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**Assessment of Mothers' Knowledge Regarding Care of
their Premature Babies in the Gaza Strip, Palestine**

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their Premature Babies in the Gaza Strip, Palestine**

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Thesis Approval

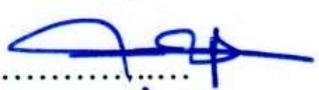
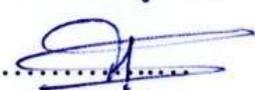
Assessment of Mothers' Knowledge Regarding Care of their Premature Babies in the Gaza Strip, Palestine

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Dedication

To my father..... To my mother....

Shrooq, my wife...

My brothers (Saed and Abedalla)...

Tasneem, Israa, Aya, Matab, Maab, and Dania, my sisters...

I dedicate this work to all of them and to my family in appreciation of their constant support throughout all stages of my life, including the master's program.

Mohammed Hamza Mohammed Abdeljawad

Declaration

I certify that this thesis submitted for the degree of Master is the result of my own research, except where otherwise acknowledged, and that this thesis (or any of its parts) has not been submitted for a higher degree to any other university or institution.

Signed: 

Mohammed Hamza Mohammed Abdeljawad

Date: 21/3/2023

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With my best regards

Mohammed Hamza Mohammed Abdeljawad

Abstract

Good knowledge of mothers about essential neonatal care is the key step in a child health program, especially in premature children. The study aimed to assess the mothers' knowledge regarding the care of their premature babies in the Gaza Strip, Palestine. A descriptive cross-sectional design was used, and mothers who delivered premature infants admitted to the neonatal departments of Al-Shifa medical complex, Al-Aqsa Hospital, Nasser Hospital, and Emirati Hospital were targeted to fill out a questionnaire. Epi info program was used to calculate the study sample at a 95% confidence interval which revealed a sample of 172 and a consecutive sampling was used to recruit infants and their mothers. A proportionate sample of each hospital was selected considering the inclusion criteria of mothers who delivered a premature baby admitted to one of the selected hospitals. A pilot study was conducted on 10% of the sample size which was included in the final analysis. Ethical considerations were considered thought the study period and SPSS program version 25 was used to analyze the data. One hundred and seventy mothers who had a preterm baby filled out the questionnaires with a response rate of 98.8%. The mean age of the mothers has preterm birth children is 28.8 years with the greatest (36.5%) in the age group (> 30 years). Although, the majority of mothers and their husbands hold a bachelor's degree or higher (51.2% and 60%, respectively). Most of the mothers are housewives, and 78.2% of their husbands work or are employed. In addition, 77.6% of the families have incomes less than 1973 New Israel Shekel (NIS). The dominant maternal risk factors include pregnancy-induced hypertension (45.3%), previous Cesarean Section (62.4%), and Twins (14.1%). The mean number of antenatal care (ANC) visits is 5 visits, 28.2% of mothers received a special ANC follow-up related to the care of premature children. Only 30% of mothers received information related to the care of premature during pregnancy, however, 83% of mothers received it after delivery. 40.4% of mothers perceived the information they received as adequate. The level of mothers' knowledge about the care of their premature babies is 63.8 and the percentages of poor, good, and excellent categories are 34.7%, 18.2%, and 47.1% respectively. The study showed a positive correlation between the level of all mothers' knowledge domains (thermoregulation, feeding, phototherapy, and infection and skin care) as all p- values < 0.05. Also, the study found four factors affecting the mothers' knowledge about the care of their premature babies; receiving a special ANC related to the care of a premature baby (chi=7.2, P- value=0.008), source of information as mass media (chi=5.067, p- value= 0.024), receive information related to the care of premature after delivery (chi= 9.42, p- value= 0.002), and perceive information received as adequate (chi=9.27, p- value= 0.010). However, the finding of the multivariate analysis shows that receiving a special ANC is the only variable that predicts mothers' knowledge about the care of their premature baby (p- value= 0.038). The study suggests that there is still a considerable gap in the knowledge of respondents when it comes to the care of their premature babies. This means that there is an opportunity for improvement in educating mothers about the proper care and needs of their premature babies. The study emphasizes the significance of education programs that can help in enhancing maternal knowledge about caring for premature babies.

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List of abbreviations

ACOG	American College of Obstetricians and Gynecologists
ANC	Antenatal Care
CDC	Centers for Disease Control and Prevention
CS	Cesarean Section
MoH	Ministry of Health
NGOs	Nongovernmental organizations
NICU	Neonatal Intensive Care Unit
NIS	New Israel Shekel
PCBS	Palestinian Central Bureau of Statistics
PHC	Primary Health Care
PIH	Pregnancy Induced Hypertension
PROM	Premature Rupture of Membranes
RDS	Respiratory Distress Syndrome
ROP	Retinopathy of prematurity
SD	Standard Deviation
SPSS	Statistical Package for Social Sciences
UNICEF	United Nations Children's Fund
UNRWA	United Nation Relief and Work Agency for Palestine Refugees
WHO	World Health Organization

Chapter One

Introduction

1.1 Background

Newborn babies undergo a physiological change at birth, moving from an environment that provides them with everything from feeding and breathing through the umbilical cord to a new environment that requires them to adapt to this new situation at this particular stage, the child needs special care from caregivers, parents and especially the mother (Emmanouilides et al., 2019).

The World Health Organization (WHO) defines premature birth as “*a baby born before 37 completed weeks of pregnancy*” (WHO, 2022 a). In 2016, preterm birth complications were the primary cause of death in children under five years old worldwide, responsible for around 16% of all deaths and 35% of deaths among infants (Hug et al., 2017). Infants born prematurely who survive face higher risks of both short-term and long-term health problems. Among the most frequent complications associated with preterm birth are respiratory distress syndrome (RDS), bronchopulmonary dysplasia, necrotizing enterocolitis, sepsis, periventricular leukomalacia, seizures, intraventricular hemorrhage, cerebral palsy, infections, feeding difficulties, hypoxic-ischemic encephalopathy, and visual and auditory impairments (Koteswari et al., 2022; Gilard et al., 2020; Ramenghi, 2015; Van Dommelen et al., 2015). Premature infants are approximately 20 times more likely to die than heavier babies, and they contribute to a range of poor health outcomes (Hughes et al., 2017).

The increased risk of developing health complications is one of the primary challenges of caring for preterm infants. Preterm infants often have difficulty feeding due to their underdeveloped gastrointestinal systems and immature sucking and swallowing reflexes.

They may require specialized feeding tubes, parenteral nutrition, or breast milk fortifiers to meet their nutritional needs (Kumar et al., 2017). Preterm birth often comes with unexpected medical expenses, prolonged hospital stays, and long-term disability or medical needs. Families may experience significant stress, anxiety, and emotional upheaval as they navigate the complex healthcare system and care for their fragile newborns (Stoll et al., 2015).

Educating mothers to create awareness about essential neonatal care is the key step in a child health program (Memon et al., 2019). It is recommended to conduct educational and support programs for parents with preterm infants admitted to the Neonatal Intensive Care Unit (NICU) so that they are empowered to collaborate with healthcare providers in caring for their infants (Maleki et al., 2022).

In 2020, the number of premature babies admitted to intensive care in hospitals located in the Gaza Strip reached a concerning level of 1865, as reported by the Palestinian Ministry of Health (MoH, 2020 a). The limited availability of resources and healthcare facilities in developing countries, including the Gaza Strip, heightens the risks of complications and fatalities for preterm infants. This situation necessitates the need for a comprehensive understanding of the knowledge level of mothers regarding the care of their premature babies in the Gaza Strip, Palestine. Therefore, the present study aimed to assess the mothers' awareness regarding the care of their preterm infants in this region.

1.2 Problem Statement

Caring for a premature baby can be a challenging and stressful experience for mothers, particularly in the context of limited healthcare resources and support. Premature infants often require specialized feeding, monitoring, and medical interventions to address the risks of complications and developmental delays. Mothers of preterm infants may experience emotional distress and anxiety, compounded by concerns about their baby's health and

wellbeing. It is essential to provide comprehensive education and support programs to equip mothers with the knowledge and skills needed to provide optimal care for their premature babies (Dalal et al., 2019). Research has shown that maternal knowledge and understanding of neonatal care are strongly associated with improved outcomes for preterm infants, including reduced risks of mortality, morbidity, and developmental delays (Maleki et al., 2022; Memon et al., 2019). Therefore, addressing the challenges faced by mothers and promoting maternal knowledge and understanding of neonatal care is critical to improving outcomes for premature infants and their families.

Therefore, the present study aims to investigate the level of maternal knowledge and understanding of the care required for premature babies in the Gaza Strip and to identify the gaps in understanding and factors influencing maternal knowledge, including sociodemographic factors, obstetrical factors, antenatal care (ANC) visits, previous experience with premature babies, and sources of information

1.3 Justification of the Study

Premature birth is a major public health concern worldwide, and the incidence of premature birth is on the rise in many countries, including the Gaza Strip. The survival of premature babies largely depends on the quality of care they receive, and their growth and development can be affected by their early experiences. Maternal knowledge regarding the care of premature babies is crucial to ensure their optimal health and well-being. However, there is a lack of research on the extent of maternal knowledge regarding premature baby care in the Gaza Strip. Therefore, this study is necessary to provide insights into the level of knowledge among mothers of premature babies in the Gaza Strip, and to identify potential gaps in knowledge that need to be addressed to improve the quality of care for premature babies. The results of this study can inform the development of educational programs and

interventions to enhance maternal knowledge and improve the health outcomes of premature babies. Ultimately, this research will contribute to reducing the burden of morbidity and mortality among premature babies in the Gaza Strip, and may have implications for other low-resource settings facing similar challenges.

1.4 Study objectives

1.4.1 General objective

The overall aim of this study is to assess the mothers' knowledge regarding the care of their premature babies in the Gaza Strip, Palestine.

1.4.2 Research Objectives

1. To assess the level of knowledge of mothers regarding the care of their premature babies in the Gaza Strip, Palestine.
2. To investigate the association between the level of mothers' knowledge regarding the care of their premature babies and the socio-demographic variables of mothers.
3. To determine the association between the level of mothers' knowledge regarding the care of their premature babies and maternal health services variables of mothers.
4. To assess the association between the level of mothers' knowledge regarding the care of their premature babies and the source of information variables of mothers.
5. To predict factors that affect mothers' knowledge about the care of their premature babies.

1.5 Research Questions

- What is the level of mothers' knowledge regarding the care of their premature babies in the Gaza strip?
- Is there a relationship between mothers' knowledge regarding the care of their premature babies and some selected socio-demographic variables such as age,

educational status, occupation, history of having premature neonate, type of family, birth order of the child, the total number of living children in the family, place of residence, monthly income, and source of information on the care of premature babies?

- What is the relationship between the level of mothers' knowledge regarding the care of their premature babies and maternal health services variables of mothers?
- Are there associations between the level of mothers' knowledge regarding the care of their premature babies and the source of information variables of mothers?

1.6 Operational definitions of terms

1.6.1 Knowledge regarding the care

Refers to the assessment of the mother's understanding of care components of premature, which includes exclusive breastfeeding, thermoregulation, skincare, cord care, and prevention of infection, it will be operationally measured by questionnaire and its levels will be poor, good, and excellent knowledge.

1.6.2 Premature babies

This refers to babies born alive before 37 weeks of pregnancy are completed

1.6.3 Maternal health services

These services contain ANC follow-up and counseling ANC. Provided to mothers who are pregnant, and aims to improve the mother's health care and its impact on her physical health, which affects her and her fetus' health and physical well-being.

1.6.4 Socio-demographic variables

Refers to age, educational status, occupation, history of having premature neonate, type of family, birth order of the child, the total number of living children in the family, place of residence, monthly income, and source of information on the care of premature babies.

1.7 Context of the study

1.7.1 Demographic Context

Palestine occupies an area of 27,000 square kilometers, extending from Ras Al-Nakoura in the north to Rafah in the south (Annex 1). It is divided into three regions: the West Bank (5,655 square kilometers), Gaza Strip (365 square kilometers), and Jerusalem. The Gaza Strip is a narrow land area surrounded by Egypt, the Mediterranean Sea, and the occupied territories in 1948. Over two-thirds of the population in the Gaza Strip are refugees, and it comprises five provinces: North of Gaza, Gaza, Mid-zone, Khan Younis, and Rafah (Annex 2).

The estimated total Palestinian population is 13 million, with around 5 million living in Palestine. The male-to-female ratio is 102.8:100. The population density is 868 individuals per square kilometer in the mid-2021 (551 in the West Bank and 5,773 in the Gaza Strip) as reported by the Palestinian Central Bureau of Statistics (PCBS, 2021).

The natural increase rate in Palestine is 2.4, with rates of 2.2 in the West Bank and 2.8 in the Gaza Strip (MoH, 2022). The average household size is 5.1, with 4.7 in the West Bank and 5.7 in the Gaza Strip. The crude birth rate is estimated at 21.9 live births per 1000 population and the crude death rate is estimated at 3.3 deaths per 1000 population. The fertility rate is 2.82 for each woman of reproductive age, and the life expectancy is 76.6 years for males and 81.5 years for females (PCBS, 2021).

1.7.2 Health care system

The Palestinian Health Care System consists of the MoH, United Nation Relief and Work Agency for Palestine Refugees (UNRWA), Nongovernmental organizations (NGOs), and the non-profit private sector. The MoH is the main provider and manages 27 hospitals (14 in the West Bank and 13 in the Gaza Strip) and 444 Primary Health Care (PHC) centers.

UNRWA also operates 140 PHC centers (Health program, UNRWA, 2021). Despite facing various obstacles, the MoH collaborates with the international community and the UN, specifically the WHO, to maintain the Palestinian health system and achieve positive health outcomes. The MoH also provides school health, health education, and human resources development, and refers patients to non-governmental institutions for specialized services. Between 1994 and 2020, the MoH increased the number of PHC centers by 134% (MoH, 2020 b). Hospital services are offered by the government and NGOs, with infrastructure, technical, and support services continually improving over the years. In 2020, Palestine had a total of 87 hospitals, with 53 in the West Bank, and a total of 6,552 hospital beds at a rate of 12.8 beds per 10,000 people. The MoH manages 28 hospitals with a bed capacity of 3,590, representing 54.8% of all beds in Palestine. The Gaza Strip government facilities had 997 physicians and experts, according to the MoH annual report (MoH, 2020 b).

