



TURKISH REPUBLIC OF NORTH CYPRUS

NEAR EAST UNIVERSSTY

HEALTH SCIENCE INSTITUTE

**ASSESSMENT OF NURSES' AND MIDWIVES' KNOWLEDGE,
BELIEFS AND BARRIERS REGARDING KANGAROO CARE IN
ERBIL**

NARMIN MOHAMMED OMER

MASTER THESIS

NURSING DEPARTMENT

SUPERVISOR

Assist. Prof. Dr. SERAP TEKBAS

NICOSIA

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CONFIRMATION

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To the Directorate of Health Sciences Institute;

This thesis study was accepted by the jury on 25.03.2021 as a Master's Thesis in the Nursing Program of the Near East University Institute of Health Sciences.

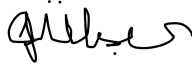
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Program: Nursing Master

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STATEMENT

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Title of Dissertation: Assessment of nurses' knowledge, beliefs and barriers regarding Kangaroo Care in Erbil.

Supervisor: Assist. Prof. Dr.SerapTekbas

Year: 2021

This thesis which includes the planning and design for the thesis is my own work. Since its genesis, I declare that I had no unethical behavior or misconduct. All the data and cited information has been collected in accordance with scholarly and ethical laws. The rightful authors of the collected information have been cited and acknowledged where appropriate.

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SUMMARY

Objective: In this study, it was aimed to evaluate nurses' knowledge, beliefs and barriers about kangaroo care.

Materials and Methods: A cross- sectional descriptive study was carried out in Maternity Teaching Hospital in Erbil in the period of April to July 2020. Collectively 165 male and female nurses and midwives were included in the study. A questionnaire form consisting of 5 parts including 73 questions was developed to collect information about demographic, education, experience, beliefs, knowledge and barriers related to application of Kangaroo Care

Result: The majority of the participants (85%) previously had heard about the kangaroo care. Most of them (81%) had no certification of Kangaroo Care training. (64%) of participants had beliefs that all neonatal babies should be allowed to collaborate Kangaroo Care. (71.4%) of the participants had belief that Kangaroo Care can reduce mortality and morbidity. The majority had belief that insufficient practicing on Kangaroo Care do affect the ability of nurse's activity confidence. The participants (58.2%) found it "very effective/ effective" that the hospital system does not support Kangaroo Care procedure. The participants of 68.5% stated that the knowledge level of the families is insufficient.

Conclusion and Recommendations: The conclusion was based on the findings of the main three components which includes the beliefs, knowledge and barriers. The majority found that Kangaroo Care important to be applied and the parents should be part of the procedure. The low educational level and knowledge had a great influence on the Kangaroo Care process. We recommend to raise the health care givers and parent's belief about Kangaroo Care, promote certification and education in addition to developing practice guidelines and policies that ensure application of safe Kangaroo Care.

Keywords: Kangaroo care, nurse, knowledge, barriers, beliefs.

ÖZET

Amaç: Bu çalışmada hemşirelerin kanguru bakımı ile ilgili bilgi, inanç ve engellerini değerlendirmek amaçlanmıştır.

Gereç ve Yöntem: Kesitsel tanımlayıcı nitelikteki çalışmamız Erbil Doğum Hastanesi'nde Nisan-Temmuz 2020 tarihleri arasında gerçekleştirildiği Çalışmaya toplam 165 erkek ve kadın hemşire ve ebe dahil edilmiştir. Kanguru Bakımı uygulaması ile ilgili demografik, eğitim, deneyim, inanç, bilgi ve engeller hakkında bilgi toplamak için 73 sorudan ve 5 bölümden oluşan bir anket formu veri toplama aracı olarak kullanıldı.

Bulgular: Katılımcıların çoğunluğu (% 85) daha önce kanguru bakımını duymuştu. Çoğunun (% 81) Kanguru Bakımı eğitimi sertifikası yoktu. Katılımcıların (% 64) tüm yeni doğan bebeklerin Kanguru Bakımı ile işbirliği yapmasına izin verilmesi gerektiğine inanmaktadır. Katılımcıların (% 71,4) Kanguru Bakımının mortalite ve morbiditeyi azaltabileceğine inanmaktadır. Çoğunluk, Kanguru Bakımı konusunda yetersiz uygulama yapmanın hemşirenin aktivite güvenini etkilediğine inanıyordu. Katılımcıların (% 58,2) hastane sisteminin Kanguru Bakımı prosedürünü desteklememesini “çok etkili / etkili bulmuştur. Katılımcıların% 68,5'i ailelerin bilgi düzeyinin yetersiz olduğunu belirtmiştir.

Sonuç ve Öneriler: Sonuç, inançları, bilgileri ve engelleri içeren ana üç bileşenin bulgularına dayanıyordu. Çoğunluk, Kanguru Bakımının uygulanmasının önemli olduğunu ve ebeveynlerin prosedürün bir parçası olması gerektiğini gördü. Düşük eğitim seviyesi ve bilgi, Kanguru Bakımı süreci üzerinde büyük bir etkiye sahipti. Hastane politikaları, Kanguru Bakım programlarındaki uygulamaları desteklemelidir.

Anahtar Kelimeler: Kanguru bakımı, hemşire, bilgi, engeller, inançlar.

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ABBREVIATION

CKC	Caregiver Kangaroo Care
HR	Heart Rate
HRV	Heart Rate Variability
IVF	Intravenous Fluid
KC	Kangaroo Care
KCQ	Kangaroo Care Questionnaire
KMO	Kaiser Mayer Olkin (Test is a measure of how suited your data is for factor analysis)
KRG	Kurdistan Regional Government
LBW	Low Birth Weight
MKC	Mother Kangaroo Care
NICU	Neonatal Intensive Care Unit
OPD	Out Patient Department
RR	Respiratory Rate
SaO₂	Oxygen Saturation as measured by blood analysis
SGA	Small for Gestational Age
SPO₂	Oxygen Saturation the amount of oxygen carrying hemoglobin in the blood
SSC	Skin-To- Skin care
STS	Skin-To-Skin, mother communication with neonate
TNSA	The Texas Students Association
UK	United Kingdom
WHO	World Health Organization

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CHAPTER ONE

1. Introduction

Kangaroo Care (KC) is defined as skin-to-skin contact, consisting mainly of placing a nappy baby in an upright position on the bare mother's chest (Karen et al., 2014). KC position is where the infant is exposed to the chest of the parent, all sides are bent so that the infant is in a "frog-like" position, and the head is flipped to one side or the other using an upright neck to prevent suffocation (Kaffashi et al., 2012). Prone position compared to poor oxygen improves SaO₂ and reduces poor oxygen rings (Ludington et al., 2013).

KC is one of these life-saving evidences-based interventions. There are four components of KC including 1) early, continuous, and long-term skin contact between skin and caregivers, 2) exclusive breastfeeding, 3) early hospital discharge, and 4) adequate support for caregivers and infants at home (WHO, 2003; Chan et al., 2016). In addition to providing thermal control, KC is associated with a 36% reduction in neonatal mortality among low birth weight infants compared to conventional care, as well as a significantly lower risk of sepsis, hypoglycemia and significantly lower body temperature (Boundy et al., 2015; Smith et al., 2017).

KC's benefit includes enabling a mother to care for her baby LBW, reducing infant mortality, encouraging breastfeeding and reducing the frequency of children with low birth weight in clinics after discharge from hospital (Nagorski, 2007). The direct effect of KC is to prevent prolonged separation between a mother and her baby low birth weight (LBW) that can contribute to an increased incidence of disease, insufficient breast milk volume, poor growth and poor association between the mother and infant (Charpak et al., 2005)

KC is an evidence-based approach to reduce mortality and morbidity in preterm infants. Despite these benefits, mothers may encounter barriers to practice, and some may prevent them from achieving ongoing skin to skin (STS) communication with their babies. These barriers can exist at multiple levels, including barriers to implementing the KC program, limitations in the program itself, or specific challenges associated with the KC practice that the mother has to implement. Second, if there are any major positive factors, cited in the relevant literature, that could enable the mother to practice KC. We believe that it is important

to consider these different types of barriers together along with the main enabling factors to be exercised, although the solution to each barrier may be different. Specific obstacles most relevant to mothers may vary depending on the context. A comprehensive list of this type will give program implementers, policymakers, and researchers a set of factors to synthesize as they attempt to implement or improve new KC programs (Seidman et al., 2015).

For premature infants, newborn nursing and medical care are important for survival (Flynn and Leahy-Warren, 2010). In fact, nearly four million children die every year during the first four weeks of life as a result of complications of newborns. Low-cost care methods for early birth complications and LBW are essential since 99% of all infant deaths occur in low- or middle-income countries where neonatal NICUs are not developed or readily available. Neonatal complications in which preterm and LBW children may be at greater risk include hypothermia, dyspnea, and infection (Boundy, et al. 2015). One of the most common complications in preterm and LBW is hypothermia, which may lead to treatment for cold shock and terminal death (Elias and Ramu, 2014; Smola and Lawson, 2019).

One of the strong vaginal stimuli is the application of kangaroo contact skin to skin care (SSC) between the mother and the baby. Certain sensory stimuli such as touch, warmth, and odor ensure maternal oxytocin excretion through (Güleşen and Yıldız, 2013). Another literature indicates that kangaroo has no negative impact on the health of the mother or infant and has many benefits including strengthening the immune system, reducing anxiety, increasing self-esteem and self-confidence, reducing maternal pain, decreased gas and cramps, and strengthening the bond between the mother and newborn of the infant (Aghdas et al., 2014; Essa and Ismail, 2015).

KC has positive effects on successful initiation of breastfeeding, reduced postpartum hemorrhage by stimulating the secretion of oxytocin, and facilitating adaptation to maternal roles (Chermont et al., 2009; Stevens et al., 2014). Additionally, high levels of oxytocin during SSC stimulate uterine contraction and thus allow the delivery of the placenta easily (Stevens et al., 2014).

