركة في الرعاية. توصي النتائج بتدخلات صحية مستهدفة وأنظمة دعم حساسة ثقافيًا في وحدات الخدج.

الكلمات المفتاحية:

الولادة المبكرة، معدل الانتشار، العوامل المحددة، النتائج التوليدية، تجارب الأمهات، الضفة الغربية، فلسطين.