Chapter Two

Conceptual framework and Literature Review

2.1 Conceptual Framework

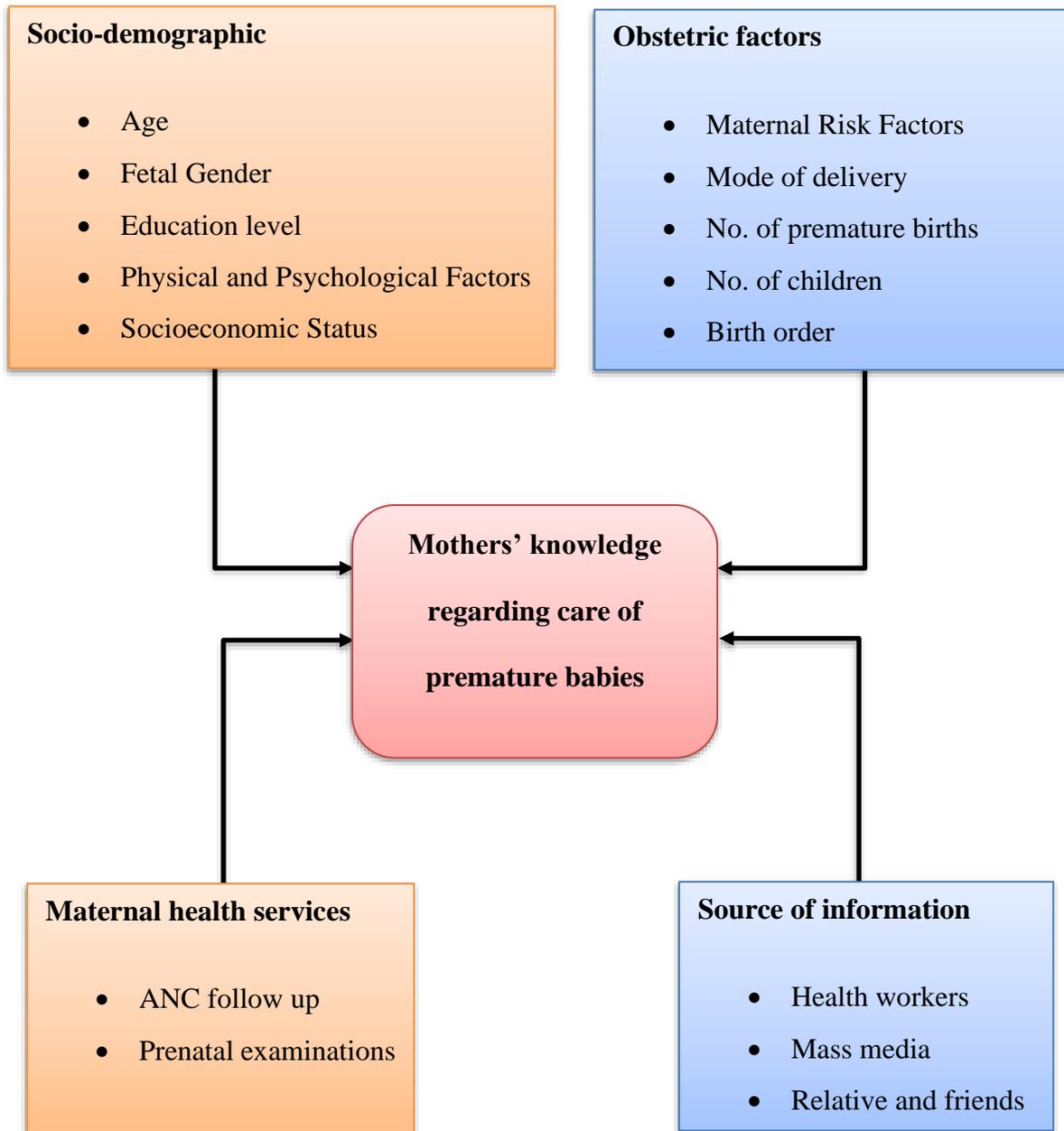


Figure (2.1): Conceptual Framework (self-developed)

Figure (2.1) shows the conceptual framework developed by the researcher after reviewing many related pieces of literature. The framework depicts the sociodemographic

characteristics, obstetric factors, maternal health services, and the availability of diverse information sources as independent variables that may affect the mothers' knowledge of how to care for their preterm newborns as a dependent variable. The mother's age is one of the socio-demographic factors that was found to have a direct impact on the mothers' knowledge of how to care for premature babies. It is possible to hypothesize that as mothers get older, their level of knowledge about maintaining care for premature babies grows as well. The amount of knowledge was also shown to be influenced by education level, as one may anticipate that the more educated the mother, the more knowledgeable she will be about caring for her preterm infant. Furthermore, a significant element affecting mothers' general well-being is their socioeconomic situation since those with higher living standards are anticipated to know more about caring for preterm babies.

Several past obstetric history factors have various relationships with the mothers' level of knowledge. These variables include prior preterm births, the number of children, the delivery method, and the birth order because higher birth orders are thought to increase mothers' knowledge. The maternal health services, which were reflected in ANC follow-ups and regular checkups, were also included in this figure as a significant predictor of the mothers' knowledge of preterm baby care. Adequate ANC, represented by a minimum of eight antenatal visits spread out throughout the pregnancy, starting before the 12-week mark, will ensure that pregnant mothers have more contact with the healthcare professionals who are expected to be the main sources of information and the carriers of health education messages for mothers, and this ultimately will produce a higher level of knowledge of premature babies' care.

2.2 Literature Review

2.2.1 Definition

Prematurity is defined by the WHO as delivery occurred before the entire 37 weeks of gestation, and it might fall into one of the following categories: Extremely preterm births are those that occur before 28 weeks of pregnancy; very preterm births occur between 28 and 32 weeks of pregnancy; and moderately preterm births occur between 32 and 36 weeks of pregnancy (WHO, 2018).

2.2.2 Risk factors of Premature delivery

The American College of Obstetricians and Gynecologists (ACOG) has identified several risk factors for preterm birth, such as a history of preterm birth, a short cervix, previous cervix procedures, carrying multiple fetuses, bleeding from the vagina during pregnancy, pregnancy-related infections, being underweight before becoming pregnant, smoking, nutritional deficiencies, and being older than 35 or younger than 17 years old (ACOG, 2022).

Esposito et al. (2022) reported that maternal age has been indicated to be independently linked to premature birth, even after controlling for possible confounders. Preterm births were more likely in both younger and older mothers. The risk rose with maternal age, being around two times greater for mothers over 40 compared to mothers between 25 and 29 years old.

Multiple pregnancies are also thought to raise the likelihood of premature delivery. The greatest risk factor for premature labor in twins is a small cervical length, with a previous history of preterm delivery, past cervical surgery, and the method of conception are other possible risk factors. Additionally, the greater frequency of preterm labor in twins is caused by several circumstances, including fetal abnormalities unique to multiple pregnancies, as well as maternal conditions such as gestational diabetes mellitus and preeclampsia. Other

possible reasons include cervical incompetency, intrauterine infection, and uterine overdistension (Roman et al., 2022).

Tobacco use during pregnancy has been associated with preterm delivery, stillbirth, and neonatal death, as well as miscarriage, fetal growth restriction, and newborn morbidity. Maternal smoking throughout the three months previous to conception and during the initial trimester of pregnancy was linked to an elevated risk of preterm delivery as compared to nonsmokers. If maternal smoking persisted during the second trimester, the risk worsened. Even if their smoking levels were modest and they stopped early in pregnancy, mothers who quit cigarettes during pregnancy still had a higher chance of giving birth prematurely (Stock & Bauld, 2020).

Preterm birth rates also differ among various racial and ethnic groups. According to the National Vital Statistics Reports of the Centers for Disease Control and Prevention (CDC), preterm birth rates in 2016 for racial and Hispanic origin groups varied from around 13.77% among births to non-Hispanic black mothers to 8.63% among births to non-Hispanic Asian mothers (Martin et al., 2018). In the same line with this finding, Keiser et al. (2019) in their study showed that black mothers with college degrees had greater premature birth rates than white mothers with college degrees, even though the risk of preterm delivery decreases as maternal education and income levels rise. It is still unclear why there are such racial and ethnic variations.

Dolatian et al. (2018) in their longitudinal study to assess factors related to preterm delivery concluded that food insecurity, stressful pregnancy, and ANC were among the intermediate variables that significantly impacted premature labor. In terms of numbers, the prevalence estimates of preterm birth were nearly 2, 9, and 13 times greater in situations of food

insecurity, stressed pregnancy, and poor ANC than they were in cases of food security, stress-free pregnancies, and sufficient prenatal care.

In Gaza, the prevalence of preterm birth, and birth abnormalities have considerably increased since 2011. This increase was not supported by changes in recognized co-factors of reproductive health but due to many new risk factors for birth outcomes such as multiple military operations, pollution by teratogens and carcinogens in heavy metals weapon residues, continued poverty, poor waste management (Manduca et al., 2019).

2.2.3 Complications of Premature delivery

It is commonly known that preterm newborns are 2-3 times more likely to experience developmental problems and other long-term effects than their full-term peers. Many areas of development, particularly nutritional needs, intellectual development, and social progress, including bonding and communication, may be impacted in premature babies (Buys & Gerber, 2021). Although not all preterm infants encounter poor health outcomes, giving birth too soon can result in both immediate and long-term health complications. In general, the risk of problems depends on the gestational age at birth. Additionally, birth weight has a significant impact on the prognosis (Mayo Clinic, 2021).

2.2.3.1 Short-term complications of prematurity

- **Respiratory complications**

Premature birth necessitates neonatal enhanced care and is associated with greater respiratory symptoms, reversible airflow obstruction, and atypical chest imaging. In preterm newborns, there is a reduction in alveolar volumes (Pravia & Benny, 2020). A disease known as RDS affects preterm babies and is caused by anatomical immaturity in the lungs that can't produce enough surfactant. In actuality, RDS affects almost all newborns delivered before 28 weeks of pregnancy (Kumaran et al., 2022). Bronchopulmonary dysplasia is another kind

of respiratory illness that occurs in premature infants who are administered oxygen & positive-pressure breathing. The pathophysiology of this disorder is still unclear and complicated, although many variables can harm tiny airways as well as interfere with alveolar septations, which reduces the available surface area for the exchange of gases (Ambalavanan, 2020).

- **Cardiovascular complications**

The most frequent cardiac abnormality among premature infants is patent ductus arteriosus. It is characterized by a fraction of blood that is oxygenated and can flow back from the left heart to the lungs through the pulmonary artery by traveling from the higher-pressure aorta in a situation known as ductus arteriosus failure after birth (Wheeler et al., 2022).

- **Gastrointestinal problems**

Due to their weak digestive tracts, premature newborns are more susceptible to problems like necrotizing enterocolitis. Infants born prematurely are susceptible to this terrible bowel illness. Poor nutrition, bloating, less activity, blood in the stool, bile vomiting, bowel necrosis, multi-organ- organ failure, and even death are possible symptoms (Kaelin et al., 2022).

- **Blood disorders**

After delivery, the hemoglobin concentration falls in all newborns. Erythropoietin concentration decreases as a result of the change from a relatively hypoxic environment in utero to a comparatively hyperoxic one with improved tissue oxygenation after delivery. Therefore, anemia is noticed in term infants 8–12 weeks after birth, and it is generally physiologic and asymptomatic. However, an excessive pathologic reaction of the preterm newborn to this transition is known as anemia of prematurity. The severity of anemia may be exacerbated by nutritional deficits, as well as by loss of blood and a shortened red cell

life span. In many preterm newborns, this condition resolves spontaneously within 3-6 months (Cassady, 2021).

- **Neonatal Jaundice**

In the first week following delivery, clinical jaundice appears in 80% of premature neonates. It is usually a mild, temporary, and self-limiting illness known as physiological jaundice, which goes away on its own without therapy. Free unconjugated bilirubin's adverse effects on the central nervous system are particularly dangerous for preterm newborns. This is partially explained by the relatively lower blood albumin levels, central nervous system immaturity, and coexisting conditions such as necrotizing enterocolitis, sepsis, periventricular leukomalacia, and bronchopulmonary dysplasia (Ansong-Assoku & Ankola, 2018).

Premature newborns with severe jaundice might benefit from exchange transfusions and phototherapy to lower their bilirubin levels. The invention of visible light to be utilized for the treatment of newborns with hyperbilirubinemia—now known as phototherapy—was discovered in 1958. It is a reasonably cheap and non-invasive procedure and this has led to a decrease in the use of exchange transfusions in recent years. Many variables, including the total blood bilirubin level, the infant's gestational age, and any specific risk factors for hyperbilirubinemia, influence the precise total bilirubin in the blood concentration for which phototherapy should be started. There are no evidence-based recommendations available for phototherapy in preterm newborns, however, a frequent practice in the NICU starting phototherapy once the total blood bilirubin level is more than five times the baby's birth weight. As a result, phototherapy is initiated at the bilirubin level of 5 mg/dL in infants weighing 1 kg, 10 mg/dL in infants weighing 2 kg, and so on (Sawyer, 2019).

- **Ophthalmologic complications**

Retinopathy of prematurity (ROP) is an ocular condition that affects premature newborns. These babies typically receive newborns intensive care, where oxygen therapy is applied due to their lungs' immature growth. It is believed to be brought on by the retina's abnormal blood vessel development, which can induce scarring and retinal detachment. ROP might be moderate and cured on its own, but in more severe cases, it can cause blindness. Hence, ROP is a danger for all preterm infants, and extremely low birth weight seems to be an added risk. ROP can be brought on by both relative hypoxia and oxygen toxicity (Vogel et al., 2018).

2.2.3.2 Long-term consequences of prematurity

Premature babies are delivered before major body organ development has been completed because the last trimester of pregnancy is a time of accelerated organ development and growth. Having organs that did not develop properly can have deleterious health impacts on babies of preterm birth. They will be more susceptible to developing long-term problems. For instance, asthma is four times more common in premature newborns, they also have fewer numbers of nephrons and more defective glomeruli, which forces their remaining nephrons to work harder and thus have a higher prevalence of chronic kidney disease. Additionally, prematurity is associated with an increased chance of developing hypertensive disorders and an increased relative risk of ischemic heart disease compared with a full-term birth cohort (Pravia & Benny, 2020).

2.2.4 The burden of Premature births

2.2.4.1 Morbidity and Mortality

Preterm births are estimated at 14.8 million newborns annually, with the majority (81%) occurring among sub-Saharan African and Asian nations. The rates vary significantly between nations, ranging from 5% to 18% of all births. Additionally, preterm

birth accounts for 35% of newborn deaths, making preterm birth the greatest cause of mortality among children under the age of five (WHO, 2022 a). In high-income nations, preterm deliveries make up around 5% of all births and have serious short- and long-term health effects for the baby. It accounts for nearly 900,000 fatalities annually, and thus it is the main cause of neonatal deaths worldwide (Walani, 2020). Preterm birth complications (18%), pneumonia (16%), complications during delivery (12%), diarrhea (8%), and neonatal sepsis (7%) were the top causes of death for children under the age of five in 2016 according to the United Nations Children's Fund (UNICEF, 2017).

Preterm babies typically have higher medical problems and hospital expenses than full-term babies. They are vulnerable to a wide range of detrimental consequences, including severe brain damage, ROP, newborn sepsis, and chronic lung disease. Premature infants are also more prone to experience temperature fluctuations, breathing difficulties, apnea, periventricular leukomalacia, hypoglycemic episodes, seizures, neonatal jaundice, feeding problems, and risks of rehospitalizations than those who give birth at term (Ahmadzadeh et al., 2017).

According to estimates from the Palestinian MoH, 40.1% of newborns admitted to the NICUs in 2020 were premature. In the Gaza strip, there are 14,000 high-risk pregnancies each year, 23% of births are preterm, and every year, 10,000 newborns need to be transferred to NICU facilities for rapid medical attention and early intervention. Prematurity, respiratory infections, and congenital abnormalities accounted for the top three causes of newborn deaths, accounting for 61% of cases (UNICEF, 2019).

2.2.4.2 Global economic burden of premature births

The preterm birth rate in Hamilton County is significantly higher than the national average, which is a chronic issue that not only has an impact on the baby and his or her family but

also has long-lasting economic effects on society. Hamilton County's first hospital expenses for preterm babies are estimated to have surpassed \$98 million annually, in the five years from 2009 to 2013. The majority of these expenses are due to costly measures like neonatal critical care. Although the expense of these births would be less than \$3,400 on average if the infants were delivered at full term, the net additional cost can vary from \$19,600 for moderately and late preterm delivery to \$454,500 for severely preterm birth (Rexhausen et al., 2019).

According to research by Newnham et al. (2021) estimating the economic cost of preterm birth in Australia for children up to the age of 18, preterm birth costs the Australian government almost \$1.4 billion annually for the first 18 years of a child's life. Neonatal care accounts for two-thirds of the expenses, while the requirement for special educational support accounts for another one-quarter. The findings also indicate that a 5% reduction in the national average of preterm birth might result in annual cost reductions of \$71 million.

2.2.4.3 The psychological burden of premature births

Taking care of a preterm newborn is frequently a stressful experience, which puts mothers at an increased risk for mental health issues including anxiety and depression. Mothers with high levels of stress may have trouble bonding with their children, and maternal mental problems can last for a long time after giving birth. Problems with mother-infant interactions or attachment connections can have an impact on the infant's long-term socio-emotional development, increase the likelihood of maternal neglect, and have a negative impact on the development of the baby. Hence, maternal well-being is a crucial component of early childhood intervention activities (Buys & Gerber, 2021).

2.2.5 Prevention of preterm births' adverse outcomes

Starting with a healthy pregnancy, premature birth problems and fatalities can be avoided. The WHO's ANC guidelines outline important measures that can avoid preterm birth, such as counseling on healthy eating, optimal nutrition, and abstinence from drugs and alcohol. They also recommend fetal measurements, including the use of early ultrasound to help to determine gestational age and identify multiple pregnancies, as well as a minimum of eight antenatal throughout pregnancy, beginning before 12 weeks, to recognize and handle risk factors like infections (WHO,2018 b).