Evidence indicates that both mothers and their newborns who participate in SSC during the first 60 minutes after birth (also known as The Golden Hour) report enhanced psychological and physiological benefits and increased rates of breastfeeding. The aim was to learn about the meaning of KC and the advantages of SSC during the Golden Hour in order to enhance mother-infant bonding (Herman et al., 2020). KC and consistent mother-infant bonding play an important role in neonatal survival and neurodevelopment (Athanasopoulou, 2014). Approximately three quarters of neonatal deaths occur within the first week of life, with the most dangerous period being the first 24 hours (Lawn et al., 2005; UNICEF, 2008). At a time when infants are most vulnerable and families are trying to make sense of what has happened, there is an important role of the neonatal nurse in providing adequate care (Davy and Rooyen, 2011). SSC, nutrition (exclusive breastfeeding where possible) and earlier discharge (including appropriate follow-up care) are the components of KC. A support component is necessary for the mother to practice KC effectively, provided by health staff, family and community (Bergh, 2003). Previous studies observed that the implementer's awareness and knowledge levels exerted influence on practice. Nurses with a positive attitude and belief in the efficacy of KC strongly supported the use of this method. However, a lack of knowledge appeared to increase uncertainty and concerns regarding medical risks, thereby impeding the successful implementation. Caregivers are key implementers and beneficiaries of KC (Deng et al., 2018). So to implement KC, it's significant to highlight the requirements by finding out the barriers and the required educational need to implement evidence based KC policies safely and effectively by the hospitals and caregivers (Grace et al., 2016).

1.1 Aim of the Study

Our aim in this study is to evaluate the knowledge, belief and barriers levels of nurses regarding kangaroo care.

1.2 Significance of the Study

It has been revealed that kangaroo care helps to reduce mortality rates in preterm infants, stabilizes heart rate, maintains body temperature, reduces the need for oxygen, positively affects weight gain and sleep duration, and assures early discharge. Kangaroo care also guarantees mother–infant commitment in the postnatal period (Kaya et al., 2017).

1.3 Research Questions

Study questions include the following;

- 1- What are the personal beliefs of nurses toward application of KC?
- 2- How knowledge and experience of nurses affects KC?
- 3- What are the barriers of nurses and midwives regarding kangaroo care?

CHAPTER TWO

2. GENERAL INFORMATION

2.1 Kangaroo care

Scientists have recently started investigating at many advantages of not taking neonates in incubators as they advise to place children on their mothers' skin at the earliest possible stage after birth. This procedure is generally named as Kangaroo Care (KC) (Bera et al., 2014; Boundy et al., 2015; Dandekar and Shafee, 2013; Menezes et al., 2014). The characteristics of the KC approach as the alternative of the neonate directly onto the caregiver's skin have been analyzed by many studies for the long possible duration care. This can be naturally an alternative and cost-effective approach to the traditional usage of incubator. Research has indicated that the average of using KC lasted for many hour sessions during the day (Smola and Lawson, 2019).

The KC approach was found in 1978 in Bogota, Colombia by Dr. Edgar Rey Sanabria as an alternative approach to the traditional incubator care (Boundy et al., 2015; Menezes et al., 2014). The idea of KC is to encourage stability infant essential signs and obtain preventative measures from other complexities via holistic and natural means. While accessing traditional care in NICU are not available for many mothers in the world, the theory of KC approach was built to give an impactful, simple and alternative to the traditional care which can be available socio-economic classes. (Bera et al., 2014; Boundy et al., 2015; Pour and Raghobi, 2016; Smola and Lawson, 2019).

2.1.1 Traditional method for premature and low birth weight infants care

In the developing countries, almost 20 million low birth and premature babies are born yearly, four million are dead during the first month. The reasons behind these deaths are unreliability and unavailability of traditional incubators. Furthermore, the lack of health care providers has made it inaccessible although Telemedicine is beneficial in rural areas. The World Health Organization (WHO) defines Telemedicine as a healing distance. The use of

information technologies and telecommunication technology is to give remote health services to patients. The caring practice for patients remotely when the patient and provider are not physically present with each other is defined by the Telemedicine the remote delivery of healthcare services (Sanabria and Martínez, 1983). Traditional therapeutic approaches, low-birthweight incubators and preterm baby can be due to the lack of telemedicine communication and feedback. Incubators continuously link newborn with electrodes to measure the Electrocardiography (ECG), that can influence the newborn since of very weak skin (Bonner et al., 2017).

Many researches have concentrated on monitoring fetal and maternal conditions to estimate and decrease the symptoms regardless of prematurity reasons to avoid prematurity (Maastrup et al., 2014; Zaylaa et al., 2016). Treating the outcome are focused by other studies aimed to decrease mortality (Goldenberg et al., 2012; Gravett et al., 2010).

Neonatal Intensive Care Unit (NICU) is utilized for partition from illness, to balance hyperthermia and hypothermia, to better temperature prediction and specific feeding to new-conceived youngsters (Kshirsagar et al., 2019). The main predisposing factor in neonatal sepsis is said to be the barrier of the immature skin in premature babies (Visscher and Narendran, 2014). Regardless of an immature skin, the likelihood for preterm baby sepsis and infection because of contaminated incubators can be a vital factor to think of while determining humidity duration (Glass, 2019). Nowadays, developed countries are still using incubators when resources are available at NICU to maintain them. Using incubators can be beneficial when babies are too fragile and premature to risk prolonged treatment and exposure to outside infectious simulation and agents (Hartz et al., 2015). Incubators are also useful tools in case fathers, families and mothers are not able to provide baby care in situations like maternal mortality or other complexities. In this case incubators can be an alternative approach when KC cannot be achieved (Zaylaa et al., 2018).

2.1.2 Prematurity and low birth babies

Nearly 10% of babies are born premature yearly that may lead to many issues such as infant mortality (Menezes et al., 2014).

It is estimated that four million babies die annually within the first week of birth due to neonatal issues (Boundy et al., 2015). LBW complications and low cost techniques of premature care are vital considering of 99% of all infant mortality happen in medium and low-income countries there are not advanced NICU existed to available. (Boundy et al., 2015). Complications of neonatal, in which LBW and premature infants are at higher risk, can be infections, respiratory distress and hypothermia (Boundy et al., 2015). The most well-known complications for LBW and premature babies can be hypothermia, which eventual deaths and cold shock can occur due to untreated (Elias and Ramu, 2014). Some of the long run consequences of low birth weight or prematurity can occur such as chronic respiratory difficulties including reduced growth, increased likelihood of diabetes and allergies or asthma (Charpak et al., 2016). This may lead to attention issues, mental retardation decreased academic performance and cognitive deficits (Charpak et al., 2016).

2.1.3 Kangaroo definition

The idea behind KC is to place baby in close skin to skin contact with chest and abdomen of mother with frequent breastfeeding. This can be equivalent to marsupial caregiving that infant is kept warm in the maternal pouch and close to the breasts for exclusive feeding. KC appeared as non-conventional low-cost approach for infant care which touch, security and warmth are provided and it has considerable survival advantages (Alpanamayi et al., 2014). The advantage of breastfeeding outcomes and cardio-respiratory stability in newborn babies without negative effects have been reviewed by an updated Cochrane (Moore et al., 2012).

2.1.4 Time of kangaroo care

KC is a developmental care form which has advantageous for all infants, especially those who are in the NICU. This is known as KC or SSC which includes a direct contact when an infant is placed skin to skin on mother or father's chest (Blacke and Gregson, 2011). KC can be applied immediately after delivery or can began after stabilization of babies depending on the condition of baby.

Even very small newborns with main health complications or on a mechanical ventilator can advantage from these short sessions (Jennifer, 2017). KC can be begun when the infant is stable and receiving oral feeds. Babies with special treatment and have severe diseases should wait for the recovery to apply KC (Heidarzadeh et al., 2013). Advice about when an infant is ready for KC can be given by nurses and neonatal professionals and assist parents to be prepare for this special event together (Jennifer, 2017).

2.1.5 History of kangaroo care

KC is used by The Child Institute of Bogota as an alternative tool to conventional care in LBW babies. The KC approach is originally from Bogota in 1978 by Dr. Edgar Rey Sanabria as an alternative to the traditional incubator care. (Boundy et al., 2015; Menezes et al., 2014). It was called KC for its similarity to marsupial care. The high mortality rate and shortage of technologic resources, incubators led to operate this method for earlier hospital discharge of LBW newborns (Charpak et al., 2016). WHO stated that issues related to LBW can cause 60 to 80 percent of infant deaths throughout the world. This was a leading cause of newborn death in 2018. LBW is a main issue in under-developed and developing countries. More than 15% of newborns born in the world are LBW. However, nearly all of them are from under-developed and developing countries in which there are limited modern technology and health professional (Rey et al., 1983).

In the 1980s, Rey Sanabria and Martínez-Gómez's Kangaroo Mother Method earned the attention of media in Europe when news networks filmed babies strapped to their mothers' chests and reported on considerable enhancement in survival rates (Rey et al., 1983).

They reported their study in 1983 in conjunction with the United Nations International Children's Emergency Fund or UNICEF. In 1985, neonatal researchers Andrew Whitelaw and Katharine Sleath traveled from London, England to Colombia to conduct their own analysis of the effectiveness of their approach. In 1985, Whitelaw and Sleath have published their paper in *The Lancet*, a peer-reviewed medical journal. It was found by Whitelaw and Sleath that early discharge and the kangaroo position were impactful in treating LBW babies at the Columbian hospital where there was limited conventional equipment. The treatment over

conventional approach utilized to enhance the health of newborns in well-funded hospitals were not recommended by them. However, the authors focused on the psychological advantages of KC approach including developed bonding among a mom and her baby (Whitelaw and Sleath, 1985).

Different versions of KC approach were implemented worldwide after introducing KC. 66 people from 15 countries participated in the first international KC conference in October 1996. The effectiveness of the treatment in a range of various scenarios were evaluated including severity of issues, varying infant weight categories, and hospitals types in which babies were being treated. In this conference, multiple treatment terms were introduced and consolidated into KC term. A universal protocol was introduced and agreed upon and this was published as a international guideline by WHO in 2003 (Grayson, 2018).

2.2 Kangaroo advantage of several destination

KC appeared as ono-conventional low-cost approach for infant care which touch, security and warmth are provided and it has considerable survival advantages. The advantage of breastfeeding outcomes and cardio-respiratory stability in newborn babies without negative influences have been reviewed by an updated Cochrane (Moore et al., 2012).

2.2.1 Bonding and attachment affect mother and parents

The emotional relationship formed by wordless communication among newborn, caretaker, parents and nurse were defined as the attachment bond (Jeanne et al., 2019). Separating infants from mother especially in the intensive care unit in any period can be traumatic to bonding and affecting long run mother-baby relationship. Separation periods have a certain impact on the onset of lactation and impairment of infant growth in the communities where low resources available and reduce the risk of child abuse and maternal depression in the years ahead (Flacking et al., 2012). Born prematurely also means that a mother's psychological preparation for motherhood is short, that may make mother more vulnerable to the impacts of separation. Mothers can feel depressed, irrational fears about malformations and intensely anxious in case

of having a sick preterm baby. Parents need support and time to with bereavement when infant face long run issues (Costello, 2017).

