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The Effects of Implementing a Neonatal Jaundice Prevention Program on Mothers' Knowledge and Practices Toward Neonatal Jaundice at Saint Joseph Hospital in East Jerusalem

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Thesis Approval

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Declaration

I, **Taqwa Kamel Tawfeeq Mashaqi, Student ID 202112472**, one of the students of the Faculty of Graduate Studies at the Arab American University, hereby declare that this thesis, entitled **"The Effects of Implementing a Neonatal Jaundice Prevention Program on Mothers' Knowledge and Practices Toward Neonatal Jaundice at Saint Joseph Hospital in East Jerusalem"** is all my work, and the resources that are used in this thesis (including the internet resources) have been referred to and properly acknowledged as required.

I declare that I have fully understood the concept of plagiarism, and I acknowledge that my thesis will be immediately rejected if it includes any type of plagiarism.

Taqwa Kamel Tawfeeq Mashaqi

Signature: 

Date: 05/06/2024

Dedication

By the Name of Allah

My God, the night is only pleasant with your remembrance, the day is only pleasant with your obedience, the moments are only pleasant with your gratitude, the afterlife is only pleasant with your forgiveness, and heaven is only pleasant with your vision. Glory be to You.

To the beacon of knowledge, to the one who conveyed the message, fulfilled the trust, and advised the nation, to the Prophet of Mercy and Light of the Worlds, our Master Muhammad, may God bless him and grant him peace."

To the one whom God crowned with awe and reverence, to the one who taught me to give without expectation, to the one whose name I carry with pride, to the wrinkles on his face that formed every time he laughed at our achievements, to my first and only hero, to the person from whom I have received the most affection in my life, my dear father."

To my first teacher in childhood and youth, to my fuel in all life's stages, to the prayers of my mother who always preserved me until I reached where I am today.

To my dear brother Ehab, whom God has given us as support and pride.

To my dear sisters, who have always been my wings and the first refuge in all circumstances, and with whom I have shared all the days, growing up with memories that will last a lifetime.

To their continuous effort for us, and to all those who gave from their hearts so that we could gain their knowledge, to those whom we were unable to describe with all the words of the language, my PHD teachers throughout this journey.

To all those who have created beautiful memories that have paved the way for us, to those who have made our laughter louder, to all my companions and supporters who have stood by me on this journey.

To my beloved country and my people, to the wounds that have not yet healed, to the constant pain that we endure, and to all the achievements and challenges that we continue to face despite the pain.

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I also extend my deep thanks to my esteemed doctors in the discussion committee for their kindness to me in accepting to discuss the thesis and for their role in correcting the deficiencies and expressing valuable observations and wise opinions, as they are qualified to fill its defects, correct its crookedness, and point out its deficiencies.

It is my pleasure to extend my deepest thanks and great gratitude to the Arab American University, which sponsored me as a student in the master's program and opened its arms to all who thirst for knowledge and knowledge. We ask God Almighty to preserve it and keep it a beacon for science and scholars.

In the end, I extend my sincere thanks and gratitude to Saint Joseph Hospital - Jerusalem, which provided me with all the facilities and assistance to complete this research to the fullest extent, especially the neonatal department.

Abstract

Abstract Background: Neonatal jaundice; hyperbilirubinemia, is a common condition in newborns caused by an imbalance between bilirubin production and the excretory system's capacity. It affects over 50%–60% of full-term and 80% of preterm newborns and is the third most frequent reason for newborn hospital admissions. Although approximately 85% of newborns experience neonatal jaundice, it usually resolves on its own within the first week. However, improper management can lead to extreme hyperbilirubinemia, responsible for more than 75% of hospital readmissions within the first two weeks of life across the globe. **Aim:** the study aimed to assess the effect of implementing neonatal jaundice prevention programs on mothers' knowledge and practices toward neonatal jaundice at Saint Joseph Hospital in East Jerusalem. **Method:** The quantitative method, quasi-experimental, Pretest-Posttest design was applied. **Population and sample:** A convenience sampling strategy was used. The sample size was 48 mothers whose infants exhibited physiological jaundice within 24 to 72 hours after birth. **Tool:** A study questionnaire was developed by the researcher for data collection. The questionnaire had six parts. **Results:** The study revealed statistically significant differences between the pre-test and post-test results, supporting previous research that found that women's knowledge and practices of neonatal jaundice improved significantly after implementing a prevention program. **Conclusion:** findings highlight the significance of having an updated neonatal jaundice prevention program for all mothers. This will help them stay informed and maintain their knowledge and practice skills about neonatal jaundice, based on the most recent evidence. By incorporating early prevention strategies within the neonate department, we can reduce the incidence of jaundice and the devastating effects of neonatal jaundice. **Recommendation:** A routine health education program for mothers in neonatal jaundice should be implemented.

Keywords: Neonatal jaundice, prevention programs, knowledge, practice prevention of jaundice, physiological jaundice, serum bilirubin, and transcutaneous bilirubin.

Table of Contents

List of Tables

List of Figures

List of abbreviation

AAUP	Arab American University
ABO incompatibility	A, B, and O are the three major blood types. The types are based on small substances (molecules) on the surface of the blood cells. When people who have one blood type receive blood from someone with a different blood type, it may cause their immune system to react. This is called ABO incompatibility.
GA	Gestational age
G6PD deficiency	Glucose-6-Phosphate Dehydrogenase Deficiency
IRB	Institutional Review Boards
NJ	Neonatal jaundice
NJPP	Neonatal jaundice prevention program
RBCs	Red blood cells
Rh incompatibility	Rhesus (Rh) factor protein found on the surface of red blood cells(RBCs), Rh incompatibility is a condition that develops when a pregnant woman has Rh-negative blood and the baby in her womb has Rh-positive blood
SD	Standard Deviation
SPSS	Statistical Package for Social Science
TCB	Transcutaneous bilirubin
TSB	Total serum bilirubin
UTI	including Urinary tract infection

Chapter One

Introduction

Chapter One

Introduction

Neonatal jaundice (NJ), also known as Hyperbilirubinemia (Ullah et al., 2016), is a condition where bilirubin levels rise in a baby's bloodstream (Ullah et al., 2016), leading to yellowish discoloration of the skin and sclera (Lee et al., 2022). This is a physiologic phenomenon (van der Geestet al., 2021); caused by an imbalance between bilirubin production and the excretory system's capacity in the first few days of life (Hegyi & Kleinfeld, 2022). Bilirubin is a yellow substance produced when red blood cells (RBCs) break down (Ullah et al., 2016). According to the study conducted by Woodgate and Jardine in 2015, the majority of jaundice cases in newborns occur due to increased red blood cell breakdown and decreased bilirubin excretion (Woodgate & Jardine, 2015).

Neonatal jaundice is highly prevalent in newborns (Salia et al., 2021), and it is a significant global public health issue and a leading cause of neonatal mortality and morbidity (Diala et al., 2023; Khalaf et al.,2019). According to research conducted by Hegyi and Kleinfeld in 2022, NJ affects over 50%-60% of full-term and 80% of preterm newborns (Hegyi & Kleinfeld, 2022). NJ is also the most common reason for newborn hospital admissions (Belay et al., 2023), accounting for 13.5% of all hospital admissions (Huq et al., 2017). In addition, Infants in the African and Eastern Mediterranean regions are more likely to experience NJ (Diala et al., 2023).

Neonatal jaundice typically appears within 48 hours of birth and requires clinical assessment (Ansong-Assoku et al., 2023). Although approximately 85% of newborns experience NJ (Satrom et al., 2023), it usually resolves on its own within the first two

weeks (Satrom et al., 2023). However, improper management can lead to a high proportion of cases developing extreme hyperbilirubinemia (Slusher et al., 2017).

This condition is responsible for more than 75% of hospital readmissions within the first week of life across the globe (Asefa et al., 2020). This is especially true for severe cases of hyperbilirubinemia and its associated complications (Yan et al., 2022).

Pregnant women play an important role in identifying and preventing jaundice and its complications early (Zhou et al., 2022). Detecting warning signs at an early stage is also crucial (Seneadza et al., 2022), and it is essential to educate pregnant women about the risks associated with jaundice and its potential complications (Aneed, 2022). This will help in effectively treating and preventing jaundice complications (Zhou et al., 2022). The training of neonatal jaundice prevention program (NJPP) to implement NJ prevention strategies will enable mothers to provide appropriate care for their babies and increase the chances of early detection of NJ (Salia et al., 2021).

1.1 Statement and Significance of the Problem

Research studies have emphasized the importance of preventing jaundice (Ullah et al., 2016). Studies have shown that a mother's knowledge and practices can play a significant role in preventing jaundice in newborns (Seneadza et al., 2022). When a mother is aware of the risks and symptoms of jaundice, it can lead to improvements in prevention efforts (Zhou et al., 2022; Al-Ateeq & Al-Rusaiess, 2015; Olatunde et al.,2020; Downe et al., 2019). Despite an extensive literature search, no published studies were found that explore the effects of neonatal jaundice prevention programs on mothers' knowledge and practices in Palestine.

During my two years working in the Neonatal Intensive Care Unit (NICU) at Saint Joseph Hospital, the researcher observed a significant number of babies being readmitted due to hyperbilirubinemia. This prompted me to conduct a study on the topic. When the researcher inquired with Dr. Hania Kasbari, the Head of the Neonatal Department at Saint Joseph Hospital, about the number of babies readmitted with hyperbilirubinemia in our department, she shared that in the past two years (2021 & 2022), around 117 out of 144 readmitted babies were readmitted due hyperbilirubinemia in 2021, which makes up 81.3% of all readmissions. Also, out of the 127 babies readmitted in 2022, around 109 were readmitted due to hyperbilirubinemia, making up 85.8% of all readmissions.

Neonatal jaundice is a significant issue worldwide that affects many newborns (Bizuneh et al., 2020). It accounts for over 75% of hospital readmissions in the first week of life (Bizuneh et al., 2020), and can cause severe complications if left untreated (Wilde, 2022). Some of the most common complications include acute bilirubin encephalopathy, blindness, and Kernicterus (Huang et al., 2022). Both term and preterm babies are at risk (Hegyi & Kleinfeld, 2022), with approximately 50-60% of term babies and 80% of preterm babies affected globally (Hegy et al., 2022). Additionally, neonatal jaundice accounts for 13.5% of all hospital admissions and is the third most common cause of hospital admissions for neonates (Huq et al., 2017).

In May 2010, the National Institute for Health and Clinical Excellence (NICE) in the United Kingdom (UK) released clinical guidelines regarding neonate jaundice. These guidelines emphasized the potential harm that untreated severe jaundice can cause to babies (Dehghani et al., 2015), including acute bilirubin encephalopathy and Kernicterus (Dehghani et al., 2015). Additionally, studies have shown that neonate jaundice is the most commonly diagnosed neurological issue among newborns (Ansong-Assoku et al.,

2023), which can have a significant negative impact on the infants, caregivers, nurses, and the healthcare system (Ansong-Assoku et al., 2023).

Although there has been significant research conducted on neonatal jaundice and its impact on critically ill neonates (Amegan-Aho et al., 2019), little attention has been given to evaluating the effectiveness of prevention programs aimed at reducing the incidence of this condition and mitigating its negative effects (El-Kurdy et al., 2021). Furthermore, mothers often lack the necessary knowledge and skills to manage neonatal jaundice (Hassan et al., 2018).

Assisting mothers in acquiring the necessary knowledge and abilities to prevent neonatal jaundice and carrying out assessments during their child's care could lower the occurrence of neonatal jaundice (Downe et al., 2019). This would lead to better health outcomes for newborns (Downe et al., 2019), by reducing the adverse effects of neonatal jaundice (Olatunde et al., 2020).