In their review of the practiced interventions to prevent preterm labor in mothers with twin pregnancies, Roman et al. (2022) noted prolonged bed rest has been utilized to prevent preterm birth for a very long period. Nonetheless, research has shown that prolonged bed rest may cause serious physiological and psychological harm to the mother. The use of vaginal progestin in mothers with a transvaginal cervical length of less than 2.5 cm decreased neonatal morbidity among all evaluated therapies to reduce or prevent preterm birth in twin pregnancies, additionally, cervical cerclage in mothers with a cervical dilation greater than 1 cm demonstrated a significant reduction in preterm birth at various gestational ages and perinatal mortality.

Premature delivery complications are the leading cause of neonatal and under-five mortality. The WHO revised its guideline on the use of prenatal corticosteroid medication to enhance the results of premature birth. Studies on both animals and people have shown that glucocorticoids, such as dexamethasone or betamethasone, cross the placenta and improve the functional maturity of developing fetal lungs and this can protect preterm neonates from suffering respiratory-related mortality and morbidity. The recommendation said that prenatal corticosteroid treatment is indicated for mothers with a high risk of preterm labor from 24 to 34 weeks of gestation if the following conditions are met: There is a sizable chance of giving

birth to a preterm infant within seven days of starting medication. It is possible to measure gestational age correctly. There is no medical evidence to support the mother's infection. Access to sufficient maternity care is available, and this includes the capability to identify and safely treat preterm delivery (WHO, 2022b).

2.2.6 Caring for Premature babies

Caring for a premature baby is often a stressful experience that makes mothers more vulnerable to mental illnesses such as anxiety and depression (Buys & Gerber, 2021). The majority of hospitals that care for preterm newborns provide parents with specialized in-home care services, giving parents and infants the chance to return home to maintain tube feeding, establish breastfeeding, and develop family bonds. The child must have been delivered preterm, be over 34 weeks gestation when the family returns home, be in stable physical condition, and have the parents' parenting abilities positively evaluated by nurses and medical professionals to qualify for participation. Before starting early in-home care services, parents receive instruction on the symptoms of newborn sickness, how to care for preterm infants, how to insert a nourishment tube, and how to perform first aid in a medical setting (Hägi-Pedersen et al., 2021).

On November 17, 2022, two days before World Prematurity Day, the WHO issued a new recommendation for the care of babies born prematurely. According to this guideline, the mother and family must play a crucial part in the care of their premature babies. At the moment of delivery, mothers and babies should not be separated, unless the infant is seriously sick.

The essential facets of care for preterm infants were divided into three broad categories. The first group focused on extensive preventative and promotive measures, such as umbilical cord and skin care, temperature management, nutrition and dietary supplements, and a

variety of screening procedures. The second group concentrated on caring for short- and long-term complications. The last one recommended family engagement in regular care and parental support through education and counseling, care planning, psychological support, and supportive home visits. The primary areas of specialized premature babies' care are illustrated below (WHO, 2022 c).

2.2.6.1 Skincare (Kangaroo care)

The WHO guideline aimed to improve the prognosis and health outcomes for premature babies. Regarding skincare, the guideline recommends that Skin-to-skin contact with a caregiver - known as kangaroo care - should begin immediately after birth and should be given an hour or two a day. This represents a significant change from the previous guidelines and prevailing clinical practice and reflects the need to ensure that caregivers and their premature infants can maintain a close relationship after birth without leaving premature infants which may result in the experience of great stress and anxiety (WHO, 2022 c).

2.2.6.2 Umbilical cord care

The umbilical cord continues to circulate for many minutes after birth, and if the cord is clamped too soon, it might deprive the infant of potential excess blood volume, which could lead to hypotension and anemia from an iron deficit (Kresch, 2017). According to a meta-analysis, umbilical cord milking rather than immediate umbilical cord clamping was linked to higher hemoglobin and hematocrit levels, a lower risk of intraventricular hemorrhage, and a lower risk of a premature newborn's needing oxygen at 36 weeks of corrected gestational age. The clinical results and neonatal adaptability of umbilical cord milking seemed to be superior to those of delayed cord clamping (Katheria et al., 2019).

2.2.6.3 Temperature control

It is well-recognized that both hypothermia and hyperthermia have a deleterious impact on premature health outcomes. As a result, regulating body temperature for premature babies is of vital significance and neonatal care units focus on maintaining the newborns' body temperatures within the normal range. There is, however, a lack of scientific data on what would constitute the normal body temperature in premature infants. The WHO advises a body temperature range of 36.5-37.5°C for term infants. Several writers advocate using the same normal range for both term and preterm babies. According to the results of Perez et al. (2019), NICUs implicitly agree that 37.0°C is the ideal body temperature for premature infants, regardless of gestational age or birth weight.

2.2.6.4 Premature babies' Nutrition and Supplementations

Meeting the needs of premature infants, who require specialized nutritional care and supplementations, is a significant challenge for neonatologists, nutritionists, and the infants' families (Koletzko et al., 2021). For preterm babies, the mother's milk offers significant immunological and nutritional benefits. It is possible to alter artificial formulae to have higher concentrations of critical nutrients such as protein than the mother's milk. Nevertheless, formula milk lacks the antibodies found in human milk that protect preterm newborns' underdeveloped gastrointestinal tracts (Koletzko et al., 2021).

If human milk is not available, then preterm babies require to be given infant formula during the first six months of life before the beginning of the introduction of solid food. Some studies suggest that feeding preterm infants with a special preterm formula, that is fortified with extra nutrients with a total energy content of 72 kcal per 100 ml, could improve their growth parameters and neurodevelopmental outcomes (WHO, 2022 c).

The major objectives of feeding in preterm babies are to promote good neurodevelopmental functioning and adequate growth. Breastfeeding is strongly advised and the ideal timing to introduce meals to premature infants is not well understood. However, the best approach for starting supplementary feeding in preterm babies appears to be a personalized method depending on the infant's neurological capacity and nutritional state, especially in the lack of evidence-based recommendations. According to data from previous studies, preterm infants are weaned at approximately 4 months of the corrected age. The degree of prematurity and the use of formula are the main factors influencing the initiation of early supplemental feeding (Embleton et al., 2022).

Preterm babies have higher nutritional requirements than term babies, both in terms of macronutrients and micronutrients due to multiple different reasons. These include the low nutrient reserves at birth, the immaturity of their body systems, the need for quick postnatal growth, and the susceptibility to acute illnesses. To prevent malnutrition and restrict growth delay as well as to reduce the requirement for quick catch-up growth, which is linked to late poor metabolic outcomes, adequate and prompt preterm newborn nutritional care has been proposed. The scientific community has agreed that some preterm babies should take supplements of iron and vitamin D. Birth weight, gestational age, manner of feeding, and the requirement for catch-up growth should all be taken into consideration when choosing an iron supplement. Vitamin D supplementation is advised at least throughout the first year of life. Contrarily, there is yet insufficient data to provide specific recommendations for the supplementation of zinc, calcium, and phosphorus (Ilardi et al., 2021).

2.2.6.5 Infection prevention in preterm babies

Preterm babies have underdeveloped skin that is readily abraded and can allow infectious organisms to enter the body. Using topical emollients can enhance the protection of skin barrier layers and improve skin integrity, but they can also eradicate healthy flora and

microbes, and promote colonization with other microorganisms (WHO, 2022 c). Preterm infants have a higher risk of bacterial sepsis when compared with term babies. Mothers' and other caregivers' hands are habitats to numerous microorganisms that they have picked up by interacting with patients or ambient surfaces. Baby infection transmission is frequently linked to nappy change, intimate dermal exposure, and caregiver contact with respiratory secretions. However basic hygienic practices such as hand washing and maintaining a dirty-free environment are well-known prevention methods (Kuti et al., 2019).

2.2.6.6 Family involvement in Premature babies' care

Premature babies frequently need specialized care, constant observation, and close attention. In some nursery units, families have only received information about the health of their premature babies via healthcare professionals and they are not permitted to interact physically with them. Family involvement in premature care and defined it as the engagement of mothers, dads, and other family members in the regular care of the premature baby while the newborn is in the nursery unit. Family participation can occur in a variety of ways. It may be demonstrated by encouraging the family to offer hands-on care at the bedside, such as feeding their babies or administering their drugs and involving the family in medical decisions related to their babies (Stefana & Lavelli, 2017).

A fundamental and essential element of every health system is helping families care for their ill premature newborns. Assistance is needed at all times, including before conception, during high-risk pregnancy detection, throughout labor and delivery, in the hospital, after discharge, and once the infant is brought home. Many families however still believe they lack the necessary resources to care for their preterm babies at home (WHO, 2022 c).

2.2.7 Mothers' Knowledge Regarding Care of their Premature Babies in literature

The findings from Hägi-Pedersen et al. (2021) and Akimana (2017) highlight the importance of providing education and support to parents of premature babies. Parents may feel conflicting emotions and desires regarding their role in their baby's care, and they may also have limited knowledge and understanding of how to care for their premature infant.

Nurse-supported video consultations, as described in Hägi-Pedersen et al. (2021), can be a valuable tool for building parents' confidence in caring for their premature baby. These consultations can provide parents with expert advice and guidance while also allowing them to take an active role in their baby's care. By gradually increasing their knowledge and understanding, parents can become more comfortable and competent in caring for their premature infant.

The study by Akimana (2017) highlights some of the knowledge gaps that may exist among parents of premature infants, particularly in low-resource settings. While exclusive breastfeeding knowledge was strong, many parents were unsure about how to keep their baby warm or what to do if their baby experienced jaundice, convulsions, or extreme screaming. This underscores the need for targeted education and support for parents of premature babies, particularly in areas where resources may be limited. Overall, the findings from these studies suggest that healthcare providers and social networks should work to provide comprehensive education and support to parents of premature babies. By equipping parents with the knowledge and confidence they need, healthcare providers can help ensure the best possible outcomes for premature infants and their families.

The study by Gomes et al. (2021) adds to the growing body of research on parents' knowledge of caring for premature babies. The findings suggest that mothers in Brazil generally have a good understanding of certain aspects of premature baby care, such as

diaper changes and skin care routines. It is encouraging to see that mothers recognize the fragility of their babies' skin and the importance of proper hygiene practices to prevent illnesses.

One of the most significant findings from the study is the mothers' knowledge and appreciation of the benefits of breastfeeding for premature babies. Breastfeeding is crucial for providing premature infants with the necessary nutrients, immune factors, and developmental support they need to grow and thrive. The mothers in this study demonstrated a thorough understanding of these benefits, including the positive impact on their babies' immune systems and neurodevelopment. This highlights the importance of promoting and supporting breastfeeding among mothers of premature babies. Healthcare providers should provide education and resources to help mothers initiate and maintain breastfeeding, especially in the critical early days and weeks after birth. This can include guidance on positioning and latch, pumping and storing breast milk, and overcoming common breastfeeding challenges.

Overall, the findings from Gomes et al. (2021) suggest that while mothers in Brazil have some knowledge gaps regarding premature baby care, they also have a good understanding of key areas such as skin care and breastfeeding. By building on this knowledge and providing targeted education and support, healthcare providers can help parents provide the best possible care for their premature infants.

The studies by Salia et al. (2021), Omar et al. (2018), and AL-Mukhtar & Abdulghani (2020) highlight the gaps in knowledge and understanding that caregivers may have when it comes to neonatal jaundice and premature baby care.

Salia et al. (2021) found that while over 45.5% of mothers knew that phototherapy is one treatment option for neonatal jaundice, there may still be room for improvement in terms of

understanding the causes, symptoms, and potential complications of this condition. Similarly, Omar et al. (2018) found that a significant percentage of mothers did not know how to treat newborn hyperbilirubinemia, with only 34.7% mentioning phototherapy as a treatment option. This highlights the need for targeted education and support for caregivers on the importance of monitoring for and treating neonatal jaundice.

The study by AL-Mukhtar & Abdulghani (2020) also demonstrates the importance of educating caregivers on how to properly care for premature infants. The fact that over half of the study respondents showed poor knowledge scores indicates a need for targeted education and support to help caregivers understand how to provide proper nutrition, warmth, and care for premature babies.

Overall, these findings suggest that healthcare providers should work to provide comprehensive education and support to caregivers on neonatal jaundice and premature baby care. By equipping caregivers with the knowledge and skills they need, healthcare providers can help ensure the best possible outcomes for premature infants and their families.

The study by Aldirawi et al. (2019) highlights the importance of providing education and support to mothers of premature babies after they are discharged from the NICU. The fact that the average mother in the study only knew about 58% of what was needed to care for their preterm newborns demonstrates the need for more comprehensive education and support to be provided.

The findings of the study also demonstrate the importance of specific areas of knowledge for caregivers of premature babies. Infection prevention knowledge scored highest, with 73% of mothers demonstrating knowledge in this area. This is particularly important given the increased risk of infection that premature babies face. Jaundice knowledge was the second-highest scoring area, with 67% of mothers demonstrating knowledge in this area.

This is consistent with other studies that have shown that caregivers often have some understanding of neonatal jaundice.

Vaccination knowledge was the third-highest scoring area, with 60% of mothers demonstrating knowledge in this area. This is an important area of knowledge, as premature babies are at increased risk of vaccine-preventable diseases. Breastfeeding knowledge scored 54%, which is lower than expected given the well-known benefits of breastfeeding for premature babies. This highlights the need for more education and support around breastfeeding for mothers of premature babies.

Knowledge of proper temperature regulation scored 50%, which is also lower than expected given the importance of maintaining a stable temperature for premature babies. Finally, knowledge related to umbilical cord care scored the lowest, with only 46% of mothers demonstrating knowledge in this area. This is an important area of knowledge, as proper umbilical cord care can help prevent infections.

Overall, the study by Aldirawi et al. (2019) highlights the need for comprehensive education and support for caregivers of premature babies, particularly in areas such as breastfeeding, temperature regulation, and umbilical cord care. By providing targeted education and support, healthcare providers can help improve outcomes for premature babies and their families.

2.2.8 Factors affecting mothers' knowledge of premature babies' care

AL-Mukhtar & Abdulghani (2020) in their study showed a strong positive association between the age of mothers during labor and their knowledge of premature baby care. Another significant positive correlation was observed between the mother's knowledge and the order of childbirth as 78.8% of mothers with their first child had poor knowledge about premature infant care as compared to 6.7% of mothers after their third child. The study also

revealed a statistically significant correlation between a mother's socioeconomic status and her level of knowledge, with 96.7% of mothers of low socioeconomic status having poor knowledge. Moreover, the knowledge score and educational attainment were found to be closely related with just 30.6% of graduate education levels having poor knowledge scores, compared to the majority of primary levels (81.3%) and secondary levels respondents (50%).

Another previous study that was conducted by Mohini and Shetty (2017) revealed that there is a significant association between mothers' knowledge of newborn care and their education level, occupation status, and the presence of information sources. Yet, there is no correlation between the mothers' knowledge and their family's socioeconomic status.

In contrast to the findings above, Aldirawi et al. (2019) found that there were no significant connections between mothers' sociodemographic factors, their knowledge of preterm care after being discharged from the NICU, and their knowledge regarding the health care of premature newborns at home.

2.2.9 Sources of information for Mothers' Knowledge of premature care

Speaking about the sources of mothers' knowledge of caring for preterm babies, the speeches of the mothers who were questioned revealed that a large portion of their knowledge was gained and enhanced when they were hospitalized under the supervision of health professionals (Gomes et al., 2021).

Aldirawi et al. (2019) also reported that nearly two-thirds of the research respondents received information about caring for their preterm infants after discharge from the NICU nurses. Around 85.3% of the respondents obtained their knowledge individually, not via group education sessions. Just 30.8% of respondents said they received a brochure outlining information on post-NICU care for preterm babies.