Prematurity is a case that can delay or avoid formation of the mother–baby bonding connection by delaying mothers from touching and seeing their babies (Çelebioğlu and Çelebioğlu, 2010; Törüner and Büyükgönenç, 2017). Additionally, situations including feelings of fatigue and pain, uncertainties in infants' prognosis, inability to fulfil maternal roles and fear of losing babies can make mother experiencing different negative feelings like stress, anxiety and guilt (Çalışır et al., 2008; Erdem et al., 2014).

2.2.2 Breast feeding

Breastfeeding can reduce the risks of retinopathy, sepsis and necrotizing enterocolitis and will reduce the transition to complete feeding in premature babies (Arslan and Yeniterzi, 2013; Bağ et al., 2006; Cangöl and Şahin, 2011). The priority should be given to breastfeeding for its immunological, nutritional, economic advantages and psychological. Milk from breastfeeding is nutrient rising growth rate for infants (Brown et al., 2011). However, according the report by UNICEF, 77 million infants do not receive breastfeeding annually in the first hour of birth. This may led to rise the likelihood of neonatal mortality by 80% (UNICEF, 2018).

The Turkey Demographic and Health Surveys (TNSA, 2013) revealed that 50% of neonates are receiving breast milk during the first hour of birth, 70 percent of them are receiving breast milk in the first day of birth and 30 percent of them are receiving breast milk in during 6 months of birth. Not able to breastfeeding can led to decreased milk production, mastitis pain in chest and nipples, anxiety, not feeling like a mother and feelings of guilt, stress, lack of confidence in maternal roles and depression (Fahlquist, 2016; Yörük et al., 2016). additionally, mothers who do not breastfeed, fast reduction in prolactin levels can happen, that leads to postpartum depression (Erdem and Çelepkoğlu, 2014).

2.2.3 Discharge and follow up

The organs of low birth weight premature infants are immature, which can easily lead to high-risk health problems such as death, nerve dysplasia and abnormal behavior (Hintz et al., 2019). With the establishment of NICU, the rapid development of intensive care and various technologies, the survival rate of premature infants has increased, and people pay more attention to the prognosis of their babies (Fang et al., 2019). Therefore, the transition from intensive care unit to general ward or family is critical to the rehabilitation of premature infants (Peters, 2017). However, the change of environment and nursing methods is apt to make the infants and parents maladaptive (Leng et al., 2019).

Babies can be discharged when they are maintaining temperature without assistance, gaining a weight of 10-15 g/kg/d for 3 consecutive days, feeding well, and making sure the mother able and confident of caring for her baby. Weekly follow up can be made for mothers for compliance with KC and anthropometry, in the high-risk outpatient department (OPD) till postmenstrual age of 40 weeks in preterm babies or till gaining weight of 2500 g in term small for gestational age babies. Post-structured questionnaire can be designed to interview mothers in KC group to evaluate the feasibility and acceptability of KC at home or in the hospital (Suman et al., 2007).

2.2.4 Physiological changes of neonate during kangaroo care

approaches that develop the stability of state regulation and neurobehavioral, autonomic maturation and ease the adaptation of the baby to the outside world must be established for smooth transition from fetal to neonatal life. A stable transition can be more difficult in case of the procedure becomes complicated with factors including prematurity, LBW and health conditions like hypoglycemia and sepsis (Ankit and Sushma, 2019).

In response of changes in stress results from KC, evidence is evaluated. Neonates can respond to stress physiologically in multi-ways. The system of parasympathetic nervous is activated during decreasing stress in which led to enhanced ability to connect with conservation of energy for growth, improvement via lower heart rate (HR) and respiratory

rates (RR), increased heart rate variability (HRV), release of oxytocin and caregivers. HRV can be defined as time variation of heart beats to measure balance among parasympathetic (suggested less stress) and sympathetic (suggesting more stress) activity. A hormone which is linked with role of labor and delivery, is called Oxytocin. This plays an important role in attachment and bonding. The level of Oxytocin is raised in the time of reducing stress, relaxing and bonding (Porges, 2011; Gimpl and Fahrenholz, 2001).

When heightened stress is experienced by neonates, activation of the sympathetic nervous system (i.e., raised HR, raised RR, and reduce HRV) and activation of the hypothalamic pituitary adrenal axis (i.e., raised release of cortisol) will be the first respond (McCance and Huether, 2014). Cortisol is a glucocorticoid hormone released in response to activating hypothalamic—pituitary—adrenal axis in the time of stress and this can be measured in the urine, blood, or saliva as a short-term stress measurement (McCance and Huether, 2014). Apneic events can result in a drop-in oxygen saturation of the blood. The outcome measures such as HR, RR, oxygen saturation (SpO₂), HRV, apnea, bradycardia, oxytocin, and cortisol were determined depending on the physiologic responses to stress (Pados and Hess, 2020).

2.2.5 Kangaroo care improved responses to procedural pain

Admitted preterm and sick full-term neonates to the NICU may be routinely subjected to various invasive diagnostic and therapeutic processes that related to pain (Pediatrics and Society, 2006). The procedure of heel-lancing is the most popular tissue damaging procedure which premature neonates undergo. On average, 10 to 16 painful invasive procedure can be received by preterm neonates on the daily bases in the NICU with repeated heel sticks of 55 to 86% of these procedures (Batton et al., 2007).

The most public health concern in the world is pain (Pediatrics and Society, 2006). The harmful impacts of neonate's pain are not described very well. These effects are including metabolic and physiological impacts like alteration in cerebral blood flow, outpouring of stress hormones and vital signs changes (Anand et al., 2013).

Bulfone et al have reported many advantages of KC (Bulfone et al., 2011). These benefits can be thought as thermal regulation, kangaroo positioning enhances infant physiological stability. Another benefit is holding upright exposes the newborn to combinations of sensory stimulation (olfactory, kinesthetic tactile auditory, vestibular and visual) (Cong et al., 2012; Mitchell, et al. 2013). It has been suggested by researchers that KC can be applied as a non-pharmacological method in order to heal procedural pain in full term newborns and premature. However, more information is needed regarding its impact on relieving pain and physiological stability in neonates (Johnston et al., 2013; Jaklein and Naglaa, 2016).

2.2.6 Maintenance of temperature

Maintaining temperature is one of the most popular requirements of babies at birth. This is because newborn baby cannot generate heat because of the shortage shivering technique, and that is the temperature is decreased rapidly (Debra et al. 2006). Putting baby under warmer is a routine way to prevent hypothermia by separating the mother and infant. facilitating a close bonding connection between the mother and newborn is one of the most vital roles of nurses. To treat hypothermia and to accomplish the role of nurses, an effective, applicable and accessible approach can be applied by nurses which is known as mother and infant skin-to-skin contact (Galligan, 2006).

The movement of the hands of newborn over the mom' breasts in KC can increase secretion of oxytocin, that leads to increased secretion of breast heat and breast milk. The transformation of heat from mother and infant can activate infant;s sensory nerves due to temperature of mother. The mother's heat leads to infant's relaxation, dilation of the skin vessels, decreasing tone of the sympathetic nerves and raising infant's body temperature (Jonas et al., 2007; Shourangiz, et al. 2014).

2.3 Nurse application of kangaroo care

The major cause of infant deaths is due to preterm birth complications (Chawan Paiboon et al., 2019). WHO issued recommendations [International Policy Statement, 2017] for preterm infant cares in November 2015, such as KC. Health professional associations (American Academy of Pediatrics, Council of International Neonatal Nurses, International Council of Nurses, American College of

Obstetricians and Gynecologists, International Federation of Gynecology and Obstetrics, American College of Nurse-Midwives, International Pediatric Association and International Confederation of Midwives) has developed an international joint policy statement and endorsement also came from for universal use of KC for preterm and LBW Infants (GJ et al., 2016; Jamali et al. ,2019).

Belief in the physiological and psychological advantages of KC have been expressed by nurses (Higman et al., 2015; Strand et al.,2013). skill confidence and inadequate knowledge can make KC practice limited. The recent systematic review of KC revealed that inadequate training skills and lack of education are the barriers of applying KC (Seidman et al., 2015; Higman et al., 2015). The researchers have evaluated the confidence nurses in practice and knowledge of KC as they have found 52 percent of clinicians had no formal training in KC. According to the study by Solomons and Rosant, the main obstacle of adapting KC is the lack of education among nurses (Solomons and Rosant, 2012).

A simulation training session is conducted to show nurses how transfer baby on a nasal cannula, a baby on air room, a baby on continuous positive airway pressure and a baby on on mechanical ventilation from an incubator to her or his mother. They illustrated that the skill training can significantly enhance nurses's competency and comfort with the techniques (Almutairi and Ludington-Hoe., 2016).

KC provides various advantages for mothers in addition to provide infant many benefits. Secretion of maternal oxytocin in mothers who receive SSC improves uterine contractions, that supports the placenta to separate and the duration of the third stage of labor to reduce (Kiss and Mikkelsen, 2005). The third stage of labor, which involves separation and expulsion of the placenta and membranes, starts immediately after the delivery of the fetus (Buckley 2005; Kolsoom et al.,2018). However, little is known about the knowledge, practice, and attitudes of those nurses as basic members of the treatment team, particularly in the context of socio-cultural variations, which might affect maternal engagement and practice. To the best of knowledge, no studies have been conducted in Saudi Arabia concerning this topic.

2.3.1 Importance of nurse role in kangaroo care

The guidance of the KC experience needs to be provided to mothers by nurses as it is vital (Thernström and Hedberg, 2010; Nagorski, 2007). Mothers also require need for KC with teaching, planning and promoting and from nurses (Nagorski, 2007). Some mother stated that

they have not acquired enough information about the KC and other stated too extensive information and struggling in recollecting the information. mothers sometimes doubt nurses because of their negative attitude (Dalbye., 2011). Offering options to participate other people in the KC provision at NICU can be inadequate and nurses shortage sensitivity to mother's wishes and needs in regard with KC (Thernström and Hedberg, 2010, JOUR et al., 2013).

KC is commonly known as an advantageous innervation which is considerably enhance the improvement of premature babies (Head, 2014; Feldman et al., 2002). More than 82 percent of neonatal nurses practiced KC in the NICU in the USA. In all hospitals in South Africa, 50% of them practice KC in NICU (Victoria and Rubens, 2010). Several European countries (eg, Belgium, Denmark, France, Italy, the Netherlands, Spain, Sweden and the UK) have practice KC, which have reported promoting results regarding parental participation (like KC) in caring for infants (Pallás et al., 2012). In contrast, KC is less common in China as Who illustrated the rate of preterm birth is 7.1 percent in China. This makes china as the second in the high preterm births rate after India (ie, >250 000 in 2010) (Chan et al.,2016).