It is important to increase pregnant women's knowledge (Olatunde et al., 2020); to prevent complications related to neonatal jaundice (Zhou et al., 2022). It is equally important to educate mothers on how to recognize and respond appropriately to neonatal jaundice. This was emphasized by Olatunde and his colleagues in their study in 2020 (Olatunde et al., 2020).

By training mothers on neonatal jaundice strategies, they can provide proper care to their babies and detect the condition early on, as pointed out by Seneadza in his study in 2022 (Seneadza et al., 2022).

This study's findings are expected to have significant implications for mothers' practices and fill a literature gap on this topic since there are no studies on neonatal jaundice prevention in Palestine.

1.2 Objective of the Research

Main objective

To assess the effect of a neonatal jaundice prevention program on Mothers' Knowledge and Practices Regarding Neonatal Jaundice

Minor Objective

1. To assess the level of knowledge and practices of mothers regarding neonatal jaundice before the program's implementation.
2. To assess the level of knowledge and practices of mothers regarding neonatal jaundice after the program's implementation.

1.3 Hypotheses

Implementing a neonatal jaundice prevention program would improve a mother's knowledge and practices of neonatal jaundice.

1.4 Research Questions

1. What are the knowledge and practice levels of the mothers regarding newborn jaundice before the implementation of a jaundice prevention program?
2. Are there any significant differences between socio-demographic variables regarding the knowledge and practices of mothers about neonatal jaundice?

3. Are there significant differences between obstetrical history and previous experience with jaundice variables regarding the knowledge and practices of mothers about neonatal jaundice?

4. Would the introduction of neonatal jaundice prevention programs significantly improve a mother's knowledge and practices of neonatal jaundice?

1.5 Conceptual Model

The researcher adopted the Translating Evidence into Practice Model (TEP) that developed by Johns Hopkins Quality and Safety Research Group (JHQSRG) in 2008 to use in my study.

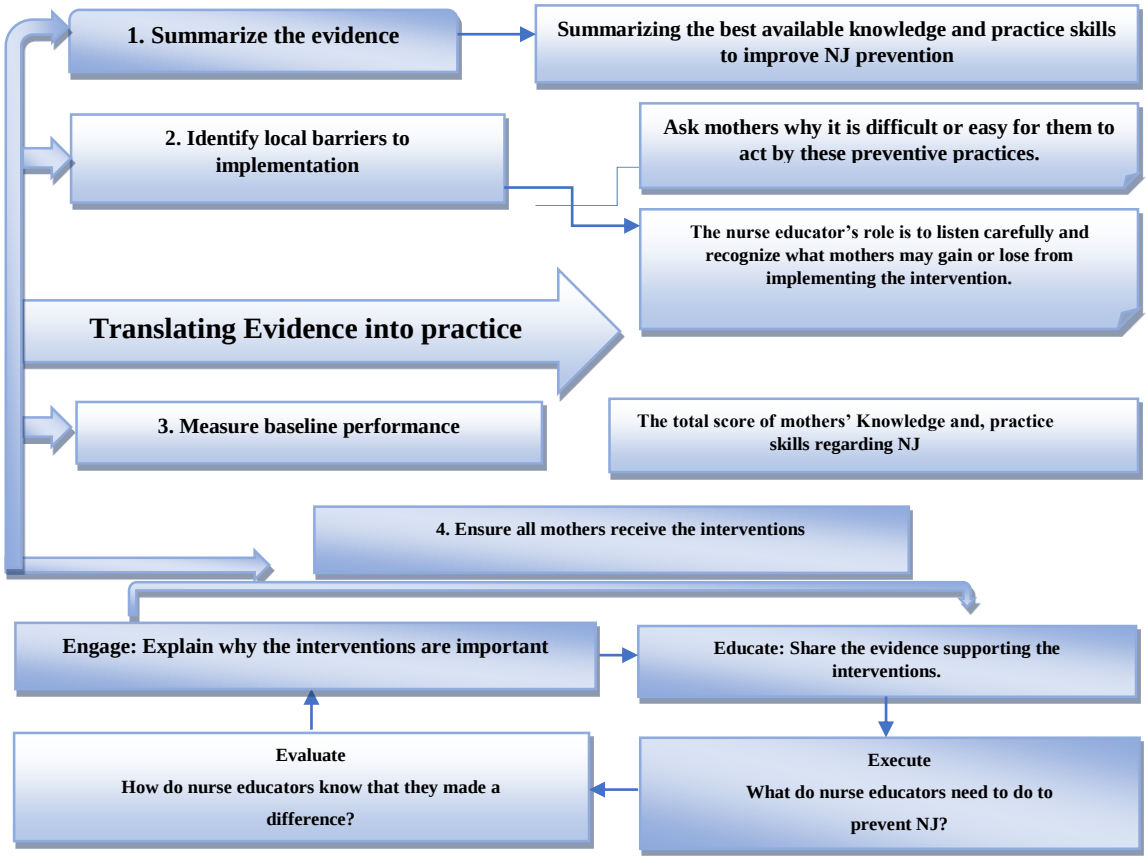


Figure 1-1: Conceptual Model

"Pronovost, P. J., Berenholtz, S. M., & Needham, D. M. (2008). Translating evidence into practice: a model for large scale knowledge translation. Bmj, 337."

The key elements of this model are: (1) summarize the evidence, (2) identify local barriers, (3) measure baseline performance, and (4) ensure all mothers receive the intervention using the "4Es" model. The following paragraphs outline the application of these elements in the context of this study.

1. Summarize the evidence

To improve NJ's prevention, identification, and management, the first step was to summarize the best available knowledge and practice skills. That involved collecting evidence through a systematic review of literature, which provided NJ with facts related to the defining characteristics of NJ, incidence, types, etiology, risk factors, NJ preventive practice skills, and negative outcomes associated with its incidence.

2. Identify local barriers to implementation

When implementing the recommended practices for neonatal jaundice prevention, neonatal jaundice researchers and nurse educators involved in NJPP asked mothers about the difficulties or ease they faced when adopting those preventive measures. The nurse educators listened attentively and identified what benefits or drawbacks mothers may experience when implementing the intervention.

3. Measure baseline performance

The total score of mothers’ knowledge and practice skills regarding NJ.

4. Ensure all mothers receive the interventions

The last and most intricate step is to guarantee, that every mother receives prevention-recommended practices and interventions about jaundice. This step involved using the "four Es" approach to enhance the reliability of receiving intervention: engage, educate, execute, and evaluate.

1) Engage: Explain why the interventions are important.

For education to have a positive impact and for changes to be implemented effectively, it is crucial that all stakeholders, including mothers, are actively involved in the NJPP and comprehend the significance of the interventions.

2) Educate: Share the evidence supporting the interventions.

NJPP was implemented, which outlined the best practices to prevent NJ. Participants received articles and a PowerPoint presentation to support this initiative.

3) Execute: What do nurse educators need to do to prevent NJ?

Nurse educators executed those interventions to ensure that every mother received the best evidence-based practice related to NJ prevention. This empowered nurse educators to prevent and decrease cases of NJ.

4) Evaluate: How do nurse educators know that they made a difference?

Conducted a rigorous evaluation to determine whether NJ detection improved. All variables of the study were measured again to evaluate the effectiveness of the intervention.

Chapter Two

Literature Review

Chapter Two

Literature Review

The study utilized several variables, including the knowledge and practices of mothers, neonatal jaundice, and a prevention program. The researcher searched multiple databases, such as EBSCO, PubMed, and Google Scholar, between 2015 and 2023 to gather information on topics related to neonatal jaundice, prevention programs, mothers' and pregnant women's knowledge and practices, prevention of jaundice, physiological jaundice, total serum bilirubin, and transcutaneous bilirubin.

Neonatal jaundice is a condition that causes yellowish discoloration of the sclera and skin in newborns (Ansong-Assoku et al., 2023); this occurs due to the build-up of unconjugated bilirubin, (Joseph & Samant, 2023), which is the most prevalent clinical issue during the neonatal period (Aneed, 2022), particularly within the first week of life (Aneed, 2022). It is also the primary risk factor for hospitalization among newborns (Boskabadi et al., 2020); Therefore, it is the most common neonatal condition that requires medical attention (Boskabadi et al., 2020).

One of the most prevalent health issues among neonates globally is NJ (Khaleel et al., 2022). In addition, is the most prevalent health problem among neonates (Mitra & Rennie, 2017), according to a study in 2022 about neonatal jaundice, approximately 50%-60% of term and 80% of preterm newborns develop physiologic jaundice in the first week after birth (Hegyi & Kleinfeld, 2022). Neonatal hyperbilirubinemia, especially in severe cases and their complications, is a significant cause of neonatal readmission (Yan et al., 2022). This could be prevented (Deng et al., 2021), and is the primary reason for readmission during the first month of life (Deng et al., 2021).

Most jaundice is a benign, mild, self-limiting, and transient case which is called "physiological Jaundice" (Ansong-Assoku et al., 2023). This means that there is usually no need for treatment, and it is resolved within two weeks (Hegyi & Kleinfeld, 2022). However, it's important to differentiate this type of jaundice from the more severe "pathological jaundice" (Ansong-Assoku et al., 2023). Physiological jaundice can appear after 24 hours of birth and may resolve on its own (Belay et al., 2023), while pathological jaundice develops within the first 24 hours of life (Belay et al., 2023). In some cases, newborns may experience severe hyperbilirubinemia (Wilde, 2022), if this condition is left untreated, can lead to permanent brain damage, such as chronic bilirubin encephalopathy or kernicterus (Wilde, 2022). Unfortunately, this is one of the leading causes of avoidable brain damage, physical and mental disabilities, and early losses among newborns in many communities (Barclay et al., 2022).

While most cases of jaundice in newborns are physiological (Ansong-Assoku et al., 2023), high levels of bilirubin can be dangerous, particularly for the central nervous system (Wilde, 2022). This can result in impairments and disabilities such as deafness, cerebral palsy, mental retardation, or developmental delays (Ansong-Assoku et al., 2023), especially in developing countries (Barclay et al., 2022). In severe cases, it may even lead to neonatal death (Ansong-Assoku et al., 2023). These complications arise from the accumulation of bilirubin in brain tissue (Ansong-Assoku et al., 2023), which emphasizes the importance of carefully evaluating and preventing jaundice from progression (Kashaki et al., 2016).

Hyperbilirubinemia is diagnosed within the first week of life when the total serum bilirubin (TSB) is above the high-risk zone related to the baby's age and status (Ullah, et al., 2016). The main physiologic cause for high TSB is an increase in bilirubin production

and a decrease in bilirubin elimination (Deng et al., 2021). TSB increases by more than 2 mg/dL during the first week after delivery and peaks between 6 and 8 mg/dL within 3-5 days (Ansong-Assoku et al.,2023). Its peak for preterm neonates may rise by 10 to 12 mg/dL on day 5 (Ansong-Assoku et al.,2023). During the first few days after birth, there is a higher risk of jaundice (Ansong-Assoku, et al.,2023), and hyperbilirubinemia problems as bilirubin production typically declines for 10 to 14 days of life (Ullah, et al., 2016). Neonatal bilirubin levels are much higher than in adults (Itoh et al., 2023); due to the short life expectancy of erythrocytes (Itoh et al., 2023), and a lower capacity for bilirubin elimination (Itoh et al., 2023), making jaundice a life-threatening condition in newborns (Ansong-Assoku et al.,2023). Despite efforts to eradicate the permanent and irreversible brain damage caused by bilirubin encephalopathy and kernicterus (Barclay et al., 2022), these conditions persist (Barclay et al, 2022); so, early prediction and classification of jaundice are therefore essential to reduce the mortality rate (Goodman et al., 2015).