2.3 Summary and gaps in the literature review

In summary. Late and middle preterm infants are physiologically and developmentally immature and have a higher risk of morbidity and mortality compared to term infants. Although there have been several studies conducted on preterm births and their medical complications, there is still a significant gap in the literature regarding the knowledge of mothers of preterm babies about caring for their infants. While it is well-established that preterm infants are more vulnerable to various health complications, little research has focused on the knowledge and awareness of mothers regarding how to provide adequate care for their premature infants.

There is a need for further research to investigate the gaps in knowledge that exist among mothers of preterm infants regarding infant care, including knowledge about thermoregulation, feeding, phototherapy, and infection & skin care. Also, there is a need to dig deeply into the factors that affect the mothers' knowledge about the care. Additionally, future studies should explore the factors that contribute to these knowledge gaps and how they can be addressed through targeted interventions and education programs.

By identifying these gaps in knowledge, healthcare professionals can develop more effective strategies to educate and support mothers in providing optimal care for their preterm infants. Ultimately, this could lead to better outcomes for both mothers and their preterm infants, including improved health, reduced hospital stays, and increased bonding between the mother and her baby.

Chapter Three

Materials and Methods

3.1 Study design

The design of this study was descriptive cross-sectional. This design was used because it is suitable, relatively simple, and is logistically easy, and less expensive. Also, it enables the researcher to meet the study objectives in a short time (Wang & Cheng, 2020).

3.2 Study setting

This study was carried out at the following governmental hospitals in Gaza: Al-Shifa medical Complex, Al-Aqsa Hospital, Nasser Hospital, and Emirati Hospital, all of which had NICUs admitting premature infants.

3.3 Study population

This study's population consisted of mothers who delivered premature infants admitted to the neonatal departments of Al-Shifa medical complex, Al-Aqsa Hospital, Nasser Hospital, and Emirati Hospital during the data collection period.

3.4 Sample size and sampling process

According to the MoH report 2020, the total population was 1865 live premature birth (MoH, 2020 a). This number was divided over six as the data was collected over two months. Epi info program was used to calculate the study sample at a 95% confidence interval which revealed a sample of 172 (Annex 3). Then a proportionate sample was calculated according to the estimated number of premature infants admitted to the hospitals. Consecutive sampling was used to recruit infants and their mothers. Table (3.1) below demonstrates the sample size and the proportionate sample of each hospital

Table (3.1): sample size and the proportionate sample of each hospital

Hospital name	Estimated number of premature infants admitted /year	Estimated number of premature infants admitted /2 months	Required Sample
Al- Shifa	996	166	100
Nasser	437	72	43
Emirati	147	24	15
Al-Aqsa	128	21	14
Total	1708	286	172

Every mother who delivered a premature baby admitted to the neonatal department and who is an attendee that fits the inclusion criteria was selected until the required sample size for each hospital is attained. This sampling technique was utilized to reach the required sample size within the timeframe for data collection. Midwives or nurses in-charge working at the neonatal departments of the targeted hospitals assisted the researcher during the study period after they trained about the data collection method.

3.5 Study period

The study proceeded from November 2021 until March 2023.

3.6 Inclusion and Exclusion Criteria

3.6.1 Inclusion criteria

Mothers who delivered a premature baby were admitted to one of the selected hospitals and who are willing to participate in the study.

3.6.2 Exclusion criteria for Sample

Mothers who are not accompanied by their newborns are excluded.

3.7 Data collection tool

The researcher designed an interviewing questionnaire, Annex 4, and the Arabic version Annex 5. It consisted of five sections:

Section I: included selected socio-demographic variables; age, place of residence, years of education, family income, husbands' years of education, mothers working status, and husband's working status.

Section II: Obstetrical factors including; maternal risk factors, mode of delivery for this baby, number of previous premature babies, gestational age of this baby in weeks, number of children including this baby, birth order of this child, gender of this baby.

Section III: Maternal health services the mother received including; the number of ANC during pregnancy of this baby, ANC follow-up related to the care of a premature baby, a prenatal exam at ANC from a doctor, a prenatal exam at ANC from a nurse/midwife, receiving information about preparing for preterm delivery.

Section IV: Source of information including; If information related to the care of the premature baby during pregnancy was received and its source, receive information related to the care of premature after delivery of this baby and source, perception about the information they received

Section V: Consisted of four domains to assess the mothers' knowledge regarding the care of premature neonates. The thermoregulation domain consisted of ten statements, the feeding domain consisted of eight statements, the phototherapy domain consisted of five statements, and the infection & skin care domain consisted of seven statements. The total number of

statements in this part is 30. The questionnaire was initially designed in English language, then translated into Arabic version. The evaluation process was done for both versions.

3.8 Pilot Study

The pilot study was conducted on 10% (20 respondents) of the total study sample before the start of actual data collection to provide feedback about the feasibility of the study and ensure the reliability and understandability of the questionnaire. The pilot study subjects were included in the study sample as no changes were required on the questionnaire.

3.9 Data collection technique

A total of 172 questionnaires were distributed in the process of collecting data on mothers who were attending the designated hospitals. Procedures were thoroughly described to mothers, and interviews were conducted in a calm and unhurried manner. Personal information in the questionnaire, such as name was optional to maintain anonymity. All mothers who met the criteria gave written consent to participate in the study before starting to fill out the questionnaires. The mean time for each questionnaire was approximately 10-15 minutes. The researcher trained the research assistants in data collection to maintain standardization in data collection.

3.10 Response rate

During the time of data collection, 172 interviewed questionnaires were distributed, and of them, 170 were fulfilled. So, the response rate was 98.8%.

3.11 Validity and Reliability

3.11.1 Face and Content Validity

To achieve the validity of the study tool, the questionnaire was sent to a panel of experts (Seven), see Annex 6 to determine whether the included items clearly and adequately cover

the domains of the content addressed. Comments of experts were considered and modifications were done accordingly.

3.11.2 Reliability of the instrument

The reliability of an instrument is the degree of consistency with which it measures the attribute it is supposed to be measuring. Cronbach's Alpha coefficient in table (3.2) showed the values of each questionnaire domain of the study respondents. The table illustrated the reliability of domains; values of Cronbach's Alpha were in the range of 0.793 and 0.946. Cronbach's alpha equals 0.973 for the entire questionnaire in the pilot sample, which indicates the good reliability of the entire questionnaire as shown in table (3.2).

Table (3.2): Reliability of each domain of the questionnaire and the overall

No.	Domains	No. of item	Cronbach's Alpha
D1.1	Thermoregulation	10	0.921
D1.2	Feeding	8	0.946
D1.3	Phototherapy	5	0.793
D1.4	Infection & Skincare	7	0.837
Overall		30	0.973

The researcher also calculated the correlation between each item and the corresponding domain. Table (3.3) presents the correlation coefficient for each domain and the total for all domains. The P-values are less than 0.05 in most items; therefore, it can be said that all domains are consistent and valid to measure what was set.

Table (3.3): Correlation coefficient of every domain related to the total of domains

Items	Statistical test	
	R	P-value
Thermoregulation	0.926	0.000
Feeding	0.942	0.000
Phototherapy	0.952	0.000
Infection & Skincare	0.982	0.000

3.12 Ethical and administrative consideration

The researcher committed to all ethical and administrative considerations required to conduct this study; ethical approval was obtained from the Helsinki committee to carry out the study (Annex 7). The admin approval letter was obtained as well from the MoH to visit the hospitals in Gaza for data collection (Annex 8). A consent form was obtained from all of the respondents to fill up the questionnaire (Annex 9).

3.13 Data Entry & Statistical Analysis

For data entry and analysis, the Statistical Package for Social Sciences (SPSS version 25) was used. The categorical variables were described using descriptive analysis in the form of frequency and percentage, whereas the quantitative variables were described using mean and standard deviation (SD). The knowledge score was calculated by assigning one point for each correct answer and zero points for incorrect answers, then multiplying the score by 100 over 30. (the number of knowledge questions). The knowledge score was further divided into three categories: poor (less than 50), good (score 50-70), and excellent (score > 70) as categorized in a previous related study (Al-Mukhtar & Abdulghani, 2020). To test the relationship between knowledge domains, the Pearson correlation test was used, and the Chi-square test was used to test the relationship between knowledge and independent variables.

The 95% confidence interval was used, and a margin of error of 0.05 is considered statistically significant.

3.14 Challenges of the study

- Small sample size: Preterm birth is a relatively rare event, which can make it difficult to recruit a large enough sample size for the study which may limit the generalizability of the study findings.
- Recall bias: Mothers may have difficulty accurately recalling details about their experience including ANC visits.

Chapter Four

Results and discussion

In this section, we present and discuss the study's key findings. Descriptive statistics were presented initially. The dependent and independent variables are then correlated. The chapter also includes the interpretation of the results and discusses them. Also, a comparison with previous studies is demonstrated.

4.1 Descriptive analysis

Table (4.1): Sample distribution according to socio-demographic data

Socio-demographic characteristics		N=170	%	Mean± SD
Mothers' age (years)	<25 years	50	29.4	28.8±6.4
	25 - 30 years	58	34.1	
	> 30 years	62	36.5	
Place of residence	Rafah	23	13.5	
	Khan Younes	38	22.4	
	Middle Gaza	20	11.8	
	Gaza	66	38.8	
	North Gaza	23	13.5	
Mothers' education level	Primary	4	2.4	
	Preparatory school	27	15.8	
	Secondary school	52	30.6	
	Bachelor's degree or more	87	51.2	
Husband's education level	Primary	4	2.4	
	Preparatory school	12	7.1	
	Secondary school	52	30.5	
	Bachelor's degree or more	102	60.0	
Average of family monthly income (NIS)	Less than 1973 NIS	132	77.6	1669.12±1594.54
	1973 to 2470 NIS	4	2.4	
	More than 2470 NIS	34	20.0	
Mothers' work status	Employed/worker	43	25.3	
	Housewife	127	74.7	
Husband's work status	Employed/worker	133	78.2	
	Not working	37	21.8	

NIS: New Israeli Shekel

The study included one hundred and seventy mothers who had a preterm baby. The socio-demographic characteristics of the respondents is shown in Table (4.1). The mean age of the mothers has preterm birth children is 28.8 years with a standard deviation of 6.4 years, with the greatest (36.5%) in the age group (> 30 years). This result is concerning as preterm birth can be associated with a range of health risks for the child, and mothers over the age of 30 are more likely to have a preterm birth. It is therefore important to identify potential risk factors associated with preterm birth to reduce the number of preterm births and improve the health of both the mother and the child. Several risk factors have been identified as increasing the risk of preterm birth, including maternal age, and history of previous preterm birth (CDC, 2021). Mothers aged 35 years or older are more likely to give birth prematurely than mothers aged 20–34 years (ACOG, 2021).

The mothers who took part to live in the Gaza Strip's five governorates are as follows: Rafah 13.5%, Khan Younis 22.4%, the Middle Zone 11.8%, Gaza 38.8%, and North Gaza 13.5%. The percentages are in a line with the proportionate sample that the researcher used in the distributing questionnaires.

The majority of mothers and their husbands hold a bachelor's degree or higher (51.2% and 60%, respectively). The majority of mothers are housewives, and 78.2% of their husbands work or are employed. This suggests that mothers are not given the same opportunities for education and employment as men. 77.6% of the families have incomes less than the 1973 NIS. This statistic indicates that 77.6% of families in Palestine have incomes below the poverty line of 1973 NIS (for a family of 2 adults and 3 children) as was previously reported (PCBS, 2017). This is a very high percentage, which indicates that poverty is a major issue in Palestine.

Table 4.2): Distribution of the mothers according to their obstetric factors' information

Obstetric factors		N=170	%	Mean± SD
Diabetes Mellitus	Yes	10	5.9	
	No	160	94.1	
Pregnancy induced hypertension	Yes	77	45.3	
	No	93	54.7	
Premature Rupture of Membranes	Yes	8	4.7	
	No	162	95.3	
Previous Cesarean section	Yes	106	62.4	
	No	64	37.6	
Twins pregnant	Yes	24	14.1	
	No	146	85.9	
Mode of delivery for this baby	C.S.	131	77.1	
	NVD	39	22.9	
Number of previous premature babies	Never	103	60.6	
	One child	53	31.2	
	Two or more	14	8.2	
Gestational age of this baby in weeks	Less than 34 weeks	22	12.9	34.71±1.5
	34 to 35 weeks	97	57.1	
	35-37 weeks	51	30	
No. of children including this baby	Less than 2 children	46	27.1	2.81±1.74
	2 to 4 children	91	53.5	
	More than 4 children	33	19.4	
Birth order of this child	First	42	24.7	
	Second	38	22.4	
	Third	41	24.1	
	Fourth or more	49	28.8	
Sex of current baby	Male	82	48.2	
	Female	88	51.8	

Table (4.2) depicts the distribution of mothers based on their obstetric variables. DM 5.9%, Pregnancy Induced Hypertension (PIH) 45.3%, Premature Rupture of Membranes (PROM) 4.7%, previous Cesarean Section (CS) 62.4%, and 14.1% pregnant with twins are at risk factors among mothers. The majority of mothers, 77.1%, have CS delivery.

The majority of mothers (60.6%) have no previous premature children, whereas 31.2% have had one premature child and 8.2% have had two or more premature children. The data indicates that the gestational age of the current infant was between 34 and 35 weeks (57.1%),

while 30% were older than 35 weeks. Nonetheless, the lowest categories of gestational age in the study were less than 34 weeks (12.9%). More than half of mothers, 53.5%, have between two and four children, including their current child, while 27.1% have fewer than two and 19.4% have more than four. The majority of mothers (28.8%) have the current child as their fourth or more child, while 24.7% have the current child as their first, 24.1% as their third, and 22.4% have the current child as their second. The results of the study are in a line with several obstetric factors associated with an increased risk of having a preterm baby. These include PROM, PIH, previous CS delivery, being pregnant with twins, advanced maternal age, and a history of preterm birth (Chang et al., 2020; Shen et al., 2019).

Table (4.3): Distribution of the mothers according to their maternal health services

Maternal health services		N=170	%	Mean±SD
Number of antenatal visits during pregnancy of this baby	Less than 3 visits	52	30.6	5.00±3.69
	3 to 6 visits	70	41.2	
	More than 6 visits	48	28.2	
Receive a special ANC follow-up related to the care of a premature baby	Yes	48	28.2	
	No	122	71.8	
Receive a prenatal exam at ANC from a doctor	Yes	104	61.2	
	No	66	38.8	
Receive a prenatal exam at ANC from a nurse/midwife	Yes	99	58.2	
	No	71	41.8	
Health care providers tell you how to prepare yourself for preterm delivery	Yes	52	30.8	
	No	117	69.2	

As shown in table (4.3). The data shows that the average number of ANC visits is five. The majority of mothers have three to six ANC visits during the current pregnancy (41.2%), while 30.6% of mothers had fewer than three ANC visits and 28.2% had more than six.

According to the WHO guidelines, mothers should have at least four ANC visits during their pregnancy. The data shows that, although the average number of ANC visits is five, a significant proportion of mothers have fewer than the WHO recommended number of visits (WHO, 2016). This may put them at an increased risk of health complications during pregnancy, childbirth, and the postpartum period. Pregnant mothers must receive the recommended number of ANC visits to ensure proper monitoring and management of their health throughout the pregnancy. Additionally, it is important to ensure that mothers have access to, and knowledge of, the recommended ANC services and to provide adequate resources to ensure that pregnant mothers receive the necessary care.

Also, only 28.2% of mothers received a specific ANC follow-up relating to the treatment of a premature baby. This suggests that there is a lack of awareness among pregnant mothers of the risks associated with premature birth and the importance of receiving ANC to reduce these risks. Additionally, it could indicate that pregnant mothers are not receiving adequate information and support to ensure they are receiving the care they need to reduce the chances of premature birth. Improving the education and information available to pregnant mothers on the risks of premature birth and the importance of ANC could help to reduce the number of premature births and improve the health of both mother and baby. Additionally, providing support and resources to pregnant mothers to ensure they are receiving the ANC they need could also help to reduce the number of premature births.

In addition, 61.2% of mothers received a prenatal assessment at ANC. The results indicate that 58.2% of mothers received a prenatal assessment at ANC from a nurse/midwife and that 30.8% of mothers received advice on how to prepare for preterm birth.