In the position of clinical supervisor, a demonstration of the advantages of STS contact immediately after birth was created nurse as an educational offering for the obstetric department nurses. Immediately after birth, the presentation included the health benefits of STS contact and encouraged participants to discuss their routine implementation forum. To strengthen the concept of STS touch, additional tools were used such as poster presentations and video formats. Completing nursing activities, including identification of measurements, newborns, vitamin K and bathing and administration of ophthalmic prophylaxis, was the greatest obstacle to the acceptance of routine STS contact immediately after birth. In the redirection of nursing activities including deferring bathing until after 4 hours of temperature stability and awareness of the mother's accessibility as a heat source during Apgar scores and the implementation of newborn recognition bands, it was paramount to implement evidence-based practice (Gretchen, 2007).

The main concentrate was on the time impacts, the infant condition, and problems with equipment dislocation. The survey results were usually supported by comments. Both

respondents stressed the time required to promote KC, with one nurse reflecting on the time needed to explain KC to parents and another stressing the time needed to prepare the area. Assistance from another nurse was also needed to transfer the infant to the parent's chest from the incubator and to monitor the physiological status of the infant during the procedure (Sellick et al.,2006).

The application of KC can be as follows:

- 1- **KC Procedure:** Kangaroo positioning procedure: The infant must be put in an upright position between the mother breasts. The head must be turned to one side and in a position, which is slightly extended. This location holds the airway open and allows the mother and her baby to have eye-to-eye contact. In a position of frog, the baby's hip can be flexed and abducted and the arms have to be flexed as well. The abdomen of the baby should be at the mother's epigastrium level. The breathing of the mother affects the infant, thereby reducing the incidence of apnea.
- 2- **Monitoring of KC:** Particularly during the initial stages, infants receiving KC should be closely monitored. Nursing personnel should ensure that the location of the neck of baby is not too flexed or too stretched, that the airway is open, that breathing is normal, that the color is pink, and that the temperature is controlled by the baby.
- 3- **Duration for KC:** Skin to skin contact must begin gradually in the nursery when it comes to length, with a smooth transition from traditional care to continuous KC. Sessions that last less than one hour should be avoided because the baby can be stressed by repeated handling. The mother can sleep with the baby in a reclining or semi-reclining position about 30 degrees from horizontal in the KC position (CIMAR, 2020).

2.3.2 Barriers of KC application

Over 2.2 million babies die yearly, 47% of them die under age five in the world (UNICEF, Levels & Trends in Child Mortality 2018). Preterm birth complications are the main cause of deaths between babies (Chawan Paiboon et al., 2019). Recommendations was publicized by

WHO (IPA 2017) for the purpose of preterm care in November 2015 such as KC. WHO issued recommendations (IPA 2017) for the care of preterm infants in November 2015, including KC. recommendations [International Policy Statement, 2017] for preterm infant cares in November 2015, such as KC. Health professional associations (American Academy of Pediatrics, Council of International Neonatal Nurses, International Council of Nurses, American College of Obstetricians and Gynecologists, International Federation of Gynecology and Obstetrics, American College of Nurse-Midwives, International Pediatric Association and International Confederation of Midwives) has developed an international joint policy statement and endorsement also came from for universal use of KC for preterm and LBW Infants (GJ et al., 2016).

Some barriers in KC application have been showed in some studies including inadequate location for mothers' accommodation and lack of privacy and obstacles in teaching mothers to practice KC that leads fewer application of KC (Chia et al., 2006). The research on the level of application and its barriers are limited throughout the world. It is thought that any care can be impacted by religious and socio-cultural status of facilities of any country (Mousaviasl et al., 2016).

Studies recently showed barriers for the KC implementation including social support, inadequate time, family acceptance and other barriers related to resources such ads problem with facility environment. However, low- and middle-income countries are focused in by these studies and assessing the clinician views rather than parents. None of the studies have identified mother's view and investigated potential structure barriers to KC in the population of the USA (Chan et al., 2016; Seidman et al., 2015; Ferrarello and Hatfield 2014).

Many studies have focused on the essential of appreciation of the barriers and enablers of KC at 3 levels including caregivers, facilities for successful implementation and launch and health care providers (Jamali, et al. 2019) (Cattaneo, Amani and Charpak 2018). Appropriate training for clinicians is proposed the International Network on KC building welcoming environment and adherence to protocols are the key components for having appropriate implementation (Cattaneo et al., 2018; Lee 2019). The top three barriers of implementation are mentioned in a retrospective cohort study in China including negative impressions about the practice between staff, fear of injuring infants during KC and problems related to facilities in NICU (Zhang et al., 2018)

CHAPTER THREE

3. MATERIALS AND METHODS

3.1 The study design

This study was conducted with a cross-sectional study design. The study population consists of all nurses who work in Maternity Hospital in Erbil-Kurdistan Region of Iraq. The participants were all nurses and midwives working on the Gynecology, Obstetrics and Neonatal departments of Maternity Hospital. We have used a special questionnaire elaborate to carry out this study. This questionnaire has been constituted by the searchers of this study. We created the questionnaire form by using the literature information (Englar et al., 2002; Flynn and Leahy-Warren 2010).

3.2 The study setting

Erbil is the capital of Kurdistan Region and is the largest city in northern Iraq. Erbil has a population of 2,305,613, It is after Baghdad, Basra and Mosul, the fourth largest city in Iraq. The Maternity Teaching Hospital is the only governmental hospital that provides secondary and tertiary health services to women. In the year 2020 it received 88.000 visitors in the consultancy clinics, 35.000 inpatients, 15.000 normal vaginal deliveries and nearly 6.800 operative deliveries. more than 5.700 different operations were performed. The NICU admitted 4.366 newborn babies in the year 2020.

3.3 Study population and sampling

For this study we selected all nurses and midwives working in the departments of gynecology, obstetrics and NICU departments of Maternity Teaching Hospital in Erbil. The participants were interested to be part of the study. A total of 165 female and male nurses and midwives were included.

Figure 1. Number of nurses per department in Maternity Hospital

No	Department	Number of nurses
1	Labor room	24
2	Post operation	13
3	Maternal word	17
4	Consultant department	10
5	Postpartum department	8
6	Emergency department	23
7	High risk department	22
8	Surgery department	23
9	Intensive care unit	25
Total		165

3.4 Inclusion criteria for research sample

- Working as a nurse and a midwife in different departments in the Maternity Teaching Hospital. We found that 165 are not all nurses but there were also midwives among them during data collection, so we took both nurses and midwives.
- Volunteering to participate in the study.

3.5 Exclusion criteria for research sample

- Nurses and healthcare professionals other than nurses and midwives in different departments in the Maternity Teaching Hospital
- Those who do not agree to participate in the study

3.6 Data collection

3.6.1 Questions Form

The questionnaire form consisted of 73 questions divided into five parts. The five parts of the questionnaire included demographic, education and experience, Kangaroo Care beliefs, knowledge and barriers. The questions in the demographic section included age, gender, marital status, religion and economic status. The part of education and experience question consisted of four questions which were about educational level, qualification and employment experience. There were 23 questions about Kangaroo care beliefs, 15 questions about KC

knowledge and 25 questions about KC barriers (A. Englar et al., 2002; Ann and Leahy-Warren, 2010; Englar et al.,2002).

Personal beliefs questions: We gave scores for personal belief questions; the question of 1,6,7,8,13,14,15,16,17 and 18. Score 1 was given when the participants selected “Agree” and 0 if the answer was “sometimes agree” or “disagree”. Additionally, eight items were scored as reverse which were items of 2,3,4,5,9,10,11,12. Thus, we have put 0 for “Sometimes agree” or “Agree” and we put 1 for “Disagree”. The total score was calculated for each participant. We have categorized the scores as low score (0-6), Medium score (7-12) and High score (13-18). The high scores indicated that nurses have more beliefs in KC.

Knowledge questions: We have also calculated scores, knowledge and experience questions for each for the question of 1,3,4,5,6,8,10,11,12,13 and 14. We have indicated 1 when the participants selected “Yes” and we have put 0 if the answers are “No”. Additionally, three items were scored as reverse which were items of 2,7 and 9. Thus, we have put 0 for “Yes” and we put 1 for “No”. We calculated the total score for each participant. We categorized the scores as low score (0-4), Medium score (5-9) and High score (10-14). Here, high scores indicated that nurses have higher knowledge and experiences. Another research found that Despite incorrect answers to certain questions in the information segment, the general standard of neonatal nurses' knowledge in relation to kangaroo care ranged from good to excellent when the responses were scored, excellent the highest score, the poor is the lowest score (Flynn and Leahy-Warren, 2010).

Barriers questions: There were several questions related to barriers to know nurse procedures for KC maternity hospitals. We included questions related to workload, family engagement and physical environment. Information about barriers were obtained using five points Likert scale ranging 1 "ineffective" 2 "don't know" 3 "sometimes effective" 4 "effective" 5 "very effective". There were 26 questions related to barriers.

3.6.2. Data form application

For the questionnaire form about the demographic questions, approvals were taken from the Ministry of Health and Maternity Teaching Hospital. We obtained nurses consent before

the questionnaires were distributed. The questionnaires were addressed to female and male nurses at Maternity Teaching Hospital in the Erbil. Information was given regarding the meaning, instructions and objectives of the questionnaires and the purpose of the study. It took about 15 to 40 minutes to complete each questionnaire. Data was successfully gathered, and the recipients were thanked afterward.

3.6.3. Evaluation of research data

The collected information was put on an excel sheet, then was converted to an SPSS program for analysis. For the answers, we have used five-point Likert's score of the range of (1 to 5). Descriptive statistics analyses were conducted for the socio demographic section of the questionnaire. The data were analyzed using X^2 tests for multinomial variables and Fisher's exact tests (two-tailed) using SPSS version 25. A p value of 0,05 was considered as a significant level. For the barriers question, we have used factor analysis to reduce variables into interpretable factor loading. We used LSD Post Hoc test (ANOVA) to provide specific information about which tools are significantly different from each other.

3.7. Ethical considerations

Prior to the study, formal permission was received from the Near East University Ethics Committee and project number (YDU/2019/71-863 (Appendix 2). Approval was granted before being engaged in the survey process. And made sure engagement will be voluntary. Identity of the subject was kept secret by giving numbers instead of names. The collected data kept confidential. Hospital permission was sought. At the state government level, permission from ministry of health 27/10/2019, and maternity hospital, on 24/10/2019, requested by the Poly Technical University.