Measuring bilirubin levels is traditionally done through TSB testing (Mohamed et al., 2022), which is considered the gold standard in biochemistry labs (Okwundu et al., 2023). However, this method is invasive and requires needle pricks that can cause pain, stress, and infection risk for neonates (Taylor et al.,2015). Additionally, the test results may take some time to generate (Okwundu et al, 2023); cause delaying the initiation of therapy for neonatal hyperbilirubinemia (Mohamed et al., 2022). To address these concerns, a non-invasive alternative called the transcutaneous bilirubin meter has been developed (Mohamed et al., 2022). This portable device uses photometry to estimate bilirubin levels by pressing a probe on a neonate's forehead or sternum (Okwundu et al, 2023). It provides an immediate result, allowing healthcare providers to initiate therapy

promptly and with less burden (Mohamed et al., 2022). Therefore, in recent years, this meter used as an alternative to estimate bilirubin levels (Mohamed et al., 2022; Taylor et al., 2015; Okwundu et al, 2023). In 2022 another study found a strong difference between Transcutaneous bilirubin (TcB) values and Total serum bilirubin (TSB) values, indicating that TcB is a reliable alternative as a non-invasive screening tool for non-severe hyperbilirubinemia in neonates (Mohamed et al., 2022). Overall, the transcutaneous bilirubin meter is a painless and safe option that can improve the screening and management of neonatal hyperbilirubinemia (Mohamed et al., 2022; Taylor et al., 2015; Okwundu et al, 2023).

There are different approaches to circumcising babies with jaundice (Huen et al., 2021). Despite neonatal jaundice rarely conferring increased bleeding risks, (Huen et al.,2021), 30% of pediatric urologists survey respondents consider NJ a potential contraindication to neonatal circumcision (Huen et al.,2021). Identifying the risk factors that may contribute to neonatal hyperbilirubinemia is crucial for its prevention (Boskabadi et al., 2020). Neonatal jaundice can be caused by various factors, including problems with breastfeeding (Mojtahedi et al., 2018; Guled et al., 2018; Al-Mutairi et al., 2017), which may result in physiologic neonatal jaundice (Wang et al., 2021). Preterm delivery which means gestational age (GA) of less than 37 weeks is another factor that increases the risk of pathologic jaundice in newborns (Ansong-Assoku et al., 2023); due to their inability to eliminate bilirubin from their bodies (Ansong-Assoku et al., 2023). Also, Blood type incompatibilities (ABO incompatibility), Rhesus factor protein incompatibilities (Rh incompatibilities), direct coombs, mode of delivery, delivery complications, and sepsis are critical factors that can contribute to pathologic neonatal jaundice (Ansong-Assoku et al., 2023; Tavakolizadeh et al., 2018).

A study conducted in 2020 found the incidence percentage of the most common causes of neonatal jaundice to be as follows: ABO incompatibility (24.6%), infection (including Urinary tract infection (UTI) and sepsis) (13.7%), Glucose-6-Phosphate Dehydrogenase Deficiency (G6PD deficiency) (9.4%), Rh incompatibility (7%), and Cephalohematoma (2.9%). Additionally, predisposing factors for neonatal jaundice were reported as unknown (33.2%), low birth weight (30.9%), hyperbilirubinemia in siblings (22.7%), prematurity (20.1%), and infant of diabetic mother (6.7%) (Boskabadi, et al.,2020). In addition, the results of a study in 2022, ABO incompatibility, Rh incompatibility, Glucose-6-Phosphate dehydrogenase (G6PD) deficiency, and sepsis are the most common causes of pathologic jaundice (Isa et al., 2022).

G6PD deficiency is an inherited X-linked recessive disorder (Kristensen et al., 2021), that frequently affects children of Middle Eastern descent, (Kristensen et al., 2021), causing a spectrum of diseases (Lee et al., 2022), including acute and chronic hemolytic anemia as well as neonatal hyperbilirubinemia (Lee et al., 2022). Infants with the severe variant of G6PD deficiency may develop hyperbilirubinemia severe enough to cause kernicterus. Therefore, a study in 2019 suggests that newborns with neonatal jaundice should be screened for G6PD deficiency (Akhter et al., 2019); as lower enzyme activity has been linked to hyperbilirubinemia (Akhter et al.,2019). In 2022, a study examined the risk factors for severe neonatal hyperbilirubinemia in infants with G6PD deficiency (Gopagondanahalli et al., 2022), the study evaluated the necessity for phototherapy in G6PD-deficient neonates after 72 hours of age (Gopagondanahalli et al., 2022), as well as the safety of early discharge (Gopagondanahalli et al., 2022). The study found that G6PD-deficient infants with day four, TSB levels exceeding 10.5 mg/dL, and ABO blood group incompatibility are at a higher risk of requiring phototherapy in their

first week of life (Gopagondanahalli et al., 2022); therefore, close monitoring of these infants is recommended (Gopagondanahalli et al., 2022)

To effectively prevent, screen, and manage neonatal jaundice, it is important to identify maternal factors that are linked to the condition (Yu et al., 2022). A study in 2022 found that maternal disease factors correlated with neonatal jaundice during pregnancy and one year before conception (Yu et al., 2022), including syphilis and leiomyoma during pregnancy, and salpingo-oophoritis before pregnancy (Yu et al., 2022). In addition, exposure to air pollution during pregnancy and after birth can have various negative effects throughout a person's life (Nelin & Burris, 2022), such as premature birth, low birth weight, asthma, respiratory infections, heart and metabolic problems, and neonatal hyperbilirubinemia (Nelin et al., 2022). A study in 2022 that was evaluated the relationship between maternal exposure to ambient pollutants and neonatal jaundice (Chen et al., 2022). The study found that if mothers are exposed to air pollutants, their newborns may require more phototherapy for neonatal jaundice (Chen et al.,2022), and have higher levels of serum total bilirubin (Chen et al.,2022), this is consistent with other study results conducted in 2022 (Nelin et al.,2022). The American Academy of Pediatrics (AAP) recommends conducting universal postnatal screening for hyperbilirubinemia within 48 hours after discharge according to their guidelines for monitoring neonatal jaundice (Blumovich et al., 2020).

Where recently, newborns have been discharged from the hospital early (Lindblad et al., 2021), sometimes at 48 hours postpartum (Lindblad et al., 2021), which increases the risk of hyperbilirubinemia (Lindblad et al., 2021); since the baby won't be under medical supervision (Ansong-Assoku et al., 2023). So, the parent's primary responsibility is to recognize early signs of hyperbilirubinemia and seek proper treatment (Lass et al.,

2018), which can cause anxiety in parents (Ullah et al., 2016). To reduce this, antenatal nurses can organize antenatal sessions about NJ (Olatunde et al., 2020). Antenatal preparation sessions are crucial for pregnant women during visits (Downe et al., 2019); to address different aspects related to pregnancy, delivery, and infant care (Downe et al., 2019). In addition, Olatunde and his colleagues in their study suggested educating pregnant verbally and in writing about this NJ (Olatunde et al.,2020), evaluating their level of knowledge (Olatunde et al., 2020), and discouraging inappropriate behavior (Olatunde et al., 2020; Karim, 2016). Many articles discussing neonatal jaundice emphasize the importance of preventing complications and early detection (Olatunde et al., 2020), through education and knowledge for mothers (Al-Ateeq & Al-Rusaiess, 2015; Olatunde et al., 2020; Downe et al., 2019).

According to a study by Al Ateeq & Al-Rusaiess in 2015, maternity care providers should assist in educating mothers about the signs of jaundice since symptoms often appear at home (Al Ateeq & Al-Rusaiess, 2015). Mothers should observe the baby's skin color from head to toe (Olusanya et al., 2017), and check the color of the sclera (Olusanya et al., 2017), and mucous membranes (Olusanya et al., 2017), by applying direct pressure to the skin (Olusanya et al., 2017), particularly in bony prominences like the tip of the nose (Olusanya et al., 2017); which causes blanching the skin to allows the yellow color to be more prominent (Olusanya et al., 2017). Mothers are advised to breastfeed early and frequently without water supplementation (Prell & Koletzko, 2016), as this has a significant influence on improving NJ during the initial days of life (Prell et al., 2016). Additionally, mothers should bring their newborns for follow-up visits to evaluate feeding, elimination patterns, and jaundice (Olatunde et al.,2020). Pregnancy, especially for primigravid women who are inexperienced, is a maturational crisis that affects both

maternal and fetal well-being (Barclay et al., 2022; Davis & Narayan, 2020; Ayu et al., 2019).

Preventing neonatal jaundice is crucial (Zhou et al., 2022), and raising mothers' awareness is key to achieving this (Zhou et al., 2022). A routine health education program for pregnant women in NJ can be an effective way to achieve this (Amegan-Aho et al., 2019); because a poorly mother's knowledge about NJ and its causes can negatively affect the mother's activities in recognizing NJ (Olatunde et al., 2020), resulting in a delay in seeking medical care (Olatunde et al., 2020; Zhang et al., 2015). Delayed detection and improper treatment of neonatal jaundice can lead to neonatal morbidity and mortality (Amegan-Aho et al., 2019). Therefore, a mother's knowledge of this health condition plays a crucial role in managing it (Khaleel et al., 2022; Mohamed et al., 2022). In a 2015 article by Dehghani and their colleagues, that was looking at the causes of hyperbilirubinemia, with a focus on educating families on the symptoms, seriousness, and complications of jaundice (Dehghani et al., 2015); delayed diagnosis can lead to complications (Magai et al., 2020), that significantly contribute to neonatal morbidity and mortality (Ullah et al., 2016). Possible complications from unconjugated hyperbilirubinemia include acute bilirubin encephalopathy, kernicterus, seizures, cerebral palsy, mental retardation, and deafness (Bhutani et al., 2016).

A study in 2015 by Olusanya, Osibanjo, and Slusher found that a mother's ethnicity had more of an impact on preventing severe hyperbilirubinemia complications than their level of education (Olusanya et al., 2015). Additionally, a 2019 study by Amegan-Aho, Segbefia, and their colleagues showed that pregnant mothers had a limited understanding of NJ's causes, risk indicators, and treatments, regardless of their level of education (Amegan-Aho et al., 2019). While Salia, Afaya, and their colleagues found in

their study 2021 disparities in mothers' knowledge, attitudes, and perspectives on the disease (Salia et al., 2021), despite widespread awareness of NJ (Salia et al., 2021), the study also recommended better education for women on the causes, signs, and symptoms of NJ. However, a separate study by Huang and their colleagues in 2022 revealed that while mothers have significant knowledge about the signs and symptoms of neonatal jaundice (Huang et al., 2022), they lack information regarding possible complications (Huang et al., 2022). The study also found that a mother's level of education and age correlates strongly with the information they possess (Huang et al., 2022). Therefore, they recommend implementing ongoing medical education programs and yearly workshops certified by the Training Department Directorate of Health to educate mothers about newborn jaundice and how to prevent it in the future (Huang et al., 2022).

Smartphone-based screening methods have shown satisfactory accuracy in detecting neonatal bilirubin levels (Yan et al.,2022). In 2022, a study was conducted to assess how a smartphone-based screening program for neonatal jaundice could affect the readmission rates for jaundice in newborns, as well as the anxiety of mothers related to this condition outside of hospital settings (Yan et al.,2022). The study found that using this screening method for neonatal hyperbilirubinemia outside of the hospital reduced the number of newborns readmitted within 30 days of discharge (Yan et al.,2022), and also led to some improvement in the mental health of mothers (Yan et al.,2022). These findings suggest that a screening app is a valuable tool for pediatric follow-up care (Yan et al.,2022).

Conclusion

To increase awareness among mothers about caring for neonatal jaundice, Aneed recommends providing special educational programs involving electronic media (Aneed, 2022); The training of NJPP on how to implement NJ prevention strategies will enable mothers to provide appropriate care for their babies (Seneadza et al., 2022), and enhance the opportunity to detect NJ early (Seneadza et al., 2022).