Table (4.4): Distribution of the mothers according to their source of information

Source of information		N=170	%
1. Receive information related to the care of the premature baby during pregnancy	Yes	51	30.0
	No	119	70.0
(N=51)			
a) Doctor	Yes	43	84.3
	No	8	15.7
b) Nurse/midwife	Yes	14	27.5
	No	37	72.5
c) Mass media	Yes	3	5.9
	No	48	94.1
d) Relative/friend	Yes	5	9.8
	No	46	90.2
2. Receive information related to the care of premature after delivery of this baby	Yes	140	83.3
	No	28	16.7
(N=140)			
a) Doctor	Yes	55	39.3
	No	85	60.7
b) Nurse/midwife	Yes	124	88.6
	No	16	11.4
c) Mass media	Yes	8	5.7
	No	132	94.3
d) Relative/friend	Yes	22	15.7
	No	118	84.3
(N=141)			
Perceived the information you receive adequate	Yes	57	40.4
	No	84	59.6

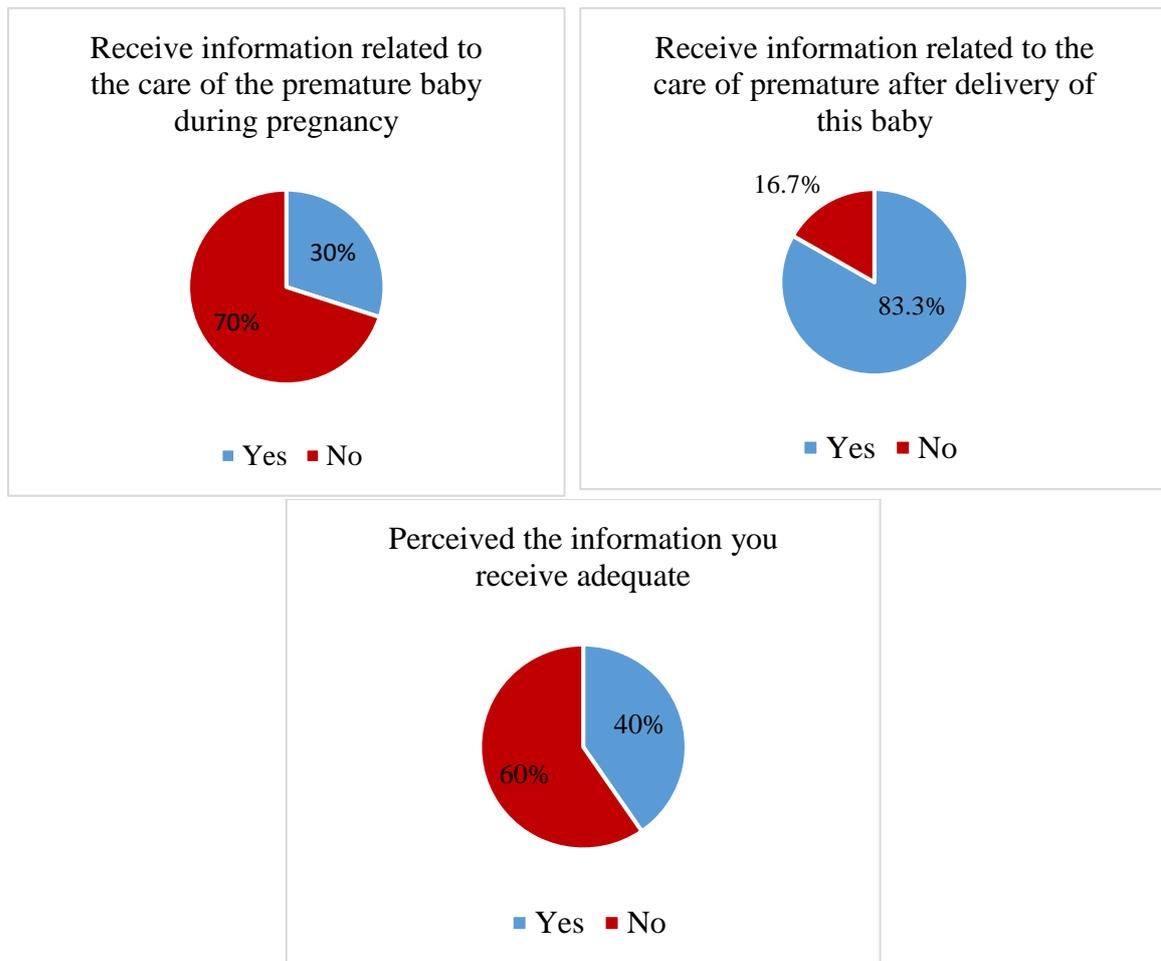


Figure (4.1): Information received about premature children care

Table (4.4) and Figure (4.1) display the sources from which mothers obtained knowledge regarding the care of preterm infants. Throughout pregnancy, only 30% of mothers received information regarding the care of premature babies, with the majority of mothers (84.3%) receiving this information from doctors. According to a study published in the journal *Pediatrics* in 2014, only 30% of mothers of preterm infants reported receiving information about the care of their premature child (Giannone & Belanger, 2014). This is lower than the results of previous studies, which reported that over 50% of mothers of preterm infants had received information about the care of their premature child (Tolcher & Afzal, 2006; McCarthy & Grisso, 2005). Receiving proper care during pregnancy is critical for the health

of both the mother and the baby. For a premature baby, the importance of adequate prenatal care is even greater. Mothers who are pregnant with a preterm baby should be monitored more closely than those who are pregnant with a full-term baby and should receive extra care and support. This includes regular visits to the doctor or midwife, tests and ultrasounds, nutritional and lifestyle advice, and regular monitoring of the baby's health and development. Some mothers may require additional care and support such as bed rest, extra monitoring, and specialized medical care. It is important for mothers to be aware of the signs and symptoms of preterm labor and to seek medical help if they experience any of these.

Most of the mothers (88.6%) obtained information regarding the care of delivered premature infants and the majority (83.3%) received this information from nurses. This is encouraging, as it shows that mothers are being provided with the necessary information and support to care for their infants. It also suggests that access to relevant information is being made available to those who need it, which is a positive step towards improving the health outcomes of premature infants. However, it is important to note that the percentage of mothers who obtained information is still lower than desired, meaning that there is still much work to be done to ensure that all mothers are receiving the necessary information and support to care for their premature infants. The findings of the study regarding information after delivery match what Matos et al. (2020) mentioned, as it is crucial to include the improvement of parents' knowledge about prematurity as a complementary dimension during the provision of medical care, with nurses playing a key role as main sources of information. While it is contradicting the findings during pregnancy mainly from doctors. The researcher attributes that mainly to close follow-up by doctors during pregnancy of high-risk pregnant mothers rather than from midwives and nurses.

Only 40.4% of mothers felt the information they received was adequate. This suggests that more information needs to be provided to mothers of premature babies to ensure they are fully informed and able to make the best decisions for their children. It is also important that pregnant mothers receive accurate and up-to-date information about the potential risks of preterm birth and the options available to them should they find themselves in this situation.

Table (4.5): Items of knowledge for thermoregulation among mothers (N=170)

No.	Knowledge of thermoregulation	Key answer	Correct	Incorrect	Rank
1	The premature baby should be placed in a warm environment	True	106 (62.4)	64 (37.6)	5
2	The premature baby loses body heat rapidly if uncovered	True	91 (53.5)	79 (46.5)	9
3	Covering a premature baby's head help in keeping the baby's temperature	True	142 (83.5)	28 (16.5)	4
4	Premature babies should be placed near open windows with air drafts	False	153 (90.0)	17 (10)	2
5	A premature baby could be placed on cold beds or blanket	False	95 (55.9)	75 (44.1)	8
6	Premature babies should be manipulated frequently	False	48 (28.2)	122 (71.8)	10
7	The Source of heat is essential to keep a baby's normal temperature	True	96 (56.5)	74 (43.5)	7
8	Handling the baby with warmed hands is necessary	True	145 (85.3)	25 (14.7)	3
9	Dressing the baby in previously warmed clothes is necessary	True	106 (62.4)	64 (37.6)	5
10	The baby should be bathed with warm water with immediate drying and covering after bathing	True	164 (96.5)	6 (3.5)	1
Total			67.41	32.59	

The distribution of mothers based on their thermoregulation domain responses is rated and highlighted in Table (4.5). The results indicate that the total score for mothers' thermoregulation knowledge is 67.4%. The table reveals that according to their response to thermoregulation, the question with the highest proportion of correct responses was number (10) " The baby should be bathed with warm water with immediate drying and covering after

bathing," with a score of 96.5%, was followed by the question number (4), " Premature babies should be placed near open windows with air drafts. The question with the lowest score was number (6)" Premature newborns should be manipulated frequently," with a score of 28.2%, followed by question These results indicate that mothers of premature babies have an overall good knowledge of thermoregulation, but there are still some areas where they need to be better informed. For example, the question with the lowest score, "Premature newborns should be manipulated frequently," suggests that mothers may not be aware of the importance of avoiding frequent handling of premature babies. This is because frequent handling can be stressful for premature babies and can interfere with their normal growth and development. Additionally, the question with the second-lowest score, "The premature baby loses body heat rapidly if uncovered," indicates that mothers may not be aware of the importance of keeping their premature babies warm. Therefore, mothers of premature babies need to be informed about the importance of proper thermoregulation and handling of their babies.

Previous research has indicated that mothers of premature babies generally have good knowledge of thermoregulation, but that there are still some areas where they lack knowledge. For example, a study conducted in 2010 found that the question with the lowest score, "Premature newborns should be manipulated frequently," had a score of only 28.2%, indicating that mothers may not be aware of the importance of avoiding frequent handling of premature babies. Additionally, the study found that the question with the highest score, "The baby should be bathed with warm water with immediate drying and covering after bathing," had a score of 96.5%, indicating that mothers largely had good knowledge of thermoregulation (Khoramabadifar et al., 2010).

Another study showed that 66.2% of mothers with premature babies have neutral knowledge about thermoregulation (Abdullah& Hassan, 2019). Also, a similar study was conducted by Malathi et al. (2014) in India, which revealed that the majority of mothers had a neutral level of awareness about thermoregulation.

Table (4.6): Scores of questions measuring knowledge level of feeding among mothers (N=170)

SN	Questions	Key answer	Correct	Incorrect	Rank
Knowledge level of the feeding					
1	Any premature baby can tolerate breastfeeding	False	58 (34.1)	112 (65.9)	8
2	A premature baby may be kept NPO	True	89 (52.4)	81 (47.6)	4
3	A premature baby may be given feeding through NGT	True	106 (62.4)	64 (37.6)	3
4	Feeding a premature baby through NGT is by pushing milk through a syringe in the tube	False	83 (48.8)	87 (51.2)	6
5	Pacifiers may be used for NPO premature baby	True	84 (49.4)	86 (50.6)	5
6	Premature babies should receive small & frequent amounts of milk	True	120 (70.6)	50 (29.4)	1
7	Burping a premature baby during and after feeding is not essential	False	73 (42.9)	97 (57.1)	7
8	Expressed breast milk for baby is best if unable to receive breastfeeding	True	116 (68.2)	54 (31.8)	2
Total			51.51	48.49	

Table (4.6) displays the scores for questions reflecting the level of feeding knowledge among mothers. The data indicate that 51.51% of mothers are knowledgeable about feeding their children. The table reveals that the question with the highest proportion of correct responses in the feeding domain was number 6, "Premature babies should receive small & frequent amounts of milk," with a score of 70.6%, followed by question number 8, "Expressed breast milk is best for babies who are unable to breastfeed," with a score of 68.2%. The question with the lowest percentage of right responses was number 1, which had a score of 34.1%, followed by number 7, which had a score of 42.1%. The results of this study indicate that while the majority of mothers are knowledgeable about feeding their children, there is still room for improvement. Based on these results, it's clear that more effort needs to be put into educating and supporting mothers of premature infants on the best ways to feed their children. Previous studies have found that mothers of preterm infants have a solid grasp of

optimal feeding techniques. Researchers Fey et al. (2019) found that mothers of preterm infants were more informed than those of full-term infants when it came to feeding their children. Also, de Groot et al. (2015) revealed that mothers of preterm newborns were more informed about their babies' nutritional requirements than mothers of term infants.

Having a preterm infant required the parent to learn specialized feeding techniques for their children (Brown et al., 2013). This included learning about the preterm infant's physiological responses and being familiar with the mother's surroundings, such as the presence of medical equipment and monitoring. These results point to the importance of nurses creating environments in which parents can learn to recognize newborn feeding cues and acquire expertise in a variety of feeding methods.

Table (4.7): Scores of questions measuring the knowledge level of phototherapy among mothers of premature children (N=170)

SN	Questions	Key answer	Correct	Incorrect	Rank
Knowledge level of phototherapy					
1	The premature baby's temperature should be monitored during phototherapy	True	148 (87.1)	22 (12.9)	1
2	The premature baby's position should be changed frequently during phototherapy	True	85 (50.0)	85 (50)	4
3	The Baby's eyes should be covered during phototherapy	True	94 (55.3)	76 (44.7)	3
4	The Baby's genitalia should be covered during phototherapy	True	70 (41.2)	100 (58.8)	5
5	Baby under phototherapy should be kept well hydrated through IV fluid or milk feeding	True	118 (69.4)	52 (30.6)	2
Total			60.60	39.40	

Table (4.7) displays the results of questions testing mothers' phototherapy knowledge. According to the data, 60.60 % of mothers are knowledgeable about phototherapy. The table reveals that the statement with the highest proportion of correct answers, based on mothers' phototherapy knowledge, is number 1, "The premature baby's temperature should be monitored during phototherapy," with a score of 87.1%. This is an important aspect of phototherapy because overheating can cause serious complications, including dehydration and electrolyte imbalances (American Academy of Pediatrics, 2021).

This statement is followed by statement number 5, "Babies receiving phototherapy should be kept well hydrated through IV fluids or breastfeeding," with a score of 69.4%. The statement with the lowest score is number 4, "The baby's genitalia should be covered during phototherapy," with a score of 41.2%. This is also an important aspect of phototherapy, as the genitalia are particularly sensitive to light and can be easily burned if not protected. Therefore, it is important to educate parents and caregivers about the need to cover the genitalia during phototherapy (Bhat et al., 2020).

Following that, the number 2 statement, "The premature baby's position should be often changed during phototherapy," with a score of 50%. The finding that 60.6% of respondents answered all the questions correctly suggests that there is room for improvement in the level of knowledge about phototherapy among mothers of premature children. Healthcare providers can play a critical role in providing education and counseling to parents and caregivers of premature infants (Cline, 2018).

Table (4.8): Scores of questions measuring the knowledge level of infection and skincare among mothers

SN	Questions	Key answer	Correct	Incorrect	Rank
knowledge level of infection and skincare					
1	The umbilical cord can be covered by the diaper	False	70 (41.2)	100 (58.8)	7
2	The umbilical cord should be kept dry & clean	True	160 (94.1)	10 (5.9)	3
3	A soiled diaper should be changed immediately	True	164 (96.5)	6 (3.5)	1
4	Hand hygiene should be done before handling a premature baby	True	97 (57.1)	73 (42.9)	5
5	The umbilical cord should be covered	False	86 (50.6)	84 (49.4)	6
6	Instruments used for the care of the baby could be shared with others	False	161 (94.7)	9 (5.3)	2
7	Perineal & umbilical cord areas should be monitored closely for infection	True	140 (82.4)	30 (17.6)	4
Total			73.80	26.20	

Table (4.8) depicts the distribution of mothers according to their results on questions measuring their knowledge of infection and skin care. The data indicate that the infection & skincare percentage is 73.80%. According to their responses to their infection & skincare survey, the question with the highest percentage of correct answers was number 3, "A soiled diaper should be changed immediately," with a score of 96.5%, followed by question number 6, "Instruments used for the care of the baby could be shared with others," with a score of 94.7%. The question with the lowest score was (1), "The umbilical cord can be covered by the diaper," with a score of 41.2%, followed by (5), "The umbilical cord should be covered," with a score of 50.6%.