CHAPTER FOUR 4.0 Findings

4.1 Demographic characteristic

A total of 165 nurses and midwives participated in the study. The group consisted of 125 nurses and 40 midwives. Our participants' age was 39 ± 8.7 (Mean \pm SD). Information about socio-demographic characteristics, personal beliefs, personal knowledge's barriers are presented below.

Table 1. Socio-demographics, work experience for nurses and midwives (n=165)

Variables		n	%
Gender	Female	150	90.9
	Male	15	9.1
Marital Status	Married	145	87.9
	Unmarried	20	12.12
Religion	Muslim	160	97.6
	Christian	3	1.8
	Other*	2	0.6
Economic Status	Income less than expense	52	31.5
	Income is equal expense	104	63
	income more than expenses	9	5.45
Education	School nurse	16	9.7
	preparatory of nursing and midwifery	46	27.9
	Diploma	61	37
	Bachelor	40	24.2
	Master	2	1.2
Years of Experience	1- 5 years	14	8.5
	6-10 Years	38	23
	11-15 Years	46	27.9
	16-20 Years	18	10.9
	More than 20years	49	29.7
Nurse to patient range	1 person= 1nurse/midwife	7	4.27
	2 persons=1 nurse/midwife	10	6.1
	3 persons=1 nurse/midwife	8	4.3
	4 persons=1 nurse/midwife	10	6.1
	5 and more person =1 nurse/midwife	130	79.3

* Other here means religious minorities such as Yizidies, Kakaie

Table 1 illustrates socio-demographic information. 91% of participants interviewed were female and 88% of them were married. The average age of nurses and midwives were 39 years old with standard deviation of 8.7 and the average number of children that participants had 3 children. The participants had the following educational qualifications: 16 nurses graduated from school of nursing 9.7%, 46 of them graduated from preparatory school of nursing and midwifery 27.9%, 61 of them had diploma in nursing 37%, 40 of participants had BSc in nursing and only 2 of nurses had MSc in nursing 1.2%. It is clear that hospitals need more professional nurses that their qualifications could be higher. Furthermore, 63% stated that their income covers their expenses. On the other hand 31.5% of them stated that their incomes do not cover their expenses.

Out of 165 participants, 23% of them had work experience between 6 to 10 years, 46 experience of more than 15 years. However, only 8.5% nurses had work experience between 1 to 5, 27.9% of them had 11 to 15 years of experience and 40.8% of them had work for 5 years. On average, participants had 14 years of experience in maternal hospitals. Another crucial factor is nurse to patient range. 130 nurses stated that the nurse to patient range is one to five patients and even more.

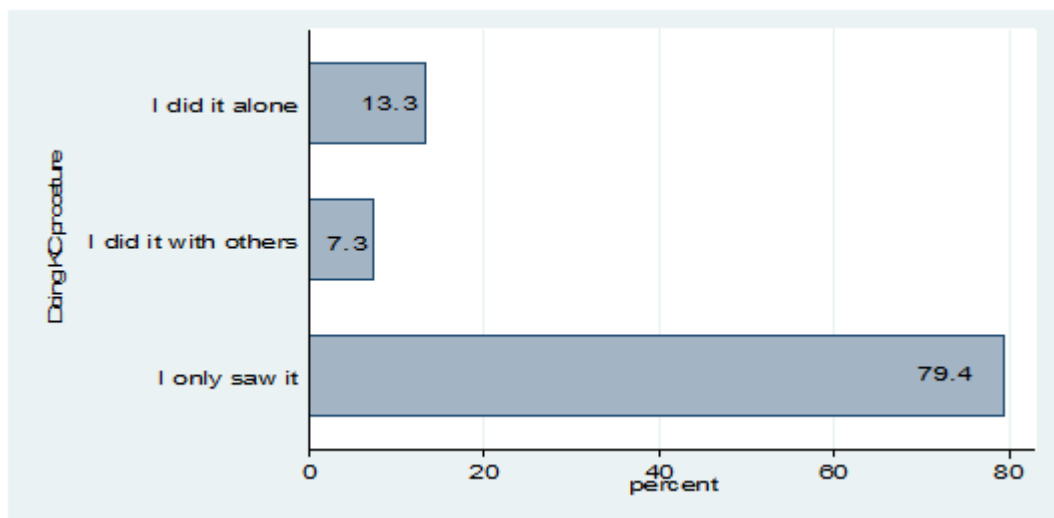
Table 2 Information and experience of nurses and midwives about kangaroo care (n=165).

Nurses characteristics about Kangaroo Care		n	%
Heard about Kangaroo care	Yes	139	84.8
	No	25	15.2
Having information about kangaroo care	Yes	104	63.4
	No	60	36.6
Having certificate about kangaroo care	Yes	31	19.4
	No	129	80.6
Applying kangaroo care for nurse's child	Yes	41	26.0
	No	117	74.0
Practicing Kangaroo care	Yes	34	20.6
	No	131	79.4

Table 2 presents frequency and percentage of participants in order to know whether nurses are aware, have certificates, or applying Kangaroo skin-to-skin care. It can be seen from the

above table that the majority of participants 84.8% previously heard about the kangaroo skin-to-skin care. 63.4% of nurses stated that to some extent they have information about kangaroo skin-to skin care. Only 19.4% of nurses had certificates in KC while almost 80.6% of them had no certificates. 26% of nurses and midwives apply KC to their children. Generally, only 20.6% of nurses had practiced KC in hospitals due to lack of having time and lack of training opportunities.

Figure 2. Kangaroo Applications Procedure among Participants.



The above figure illustrates whether nurses did KC, did it with others or they only saw it. Approximately 79.4% of nurses only saw others do KC procedure while 13.3% of them have done KC procedure alone. Also, 7.3% of them claimed that they did the KC procedure with others.

4.2 Personal beliefs

We have calculated scores for personal beliefs in order to make comparison between belief scores and other demographic characteristics. The scores were categorized as low, medium and high.

Table 3 Nurse and midwives' beliefs about kangaroo care (n = 165)

Personal beliefs	Agree n (%)	Disagree n (%)	Sometimes agree n (%)
All neonatal babies should be allowed to collaborate KC	107 (64.5)	29 (17.6)	29 (17.6)
Only low birth weight and premature babies should take place of KC	59 (35.8%)	85 (51.5%)	21 (12.7%)
Babies on ventilator shouldn't not be allowed for KC	63 (38.2%)	73 (44.2%)	29 (17.6%)
KC should not have been allowed babies with IVF* treatment	53 (32.1%)	82 (49.7%)	30 (18.2%)
KC should not be allowed babies with chest tubes	61 (37.0%)	84 (50.9%)	20 (12.1%)
Parents should be a part of the procedure of KC	126 (76.4%)	22 (13.3%)	17 (10.3%)
Parents should practice on KC	135 (81.8%)	18 (10.9%)	12 (7.3%)
KC promote connection between parent and baby	139 (84.2%)	16 (9.7%)	10 (6.1%)
KC cause results in discontinue patient care	49 (29.7%)	88 (53.3%)	28 (17.0%)
KC takes a lot of nurse's time	73 (44.2%)	55 (33.3%)	37 (22.4%)
I believe KC useful only for breastfeeding	31(18.8%)	111 (67.3%)	23 (13.9%)
KC is not practical with some unstable babies	72 (43.6%)	57 (34.5%)	36 (21.8%)
KC improve the quality of health services	130 (78.8%)	13 (7.9%)	22 (13.3%)
All parents should approach KC in NICU [⊥]	73 (44.2%)	61 (37.0%)	31 (18.8%)
Collaboration between the nurse and the parent's is essential during KC	130 (78.8%)	23 (13.9%)	12 (7.3%)
KC will improve baby's outcome	135 (81.8%)	16 (9.7%)	14 (8.5%)
Parents more comfortable for caring their babies during KC	133 (80.6%)	17 (10.3%)	15 (9.1%)
Belief father should share kangaroo care procedure	127 (77.0%)	26 (15.8%)	12 (7.3%)

*IVF abbreviation of Intra Venous Fluid

[⊥] NICU abbreviation of Neonate Intensive Care Unit

Table 3 illustrates the personal beliefs of nurses regarding KC. The results indicate that 64% of participants stated that all neonatal babies should be allowed to collaborate KC. However, more than half of participants disagreed on statements that “the Only low weight and premature babies should take place of KC 50%”, “Should not have allowed babies with IV fluid treatment 48.5%”, “Should not be allowed babies with chest tubes 47.9%” and 65.5% of participants said that “I believe KC useful only for breast feeding babies”.

The majority of participants agreed that parents should be part of the procedure of KC 77%, parents should practice on the KC 78% and the KC promote connection between parents and babies. Collaboration between nurses and parents was considered as an important indicator. In this study 77.6% of participants stated that collaboration between the nurse and the parent’s is essential during KC. Moreover, nurses and midwives agreed with the statement that “KC will improve babies’ outcome 77.6%”, “Parents more comfortable caring for their babies during KC 77.0%” and “Belief father should share kangaroo care procedure 75.2%”.

Table 4 Comparison of socio-demographic characteristics with personal beliefs score level of nurses and midwives.

Socio demographic characteristics		Low		Medium		High		X ²	p
		n	%	n	%	n	%		
Age	≤ 29	1	5.0	11	55.0	8	40.0	9.46	0.15
	30-39	6	8.7	52	75.4	11	15.9		
	40-49	2	4.0	39	78.0	9	18.0		
	≥50 years	0	0.0	22	84.6	4	15.4		
Gender	Women	9	6.0	127	84.7	14	9.3	1.13	0.57
	Men	0	0.0	14	93.3	1	6.7		
Marital status	Married	8	5.5	123	84.3	14	9.7	0.48	0.79
	Unmarried	1	5.0	18	90.0	1	5.0		
Religion	Muslim	9	5.6	136	85.0	15	9.4	0.70	0.95
	Christian	0	0.0	3	100.0	0	0.0		
	Others*	0	0.0	3	100.0	0	0.0		
Economic status	My income less than my expense	1	1.9	49	95.2	2	3.9	7.44	0.12
	My income is equal to my expenses	8	7.7	83	79.8	13	12.5		

	My income is more than my expense	0	0.0	9	100.0	0	0.0		
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* Other here means religious minorities such as Yizidies, Kakaie

The above table shows the cross tabulation of participants belief and socio demographic characteristics (Table 4). It can be noticed that there is no statistical relationship between belief score and socio-economic characteristics ($p > 0.05$).