Chapter Three

Methodology

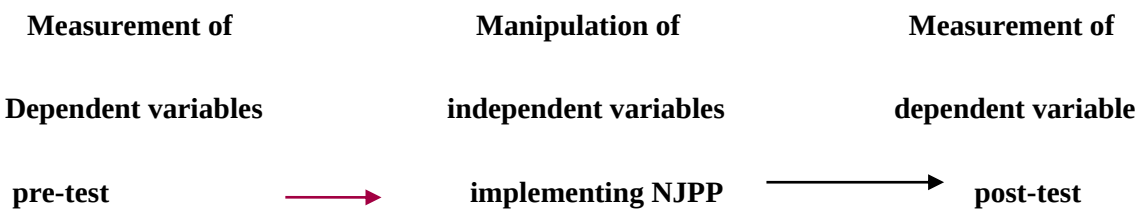
Chapter Three

Methodology

This chapter describes the study design, setting, sample, sampling method, study instruments, psychometric properties, data collection procedures, ethical considerations, and data analysis.

3.1 Research Design

The quantitative method, quasi-experimental, Pretest-Posttest design was used to answer research questions (figure 3-1 and figure 3-2). The purpose of this study was to assess the effect of neonatal jaundice prevention programs on mothers' knowledge and practices toward neonatal jaundice at Saint Joseph Hospital in East Jerusalem.



Dependent variables: Mothers' Knowledge and Practices.

Independent variables: Neonatal Jaundice, Prevention Program.

Figure 3-1. Quasi-experimental, pretest and posttest design.

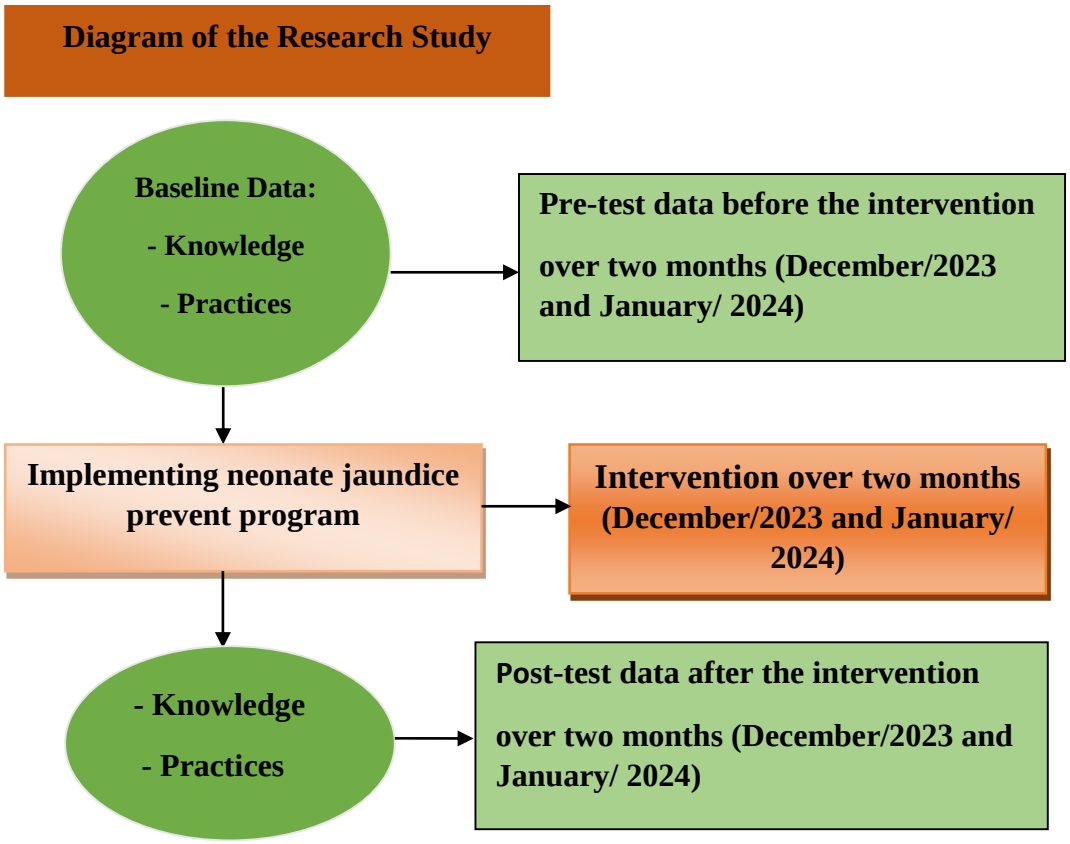


Figure 3-2. Application of the model in the study design

3.2 Population and Sample

The researcher identified and included all mothers whose infants exhibited physiological jaundice within the time frame of 24 to 72 hours after birth in the Neonatal and Nursery Department at Saint Joseph Hospital in December/2023 and January/ 2024. There were two primary criteria for their selection. Firstly, infants older than 24 hours were chosen, as the existing literature asserts that physiological jaundice typically manifests after this period, distinguishing it from pathologic jaundice. Secondly, infants younger than 72 hours were included, aligning with the hospital's protocol of discharging infants at this age after birth.

3.2.1 Sample Size

The sample size was calculated using a G-power t-test (two tails), taking into account the significance level of 0.05, the effect size of 0.5, and the power of the study of 0.95. The sample size was estimated at 45 mothers. to overcome the attrition rate10% was added, so the total sample is 50 mothers.

3.2.2 Sampling Technique

The researcher used a convenience sampling strategy. The study included all mothers between December/2023 and January/ 2024 who fulfilled the following criteria: mothers who accepted to participate in the study, mothers whose infants developed physiological jaundice between 24 and 72 hours after birth, and mothers with no medical problems associated with pathological jaundice such as gallbladder inflammation, severe anemia, and liver disease.

3.2.3 Exclusion Criteria

1. Mothers with any medical problems associated with pathological jaundice such as gallbladder inflammation, severe anemia, and liver disease.
2. Mothers whose babies develop pathological jaundice within the first 24 hours after birth.
3. Mothers whose babies do not develop physiological jaundice between 24-72 hours after birth.
4. Mothers who have participated in a prevention program focused on jaundice.

3.3 Setting

This study was conducted at Saint Joseph's Hospital, which was established in 1954 by the Sisters of Saint Joseph of the Apparition in the Sheikh Jarrah neighborhood of Eastern Jerusalem. Saint Joseph's Hospital encompasses a range of departments. These include physiotherapy, gynecology, outpatient clinics, ambulatory cardiology unit, pharmacy department, continuous education department, laboratory, anesthesia department, radiology department, department of urology, neonatal department, operating theatre, ICU and CCU, private ward, internal medicine, accident and emergency room, as well as lecture and meeting rooms.

The selection of the Neonatal Department for this study was deliberate, as it closely corresponds to the study's objectives and scope. Additionally, the researcher implemented a prevention program tailored for mothers whose infants develop physiological jaundice between 24 and 72 hours after birth. The educational sessions were conducted in a dedicated, serene, and enclosed space specifically designated for lectures and meetings. That choice aimed to provide an optimal learning environment and foster focused discussions on managing and understanding jaundice in newborns.

3.4 Research Tool

A study questionnaire was developed by the researcher for data collection. This questionnaire was created using reliable information from the National Institute for Health and Clinical Excellence (NICE) and a literature review. Although the researcher tried to obtain permission to use a questionnaire from another study, unfortunately, there was no response or agreement. To ensure the validity and reliability of the questionnaire, it was reviewed by pediatric nursing experts at Arab American University, including Dr.

Faida Eqtait, Dr. Ahmad Ayed, and Dr. Najwa Subeh. The questionnaire had six parts; Socio-demographic characteristics, obstetrical history and previous experience with jaundice, mother's knowledge of jaundice, mother's knowledge about complications of neonatal jaundice, mother's knowledge about risk factors of neonatal jaundice, and mother's practices about neonatal jaundice, (Appendix 1).

Part one: Socio-demographic characteristics that include age, level of education, occupation, and you have participated in a prevention program focused on jaundice.

Part Two: obstetrical history and previous experience with jaundice that include the number of children in the family who had neonatal jaundice, gestational age in weeks, and feeding methods.

Part three: Mother's knowledge of jaundice that includes neonatal Jaundice is a greenish discoloration of the skin and sclera, jaundice is a non-common problem of neonates, jaundice not lasting for more than 2 weeks- month, phototherapy is a treatment for neonate jaundice, neonatal jaundice in newborns is diagnosed by the pediatrician based on the high percentage of bilirubin in the blood and can use a medical advice machine to check the bilirubin through the skin (Transcutaneous Bilirubinometer)

Part four: Mother's knowledge about complications of neonatal jaundice that includes: untreated severe jaundice for a long time can lead to brain damage, convulsions, mental retardation, deafness, physical retardation, and death.

Part five: Mother's knowledge about risk factors of neonatal jaundice that include ABO compatibility, Rh compatibility, infection, G6PD deficiency, low birth weight, hyperbilirubinemia in siblings, premature birth, problems with breastfeeding, and the infant of a gestational diabetic mother.

Part six: Mother’s practices about neonatal jaundice include: What do you do when you notice jaundice in your baby? I take the initiative to look for information about neonatal jaundice, I expose my child to sunlight, I use a neon lamp for my child at home, I use medicinal herbs, I monitor my child's weight, I monitor my child's behavior, I continue to breastfeed, I check my baby's jaundice by observing the color of skin and eyes, and I visit the doctor as soon as possible.

3.4.1 Scoring System

For Knowledge Part

Questions were answered "Yes", "No", and "I don’t know". The correct answer scored as 1 and the incorrect or I don’t know scored as 0. The knowledge scores were converted into percentage scores by dividing the respondents' results by the potential maximum scores and multiplying by 100. The total score of each result was calculated using Bloom's cutoff point (Blooms, 1956). The degree of knowledge was categorized into three categories based on the aggregate scores: low-level knowledge (less than 60%), moderate-level knowledge (60-79%), and high-level knowledge (80-100%).

For Practice Part

The items were answered "Yes", and "No". The correct practice scored as 1 and the incorrect score was 0. The practice scores were converted into percentage scores by dividing the respondents' scores by the potential maximum scores and multiplying by 100. The total score of each result was calculated using Bloom's cutoff point (Blooms, 1956). Based on the aggregate scores, the degree of practice was classified as Poor Practice (less than 60%), Fair Practice (60-79%), and Good Practice (80-100%).

3.4.2 Validity and Reliability

Regarding the validity, the researcher presented the program and questionnaire to nursing experts at Arab American University (AAUP), including Dr. Faeda Eqtait, Dr. Ahmad Ayed, Dr. Najwa Subuh, and Dr. Bahaa Hammad. The board reviewed the study tool for clarity, relevance, completeness, understanding, and applicability.

Also, regarding reliability, the researcher did the pilot study with a percentage of 10% of the sample size for the study, and the reliability was ascertained by Cronbach's Alpha, and it gave an internal consistency of $\alpha = 0.80$ for the knowledge questionnaire and $\alpha = 0.81$ for the practice questionnaire, respectively.

3.5 Data Collection Procedures

After the researcher obtained ethical approval from the Institutional Review Boards (IRB) department at AAUP (Appendix 2) and then obtained approval from Saint Joseph Hospital (Appendix 3). Also, from the mothers (Appendix 4), after the researcher explained the objectives of the study to them. The researcher started the journey of data collection, which was carried out in three phases: the assessment phase, the application phase, and the evaluation phase.

Assessment Phase: This phase involved conducting a pre-test using a questionnaire to evaluate mothers' knowledge and practices regarding neonatal jaundice. Data collection spanned two months (December/2023 and January/ 2024).