Studies have consistently shown that premature babies are at an increased risk of infections and skin problems, which can lead to serious complications (Steiner et al., 2019; Collins et al., 2018). Therefore, it is important for mothers of premature babies to have a good level of

knowledge about infection and skin care to ensure the best possible outcomes for their babies.

Table (4.9): Descriptive analysis of knowledge score

Variable	Mean \pm SD	Min- Max
Knowledge	63.8 \pm 22.7	14.4- 100

Table (4.9) shows the descriptive analysis of the knowledge score among the respondents. The mean score of knowledge is 63.8 with a standard deviation of 22.7. The minimum and maximum values are 14.4, and 100 respectively. When the knowledge score was further categorized, the percentages of poor, good, and excellent categories are 34.7%, 18.2%, and 47.1% respectively as figure (4.2) demonstrates.

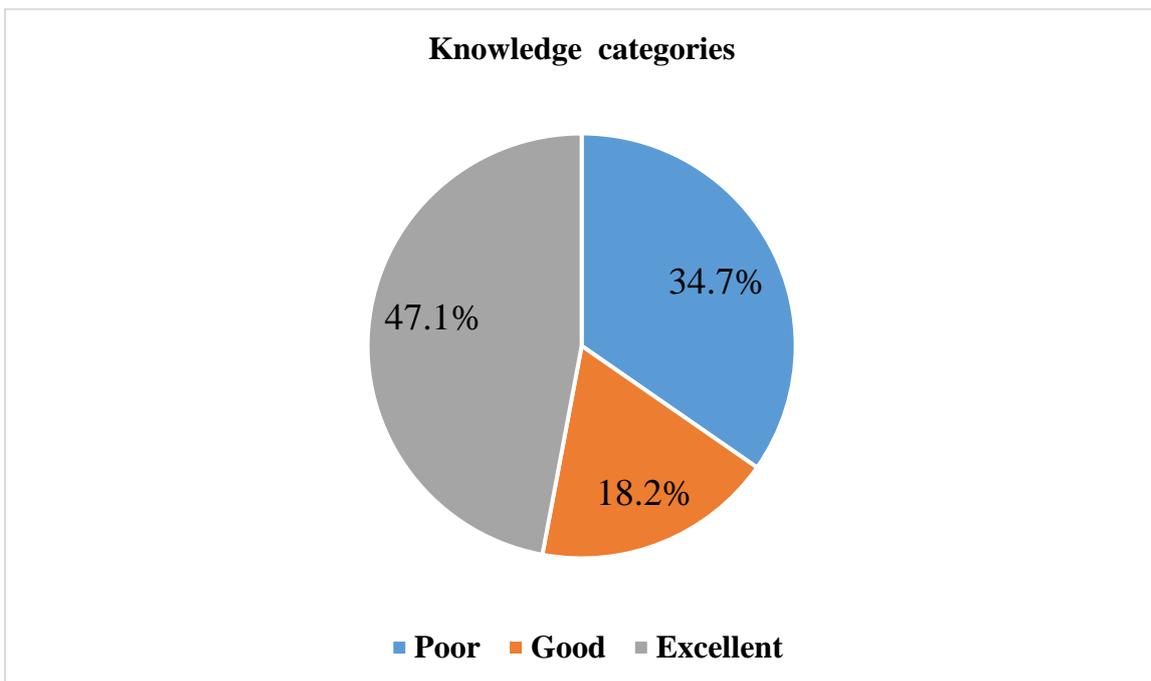


Figure (4.2): Knowledge categories

The study by Al-Mukhtar& Abdulghani (2020) investigated the knowledge of mothers in Mosul city regarding premature baby care. The authors reported that the mean knowledge score of the respondents was 52.2, with a standard deviation of 10.5. They also found that

only 16.7% of the respondents had good knowledge, while the majority (62.7%) had poor knowledge.

Comparing these findings with the results presented in the question, we can see that the mean knowledge score of the respondents in the current study is higher (63.8) than that reported by Al-Mukhtar & Abdulghani (2020) (52.2). Additionally, the distribution of knowledge scores in the current study shows a higher percentage of respondents with good (18.2%) and excellent (47.1%) knowledge, compared to only 16.7% with good knowledge reported by Al-Mukhtar & Abdulghani (2020).

However, both studies highlight the importance of improving knowledge among mothers of premature infants to ensure optimal care for their children. The current study recommends that healthcare providers play a significant role in educating and supporting parents of premature infants, which is consistent with the findings of Al-Mukhtar & Abdulghani (2020), who also suggest that health education programs should be implemented to improve knowledge among mothers.

4.2 Inferential analysis

4.2.1 Bivariate analysis

Table (4.10): Correlation between the studied domains

Knowledge domains		Thermoregulation	Feeding	Phototherapy	Infection & Skincare	Total
Thermoregulation	r	1	0.735	0.670	0.586	0.876
	P-value	-	0.000*	0.000*	0.000*	0.000*
Feeding	r	0.735	1	0.633	0.569	0.871
	P-value	0.000*	-	0.000*	0.000*	0.000*
Phototherapy	r	0.670	0.633	1	0.575	0.871
	P-value	0.000*	0.000*	-	0.000*	0.000*
Infection & Skincare	r	0.586	0.569	0.575	1	0.773
	P-value	0.000*	0.000*	0.000*	-	0.000*
Total	r	0.876	0.871	0.871	0.773	1
	P-value	0.000*	0.000*	0.000*	0.000*	-

r: Pearson correlation &* a statistically significant difference at $P < 0.05$.

Table (4.10) shows that there is a positive correlation between levels of mothers' knowledge domains. Also, their results show that there is a positive correlation between knowledge as total and thermoregulation, feeding, phototherapy, and infection & skincare domains ($P < 0.05$).

Mothers who have a high level of knowledge in one domain are more likely to have a high level of knowledge in another domain as well. This finding suggests that there may be underlying factors that contribute to a mother's overall level of knowledge about caring for her child.

Additionally, the fact that there is a positive correlation between knowledge in specific domains such as thermoregulation, feeding, phototherapy, and infection & skincare indicates that these areas may be particularly important for mothers to know about to provide optimal care for their children. This finding may have important implications for healthcare providers, who can use this information to target education and support mothers in these key areas.

Finally, the fact that the p-value is less than 0.05 suggests that the positive correlation is statistically significant, meaning that the probability of the correlation occurring by chance is very low. This lends additional support to the idea that there is a meaningful relationship between mothers' knowledge domains in these areas.

Table (4.11): Association between mothers' knowledge about the care of their premature children and demographic characteristics

Variables	categories	Poor N (%)	Good N (%)	Excellent N (%)	Chi	p- value
Mother's age (years)	Less than 25 years	21(35.6)	5(16.1)	24(30)	5.356	0.253
	25 to 30 years	16(27.1)	15(48.4)	27(33.8)		
	More than 30 years	22(37.3)	11(35.5)	29(36.3)		
Place of residence	Rafah	10(16.9)	3(9.7)	10(12.5)	10.832	0.211
	Khan Younes	10(16.9)	9(29)	19(23.8)		
	Middle Gaza	7(11.9)	7(22.6)	6(7.5)		
	Gaza	27(45.8)	8(25.8)	31(38.8)		
	North Gaza	5(8.5)	4(12.9)	14(17.5)		
EducationMother	Less Than Secondary School	13(22)	5(16.1)	13(16.3)	3.268	0.514
	Secondary School	16(27.1)	7(22.6)	29(36.3)		
	More Than Secondary School	30(50.8)	19(61.3)	38(47.5)		
EducationFather	Less than secondary school	6(10.2)	3(9.7)	7(8.8)	2.426	0.658
	secondary school	19(32.2)	6(19.4)	27(33.8)		
	more than secondary school	34(57.6)	22(71)	46(57.5)		
Average of family monthly income	Less than 1000 NIS	24(40.7)	11(35.5)	37(46.3)	4.725	0.317
	1000 to 2000 NIS	26(44.1)	13(41.9)	23(28.8)		
	More than 2000 NIS	9(15.3)	7(22.6)	20(25)		
Mother's work status	Employed/worker	14(23.7)	9(29)	20(25)	0.309	0.857
	Housewife	45(76.3)	22(71)	60(75)		
Husband's work status	Employed/worker	43(72.9)	26(83.9)	64(80)	1.718	0.424
	Not working	16(27.1)	5(16.1)	16(20)		

Table (4.11) demonstrates the relationship between mothers' knowledge and demographic characteristics. The chi-square test revealed no statistically significant relationship between mothers' knowledge about the care of their premature children and any of the examined demographics including (Mother's age, place of residence, education of mother, education of father, average of family monthly income, mother's work status, husband's work status) as the p-value for all the test > 0.05 .

A study in Mosul city, Iraq found no statistically significant relationship between mothers' knowledge of premature baby care and any of the demographic characteristics including mother's age, place of residence, mother's education, father's education, and average family monthly income, mother's work status, and husband's work status (Al-Mukhtar & Abdulghani, 2020).

In contrast, a study conducted in Brazil found that maternal education and socioeconomic status were significantly associated with knowledge of neonatal care practices (Martins et al., 2019). In another study in Bangladesh, researchers found that mothers' education level and age were significantly associated with their knowledge of neonatal care practices (Rahman et al., 2017). However, a study in Nepal found a significant relationship between maternal education level and knowledge of neonatal care practices (Singh et al., 2019).

These comparisons suggest that the relationship between demographic characteristics and knowledge about neonatal care practices can vary widely across different contexts. While some studies find significant associations between demographic factors and knowledge, others find no significant relationships. This may be due to differences in cultural, economic, and social factors across different populations.

Table (4.12): Association between mothers' knowledge about the care of their premature children and obstetrical factors

Variables	categories	Poor N (%)	Good N (%)	Excellent N (%)	Chi	p- value
Risk1 D.M.	Yes	2(3.4)	0(0)	8(10)	5.050	0.080
	No	57(96.6)	31(100)	72(90)		
Risk2 PIH	Yes	25(42.4)	16(51.6)	36(45)	0.706	0.703
	No	34(57.6)	15(48.4)	44(55)		
Risk3 PROM	Yes	2(3.4)	2(6.5)	4(5)	0.454	0.797
	No	57(96.6)	29(93.5)	76(95)		
Risk4 Previous C.S.	Yes	38(64.4)	18(58.1)	50(62.5)	0.350	0.840
	No	21(35.6)	13(41.9)	30(37.5)		
Risk5 Twins pregnancy	Yes	7(11.9)	5(16.1)	12(15)	0.402	0.818
	No	52(88.1)	26(83.9)	68(85)		
Mode of delivery for this baby	NVD	13(22)	8(25.8)	18(22.5)	0.180	0.914
	C.S.	46(78)	23(74.2)	62(77.5)		
No. of previous premature babies	Non	39(66.1)	15(48.4)	49(61.3)	2.1	0.145
	One child	19(32.2)	14(45.2)	20(25)		
	Two or more	1(1.7)	2(6.5)	11(13.8)		
Gestational age of this baby in weeks	Less than 34 weeks	9(15.3)	6(19.4)	7(8.8)	2.859	0.582
	34 to 35 weeks	34(57.6)	16(51.6)	47(58.8)		
	More than 35 weeks	16(27.1)	9(29)	26(32.5)		
No. of children including this baby	Less than 2 children	19(32.2)	5(16.1)	22(27.5)	0.499	0.480
	2 to 4 children	28(47.5)	24(77.4)	39(48.8)		
	More than 4 children	12(20.3)	2(6.5)	19(23.8)		
Birth order of this child	First child	16(27.1)	4(12.9)	22(27.5)	11.946	0.063
	Second child	14(23.7)	11(35.5)	13(16.3)		
	Third child	9(15.3)	11(35.5)	21(26.3)		
	Fourth or more child	20(33.9)	5(16.1)	24(30)		
Gender of this baby	Male	33(55.9)	13(41.9)	36(45)	2.228	0.328
	Female	26(44.1)	18(58.1)	44(55)		

Table (4.12) illustrates the relationship between mother's knowledge and obstetrical factors. The chi-square test revealed no statistically significant relationship between mothers' knowledge about the care of their premature children and any of the examined obstetrical factors including (maternal risk factors, mode of delivery for this baby, number of previous

premature babies, gestational age of this baby, number of children including this baby, birth order of this child, and gender) as the p-value for all the test > 0.05 . There is no evidence to suggest that any of the examined obstetrical factors influence mothers' knowledge about the care of their premature children. It is important to note that the lack of a statistically significant relationship does not necessarily mean that there is no relationship between the variables. It is possible that the sample size was not large enough to detect a significant relationship or that the measure of mothers' knowledge about the care of their premature children was not sensitive enough to capture any differences that may exist. Additionally, there may be other factors that were not examined in this study that could influence mothers' knowledge about the care of their premature children.

There have been many studies conducted to investigate the relationship between obstetrical factors and mothers' knowledge about caring for their premature babies. Some studies have found a significant relationship between obstetrical factors and maternal knowledge, while others have not.

Chiu et al. (2014) found that parity was significantly related to maternal knowledge about infant care in the NICU. However, Feeley et al. (2016) found no statistically significant association between the mode of delivery and maternal knowledge about infant care.

Overall, while some studies have found significant relationships between obstetrical factors and maternal knowledge about premature infant care, others have not. Factors that may influence these relationships could include study design, sample size, and the specific obstetrical factors and knowledge areas that are examined.

Table (4.13): Association between mothers' knowledge about the care of their premature children and maternal health services received

Variable	categories	Poor N (%)	Good N (%)	Excellent N (%)	Chi	p- value
Number of antenatal visits during pregnancy of this baby	Less than 3 visits	16(30.8)	5(9.6)	31(59.6)	8.848	0.065
	3 to 6 visits	28(40)	12(17.1)	30(42.9)		
	More than 6 visits	15(31.3)	14(29.2)	19(39.6)		
Receive a special ANC follow-up related to the care of a premature baby	Yes	8(16.7)	12(25)	28(58.3)	7.12	0.008*
	No	51(41.8)	19(15.6)	52(42.6)		
Receive a prenatal exam at ANC from a doctor	Yes	38(36.5)	23(22.1)	43(41.3)	1.89	0.169
	No	21(31.8)	8(12.1)	37(56.1)		
Receive a prenatal exam at ANC from a nurse/midwife	Yes	35(35.4)	21(21.2)	43(43.4)	0.54	0.464
	No	24(33.8)	10(14.1)	37(52.1)		
Healthcare providers tell you how to prepare yourself for preterm delivery	Yes	18(34.6)	11(21.2)	23(44.2)	0.046	0.831
	No	41(35)	20(17.1)	56(47.9)		

The association between mothers' knowledge and maternal health services received is depicted in Table (4.13). The Chi-square test demonstrated a statistically significant relationship between mothers' knowledge of care and whether or not the woman received a special ANC follow-up relevant to premature baby care. Only 16.7% of mothers with special care have poor knowledge, whereas 58.3% have excellent knowledge. In comparison, 42.6% of mothers with no special care had excellent knowledge, whereas 41.8% have poor knowledge (chi= 7.12, p-value= 0.008).

The other examined maternal health services showed no relationship with the mothers' knowledge about the care of their premature babies (Number of ANC visits, receiving a prenatal exam at ANC from a doctor, receiving a prenatal exam at ANC from a

nurse/midwife, and if she told how to be prepared for preterm delivery) as the p-value for all the test > 0.05.

This is consistent with some previous research in similar contexts. For example, a study conducted in South Africa found that maternal knowledge of neonatal care did not significantly predict the number of ANC visits attended by mothers (Fadlelmola et al., 2020). Similarly, a study in Ethiopia found that there was no significant relationship between maternal knowledge of neonatal danger signs and the number of ANC visits attended (Assefa et al., 2019). However, other studies have found a positive relationship between maternal knowledge and ANC attendance. For example, a study in Indonesia found that mothers who had higher levels of knowledge about pregnancy and childbirth were more likely to attend ANC visits (Handayani et al., 2018).

Overall, the relationship between maternal knowledge of care for premature babies and ANC attendance is not entirely clear and may depend on various contextual factors. Some studies have found a positive relationship, while others have found no significant relationship. More research is needed to fully understand this relationship in different contexts.