Table 5 Comparison of some characteristics of nurses and midwives' level with personal beliefs score level

Education		Low		Medium		High		X ²	p
		n	%	n	%	n	%		
Education	School of nurse [⊥]	2	22	10	8.06	4	12.5	3.43	0.75
	Preparation of nursing	1	11	37	29.84	8	25		
	BSc ^μ in nurse	4	44	45	36.29	12	37,5		
	Postgraduate	2	22	32	25.81	8	25		
Experienced year employment	1 to 5 years	3	6.0	36	72.0	11	22.0	5.72	0.7
	6 to 10 years	0	0.0	20	74.1	7	25.9		
	11 to 15 years	3	12.5	18	75.0	3	12.5		
	15 to 20 years	1	6.7	12	80.0	2	13.3		
	more than 20 years	2	4.1	38	77.6	9	18.4		
Range of nurse to patient	1 to 1	0	0.0	7	100.0	0	0.0	8.52	0.4
	2 to 1	0	0.0	7	70.0	3	30.0		
	3 to 1	0	0.0	5	71.4	2	28.6		
	4 to 1	2	20.0	7	70.0	1	10.0		
	5 to 1	7	5.4	97	74.6	26	20.0		

** Kruskal Wallis test, ** significant level at 0.05

[⊥] Nurse school in Erbil is usually for 3 years

^μ BSc means Bachelor of Science

. In Table 5, we did not find a significant difference between the believe scores of the participants and their education level and experience ($p > 0.05$). However, the percentage of personal belief scores are varied between educational levels. The BSc nurse scored high 37.5%

and medium scored 36.29%, low scored 44%. Finding the experienced year employment level of participants with personal beliefs the high score is 25.9% of 6 to 10 years, medium 80% among 15to 20 years employment and the low score is 12.5% for 11to 15 years, rang of nurse to patient found the high score of the range 2to1 is 30%. that, medium score is 100% found for 1to1, low score is20% for 4 to 1.

Table 6 Comparison of experiences and knowledge about kangaroo care of nurses and midwives with personal beliefs score level

Experiences and Knowledge		Low		Medium		High		X ²	p
		n	%	n	%	n	%		
I heard about KC	Yes	5	3.6	120	86.3	14	10.1	6.89	0.03
	No	4	16.0	20	80.0	1	4.0		
I have any information about KC	Yes	4	8.9	90	86.4	10	9.6	1.51	0.47
	No	5	8.3	50	83.4	5	8.3		
I apply KC	Yes	3	7.3	36	87.8	2	4.9	1.55	0.49
	No	6	5.1	134	84.8	13	11.1		
I have practice on KC	Yes	3	7.5	31	77.5	6	15.0	2.73	0.25
	No	8	5.1	135	88.4	15	9.5		

Table 6 shows the comparison of experiences and knowledge of nurses about KC by personal beliefs. There is statistically a significant relationship between personal beliefs and nurse's heard about KC (p=0.03). There are significant differences between participants heard about KC as indicated scored high 10.1% in this question while scrod medium 86.3% of participants scored low in this question is only 3.6%. only 4.0%of participants didn't hear about KC scrod high, 80%scord medium and 16%scord low. Since the p-value of I have information about KC, indication for: I apply KC and I have practice on KC is more than 0.05, there is no relationship. I have any information about KC high score is 9.6% they said yes, medium score 86.4% and the lower score is 8.9%. participants not agree they have any information high scored 8.3%, medium scored 83.4% and low scored 8.3%.

The result of I apply KC high scored among participants 4.9%, medium scored 87.8% and the lower scored 7.3%. participants answer not apply KC high range scored 11.1% the medium scored 84.8%, and low scored only 5.1%.

Finding answer the question I have practice on KC scored high 15%, scored medium 77.5% and 7.5% scored low. Participant they haven't practice on KC the high scored 9.5%, medium scored 88.4% and low scored only 5.1%.

4.3 Knowledge and Experience of Nurses and Midwives

Knowledge and experience are one of the main parts of the study. We calculated the scores for knowledge and experience of nurses and midwives.

Table 7 Knowledge of nurses and midwives about kangaroo care (n=165)

Variables	Yes n (%)	No n (%)
KC shows satisfied for babies	149 (90.3)	16 (9.7)
KC decrease oxygen saturation	52 (31.5)	113 (68.5)
KC procedure helps_baby's temperature regulation	136 (82.4)	29 (17.6)
KC make babies deep sleeping and increase the duration and quieter	139 (84.2)	26 (15.8)
Mothers are more comfortable and decrease of stress during KC	143 (86.7)	22 (13.3)
KC can reduce apnea and KC regulate breathing of newborn babies	118 (72.8)	44 (27.2)
KC is suggested to babies within 28 weeks	84 (50.9)	81 (49.1)
Babies with KC application have earlier breastfeeding	144 (87.3)	21 (12.7)
Increased of infection within KC procedure	37 (22.4)	128 (77.6)
KC Increase the confidence of the mother in breastfeeding	142 (86.1)	23 (13.9)
KC reduce crying of babies	136 (82.4)	29 (17.6)
KC reduce pain in babies	124 (75.2)	41 (24.8)
KC can help to short stay in hospital	129 (78.2)	36 (21.8)
KC can reduce mortality and morbidity among newborn babies	118 (71.5)	47 (28.5)

Table 7 indicates the knowledge of nursing staff about kangaroo care. Different questions were used in the survey in order to assess nurses and midwife's knowledge. The first question in the survey was if KC shows satisfactory for babies. (90.3%) of responders stated that KC was satisfying for babies. Questions were coded before the analysis was carried out, with "Yes" answers coded as agreed and given a value of 1 and "No" as do not agree. Out of 165 responders, (68.5%) of responders did not think that KC reduces oxygen saturation. (82%) of respondents affirmed that KC procedure helps baby's temperature regulation and 84% believes that KC makes babies deep sleeping and increases the duration and quieter. Nurses

agreed in most of the questions related to the knowledge of KC such as Mothers are more comfortable and decrease of stress during KC (86.7%), KC can reduce apnea and regulate breathing (72.8%), Babies with KC application have earlier breastfeeding (87%), KC Increase the confidence of the mother in breastfeeding (86%), KC reduce crying (82.4%), KC reduce pain (75.2%), KC can help to short stay in hospital (78.2%) and KC can reduce mortality and morbidity (71.5%).

Table 8 The comparison of socio demographic characteristics of participants with knowledge score level of kangaroo care

Socio demographic characteristics		Low		Medium		High		X ² *	P**
		n	%	n	%	n	%		
Age	Less than 30 years	1	3.3	9	30.0	20	6.7	5.08	0.53
	30-39	2	3.4	17	28.8	40	67.8		
	40-49	4	8.0	11	22.0	35	70.0		
	more than 49 years	1	3.8	3	22.5	33	84.6		
Gender	Male	1	6.7	3	20.0	11	73.3	0.25	0.88
	Female	7	23.7	37	24.7	106	70.6		
Marital status	Married	7	4.8	37	25.5	101	69.7	1.06	0.59
	Unmarried	1	5.0	3	15.0	16	80.0		
Religion	Muslim	8	5.0	40	25.0	112	70.0	1.69	0.79
	Christian	0	0.0	0	0.0	0	0.0		
	Other	0	0.0	0	0.0	0	0.0		
Economic status	My income less than my expense	3	5.8	8	15.4	41	78.9	5.45	0.24
	My income is equal to my expenses	5	4.8	31	29.8	68	65.4		
	My income is more than my expense	0	0.0	1	11.1	8	88.9		

* Kruskal Wallis test, ** Significant level at 0.05

* Other here means religious minorities such as Yizidies, Kakaie

In Table 8, we did not find a significant difference between the knowledge score of the participants and their age, gender, marital status, religion and economic status ($p > 0.05$). In this table finding 84.6% of participants in age more than 49 years scored high, 30% scored medium in age ≤ 29 years, and 8% scored low in age 40 to 49 years. Gender participants found male 73.3% high scored, female 24.7% medium scored, unmarried 80% high scored and the

medium scored married 25.5%. in the religion result found Muslim high scored 70%, medium scored 25%, and 0% other scored. The economic status in my income is more than expense scored high 88.9%, medium scored my income is equal to my expense, and 5.8% my income less than my expense low scored.

Table 9 Comparison of education level of participants with knowledge score level of kangaroo care

Education		Low		Medium		High		X ^{2*}	P**
		n	%	n	%	n	%		
Education	School of nurse	1	6.3	5	3.2	10	62.5	3.71	0.71
	Prep of nursing	3	6.5	14	30.4	29	63.0		
	BSc in nurse	2	3.3	14	22.9	45	73.8		
	Postgraduate	2	4.8	7	16.7	33	78.6		
Experienced year employment	1 to 5 years	0	0	4	28.6	10	71.4	3.62	0.89
	6 to 10 years	1	2.6	11	29	26	68.4		
	11 to 15 years	2	4.3	11	23.9	33	71.7		
	15 to 20 years	2	11.1	4	22.2	12	66.7		
	more than 20 years	3	6.1	10	20.4	36	73.4		
Range of nurse to patient	1 to 1	0	0	2	28.6	5	71.4	13.76	0.08
	2 to 1	0	0	2	20	7	70		
	3 to 1	0	0	2	20	7	70		
	4 to 1	0	0	5	57.1	3	42.9		
	5 to 1	7	5.3	26	19.9	98	74.8		

* Kruskal Wallis test, ** Significant level at 0.05

In Table 9, it can be seen that there is no statistically significant relationship between range of nurse to patient, year of experience and educational level and knowledge score on KC ($p>0.05$). the high scored of education level with knowledge score 78.6% post graduate, 30.4% scored medium, 6.5% scored low, preparation of nursing, in experience year

employment, more than 20 years scored high rang 73.4%, 6 to 10 years 29% medium scored.15 to 20 years 11.1% low scored. Range of nurse to patient the high range scored 74.8% 5 patients to one nurse, 57.1% 4 to 1 medium scored, only 5.3% scored low 4 to 1, the others 0.0%.