Application Stage: Following the completion of the pre-test questionnaire by mothers, this stage entailed organizing and executing an educational program.

A daily teaching session was held from 10:00 to 11:30 AM. This particular time slot has been selected to coincide with the time when mothers are usually in their rooms, taking rest after breakfast and post-rounds by pediatricians and gynecologists, just before

lunchtime at 12:00 PM. The program has been designed to run throughout December/2023 and January/ 2024, ensuring extensive coverage and engagement for the participating mothers. The teaching sessions were conducted in a designated, quiet, and private space that has been approved by the hospital (Appendix 3) and the mothers (Appendix 4) for lectures and meetings. Each session lasted for 90 minutes per day. During the data collection period, the researcher remained in the hospital, providing face-to-face education.

Educational Program

The program was aimed at equipping mothers with essential knowledge and skills to ensure proper care for their infants and to facilitate early identification of neonatal jaundice. The program focused on the following: defining neonatal jaundice and categorizing its various types, outlining associated risk factors, emphasizing the significance of a neonatal jaundice prevention program, enumerating the adverse outcomes linked to neonatal jaundice, explaining the symptoms of neonatal jaundice, promoting awareness of best practices to prevent and manage neonatal jaundice, describing the mother's role in preventing and treating neonatal jaundice and discussing the common home treatment for jaundice in newborns.

The researcher introduced this program to experts in pediatric nursing at Arab American University to review for clarity, relevance, completeness, understanding, and applicability, including Dr. Faida Eqtait, Dr. Ahmad Ayed, and Dr. Najwa Subuh. The program, developed based on a literature review, comprises three stages: (Appendix 5).

Teaching Site: The program took place in a dedicated meeting and lecture room, providing a separate, quiet, and closed environment. The room is equipped with a display

screen and all the necessary resources for conducting lectures. Approval from both the hospital and the mothers was obtained (Appendices 3 and 4).

Teaching Techniques and Materials: The researcher employed straightforward teaching methods, such as lectures and discussions (Appendix 5).

Evaluation Stage: To evaluate mothers' knowledge and practices concerning neonatal jaundice, a post-test was administered using the same questionnaire used in the pre-test. According to hospital policy, all mothers returned for a follow-up visit for their infants, so evaluation (post-test) was done during this visit (approximately one week after discharge). For those who were unable to visit the clinic, evaluations were conducted through telephone interviews.

3.6 Ethical Considerations

Ethical approval was obtained from the Arab American University Ethical Review Committee (IRB) (Appendix 2), and then an approval letter from the director of Saint Joseph Hospital was obtained (Appendix 3). Informed consent was obtained from each mother before their involvement (Appendix 4). Study participants were informed of their rights to preserve confidentiality and the right to withdraw at any time without penalty. Study participants were informed that their participation was voluntary. This study did not cause harm to participants, and the study subjects' privacy was considered during data collection (Appendix 3).

3.7 Data Analysis

The Statistical Package for Social Science (SPSS, version 23) was used to analyze the data. Descriptive and inferential statistics were used to test the study hypotheses. Descriptive statistics (mean, standard deviation, count, and percentage) were used to describe the characteristics of the participants. The inferential statistics (independent t-test, paired t-test, and ANOVA) were utilized to test the research questions.

The first research question: (What are the knowledge and practice levels of the mothers regarding newborn jaundice before the implementation of a jaundice prevention program?). This question was answered by calculating the total and mean scores and Standard Deviation (SD) obtained from completing the NJ Knowledge, Practice Skills of Mother's questionnaires by the participant before starting the NJPP.

The second research question: (Are there any significant differences between socio-demographic variables regarding the knowledge and practice of mothers about neonatal jaundice?). An independent t-test and ANOVA tests were performed to assess the difference between the mean score of the knowledge and demographic data as age, occupation, and level of education. Also, independent t and ANOVA tests were performed to assess the difference between the mean score of the practice and demographic data as age, occupation, and level of education.

The third research question: (Are there significant differences between obstetrical history and previous experience with jaundice variables regarding the knowledge and practice of mothers about neonatal jaundice?). An independent t and ANOVA tests were performed to assess the difference between the mean score of the knowledge and obstetrical history and previous experience with jaundice (Number of children in the

family who had neonatal jaundice, gestational age, feeding methods). Also, independent t and ANOVA tests were performed to assess the difference between the mean score of the practice and obstetrical history and previous experience with jaundice (Number of children in the family who had neonatal jaundice, gestational age, feeding methods).

The fourth research question: (Would the introduction of neonatal jaundice educational programs significantly improve a mother's knowledge and practice of neonatal jaundice?).

This question was answered by using Paired t-tests to test the differences between two related group means (pre-intervention, post-intervention).

Chapter Four

Results

Chapter four

Results

4.1 Introduction

In this chapter, the results of the study are presented. The purpose of this study was to evaluate the effect of a neonatal jaundice prevention program on Mothers' Knowledge and Practices Regarding Neonatal Jaundice. The Statistical Package for Social Science (SPSS, version 23) was used to analyze the data. Descriptive and inferential statistics were used to test the study hypotheses. Descriptive statistics (mean, standard deviation, count, percentage) were used to describe the characteristics of the participants. The inferential statistics (independent t-test, paired t-test, and ANOVA) were utilized to test the research questions.

4.2 Cronbach's Alpha for the study scale

Data from respondents were combined and the Kuder Richardson formula 20 (KR-20) was used to assess the internal consistency of the Knowledge. The internal consistency of the knowledge and practice tools were 0.87 and 0.82, respectively indicating high internal consistency or homogeneity for the tools.

4.3 Participants' Characteristics

Forty-eight mothers participated in the study. The majority of the participants 19 (39.6%) their age were 25 years or less. Also, 23 (47.9%) of them have a bachelor's degree or above. Furthermore, most of them 37 (77.1%) were housewives, as seen in (Table 4-1)

Table 4-1: Socio-demographic characteristics of the study participants (N=48)

Variable		n	(%)
Age	25 years or less	19	39.6
	26-30 years	15	31.3
	>30 years	14	29.2
Educational level	Primary	4	8.3
	Secondary	21	43.8
	Bachelor and above	23	47.9
Occupation	Housewife	37	77.1
	Employee	11	22.9

Regarding obstetrical history and previous experience with jaundice, the analysis revealed that 29 (60.4%) of the participants hadn't previous neonatal jaundice experience with their children. Also, half of the participants 24 (50.0%) were 38 weeks and above gestational age. Furthermore, more than half of them 27 (56.3%) reported that their children were breastfeed only, as seen in Table 4-2.

Table 4-2: Distribution of the participants regarding obstetrical history and previous experience with jaundice (N=48)

Variable		n	(%)
Number of children in the family who had neonatal jaundice	None	29	60.4
	1-3	19	39.6
Gestational age in weeks	35 -36 weeks and 6 days	5	10.4
	37 -37 weeks and 6 days	19	39.6
	38 weeks and above	24	50.0
Feeding Methods	Breastfeed only	27	56.3
	Breastfeeding and formula milk	21	43.8

4.4 Testing Research Questions

Research question one: What are knowledge and practice levels of the mothers regarding the newborn jaundice before the implementation of a jaundice prevention program?

The analysis revealed that 41(85.4%) of the participants had low total knowledge level about neonatal jaundice. Also, 17 (35.4%) of them had low knowledge level regarding overview and management of jaundice. Moreover, 45 (93.8%) of them had low level of knowledge regarding complication of neonatal jaundice. Furthermore, 35 (72.9%) of them had low knowledge level regarding risk factors of neonatal jaundice, as seen in (Table 4-3).

Table 4-3: Description of participants' Knowledge about jaundice (N=48)

Variable		N	(%)
Total Knowledge about jaundice	Low knowledge level	41	85.4
	Moderate knowledge level	5	10.4
	High knowledge level	2	4.2
Overview and management of jaundice	Low knowledge level	17	35.4
	Moderate knowledge level	14	29.2
	High knowledge level	17	35.4
Complication of jaundice	Low knowledge level	45	93.8
	High knowledge level	3	6.3
Risk factor of jaundice	Low knowledge level	35	72.9
	Moderate knowledge level	11	22.9
	High knowledge level	2	4.2

N= sample; %= percentage

Regarding the practice, the analysis revealed that 29(60.4%) of the participants had good practice levels regarding neonatal jaundice, as seen in (Table 4-4).

Table 4-4: Description of the participants practice regarding to the jaundice (N=48)

Variable		N	(%)
Practice	Poor practice level	2	4.2
	Fair practice level	17	35.4
	Good practice level	29	60.4

N= sample; %= percentage

Research question two: Are there any significant differences between socio-demographic variables regarding the knowledge and practice of mothers about neonatal jaundice?

An independent t-test and ANOVA tests were performed to assess the difference between the mean score of the knowledge and demographic data as age, occupation, and level of education. The analysis revealed that there were no significant differences between demographic data and knowledge scores mean ($p>0.05$), as seen in table 4-5.

Table 4-5. Differences between jaundice knowledge mean scores according to demographic characteristics (N= 48)

Variable		N	M	SD	Statistical test	P. Value
Age	25 years and less	19	36.3	23.1	F=1.245	.298
	26-30 years	15	43.5	18.4		
	>30 years	14	46.6	13.6		
Occupation	Housewife	37	41.2	20.5	t=0.248	0.805
	Employee	11	42.9	16.1		
Educational level	Primary	4	38.1	13.5	F=1.956	.153
	Secondary	21	36.1	21.2		
	Bachelor and above	23	47.2	17.5		

P. value significant at the 0.05 level

Also, an independent t and ANOVA tests were performed to assess the difference between the mean score of the practice and demographic data as age, occupation, and level of education. The analysis revealed that there is a significant difference between level of education and practice scores mean ($p<0.05$). A Tukey post hoc test showed that the bachelor and above degree has practice more than primary and secondary degree ($p < 0.05$). However, the analysis revealed that there were no significant differences between demographic characteristics (age and occupation) and practice scores mean ($p>0.05$), as seen in table 4-6.

Table 4-6. Differences between jaundice practice mean scores according to demographic characteristics (N= 48)

Variable		N	M	SD	Statistical test	P. Value
Age	25 years and less	19	86.0	12.2	F=0.250	0.780
	26-30 years	15	85.9	14.2		
	>30 years	14	88.9	13.1		
Occupation	Housewife	37	85.6	13.1	t=1.208	0.233
	Employee	11	90.9	12.0		
Educational level	Primary	4	75.0	10.6	F=6.507	0.003*
	Secondary	21	82.5	13.4		
	Bachelor and above	23	92.8	9.8		

**P. value significant at the 0.05 level*

Research question three: Are there significant differences between obstetrical history and previous experience with jaundice variables regarding the knowledge and practice of mothers about neonatal jaundice?

An independent t and ANOVA tests were performed to assess the difference between the mean score of the knowledge and obstetrical history and previous experience with jaundice (Number of children in the family who had neonatal jaundice, gestational age, feeding methods). The analysis revealed that there is a significant difference between feeding methods and knowledge scores mean ($p<0.05$). Breastfeed only mothers group indicated increased mean knowledge (M= 47.8±20.0) more than formula group mothers (M= 33.6±15.7). However, the analysis revealed that there were no significant differences between other obstetrical history and previous experience with jaundice and knowledge scores mean ($p>0.05$), as seen in table 4-7.