Table (4.14): Association between mothers’ knowledge about the care of their premature children and sources of information

Variables	Categories	Poor N (%)	Good N (%)	Excellent N (%)	Chi	p- value
Receive information related to the care of the premature baby during pregnancy	Yes	12(23.5)	11(21.6)	28(54.9)	3.27	0.071
	No	47(39.5)	20(16.8)	52(43.7)		
The source of information was Doctor	Yes	14(32.6)	8(18.6)	21(48.8)	0.71	0.399
	No	3(37.5)	3(37.5)	2(25)		
The source of information was from Nurse/midwife	Yes	3(21.4)	5(35.7)	6(42.9)	0.23	0.632
	No	14(37.8)	6(16.2)	17(45.9)		

Table (4.14): continued ...

The source of information was from mass media	Yes	3(100)	0(0)	0(0)	5.067	0.024*
	No	14(29.2)	11(22.9)	23(47.9)		
The source of information was from Relative/friend	Yes	3(60)	0(0)	2(40)	0.711	0.399
	No	14(30.4)	11(23.9)	21(45.7)		
Receive information related to the care of the after delivery of this baby	Yes	41(29.3)	27(19.3)	72(51.4)	9.42	0.002*
	No	18(60)	4(13.3)	8(26.7)		
The source of information was Doctor	Yes	17(30.9)	15(27.3)	23(41.8)	3.730	0.155
	No	32(37.6)	12(14.1)	41(48.2)		
The source of information was from Nurse/midwife	Yes	44(35.5)	21(16.9)	59(47.6)	0.259	0.611
	No	5(31.3)	6(37.5)	5(31.3)		
The source of information was from Mass media	Yes	3(37.5)	2(25)	3(37.5)	0.284	0.868
	No	46(34.8)	25(18.9)	61(46.2)		
The source of information was from Relative/friend	Yes	9(40.9)	4(18.2)	9(40.9)	0.373	0.541
	No	40(33.9)	23(19.5)	55(46.6)		
perceive the information you receive adequate	Yes	12(21.1)	15(26.3)	30(52.6)	9.273	0.010*
	No	38(45.2)	12(14.3)	34(40.5)		

**Statistically significant*

Table (4.14) depicts the association between mothers' knowledge of the care of their premature infants and the sources of information regarding the care. The Chi-square test demonstrated a statistically significant relationship between three variables and the knowledge of mothers regarding the care of their premature children. Initially, obtain information from the media regarding the care of the premature infant throughout pregnancy. The three mothers receiving information from this source have poor knowledge, while 47.9% of those who do not have this source have excellent knowledge (chi= 5.067, p- value= 0.024). Second: Obtain information regarding the care of this baby after delivery, such that more than half (51.4%) of those receiving the information has excellent knowledge and just 29.2% have poor knowledge. Comparatively, 26.7% of those who did not receive the

information rated it as excellent, while 60% rated it as poor ($\chi^2 = 9.42, p = 0.001$). Third: regard the information as adequate, with 52.6% of those who perceive the material as adequate having excellent knowledge and 21.1% having poor knowledge. In contrast, 40.5% of individuals who evaluated the obtained information to be inadequate have excellent knowledge, while 45.2% have poor knowledge ($\chi^2 = 9.273, p\text{-value} = 0.010$).

The other examined maternal health services showed no relationship with the mothers' knowledge about the care of their premature babies (Receive information related to the care of the premature baby during pregnancy; and its sources of information from the doctor, nurses/midwives, and relatives/friends, all the sources of information for receiving information after delivery) as the p -value for all the test > 0.05 .

According to Ding et al. (2019), parental education is one factor that can affect knowledge and confidence in caring for preterm infants. The results of their study showed that parental education had a positive effect on the knowledge and confidence of parents in China. Similarly, Kaarensen et al. (2016) conducted a randomized controlled trial and found that an early intervention program helped to reduce parenting stress after preterm birth. In terms of the sources of information for parents, Kim et al. (2018) found that physician-parent communication can positively influence parents' perceptions of their influence in the NICU. However, in the study by Almutairi (2021), sources of information such as doctors, nurses/midwives, and relatives/friends did not have a significant relationship with the knowledge of mothers about the care of their premature babies.

Table (4.15): Multivariate analysis

		Estimate	Std. Error	Wald	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Threshold	[Totalknowledge = 1.00]	-28.35	2142.76	0.00	0.989	-4228.08	4171.38
	[Totalknowledge = 2.00]	-26.93	2142.76	0.00	0.990	-4226.66	4172.80
Location	DM as a risk factor	-14.30	0.00			-14.30	-14.30
	number of premature babies	-0.74	0.62	1.42	0.234	-1.95	0.48
	birth order of the child	0.33	0.44	0.55	0.457	-0.54	1.19
	number of ANC visits during pregnancy	0.23	0.67	0.12	0.730	-1.08	1.54
	receive a special follow-up related to the care of a premature child	-2.00	0.96	4.32	0.038*	-3.88	-0.11
	receive information related to the care of a premature child during pregnancy	-13.95	654.69	0.00	0.983	-1297.13	1269.22
	mass media as a source of information	16.44	958.58	0.00	0.986	-1862.35	1895.22
	receive information related to the care of a premature child after delivery	-15.80	698.06	0.00	0.982	-1383.96	1352.37
	perceive information adequate	0.88	1.39	0.40	0.526	-1.85	3.62

*Nagelkerke value=0.51, *statistically significant.*

Table (4.15) shows the results of ordinal regression. Nine variables showed a p-value less than 0.1 in the bivariate analysis and were entered in the regression model (This value was used in previous studies such as Ramanathan et al. (2020) and Cao et al. (2019) study. The variables entered were; DM as a risk factor, number of premature babies, birth order of the child, number of ANC visits during pregnancy, receiving a special follow-up related to the

care of a premature child, receiving information related to the care of the premature child during pregnancy, mass media as a source of information, receive information related to the care of the premature child after delivery, perceive information adequate. The Nagelkerke value derived from the model is 0.51 means that the model predicts 51% of the variation in the dependent variable (Mothers' knowledge about the care of their premature children). This value indicates a moderate level of predictability, but it also suggests that there may be other factors that influence mothers' knowledge about the care of their premature babies that are not accounted for in this model.

The variable "receive a special ANC follow up related to the care of the premature baby" is the only variable considered as a predictor for mothers' knowledge about the care of her premature baby as being in the no category decreases the likelihood of having an excellent knowledge by 2 holding all other variables constant (p- value= 0.038). Although the univariate analysis identified four factors affecting mothers' knowledge about the care of their premature babies, the only variable that was found to be a significant predictor was "receive a special ANC follow-up related to the care of premature babies." Mothers who did not receive this special follow-up were found to be 2 times less likely to have excellent knowledge about the care of their premature baby, holding all other variables constant. Overall, receiving specialized follow-up care related to premature babies during ANC visits can significantly improve a mother's knowledge about the care of their premature babies. The findings imply that such follow-ups could positively impact the health outcomes of premature babies by ensuring that their mothers have adequate knowledge of the care required for them. However, there is a need for further research to identify other factors that may influence a mother's knowledge about the care of their premature babies. Such factors could be related to the mother's socioeconomic status, educational background, cultural beliefs, access to healthcare, and the quality of healthcare services available.

Chapter Five

Conclusion and recommendations

5.1 Conclusion

This study aimed to assess the mothers' knowledge regarding the care of their premature babies in the Gaza Strip, Palestine. The study found a positive correlation between levels of mothers' knowledge domains about caring for their premature children. However, no statistically significant relationship was found between mothers' knowledge and neither demographic characteristics nor obstetrical factors.

Mothers who received a special ANC follow-up relevant to premature baby care had significantly better knowledge about caring for their premature babies than those who did not receive such follow-up. However, the other examined maternal health services showed no statistically significant relationship with mothers' knowledge about caring for their premature babies.

Furthermore, the study found that mothers who received information about the care of their premature babies during pregnancy and after delivery and regarded the information as adequate had better knowledge about caring for their premature babies than those who did not receive such information or perceived it as inadequate.

Finally, the study identified receiving a special ANC follow-up related to the care of premature babies as a significant predictor of mothers' knowledge about caring for their premature babies. Mothers who did not receive this special follow-up were found to be 2 times less likely to have excellent knowledge about the care of their premature baby, holding all other variables constant. In the last, the study suggests that receiving a special follow-up related to the care of premature babies during ANC visits is an important factor in improving

mothers' knowledge about the care of their premature babies. However, further research is needed to identify other factors that may influence mothers' knowledge about the care of their premature babies.

5.2 Recommendations

5.2.1 Recommendations for policymakers

- To encourage healthcare providers to provide special follow-ups related to the care of premature babies during ANC visits. This could include providing information on how to care for a premature baby and what to expect during the postnatal period.
- To increase mothers' knowledge about the care of premature infants during ANC visits by providing adequate information about its definition, complications, and care.
- To develop and implement educational programs to increase awareness among mothers about the care of premature babies. These programs could include prenatal education sessions, online resources, and information leaflets distributed in health clinics.
- To consider providing additional resources and support to mothers who have had previous premature births. This could include increased ANC visits, access to specialized care providers, and additional educational materials.
- To encourage the media to promote information about the care of premature babies during pregnancy and after delivery. This could include TV commercials, radio spots, and social media campaigns.
- To encourage healthcare providers to offer counseling and support services to mothers who have given birth prematurely. This could include access to mental health services, support groups, and other resources to help them cope with the stress and challenges of caring for a premature baby.

5.2.2 Recommendations for mothers of premature babies

- To seek information and support: Mothers need to seek information and support from their healthcare providers, such as doctors, nurses, and midwives, as well as from support groups and organizations that specialize in caring for premature babies.
- To learn about baby's needs: Premature babies have unique needs and require specialized care. Mothers should work with their healthcare providers to learn about their baby's specific needs and how to best care for them.
- To be involved in baby's care: Mothers should be involved in their baby's care as much as possible, including feeding, changing diapers, and providing comfort. This can help strengthen the bond between mother and baby and improve outcomes for the baby.
- To follow healthcare provider's instructions: Mothers should follow their healthcare provider's instructions regarding feeding, medications, and other aspects of their baby's care to ensure the best possible outcomes.
- To be aware of signs of complications: Premature babies are at higher risk for certain complications, such as breathing problems, infections, and developmental delays. Mothers should be aware of the signs of these complications and seek medical attention if necessary.
- To stay up-to-date with appointments: Premature babies may require more frequent medical appointments than full-term babies. Mothers should stay up-to-date with these appointments and communicate any concerns or questions they may have with their healthcare providers.

5.2.3 Recommendations for future research

- To conduct a larger sample size study: The lack of significant relationships between some variables and mothers' knowledge about the care of their premature babies may be due to the small sample size of the study. A larger sample size may help to cover more significant relationships and better understand the factors influencing mothers' knowledge about the care of their premature babies.
- To conduct a longitudinal study: A longitudinal study can provide a more in-depth understanding of the relationship between obstetrical factors, maternal health services, and mothers' knowledge about the care of their premature babies. It can help to identify changes in knowledge and practices over time and determine the effectiveness of interventions aimed at improving knowledge and practices.
- To explore cultural and social factors: The study did not explore the influence of cultural and social factors on mothers' knowledge about the care of their premature babies. Future studies could investigate the impact of cultural and social factors such as traditional beliefs and practices, family support, and access to information on mothers' knowledge about the care of their premature babies.
- To investigate the effectiveness of interventions: There is a need to evaluate the effectiveness of interventions aimed at improving mothers' knowledge about the care of their premature babies. Future studies could investigate the impact of interventions such as peer education, social media campaigns, and mobile health applications on mothers' knowledge about the care of their premature babies.
- To investigate the impact of fathers: The study focused on the knowledge of mothers about the care of their premature babies. However, fathers play an important role in the care of premature babies, and their knowledge and involvement can influence maternal knowledge and practices. Future studies could investigate the impact of fathers' knowledge and involvement on maternal knowledge and practices.

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Annexes

Annex (1): Palestine map



Annex (2): Gaza Strip map



Annex (3): Sample size calculation



8- The birth date of the baby:.....

Part III: Maternal health services

1- Number of antenatal visits during pregnancy of this baby:.....times

2- Did you receive a special ANC follow-up related to the care of a premature baby?

Yes No

3- Did you receive a prenatal exam at ANC from a doctor? Yes No

4- Did you receive a prenatal exam at ANC from a nurse/midwife? Yes

No

5- Did a health care provider tell you how to prepare yourself for preterm delivery?

Yes No

Part IV: Source of information

1- Did you receive information related to the care of a premature baby during pregnancy?

Yes No

If yes, the source of information was from **(possible to select more than one answer)**:

a. Doctor b. Nurse/midwife c. Mass media d. Relative/friend

2- Did you receive information related to the care of the premature after delivery of this baby?

Yes No

If yes, the source of information was from **(possible to select more than one answer)**:

a. Doctor b. Nurse/midwife c. Mass media d. Relative/friend

If your answer for the previous 2 questions was no, skip the next question (Q 3)

3- Did you perceive the information you receive as adequate? Yes No

Part V: Mother's knowledge regarding care of a premature baby (maximum score 30)

A	Thermoregulation	Yes	No
1.	The premature baby should be placed in a warm environment	/	
2.	The premature baby loses body heat rapidly if uncovered	/	
3.	Covering a premature baby's head help in keeping the baby's temperature	/	
4.	Premature babies should be placed near open windows with air drafts		X
5.	A premature baby could be placed on cold beds or blanket		X
6.	Premature babies should be manipulated frequently		X
7.	The Source of heat is essential to keep a baby's normal temperature	/	
8.	Handling the baby with warmed hands is necessary	/	
9.	Dressing the baby in previously warmed clothes is necessary	/	
10.	The baby should be bathed with warm water with immediate drying and covering after bathing	/	
B	Feeding		
1.	Any premature baby can tolerate breastfeeding		X
2.	A premature baby may be kept NPO	/	
3.	A premature baby may be given feeding through NGT	/	
4.	Feeding a premature baby through NGT is by pushing milk through a syringe in the tube		X
5.	Pacifiers may be used for NPO premature baby	/	
6.	Premature babies should receive small & frequent amounts of milk	/	
7.	Burping a premature baby during and after feeding is not essential		X
8.	Expressed breast milk for baby is best if unable to receive breastfeeding	/	
C	Phototherapy		
1.	The premature baby's temperature should be monitored during phototherapy	/	
2.	The premature baby's position should be changed frequently during phototherapy	/	
3.	The Baby's eyes should be covered during phototherapy	/	
4.	The Baby's genitalia should be covered during phototherapy	/	

5.	Baby under phototherapy should be kept well hydrated through IV fluid or milk feeding	/	
D	Infection & Skincare		
1.	The umbilical cord can be covered by the diaper		X
2.	The umbilical cord should be kept dry & clean	/	
3.	A soiled diaper should be changed immediately	/	
4.	Hand hygiene should be done before handling a premature baby	/	
5.	The umbilical cord should be covered		X
6.	Instruments used for the care of the baby could be shared with others		X
7.	Perineal & umbilical cord areas should be monitored closely for infection	/	

Thank you very much for your cooperation

Annex (5): Interviewed Questionnaire (Arabic version)

رقم الاستبانة:.....