Table 10 The comparison of experiences and knowledge of nurses with midwives about kangaroo care by knowledge score level on kangaroo care

Experiences and Knowledge		Low		Medium		High		X ² *	P**
		n	%	n	%	n	%		
I heard about KC	Yes	7	5.0	35	21.2	97	69.8	0.395	0.82
	No	1	4.0	5	20.0	19	76.0		
I have any information about KC	Yes	7	6.7	24	23.1	73	71.7	2.2	0.33
	No	1	1.7	16	26.7	43	71.6		
I applied KC	Yes	1	2.4	9	22.0	31	75.6	0.726	0.69
	No	6	5.1	29	24.8	82	70.1		
I have practice on KC	Yes	2	5.0	10	25.0	28	70.0	0.047	0.97
	No	5	2.2	29	24.6	84	71.2		

*Kruskal Wallis test, ** Significant level at 0.05

In Table10, we did not find a significant difference between the knowledge score with KC experiences and practice of the participants ($p > 0.05$). 69.8% of participants who heard about KC scored high, 21.2% scored medium, and 5% scored low. 76% of Participants did not heard about KC scored high, 20% scored medium, and only 4% scored low. I have any information about KC 71.7% scored high, medium scored 23.1%, low scored only 6.7%. Participants who did not have any information about KC 71.6% scored high, 26.7% scored medium, only 1.7% scored low. 75.6% of participants have applied KC scored high, 22% scored medium, 2.4% scored low. Participants did not apply KC 70.1% scored high, 24.8% scored medium, and 5.1% scored low. Finding of participants have practice on KC 70% scored high, 25% scored medium, and 5% scored low. Participants did not have practice on KC 71.2% scored high, medium score 24.6%, low scored only 2.2%.

4.4 Barriers of KC

Table 11 Nurse and midwives' barriers regarding kangaroo care (n=165)

Barriers	Very effective n (%)	Effective n (%)	Sometimes effectives n (%)	Do not know the effect n (%)	No effective n (%)
The hospital system does not allow for KC procedure.	72 (43.6)	24 (14.6)	34 (20.6)	15 (9.1)	20 (12.2)
Medical staff unwilling to allow KC	50 (36.7)	44 (26.4)	28 (16.5)	21 (12.9)	22 (13.5)
Advanced practice nurses not allow to KC	59 (35.4)	34 (20.7)	13 (7.9)	24 (14.6)	35 (21.3)
Lack nurse's information about KC	69 (41.5)	56 (34.1)	28 (17.1)	7 (4.3)	5 (3.0)
Nurses feeling that KC is a load beside their work	42 (25.3)	30 (18.5)	43 (25.9)	15 (9.3)	35 (21.0)
Nurses feels that KC makes it difficult to administer care	35 (21.2)	47 (28.5)	30 (18.2)	16 (9.7)	37 (22.4)
Insufficient practicing and KC program effect on ability of nurse's activity confident of KC	67 (40.5)	55 (33.1)	16 (9.8)	11 (6.8)	16 (9.8)
Insufficient time for family care	58 (35.2)	47 (28.4)	23 (13.6)	15 (9.3)	22 (13.6)
believe that technology like incubator is better than KC	26 (16.0)	25 (14.7)	26 (16.0)	26 (16.0)	63 (37.4)
Increase accidental falling during the procedure	26 (16.1)	28 (16.8)	41 (24.8)	34 (20.5)	36 (31.7)
Lack of nurse /midwives staff to parents participating KC	63 (37.8)	51 (31.1)	23 (14.0)	13 (7.9)	15 (19.2)
Parents lack of knowledge about KC	57 (34.4)	57 (34.4)	24 (14.1)	17 (10.4)	11 (6.8)
Mothers were less likely to accept KMC	45 (27.2)	41 (24.7)	36 (21.6)	25 (15.4)	18 (11.1)
Parents reported that they were simply told to perform KMC without explanation why or how to do	47 (28.6)	52 (31.7)	35 (21.1)	22 (13.0)	9 (5.6)
Caregiver perceived that their newborn did not enjoy KMC	35 (21.1)	31 (18.6)	35 (21.1)	3 (18.6)	33. (19.9)
Hot climate, parents observed their infant become irritable	47 (28.1)	41 (25.0)	26 (15.9)	20 (12.2)	31 (18.9)
Caregivers not comfort being able to see their newborn during KC	40 (24.1)	43 (25.9)	35 (21.0)	18 (11.1)	29 (17.9)

Mothers lack of bonding with the infant due to fear, anxiety, stigma about having a preterm infant	64 (38.9)	34 (20.4)	30 (18.5)	24 (14.2)	13 (8.0)
Parents refuse to keep the baby at all	56 (34.0)	41 (24.7)	28 (16.7)	20 (12.3)	20 (12.3)
Parents reluctance for doing KC procedures	49 (29.6)	52 (31.5)	23 (14.2)	23 (14.2)	18 (10.5)
Insufficient private places for parents to do KC	74 (44.8)	40 (23.9)	18 (11.0)	13 (8.0)	21 (12.3)
Difficulty to assess baby's readiness and changes	35 (20.9)	58 (35.0)	27 (16.6)	30 (18.0)	15 (9.2)
Difficulty of KC of babies with chest tubes	55 (33.1)	42 (25.2)	22 (13.5)	24 (14.7)	22 (13.5)
Difficulty of KC of babies with ventilation	65 (39.0)	42 (25.6)	20 (12.2)	20 (12.2)	18 (11.0)
Different language miss understanding with parents	42 (25.5)	43 (26.1)	26 (15.8)	11 (6.8)	43 (26.1)
The nurse herself refuses to do KC Procedure	57 (31.2)	42 (25.6)	24 (14.6)	14 (8.5)	28 (17.1)

Table 11 shows the number and percentage of answers of responders related to barrier questions. It can be seen that most of the participants stated either very effective, sometimes effective or effective. Most of the responders answer the question that the hospital system does not allow for KC procedure as “Very Effective” which is 72 (43.6%). 50 (36.7%) of responders for questions that medical staff unwilling to allow KC is “very effective” and 43 (26.4%) stated “Very Effective. 58 (35.4%) stated advanced practice nurses do not allow to KC is also “Very effective” while 35 (21.3%) stated “No Effect). Further, most of the respondents answered the most of the questions as “Very effective” such as Insufficient practicing and KC program effect on ability of nurse’s activity confident of KC 66 (40.5%), parents lack of knowledge about KC 56 (34.4%), Insufficient private places for parents to do KC 73 (44.8%) and Parents reported that they were simply told to perform KMC without explanation why or how to do 46 (28.6%).

Table 12 Comparison of nurses and midwives' age groups with barrier mean scores

Barriers	Less than 30years n=20	31-39 years n=69	40-49years n=50	50 years and above n=26	X ² *	P* *
	Mean±SD	Mean±SD	Mean±SD	Mean±SD		
The hospital system does not allow for KC procedure.	3.8±1.3	3.6±1.5	3.7±1.4	3.8±1.4	0.21	0.97
Medical staff unwilling to allow KC	3.5±1.2	3.4±1.5	3.4±1.3	3.7±1.3	1.09	0.78
Advanced practice nurses do not allow to KC	3.8±1.2	3.1±1.7	3.4±1.4	3.5±1.6	3.3	0.32
Lack of nurse's knowledge about KC	3.6±1.1	4.2±0.99	4.0±1.1	4.2±0.9	5.3	0.15
Nurses feel that KC is an extra load beside their work	3.1±1.4	3.1±1.4	3.3±1.4	3.1±1.6	0.49	0.92
Nurses feel that KC makes difficult to administer care	3.5±1.2	3.2±1.5	3.1±1.4	2.8±1.5	2.2	0.51
Insufficient practicing and KC program effect on ability of nurse's activity confident of KC	3.6±1.4	3.8±1.4	4.1±1.1	3.8±1.2	2.3	0.51
Insufficient time for family care	3.6±1.4	3.6±1.5	3.6±1.3	3.7±1.5	0.68	0.87
Believe that technology like incubator is better than KC	2±1.4	2.5±1.5	3.0±1.6	2.4±1.3	5.98	0.09
Increase accidental falling during the procedure	3.3±1.5	2.8±1.3	3.1±1.4	2.3±1.3	8.12	0.04
Lack of nurse /midwives staff to parents participating KC	3.9±1.4	3.7±1.3	3.9±1.3	3.8±1.2	1.09	0.78
Parents lack of knowledge about KC	3.4±1.5	3.9±1.1	3.7±1.3	4.0±0.9	2.7	0.4
Mothers were less likely to accept KMC	3.2±1.4	3.3±1.3	3.5±1.4	3.6±1.4	1.8	0.6
Parents reported that they were simply told to perform KMC without explanation why or how to do	3.6±1.2	3.8±1.1	3.5±1.3	3.6±1.2	0.75	0.86

Caregiver perceived that their newborn did not enjoy KMC	2.7±1.4	3.2±1.4	3.0±1.5	3.0±1.3	2.2	0.5
In hot climate environment infant may become irritable	3.2±1.6	3.3±1.6	3.6±1.3	2.9±1.4	3.06	0.38
Caregivers not comfort being able to see newborn during KC	3.3±1.6	3.0±1.4	3.5±1.4	3.4±1.2	4.18	0.24
Mothers lack of bonding with the infant due to fear, anxiety, stigma about having a preterm infant	3.3±1.5	3.7±1.2	3.6±1.4	4.0±1.2	2.85	0.41
Parents refuse to keep the baby at all	3.0±1.6	3.6±1.4	3.6±1.4	3.8±1.1	3.22	0.33
Parents reluctance for doing KC procedures	3.0±1.5	3.5±1.3	3.7±1.2	3.9±1.2	6.2	0.1
Insufficient private places for parents to do KC	3.7±1.3	3.7±1.4	3.9±1.4	4.1±1.4	1.96	0.58
Difficulty to assess baby's readiness and changes	3.4±1.5	3.2±1.2	3.5±1.2	3.6±1.3	1.81	0.58
Difficulty of KC of babies with chest tubes	3.4±1.4	3.6±1.4	3.2±1.5	3.8±1.2	3.87	0.27
Difficulty of KC of babies with ventilation	3.6±1.4	3.7±1.3	3.6±1.5	4.0±1.1	0.96	0.81
Different language miss understanding with parents	3.2±1.4	3.1±1.5	3.3±1.6	3.0±1.7	0.68	0.88
The nurse herself effused to do KC procedure	3.5±1.5	3.5±1.5	3.5±1.4	3.6±1.4	0.21	0.97

*Kruskal Wallis test, ** Significant level at 0.05

It can be noticed from table 12 that there is no statistically significant difference in means of barriers and age groups of participants ($p > 0.05$). However, there is a statistically significant difference in mean of the barrier question of Increase accidental falling during the procedure since the p-value is equal to 0.04.

The mean score for aged below 30 years for this question is 3.3 while for aged between 30 and 39 is 2.8 and for age group 50 and above is 2.1. We have conducted post hoc analysis

based on Dunn test of multiple comparison. The test revealed that only 50 and above age group is statistically significant compared to other groups (p=0.01).