Table 4-7. Differences between jaundice knowledge mean scores according to obstetrical history and previous experience with jaundice (N= 48)

Variable		N	M	SD	Statistical test	P. Value
Number of children in the family who had neonatal jaundice	None	29	37.4	19.4	t=1.868	0.068
	1-3	19	47.9	18.2		
Gestational age	35 -36 weeks and 6 days	5	45.7	18.3	F=0.126	0.882
	37 -37 weeks and 6 days	19	41.4	21.2		
	38 weeks and above	24	40.9	18.9		
Feeding methods	Breastfeed only	27	47.8	20.0	t=2.680	0.010*
	Breastfeeding and formula milk	21	33.6	15.7		

**P. value significant at the 0.05 level*

Also, an independent t and ANOVA tests were performed to assess the difference between the mean score of the practice and obstetrical history and previous experience with jaundice (Number of children in the family who had neonatal jaundice, gestational age, feeding methods). The analysis revealed that there are significant differences between obstetrical history and previous experience with jaundice and practice scores mean ($p<0.05$). The analysis indicated that mothers who have 1-3 child with previous jaundice have mean scores practice (M=91.2± 8.7) more than non-children (M=83.9± 14.4). Also, mothers' group with breast feeding method have mean scores practice (M=90.5±10.5) more than formula method (M=82.0±14.3), as seen (Table 4-8).

However, a Tukey post hoc test showed that no differences between practice and gestational age ($p > 0.05$).

Table 4-8. Differences between jaundice practice e mean scores according to obstetrical history and previous experience with jaundice (N= 48)

Variable		N	M	SD	Statistical test	P. Value
Number of children in the family who had neonatal jaundice	None	29	83.9	14.4	t=2.187	0.034*
	1-3	19	91.2	8.7		
Gestational age	35 -36 weeks and 6 days	5	95.6	6.1	F=3.752	.031*
	37 -37 weeks and 6 days	19	81.3	12.9		
	38 weeks and above	24	89.4	12.5		
Feeding methods	Breastfeed only	27	90.5	10.5	t=2.382	0.021*
	Breastfeeding and formula milk	21	82.0	14.3		

**P. value significant at the 0.05 level*

Research question four: Would the introduction of neonatal jaundice educational programs significantly improve a mother's knowledge and practice of neonatal jaundice?

The analysis revealed that knowledge mean scores differed significantly among the participants at pre and post-test ($p<0.05$). The mean of knowledge scores at post-test ($M=93.0\pm8.8$) was higher than pretest ($M=41.6\pm19.4$). Also, other subscales of knowledge revealed similar results ($P< 0.05$), as seen in Table 4-9.

Table 4-9. Knowledge of participants about neonatal jaundice between pretest and post-test (N= 48)

Variable	Pre test M (SD)	Post-test M (SD)	t test	*p - value*
Total Knowledge about jaundice	41.6(19.4)	93.0(8.8)	-17.2	0.001*
Overview and management of jaundice	64.2(23.6)	96.9(6.6)	-10.4	0.001*
Complication of jaundice	9.7(21.4)	96.9(14.9)	-19.0	0.001*
Risk factor of jaundice	47.7(24.7)	87.7(13.0)	-11.8	0.001*

**P. value significant at the 0.05 level*

Also, the analysis revealed that practice mean scores was differed significantly among the participants at pre and post-test ($p<0.05$). The mean of practice scores at post-test (M=98.4±6.1) was higher than pre-test (M=86.8±12.9), as seen in Table 4-10.

Table 4-10. Practice of participants regarding neonatal jaundice between pretest and post-test (N= 48)

Variable	Pre test M (SD)	Post-test M (SD)	t test	*p - value*
Practice	86.8(12.9)	98.4(6.1)	5.5	0.001*

**P. value significant at the 0.05 level*

Also, figure 4-1 shows the change in knowledge and practice mean scores between pre- test and post-test

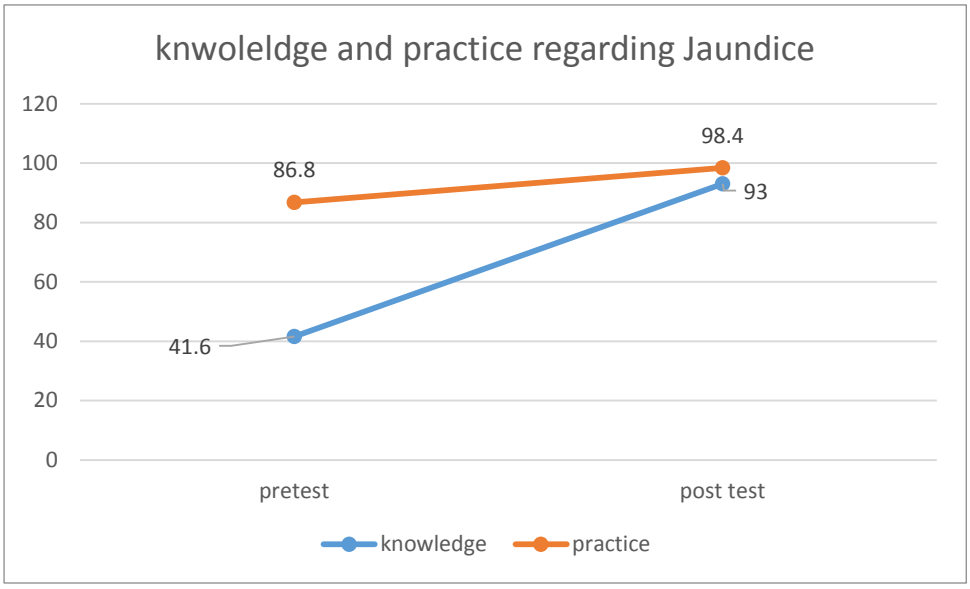


Figure 4-1. Knowledge and practice of participants regarding neonatal jaundice between pretest and post-test (N= 48)

Chapter Five

Discussion

Chapter five

Discussion

5.1 Introduction

The aim of this study was to assess the effect of implementing a neonatal jaundice prevention program on mothers' knowledge and practices relating to neonatal jaundice at Saint Joseph Hospital in East Jerusalem. This chapter debates the findings of the study through a comparative analysis of the existing body of literature. The discussion covers the implications of the findings and outlines recommendations. Furthermore, the study's limitations are addressed.

Neonatal jaundice is a significant problem that affects many newborns worldwide (Bizuneh, et al., 2020). It is the reason for more than 75% of hospital readmissions in the first week of life (Bizuneh, et al., 2020), and if left untreated, it can lead to severe complications (Wilde, 2022). Common complications include acute bilirubin encephalopathy, blindness, and Kernicterus (Huang, et al., 2022).

Assisting mothers in acquiring the necessary knowledge and practices to prevent neonatal jaundice and carrying out assessments during their child's care could lower the occurrence of neonatal jaundice (Downe, et al., 2019). This can be achieved by training them on neonatal jaundice strategies to provide proper care to their babies and detect the condition early on, as pointed out by Seneadza in his study in 2022 (Seneadza, et al., 2022).

5.2 Discussion

After implementing a neonatal jaundice prevention program, a study found that mothers showed significant improvement in their level of knowledge and practice regarding neonatal jaundice. The study also found that mothers with a bachelor's degree or higher demonstrated better practice compared to those with primary or secondary degrees. However, there were no significant differences based on demographic characteristics such as age and occupation with practice. on the other side, the study revealed that there was no significant difference between demographic data and knowledge scores.

The analysis also showed that mothers who exclusively breastfeed had a higher level of knowledge compared to those who use formula. However, there were no significant differences between other obstetrical histories, previous experience with jaundice, and knowledge.

Moreover, the study revealed that obstetrical history and previous experience with jaundice significantly influenced practice; the result showed that mothers who had 1-3 children with previous jaundice had better practice compared to those without children who had jaundice. Mothers who exclusively breastfeed also had better practices than those who use formula. However, there were no differences in practice based on gestational age.

As per the research findings, 85.4% of the participants possessed insufficient knowledge about neonatal jaundice, including its types, causes, risk factors, signs, complications, prevention, and treatment, before the program's implementation. Nevertheless, following the implementation of the program in the current study, mothers'

level of knowledge regarding neonatal jaundice was found to have significantly improved. This improvement in total knowledge may be related to the mothers' positive change in perception of neonatal jaundice after receiving accurate information and instructions about neonatal jaundice, including the risks and complications.

The study revealed a statistically significant difference between the pre-and post-test results, supporting previous research that found that women's knowledge of neonatal jaundice improved significantly after an educational program. Before the program's implementation, the mothers had limited knowledge about the types, causes, signs, complications, prevention, and treatment of neonatal jaundice. However, their knowledge improved after the program was implemented. The results of this study are consistent with previous research conducted by Aneed (2022), Olatunde, et al., (2020), and Khalaf, et al., (2019) found that mothers had insufficient knowledge about neonatal jaundice before participating in an educational program. However, following the program's conclusion, the mothers' understanding of neonatal jaundice significantly increased. This is supported by studies conducted by Aneed (2022), Olatunde, et al., (2020), and Khalaf, et al., (2019), which found that the mean knowledge level of women regarding neonatal jaundice increased significantly following the educational program. This increase was supported by the statistically significant difference sbetween the pre-and post-tests. Furthermore, the results of this study are consistent with the findings of El-Kurdy, et al., (2021), who discovered that knowledge levels regarding preventing neonatal jaundice improved following the intervention, which found that following the intervention, knowledge levels about preventing neonatal jaundice improved. as well as Hassan, et al., (2018), found that implementation of an educational program would lead to significant improvement in knowledge scores after giving the correct instructions. Similarly, an

Iranian study conducted by Kashaki, et al., (2016) also reported a highly significant difference in the level of knowledge about neonatal jaundice after the educational program was implemented.

According to the study, before the start of the instructional program, 60.4% of the participants had good levels of experience treating newborn jaundice. Nonetheless, the mothers' practice levels significantly improved after the program was implemented, according to the results. This result is in line with other research by El-Kurdy, et al., (2021), Guled, et al., (2018), Khalaf, et al., (2019), Huang, et al., (2022), and El-Kurdy, et al., (2021), which found that mothers' practices regarding neonatal jaundice were positively impacted by educational programs.

The prevention program proved effective in dispelling myths and conventional wisdom surrounding the treatment of neonatal jaundice, particularly about illiterate mothers who exposed their babies to sunlight, gave their babies certain herbs, or used neon lamps at home. Mothers' practices changed for the better as a result of the program's emphasis on the value of early intervention. This conclusion is supported by the findings of additional studies by Huang, et al., (2022), El-Kurdy, et al., (2021), Khalaf, et al., (2019), and Guled, et al., (2018), which also highlighted the advantages of early detection and suitable management of neonatal jaundice.

A notable benefit of the educational initiative was the notable rise in mothers' breastfeeding habits. This result is in line with research by Huang, et al., (2022) and Guled, et al., (2018), which also found that the program intervention led to an increase in mothers' breastfeeding practices.

Based on the analysis conducted, there were no significant differences found in the level of knowledge among the participants, regardless of their demographic data such as age, occupation, and level of education. These findings are consistent with previous research on neonatal jaundice by Olatunde, et al., (2020), which indicated that neither age nor level of education had an impact on knowledge about neonatal jaundice. Similarly, Goodman, et al., (2015) did not find any association between maternal education and knowledge of neonatal jaundice. While some studies have shown that factors such as education level, occupation, and age can impact a mother's knowledge of neonatal jaundice, as found in Aneed, (2022), This result was in agreement with Khaleel, et al., (2022), who found a significant association between maternal level of education and knowledge of neonatal jaundice. This may be due to the overall low level of health literacy among mothers; even those with high education levels could be a contributing factor. Furthermore, it's also possible that the information available on this subject is not adequate to produce a sufficient level of knowledge.

Based on the present study, there is a significant difference between education and practice. This discovery is in line with the findings of previous research conducted by Mohamed Tawfik, et al., (2022), and Huang, et al., (2022), which indicates that a woman's educational level has a significant impact on her attitude toward neonatal jaundice. While the analysis conducted did not find any significant differences in practice between demographic characteristics like age and occupation. The results of this study were in line with Karim, (2016), who also found no statistical association between a mother's practices and their age and occupation.