أرجو الإجابة على الأسئلة التالية:

أولاً: البيانات الديموغرافية والاجتماعية	
1.	عمرك بالسنوات:.....سنة
2.	مكان السكن (المحافظة):.....
3.	عدد سنوات تعليمك:.....
4.	عدد سنوات تعليم الزوج:.....
5.	متوسط الدخل الشهري بالشيقل:.....
6.	عمل أم الطفل: 1- تعمل/موظفة 2- ربة منزل
7.	عمل والد الطفل: 1- يعمل/موظف 2- لا يعمل
ثانياً: عوامل متعلقة بالولادة	
1.	عوامل خطر عند الأم: 1- السكر 2. ارتفاع ضغط دم الحمل 3- انفجار مبكر لأغشية الجنين 4- ولادة قيصرية 5- حمل بتوأم 6- أخرى (مع التحديد).....
2.	طريقة ولادة الطفل: 1- طبيعية مهلبياً 2- مهلبياً باستخدام شفط 3- قيصرية
3.	عدد الأطفال المولودين خدج سابقاً (غير هذا الطفل):..... طفل
4.	عمر حمل هذا الطفل بالأسابيع:.....أسبوع
5.	عدد الأطفال لديك (مع هذا الطفل):..... طفل
6.	ترتيب هذا الطفل بين أطفالك: 1- الأول 2- الثاني 3- الثالث 4- الرابع أو أكثر
7.	جنس الطفل: 1- ذكر 2- أنثى
8.	تاريخ ميلاد الطفل:.....
ثالثاً: الخدمات الصحية ذات العلاقة بالأم	
1.	عدد الزيارات لعيادة الحوامل خلال حملك بهذا الطفل:..... زيارة

2.	هل تلقيت متابعة خاصة بعيادة الحوامل متعلقة برعاية طفل خداج: 1- نعم 2- لا
3.	هل تلقيت فحص من طبيب خلال متابعتك بعيادة الحوامل: 1- نعم 2- لا
4.	هل تلقيت فحص من ممرضة/قابلة خلال متابعتك بعيادة الحوامل: 1- نعم 2- لا
5.	هل أخبرك مقدم الخدمة الصحية عن كيفية الاستعداد لولادة طفل مبكراً (خداج): 1- نعم 2- لا
رابعاً: مصدر المعلومات	
1.	هل تلقيت معلومات ذات علاقة برعاية الطفل الخداج خلال فترة الحمل؟ 1- نعم 2- لا إذا كانت الإجابة بنعم، من كان مصدر تلك المعلومات (يمكنك اختيار أكثر من اجابة حسب ما ينطبق): 1- الطبيب 2- الممرضة/القابلة 3- الإعلام 4- أقارب/أصدقاء
2.	هل تلقيت معلومات متعلقة برعاية الطفل الخداج بعد ولادة هذا الطفل: 1- نعم 2- لا إذا كانت الإجابة بنعم، من كان مصدر تلك المعلومات (يمكنك اختيار أكثر من اجابة حسب ما ينطبق): 1- الطبيب 2- الممرضة/القابلة 3- الإعلام 4- أقارب/أصدقاء
3.	إذا كانت إجابتك للسؤالين السابقين ب (لا) لا تجيبى هذا السؤال: هل تعتبري المعلومات التي تلقيتها بخصوص رعاية الطفل الخداج كافية؟ 1- نعم 2- لا
خامساً: معلومات الأم حول العناية بالطفل الخداج	
أ	الحفاظ على حرارة الطفل
1.	الطفل الخداج يجب وضعه في بيئة دافئة
2.	الطفل الخداج يفقد حرارته بسرعة إن لم يغطى
	خطأ صحيح

	/	تغطية رأس الطفل الخداج يساعد في الحفاظ على درجة حرارة جسمه	3.
X		الطفل الخداج يتم وضعه بجانب الشبابتيك المفتوحة التي يدخلها تيار هوائي	4.
X		يمكن وضع الطفل الخداج فوق سرير أو حرام بارد	5.
X		الأطفال الخدج يتم تحريكهم باستمرار	6.
	/	مصدر للحرارة ضروري بجوار الطفل الخداج للحفاظ على حرارته	7.
	/	تتم ملامسة الطفل الخداج بأيدي دافئة	8.
	/	من الضروري الباس الطفل ملابس تم تدفنتها مسبقاً	9.
	/	تحميم الطفل الخداج يتم بماء دافئ مع سرعة التجفيف وتغطية الطفل بعد الحمام	10.
ب	صحيح خطأ	تغذية الطفل	
X		أي طفل خداج يستطيع ممارسة الرضاعة من ثدي الأم	1.
	/	الطفل الخداج من الممكن ألا يسمح له بأخذ أي شيء عبر الفم	2.
	/	الطفل الخداج من الممكن إعطائه الحليب عبر انبوب يصل للمعدة	3.
X		تغذية الطفل عبر انبوب المعدة يتم من خلال دفع الحليب بواسطة سرنجة دفعاً في الانبوب	4.
	/	البز الكاذب (اللهاية) يمكن استخدامه مع الطفل الخداج الذي لا يرضع عبر الفم	5.
	/	الطفل الخداج يتم إرضاعه بكميات صغيرة ومتكررة من الحليب	6.
	X	ليس من الضروري تكرير (تشجأة) الطفل الخداج أثناء وبعد الرضاعة	7.
	/	يعتبر حليب الأم المشفوط أفضل للطفل في حال لا يستطيع الرضاعة من ثدي الأم	8.
ت	صحيح خطأ	العلاج الضوئي	
	/	يجب مراقبة حرارة الطفل الخداج أثناء وضعه تحت العلاج الضوئي	1.
	/	يجب أن يتم تغيير وضعية الطفل الخداج أثناء وضعه تحت العلاج الضوئي	2.
	/	يجب تغطية عيني الطفل الخداج أثناء وضعه تحت العلاج الضوئي	3.
	/	يجب تغطية الجهاز التناسلي للطفل الخداج أثناء وضعه تحت العلاج الضوئي	4.

	/	الأطفال تحت العلاج الضوئي يجب الحفاظ على السوائل لديهم من خلال اعطاء الحليب أو السوائل الوريدية	5.
خطأ	صحيح	العدوى والعناية بالجلد	ث
X		الحبل السري يمكن تغطيته بالحفاضة	1.
	/	يجب أن يحافظ على الحبل السري جافاً ونظيفاً	2.
	/	الحفاضة المتسخة يجب تغييرها في الحال	3.
	/	غسل الأيدي بالصابون أو معقم ضروري قبل ملامسة الطفل	4.
X		يجب تغطية الحبل السري	5.
X		الأدوات المستخدمة للطفل يمكن مشاركتها مع الآخرين	6.
	/	المنطقة التناسلية و الحبل السري يجب مراقبتها باستمرار لعلامات العدوى	7.

شكراً لحسن تعاونكم

Annex (6): List of arbitrators

#	Name	Organization
1	Dr. Hamza M. Abdeljawad	Al-Quds University
2	Dr. Areefa S. Alkasih	Islamic University of Gaza (IUG)
3	Dr. Samira Abo Al Sheikh	Ministry of Health
4	Dr. Adham I. Ahmed	KYTC- UNRWA
5	Dr. Mohammad I. Tabash	Al Azhar University- Gaza (AUG)
6	Dr. Marwan O. Jalambo	Al Azhar University- Gaza (AUG)
7	Dr. Ahmed A. Al Shaer	Islamic University of Gaza (IUG)

Annex (7): Ethical approval

**المجلس الفلسطيني للبحث الصحي**
Palestinian Health Research Council
تعزيز النظام الصحي الفلسطيني من خلال مؤسسة استخدام المعلومات البحثية في صنع القرار
Developing the Palestinian health system through institutionalizing the use of information in decision making

Helsinki Committee
For Ethical Approval

Date: 07/02/2022 **Number: PHRC/HC/1025/22**

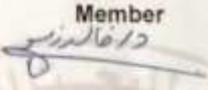
Name: Mohammed Hamza Abdeljawad الاسم:

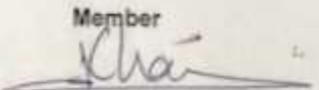
We would like to inform you that the committee had discussed the proposal of your study about: نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:

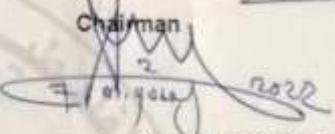
Assessment of Mothers' Knowledge Regarding Care of their Premature Babies in the Gaza Strip, Palestine

The committee has decided to approve the above mentioned research. Approval number PHRC/HC/1025/22 in its meeting on 07/02/2022 و قد قررت الموافقة على البحث المذكور عاليه بالرقم والتاريخ المذكوران عاليه

Signature

Member 

Member 

Chairman 

Genral Conditions:-

1. Valid for 2 years from the date of approval.
2. It is necessary to notify the committee of any change in the approved study protocol.
3. The committee appreciates receiving a copy of your final research when completed.

Specific Conditions:-



E-Mail: pal.phrc@gmail.com

Gaza - Palestine غزة - فلسطين
شارع النصر - مفترق العيون

Annex (8): Admin approval

State of Palestine
Ministry of health



دولة فلسطين
وزارة الصحة

التاريخ: 14/09/2022
رقم المراسلة 1057326

السيد : جهاد عبدالقادر عكاشه المحترم

مدير دائرة الإدارة العامة للبيانات الإدارية المساعدة /وزارة الصحة

السلام عليكم ...

الموضوع: تسجيل صحة البنات محمد حمزة عبد الجواد

التفصيل // السلام عليكم نعتديكم أظييد التحيات ونود منكم تسجيل صحة البنات/أ محمد حمزة محمد عبد الجواد الملتحق ببرنامج ماجستير تدريس الأهلل - جامعة القدس أبو ديس في اجراء بحث بعنوان: Assessment of Mothers ' Knowledge Regarding Care of their Premature Babies in the Gaza Strip, Palestine عدد من امعات الأهلل البدج المرابعين في مرافق وزارة الصحة (المستشفيات) ، بون اجراء أي تحلل طبي أو سحب عينات دم ، نقل توجيهاتكم لأدوى الاخصاس بضرورة الحصول على الموافقة المستنيرة من المشاركين ، بما لا يتعارض مع مصلحة العمل وتضمن أخلاقيات البحث العلمي ، ودون تحمل الوزارة أي أعباء أو مسئولية .وتتمتعوا بقبول التحية والتقدير . ملاحظات / تسجيل الصحة الخاص بالدراسة أعلاه صالح لمدة 3 أشهر من تاريخه. يرجى التأكد من توافق الاستبانة المرفقة والتي يتم تعبئتها ميدانيا على ان لا يتم أي إضافة أو تعديل على الاستبانة المرفقة

علي حسن البليسي
حكيم جمعي

المرفقات

■ بنات البحث محمد حمزة عبد الجواد.pdf



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غزة

Annex (9): Consent form

Deanship of Post-Graduate Studies

Al- Quds University



استبانة لأمهات الأطفال الخدج

**Assessment of Mothers' Knowledge Regarding Care of their Premature
Babies in the Gaza Strip, Palestine**

عزيزتي الأم:

انا الباحث/ محمد حمزة عبد الجواد طالب ماجستير بجامعة القدس أبو ديس كلية المهن الصحية تخصص تمريض أطفال، اقوم بإجراء هذا البحث كمتطلب رئيس من متطلبات الحصول على شهادة الماجستير. إن الهدف الرئيسي لهذه الدراسة هو تقييم الجانب المعرفي المتعلق برعاية الأطفال الخدج لدى الأمهات ذوي الأطفال الخدج المنومين في أقسام العناية لحديثي الولادة في مستشفيات قطاع غزة الحكومية.

أثمن عاليا مشاركتكم الهامة في هذه الدراسة من خلال الإجابة على أسئلة الاستبانة والتي من ممكن أن تستغرق حوالي 20 دقيقة. مع العلم أن المشاركة اختيارية مع ضمان سرية المعلومات المقدمة. وإن هذا البحث لن يستخدم إلا لأغراض البحث العلمي فقط. مع العلم أن مشاركتك ستعود بالنفع المستقبلي على الإرشادات المقدمة للأمهات بخصوص رعاية الأطفال الخدج.

ولكم جزيل الشكر والتقدير

الباحث / محمد حمزة عبد الجواد

Abstract in Arabic

عنوان الدراسة: تقييم معرفة الأمهات فيما يتعلق برعاية الأطفال الخدج في قطاع غزة، فلسطين

اعداد: محمد حمزة محمد عبد الجواد

اشراف: د. أحمد نجم

الملخص:

المعرفة الجيدة للأمهات حول الرعاية الأساسية لحديثي الولادة هي الخطوة الأساسية في برنامج صحة الطفل وخاصة في الأطفال الخدج. هدفت الدراسة إلى تقييم معرفة الأمهات فيما يتعلق برعاية أطفالهن الخدج في قطاع غزة ، فلسطين.

تم استخدام تصميم مقطعي وصفي، وتم استهداف الأمهات اللواتي ولدن أطفالاً خدجاً في أقسام حديثي الولادة في مجمع الشفاء الطبي ومستشفى الأقصى ومستشفى ناصر ومستشفى الإمارات لملء استبيان. تم استخدام برنامج Epi info لحساب عينة الدراسة في فترة ثقة 95% والتي كشفت عن عينة من 164 واستخدمت العينة المتتالية. تم اختيار عينة متناسبة من كل مستشفى مع الأخذ في الاعتبار معايير الاشتغال للأمهات اللواتي ولدن طفلاً خديجاً تم إدخاله إلى إحدى المستشفيات المختارة. تم إجراء دراسة استطلاعية على 10% من حجم العينة والتي تم تضمينها في التحليل النهائي. تم أخذ الاعتبارات الأخلاقية في عين الاعتبار خلال فترة الدراسة واستخدم برنامج الحزمة الإحصائية للعلوم الاجتماعية الإصدار 25 لتحليل البيانات.

تم تضمين مائة وسبعين امرأة كان لديهن أطفال خدج في الدراسة. متوسط عمر الأمهات اللائي لديهن أطفال خدج هو 28.8 مع أكبر نسبة (36.5%) في الفئة العمرية (< 30 سنة). على الرغم من أن غالبية النساء وأزواجهن حاصلين على درجة البكالوريوس أو أعلى (51.2% و 60% على التوالي). معظم النساء ربات بيوت ، و 78.2% يعملون. إضافة إلى ذلك، 77.6% من العائلات لديها دخل أقل من 1973 شيكل. تشمل عوامل الخطر السائدة على الأمهات ارتفاع ضغط الدم الناجم عن الحمل (45.3%) ، و القيصرية السابقة (62.4%) ، و إنجاب توائم (14.1%) ، و 77.1% من النساء اللواتي ولدن في العملية القيصرية. متوسط عدد زيارات الرعاية قبل موعد الولادة هو 5 زيارات، 28.2% من النساء تلقين متابعة خاصة أثناء رعاية الأطفال الخدج. فقط 30% من النساء تلقين معلومات تتعلق بالرعاية المبكرة أثناء الحمل ، ولكن 83% تلقينها بعد الولادة. 40.4% من النساء يرون أن المعلومات التي حصلن عليها كافية. وبلغ مستوى معرفة الأمهات برعاية أطفالهن الخدج 63.8 حيث كانت نسبة المعرفة بين فقيرة جيدة وممتازة 34.7% و 18.2% و 47.1% على التوالي.

أظهرت الدراسة وجود علاقة ارتباط موجبة بين مستوى جميع المجالات المعرفية للأمهات (التنظيم الحراري ، التغذية ، العلاج بالضوء ، العدوى والعناية بالبشرة) حيث أن جميع قيم مستوى المعنوية < 0.05 كما وجدت الدراسة أربعة عوامل تؤثر على معرفة الأمهات برعاية أطفالهن الخدج. تلقي زيارة رعاية الحمل خاصة برعاية الطفل الخديج ، قيمة كاي = 7.2 ، مستوى المعنوية = 0.008 ، مصدر المعلومات كوسائل الإعلام (قيمة كاي = 5.067 ، مستوى المعنوية = 0.024) ، تلقي المعلومات المتعلقة برعاية الخدج بعد الولادة (قيمة كاي = 9.42 ، مستوى المعنوية = 0.002 ، وتصور المعلومات المستلمة على أنها كافية (قيمة كاي = 9.27 ، مستوى المعنوية = 0.010) ومع ذلك ، فإن اكتشاف التحليل متعدد المتغيرات يظهر أن تلقي زيارة حمل خاصة برعاية طفل خديج هو المتغير الوحيد الذي يتنبأ بمعرفة النساء حول رعاية طفلهن الخديج (مستوى المعنوية = 0.038).

تشير الدراسة إلى أنه لا تزال هناك فجوة كبيرة في معرفة المشاركين عندما يتعلق الأمر برعاية أطفالهم الخدج. وهذا يعني أن هناك فرصة لتحسين تثقيف الأمهات بشأن الرعاية المناسبة واحتياجات أطفالهن الخدج. تؤكد الدراسة على أهمية البرامج التعليمية التي يمكن أن تساعد في تعزيز معرفة الأمهات حول رعاية الأطفال الخدج.