However, in a study conducted by Mohamed Tawfik et al. (2022), their findings were inconsistent with this study. They discovered that a mother's demographic

characteristics, such as age and occupation, have a significant impact on their practices regarding neonatal hyperbilirubinemia. This difference in findings may be due to the significantly larger sample size in their study, consisting of 4055 mothers with an average age between 18 and 35. The majority (58.7%) were 18-24 years old, and 30.7% were employed. In comparison, the current study consists of only 48 mothers, with the majority being 18-25 years old, and only 11% being employed.

The analysis showed that there is a significant difference in knowledge between mothers who breastfeed and those who use formula. The group of mothers who exclusively breastfeed their babies indicated having more knowledge about neonatal jaundice compared to the group of mothers who use formula. These results are consistent with the findings of the Al-Mutairi et al. (2017) study, which also confirmed that breastfeeding mothers have more knowledge about neonatal jaundice than those who use artificial milk. However, the analysis indicated that there were no significant variations between another obstetrical history, such as GA, previous experience with jaundice, and level of knowledge about neonatal jaundice. These findings are consistent with previous research conducted by Olatunde et al. (2020), which confirmed that previous experience of having a baby with neonatal jaundice and GA did not impact the knowledge of neonatal jaundice.

The analysis has revealed that there are significant differences between the obstetrical history and previous jaundice experience of mothers with practice, which indicates that those who have had 1-3 children with previous jaundice tend to correct practice more than those without children. This finding is consistent with a study conducted by Salia et al. (2021). Also, the mother's group with the breastfeeding method had correct practice toward neonatal jaundice more than those who used the formula

method; these results agree with Khalaf, et al., (2019). On the other side, however, the result showed no differences between practice and gestational age, which was also in line with the results of Khalaf, et al.'s (2019) research.

5.3 Recommendations

1. During antenatal visits, health services should incorporate awareness and educational programs about neonatal care in general, with a special focus on neonatal jaundice. These programs should include information on how to manage neonatal jaundice.
2. Further research is needed to evaluate the level of knowledge and practice of mothers towards NJ across various clinical settings in Palestine.
3. It is recommended to provide training courses to all staff working in neonatal wards to update their knowledge and teaching methods. They should also be encouraged to take an active role in conducting antenatal education sessions for mothers on the causes and risk signs of complications in NJ.
4. Awareness campaigns should be appropriately held at the community level about NJ through outreach programs.

5.4 Limitation

1. This study was conducted in a single clinical setting, which means that the knowledge and practices of the participants may not be representative of the entire population.
2. Since no Arabic tool was available to assess a mother's knowledge and practice skills to prevent jaundice, so the researcher created a tool and then translated the English tool to assess knowledge and practice skills.
3. The sample size was small.
4. The study did not include a control group.

5.5 Strengths

1. This study is one of the first studies conducted in Palestine on mothers' knowledge and practice skills toward NJ prevention. The researcher conducted a thorough search of the database before initiating the study.
2. The findings recommendations and implications of this study can help researchers in future work on NJ recognition and prevention.
3. The research was conducted using a quasi-experimental, pretest-posttest design.

5.6 Study Implication

Study results will be available for neonatal nurses to improve their knowledge in this area. These results can also be used to improve and create programs that are introduced to mothers during antenatal clinics.

5.7 Conclusion

The findings of the study highlight the significance of having an updated neonatal jaundice prevention program for all mothers. This will help them stay informed and maintain their knowledge and practice skills about NJ, based on the most recent evidence. Also, by incorporating early prevention strategies within the neonate department, we can reduce the incidence of jaundice and the devastating effects of NJ.

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Appendices

Appendix (1) Research Tool

الجامعة العربية الأمريكية
ARAB AMERICAN UNIVERSITY

I, ……..... *(Name of Participant / optional)* hereby agree to take part in the clinical research (clinical study/questionnaire study/drug trial) specified below:

Title of Study: The Effect of Neonatal Jaundice Prevention Program on Mothers' Knowledge and Practices Towards Neonatal Jaundice at Saint Joseph Hospital in East Jerusalem. Fulfillment of Master's degree, in Neonatal program, in AAUP.

The nature and purpose of which has been explained to me by Taqwa Kamel Mashaqi., and interpreted by Taqwa Kamel Mashaqi to the best of his/her ability in English.

I have been told about the nature of the research in terms of methodology, possible adverse effects, and complications (as per Participant Information Sheet).

After knowing and understanding all the possible advantages and disadvantages of this research, I voluntarily consent of my own free will to participate in the clinical research specified above.

I understand that I can withdraw from this research at any time without assigning any reason whatsoever.

Date: ……..…..….. **Signature:** ……..…… *(Participant)*

IN THE PRESENCE OF:

Name: ……..……

Designation: …… **Signature:** ……

(*Witness for Signature of Participant)*

I confirm that I have explained to the participant the nature and purpose of the above-mentioned research.

Date: ……. **Signature:** Taqwa Mashaqi

(Attending investigator)

A. Section one: Socio-demographic characteristics:

1) Age:

1. <20 years
2. 20-25 years
3. 26-30 years
4. >30 years

2) Level of education:

1. Not read & not write
2. Primary
3. Higher Secondary
4. Graduation & above

3) Occupation.

1. Housewife
2. Employee

4) You have participated in an educational program focused on jaundice?

1. Yes

2. No

B. Section Two: obstetrical history and previous experience with jaundice:

1) Number of children in the family who had neonatal jaundice.

1. None
2. 1-3
3. 4-6
4. >6

2) Gestational age in weeks:

1. From 35 to 6 + 36 weeks
2. From 37 weeks to 6 + 37 weeks
3. 38 weeks and more

3) Feeding Methods:

1. Breastfeed only
2. Breastfeeding and formula milk
3. Formula milk

C. Section three: Mother's knowledge of Jaundice.

Mother's knowledge of Jaundice.	**Yes**	**No**	**I don't know**
1. Neonatal Jaundice is a greenish discoloration of the skin and sclera.			
2. Jaundice is a non-common problem of neonates.			
3. Jaundice not lasting for more than 2 weeks-month.			
4. Phototherapy is a treatment for neonate jaundice.			
5. Neonatal jaundice in newborns is diagnosed by the pediatrician based on the high percentage of bilirubin in the blood.			
6. Can use a medical advice machine to check the bilirubin through the skin (Transcutaneous Bilirubinometer)			

D) Section four: Mother's Knowledge about Complications of Neonatal Jaundice.

Untreated severe jaundice for a long time can lead to:	**Yes**	**No**	**I don't know**
1. Brain damage			
2. Convulsions			
3. Mental retardation			
4. Deafness			
5. Physical retardation			
6. Death			

E) Section Five: Mother's Knowledge about Risk Factors of Neonatal Jaundice.

Risk factors of Neonatal Jaundice	**Yes**	**No**	**I don't know**
1. ABO compatibility			
2. Rh compatibility			
3. infection			
4. G6PD deficiency			
5. Low birth weight			
6. Hyperbilirubinemia in siblings			
7. Premature birth			
8. Problems with breastfeeding			
9. Infant of gestational diabetic mother			

F) Section six: Mother's Practices about Neonatal Jaundice.

What do you do when you notice jaundice on your baby?	**Yes**	**No**
1. I take the initiative to look for information about neonatal jaundice		
2. I expose my child to sunlight		
3. I use a neon lamp for my child at home		
4. I use medicinal herbs		
5. I monitor my child's weight		
6. I monitor my child's behavior		
7. I continue to breastfeed		
8. I check my baby's jaundice by observing the color of skin and eyes		
9. I visit the doctor as soon as possible		

Thank you for your cooperation and participation...

موافقة مسبقة أنا .....(اسم المشارك / اختياري) أوافق بموجبه على المشاركة في البحث السريري (الدراسة السريرية / دراسة الاستبيان / تجربة الأدوية) المحددة أدناه:

تأثير برنامج الوقاية على معرفة وممارسات الأمهات فيما يتعلق باليرقان عند حديثي الولادة في مستشفى مار يوسف في القدس الشرقية. لتحقيق درجة:الماجستير، في برنامج:حديثي الولادة في الجامعة العربية الامريكية.

تم شرح وتفسير طبيعة الدراسة وهدفها عن طريق الباحث: تقوى كامل مشاقي.

لقد تم إخباري عن طبيعة البحث من حيث المنهجية والآثار السلبية المحتملة والمضاعفات (حسب ورقة معلومات المشارك).

بعد معرفة وفهم جميع المزايا والعيوب المحتملة لهذا البحث، أوافق طواعية بمحض إرادتي على المشاركة في البحث السريري المحدد أعلاه.

أفهم أنه يمكنني الانسحاب من هذا البحث في أي وقت دون إبداء أي سبب على الإطلاق.

التاريخ: ..... إمضاء المشارك: .....

في حضور:

اسم: .....

التسمية / اللقب: . ..... إمضاء: ..... (شاهد على توقيع المشارك)

أؤكد أنني أوضحت للمشارك طبيعة وهدف البحث المذكور أعلاه.

تاريخ: ..... إمضاء: Taqwa Mashaqi(الباحث)

أ- القسم الأول: الخصائص الاجتماعية والديموغرافية للأم:

1) العمر.

1. أقل من 20 سنة
2. 20–25 سنة
3. 26–30 سنة
4. أكثر من 30 سنة

2) مستوى التعليم.

1. لا يقرأ ولا يكتب
2. الابتدائية
3. الثانوية العامة
4. بكالوريوس فما فوق

3) المهنة.

1. ربة منزل
2. موظفة

4) هل شاركت في برنامج تعليمي يركز على اليرقان؟

1. نعم
2. لا

ب- القسم الثاني: التاريخ الولادي والخبرة السابقة مع اليرقان:

1) عدد أطفال الأسرة المصابين باليرقان الوليدي.

1. لا يوجد
2. 1-3
3. 4-6
4. أكثر من 6

2)عمر الحمل بالأسابيع.

1. من 35 إلى 6+36 أسبوع
2. *من 37 أسبوع إلى 6+37 أسبوع*
3. *38 أسبوع فأكثر*

3)طرق التغذية.

1. الرضاعة الطبيعية فقط
2. الرضاعة الطبيعية والصناعية
3. صناعي

ج- القسم الثالث: معرفة الأم باليرقان:

معرفة الأم باليرقان	صح	خطأ	لا أعرف
1. اليرقان الوليدي(الصفار) هو تغير لون الجلد والعين عند الطفل إلى اللون الأخضر			
2. اليرقان(الصفار) مشكلة غير شائعة عند الأطفال حديثي الولادة			
3. لا يستمر اليرقان لأكثر من أسبوعين إلى شهر			
4. العلاج بالضوء الأزرق هوعلاج لليرقان الوليدي(الصفار)			
5. يتم تشخيص اليرقان الوليدي (الصفار) عند الأطفال حديثي الولادة من قبل طبيب الاطفال بالاعتماد على ارتفاع نسبة الصفار بالدم			
6. يمكن استخدام جهاز طبي خاص لفحص نسبة اليرقان(الصفار) عبر الجلد			

د- القسم الرابع: معرفة الأم بمضاعفات اليرقان الوليدي(الصفار):

عندما لا يعالج اليرقان الشديد (الصفار) لفترة طويلة يمكن أن يؤدي إلى:	صح	خطأ	لا أعرف
1. تلف الدماغ الناتج عن ارتفاع نسبة الصفار			
2. التشنجات			
3. إعاقة عقلية			
4. فقدان السمع(الطرش)			
5. إعاقة جسدية			
6. الموت			

هـــ- القسم الخامس: معرفة الأم بعوامل خطر الإصابة باليرقان الوليدي:

عوامل خطر اليرقان الوليدي:	صح	خطأ	لا أعرف
1. توافق فصيلة الدم			
2. توافق العامل الريسيسي			
3. العدوى(الالتهاب)			
4. نقص إنزيم التفول			
5. انخفاض الوزن عند الولادة			
6. فرط بيليروبين الدم عند الأشقاء			
7. الولادة المبكرة			
8. مشاكل في الرضاعة الطبيعية			
9. أن تكون الأم مصابة بسكري الحمل			

و- القسم السادس: ممارسات الأم حول اليرقان الوليدي.

ماذا تفعلين عندما تلاحظين الصفار على طفلك؟	نعم	لا
1. أقوم بالبحث للحصول على معلومات حول اليرقان الوليدي		
2. أعرض طفلي لأشعة الشمس		
3. استخدم مصباح النيون لطفلي في المنزل		
4. استخدم الأعشاب الطبية		
5. أراقب وزن طفلي		
6. أراقب سلوك طفلي		
7. أستمر في الرضاعة الطبيعية		
8. أتحقق من صفار طفلي من خلال فحص لون البشرة والعينين		
9. أذهب للطبيب بأسرع وقت ممكن		

شكرا لتعاونك ومشاركتك...

Appendix (2) IRP Approval

Arab American University
Institutional Review Board - Ramallah

الجامعة العربية الأمريكية
مجلس اخلاقيات البحث العلمي – رام الله

IRB Approval Letter

Study Title: "The Effect of Neonatal Jaundice Prevention Program on Mothers' Knowledge and Practices Towards Neonatal Jaundice at Saint Joseph Hospital in East Jerusalem"

Submitted by: Taqwa Kamel Mashaqi

Date received: 8th December 2023

Date reviewed: 2th January 2024

Date approved: 17th January 2024

Your Study titled **"The Effect of Neonatal Jaundice Prevention Program on Mothers' Knowledge and Practices Towards Neonatal Jaundice at Saint Joseph Hospital in East Jerusalem"** with code number **"R-2024/B/1/N"** was reviewed by the Arab American University IRB committee and was approved on the 17th January 2024.

Sajed Ghawadra, PhD
IRB-R Chairman
Arab American University of Palestine

الجامعة العربية الأمريكية - فلسطين
مجلس اخلاقيات البحث العلمي - رام الله
IRB-R
ARAB AMERICAN UNIVERSITY-PALESTINE
INSTITUTIONAL REVIEW BOARD - RAMALLAH

General Conditions:

1. Valid for 8 months from the date of approval.
2. It is important to inform the IRB-R with any modification of the approved study protocol.
3. The Bord appreciates a copy of the research when accomplished.

رام الله – فلسطين

Tel: 02-294-1999 **E-Email:** IRB-R@aaup.edu **Website:** www.aaup.edu

Appedix (3) Hospital Approval

Arab American University
Faculty of Graduate Studies

الجامعة العربية الأمريكية
كلية الدراسات العليا

2023/9/5

حضرة الأستاذ جميل كوسا المحترم

مدير عام المستشفى الفرنسي/القدس

تسهيل مهمة بحثية

تحية طيبة وبعد،

تُهديكم كلية الدراسات العُليا في الجامعة العربية الأمريكية أطيب التحيات، وبالإشارة الى الموضوع أعلاه، تشهد كلية الدراسات العُليا في الجامعة أن الطالبة **تقوى كامل توفيق مشاقي** والتي تحمل الرقم الجامعي 202112474 هي طالبة ماجستير في برنامج تمريض حديثي الولادة وتعمل على أُطروحة الماجستير الخاصة بها بعنوان:

"The Effects of Implementing Neonatal Jaundice Prevention Program on Mothers' Knowledge and Practices towards Neonatal Jaundice at Saint Joseph Hospital in East Jerusalem" ، تحت إشراف الدكتورة فائدة قطيط. نأمل من حضرتكم الإيعاز لمن يلزم لمساعدتها للحصول على المعلومات اللازمة للدراسة،علماً أن المعلومات ستستخدم لغاية البحث فقط وسيتم التعامل معها بغاية السرية، وقد أُعطيت هذه الرسالة بناءً على طلبها.

وتفضلوا بقبول فائق الاحترام

ق.أ.عميد كلية الدراسات العليا

د. حسين الأحمد

كلية الدراسات العليا
FACULTY OF GRADUATE STUDIES

Approved / referred to Dr. Hana for facilitating the student mission

St.Joseph Hospital
Mr Jamil Kousaa
General Director

Jenin Tel: +970-4-2418888 Ext.:1471,1472 Fax: +970-4-2510810 P.O. Box:240
Ramallah Tel: +970-2-2941999 Fax: +970-2-2941979 Abu Qash - Near Arrehan
E-mail: FGS@aaup.edu ; PGS@aaup.edu Website: www.aaup.edu

Appendix (4) Participants Consent form

نموذج الموافقة

AAUP-IRB-R Code No.: …….

AAUP-IRB-R Date: …….

أنا .....

(اسم المشارك / اختياري) أوافق بموجبه على المشاركة في البحث السريري (الدراسة السريرية / دراسة الاستبيان / تجربة الأدوية) المحددة أدناه:

تأثير برنامج الوقاية على معرفة وممارسات الأمهات فيما يتعلق باليرقان عند حديثي الولادة في مستشفى مار يوسف في القدس الشرقية.

لتحقيق درجة: الماجستير، في برنامج: حديثي الولادة في الجامعة العربية الامريكية.

تم شرح وتفسير طبيعة الدراسة وهدفها عن طريق الباحث: تقوى كامل مشاقي.

لقد تم إخباري عن طبيعة البحث من حيث المنهجية والآثار السلبية المحتملة والمضاعفات (حسب ورقة معلومات المشارك).

بعد معرفة وفهم جميع المزايا والعيوب المحتملة لهذا البحث، أوافق طواعية بمحض إرادتي على المشاركة في البحث السريري المحدد أعلاه.

أفهم أنه يمكنني الانسحاب من هذا البحث في أي وقت دون إبداء أي سبب على الإطلاق.

التاريخ: ..... إمضاء المشارك: .....

في حضور:-

اسم: .....

التسمية / اللقب: . ..... إمضاء: .....

(شاهد على توقيع المشارك)

أؤكد أنني أوضحت للمشارك طبيعة وهدف البحث المذكور أعلاه.

تاريخ: ..... إمضاء: Taqwa Mashaqi

(الباحث)

INFORMED CONSENT

AAUP-IRB-R Code No.: …….

AAUP-IRB-R Date: …….

I, ……..... *(Name of Participant / optional)* hereby agree to take part in the clinical research (clinical study/questionnaire study/drug trial) specified below:

Title of Study: The Effect of Neonatal Jaundice Prevention Program on Mothers' Knowledge and Practices Towards Neonatal Jaundice at Saint Joseph Hospital in East Jerusalem.

Fulfillment of Master's degree, in Neonatal program, in AAUP.

The nature and purpose of which has been explained to me by Taqwa Kamel Mashaqi., and interpreted by Taqwa Kamel Mashaqi to the best of his/her ability in English.

I have been told about the nature of the research in terms of methodology, possible adverse effects, and complications (as per Participant Information Sheet).

After knowing and understanding all the possible advantages and disadvantages of this research, I voluntarily consent of my own free will to participate in the clinical research specified above.

I understand that I can withdraw from this research at any time without assigning any reason whatsoever.

Date: ……..…….. **Signature:** …….……

(Participant)

IN THE PRESENCE OF:

Name: ……..……

Designation: . ……..……..…… **Signature:** ……..……

(*Witness for Signature of Participant)*

I confirm that I have explained to the participant the nature and purpose of the above-mentioned research.

Date: ……. **Signature:** Taqwa Mashaqi

(Attending investigator)

Appendix (5) Neonatal Jaundice Prevention Program

Program	**Neonatal jaundice prevention program for mothers**

Aim: The aim of this program is to enable the mothers to integrate updated knowledge and practices in ensuring mothers provide appropriate care for their babies, and enhance the opportunity to early detect NJ.

Program aims:

1. Defining neonatal jaundice and categorizing its various types.
2. Outlining associated risk factors.
3. Emphasizing the significance of a neonatal jaundice prevention program.
4. Enumerating the adverse outcomes linked to neonatal jaundice.
5. Explain the symptoms of neonatal jaundice.
6. Promoting awareness of best practices to prevent and manage neonatal jaundice.
7. Describe the mother's role in preventing and treating neonatal jaundice.
8. Discussing the common home treatment for jaundice in newborns.

Appendix (6) Arabic Abstract

اليرقان الوليدي المعروف أيضـًا باسـم فرط بيليروبين الدم، هو حالة شـائعة عند الأطفال حديثي الولادة بسـبب عدم التوازن بين إنتاج البيليروبين وخروجه من الجسـم. وهو يؤثر على أكثر من 50% إلى 60% من الأطفال حديثي الولادة الناضجين و80% من الأطفال حديثي الولادة الخدج، وهو السبب الثالث الأكثر شيوعًا لدخول الأطفال حديثي الولادة إلى المستشفى. على الرغم من أن ما يقرب من 85% من الأطفال حديثي الولادة يعانون من اليرقان، إلا أنه عادة ما يتم حله من تلقاء نفسه خلال الأسبوع الأول. ومع ذلك، يمكن أن تؤدي الإدارة غير السليمة إلى فرط بيليروبين الدم الشـديد، وهو المسـؤول عن أكثر من 75٪ من حالات إعادة الإدخال إلى المسـتشـفى خلال الأسابيع الأولى من حياة الطفل في جميع أنحاء العالم. تلعب النساء الحوامل دورًا مهمًا في التعرف على مرض اليرقان ومضـــاعفاته والوقاية منه مبكرًا. الهدف: هدفت هذه الدراســـة إلى تقييم تأثيرتنفيذ برنامج الوقاية من اليرقان الوليدي على معرفة وممارسات الأمهات تجاه اليرقان الوليدي في مستشفى القديس يوسف في القدس الشرقية. الطريقة: تم تطبيق المنهج الكمي، وشبه التجريبي، وتصـــميم الاختبار القبلي والبعدي. الفئة والعينة: شـملت الدراســة جميع الأمهات اللاتي أصـيب أطفالهن باليرقان الفسيولوجي خلال فترة زمنية تتراوح بين 24 إلى 72 ساعة بعد الولادة في قسم الأطفال حديثي الولادة وكان حجم العينة 48 أم. الأداة: تم تطوير استبانة الدراسـة من قبل الباحثة لجمع البيانات ويتكون الاسـتبيان من سـتة أجزاء. النتائج: كشـفت الدراسـة عن وجود علاقة ذات دلالة إحصائية بين نتائج الاختبار القبلي والبعدي، مما يدعم الأبحاث السابقة التي وجدت أن معرفة وممارسـات الأمهات باليرقان الوليدي تحسـنت بشـكل ملحوظ بعد تنفيذ برنامج الوقاية من اليرقان الوليدي. الاسـتنتاج: تسـلط نتائج الدراســة الضــوء على أهمية وجود برنامج محدث للوقاية من اليرقان الوليدي لجميع الأمهات. ســيســاعدهم ذلك في الاســتمرار على الاطلاع والحفاظ على معرفتهم ومهاراتهم العملية حول نيوجيرسي، بناءً على أحدث الأدلة. التوصية: ينبغي تنفيذ برنامج التثقيف الصحي للأمهات فيما يتعلق بموضوع اليرقان.

الكلمات المفتاحية: اليرقان الوليدي، برامج الوقاية ، المعرفة والممارســة ، الوقاية من اليرقان، اليرقان الفسيولوجي ، فحص نسبة البيليروبين بواسطة الدم ، فحص نسبة البيليروبين عبر الجلد.