Table 13 Comparison of nurses and midwives' educational level with barrier mean scores

Barriers	School Nurses n=16	School of Midwives n=46	BSc n=50	Postgraduate n=26	X ² *	p**
	Mean±SD	Mean±SD	Mean±SD	Mean±SD		
The hospital system does not allow for KC procedure.	4.4±1.0	3.8±1.5	3.6±1.5	3.5±1.3	6.89	0.05
Medical staff unwilling to allow KC	4.1±1.1	4.0±1.3	3.1±1.4	3.2±1.4	15.1	0.001
Advanced practice nurses do not allow to KC	4.0±1.1	3.7±1.6	3.1±1.6	3.0±1.6	7.1	0.05
Lack of nurse's knowledge about KC	4.4±0.6	4.0±1.1	4.0±1.1	4.0±0.9	1.92	0.54
Nurses feel that KC is an extra load beside their work	2.7±1.6	3.2±1.6	3.2±1.4	3.2±1.3	1.78	0.59
Nurses feel that KC makes difficult to administer care	3.4±1.6	3.3±1.5	2.9±1.4	3.2±1.3	3.17	0.34
Insufficient practicing and KC program effect on ability of nurse's activity confident of KC	4.2±1.0	4.0±1.3	3.8±1.3	3.8±1.3	2.11	0.5
Insufficient time for family care	3.5±1.5	3.6±1.6	3.9±1.1	3.4±1.5	1.63	0.65
Believe that technology like incubator is better than KC	3.5±1.4	2.8±1.5	2.3±1.6	2.3±1.2	9.09	0.02
Increase accidental falling during the procedure	2.9±1.4	3.0±1.6	2.8±1.3	2.8±1.1	0.33	0.95
Lack of nurse /midwives staff to parents participating KC	3.9±1.1	3.9±1.3	3.8±1.3	3.7±1.4	0.71	0.85

Parents lack of knowledge about KC	4.0±0.8	3.7±1.3	3.9±1.2	3.7±1.3	0.35	0.95
Mothers were less likely to accept KMC	3.5±1.5	3.3±1.3	3.7±1.2	3.1±1.4	4.84	0.18
Parents reported that they were simply told to perform KMC without explanation why or how to do	3.9±1.4	3.9±1.1	3.3±1.2	3.8±1.0	9.67	0.01
Caregiver perceived that their newborn did not enjoy KMC	3.4±1.4	3.3±1.5	3.0±1.5	2.6±1.2	5.62	0.13
In hot climate environment infant may become irritable	3.6±1.5	3.5±1.6	3.3±1.4	3.1±1.4	3.14	0.37
Caregivers not comfort being able to see newborn during KC	3.9±1.2	3.4±1.3	3.3±1.5	2.8±1.3	8.77	0.03
Mothers lack of bonding with the infant due to fear, anxiety, stigma about having a preterm infant	3.8±1.1	4.0±1.4	3.7±1.3	3.4±1.4	6.04	0.11
Parents refuse to keep the baby at all	3.9±1.0	3.9±1.3	3.4±1.4	3.3±1.5	5.01	0.14
Parents reluctance for doing KC procedures	3.9±1.3	3.7±1.3	3.6±1.3	3.2±1.4	3.59	0.31
Insufficient private places for parents to do KC	3.9±1.4	4.0±1.4	4.0±1.3	3.4±1.6	2.54	0.47
Difficulty to assess baby's readiness and changes	3.8±1.3	3.5±1.4	3.5±1.1	3.0±1.2	8.23	0.04
Difficulty of KC of babies with chest tubes	3.9±1.3	3.4±1.6	3.7±1.3	3.2±1.4	3.6	0.31
Difficulty of KC of babies with ventilation	4.0±1.2	3.7±1.5	3.7±1.3	3.5±1.5	1.65	0.65
Different language miss understanding with parents	3.6±1.4	3.0±1.7	3.2±1.6	3.2±1.4	1.96	0.58

The nurse herself refused to do KC procedure	3.2±1.5	3.7±1.6	3.6±1.3	3.3±1.5	2.5	0.47
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* Kruskal Wallis test, ** Significant level at 0.05

Table 13 illustrates the comparison of barrier score and educational level of nurses score. There are statistically significant differences in averages of some barrier questions using Kruskal Wallis test such as the hospital system does not allow for KC procedure ($p=0.05$). The post hoc test revealed that the reason for difference came from group of school nurse ($p=0.01$)

The average score for this question is higher in school nurses' groups in comparison with another group. Medical staff unwilling to allow KC ($p=0.001$). The reason for the difference according to the post-hoc analysis of pairwise comparisons are came from school of nurse ($p=0.004$).

Advanced practice nurses do not allow KC ($p=0.05$). The reason for the difference according to the post-hoc analysis of pairwise comparisons are came from difference between school of nurse with other education groups ($p\text{-value}=0.03$).

The average score for this question is higher among participants who attended nurses' school. Believe that technology like an incubator is better than KC ($p=0.02$). There are differences among groups for this question as the average scores are higher among education groups of school nurses and school of midwife. The post hoc test revealed that the reason for difference came from group of school ($p\text{-value}=0.002$).

Parents reported that they were simply told to perform KMC without explanation why or how to do ($p=0.01$). The post hoc test revealed that the reason for difference came from group of school nurse with BSc ($p=0.01$).

Caregivers not comfortable being able to see newborn during KC ($p=0.03$). There is a big difference between groups for this question as the average score of participants of school of nurses is significantly higher than other groups. The post hoc test revealed that the reason for difference came from group of school nurse ($p=0.003$).

The average score for difficulty to assess baby's readiness and changes question of participants who had a postgraduate educational level is significantly lower in comparison with other groups. The post hoc test revealed that the reason for difference came from group of postgraduate (p=0.04).

Table 14 Comparison of nurses and midwives' gender with barriers mean scores

Barriers	Female n=150	Male n=15	U*	p**
	Mean±SD	Mean±SD		
The hospital system does not allow for KC procedure.	3.7±1.4	3.3±1.6	0.96	0.33
Medical staff unwilling to allow KC	3.5±1.4	3.2±1.3	0.95	0.34
Advanced practice nurses do not allow to KC	3.4±1.6	2.9±1.8	1.11	0.27
Lack of nurse's knowledge about KC	4.0±1.0	4.3±0.9	0.5	0.48
Nurses feel that KC is an extra load beside their work	3.2±1.5	3.3±1.3	0.75	0.45
Nurses feel that KC makes difficult to administer care	3.2±1.4	3.2±1.5	0.02	0.88
Insufficient practicing and KC program effect on ability of nurse's activity confident of KC	3.9±1.3	3.8±1.2	0.38	0.71
Insufficient time for family care	3.6±1.4	3.8±1.2	0.12	0.87
Believe that technology like incubator is better than KC	2.5±1.5	2.7±1.3	0.3	0.6
Increase accidental falling during the procedure	2.8±1.4	3.2±1.0	0.28	0.78
Lack of nurse /midwives' staff to parents participating KC	3.8±1.3	4.0±1.1	0.57	0.57
Parents lack of knowledge about KC	3.8±1.2	3.6±1.2	1.12	0.24
Mothers were less likely to accept KC	3.4±1.3	3.2±1.6	0.34	0.73
Parents reported that they were simply told to perform KC without explanation why or how to do	3.7±1.2	3.3±1.0	0.84	0.4
Caregiver perceived that their newborn did not enjoy KC	3.0±1.4	2.9±1.5	0.46	0.65
In hot climate environment infant may become irritable	3.3±1.5	3.0±1.4	1.68	0.09
Caregivers not comfort being able to see newborn during KC	3.3±1.4	2.9±1.5	0.43	0.67

Mothers lack of bonding with the infant due to fear, anxiety, stigma about having a preterm infant	3.7±1.3	3.7±1.2	1.01	0.31
Parents refuse to keep the baby at all	3.6±1.4	3.3±1.6	1.13	0.26
Parents reluctance for doing KC procedures	3.6±1.3	3.7±1.3	0.29	0.77
Insufficient private places for parents to do KC	3.8±1.4	3.7±1.4	0.71	0.48
Difficulty to assess baby's readiness and changes	3.4±1.3	3.7±0.8	0.35	0.72
Difficulty of KC of babies with chest tubes	3.5±1.5	3.4±1.1	0.46	0.64
Difficulty of KC of babies with ventilation	3.7±1.4	3.7±1.1	0.61	0.54
Different language miss understanding with parents	3.1±1.6	3.5±1.4	0.68	0.5
The nurse herself reffused to do KC procedure	3.5±1.5	3.3±1.5	0.6	0.55

* Mann-Whitney test, ** Significant level of 0.05

We did not find significant differences between KC barriers Mean score and gender of participants (Table 14) ($p > 0.05$). The average score of hospital system doesn't allowed for KC procedure for female 3.7 ± 1.4 , male 3.3 ± 1.6 , medical staff unwilling to allow KC female 3.5 ± 1.4 and male 3.2 ± 1.3 the other question barrier ,advanced practice nurses do not allow to KC mean score of female 3.4 ± 1.6 , male 2.9 ± 1.8 . with question lack of nurses' knowledge about KC mean score for female 4.0 ± 1.0 and male 4.3 ± 0.9 , in our study found nurses feel that KC is an extra load beside their work female mean score 3.2 ± 1.5 , male score 3.3 ± 1.3 . Nurses feel that makes difficult to administer care mean score female 3.2 ± 1.4 , male score 3.2 ± 1.5 , insufficient practicing and KC program effect on ability of nurses' activity confident of KC. Mean score female for this question 3.9 ± 1.3 , male 3.8 ± 1.2 , question insufficient time for family care female score 3.6 ± 1.4 and male score 3.8 ± 1.2 . the result of believe that technology like incubator is better than KC the average score female 2.5 ± 1.5 , male score 2.7 ± 1.3 . In question increase accidental falling during the procedure female score 2.8 ± 1.4 , male score 3.2 ± 1.0 . Lack of nurse/ midwife staff to parents participating KC mean score of female 3.8 ± 1.3 , male score 4.0 ± 1.1 , another barrier result parents lack of knowledge about KC female average score 3.8 ± 1.2 , male mean score 3.6 ± 1.2 , mother were less likely to accept KC average score female 3.4 ± 1.3 male score 3.2 ± 1.6 . our study found parents reported that they were simply told to perform KC without explanation why or how to do the mean score female is

3.7±1.2, male mean score 3.3±1.0, the question caregiver perceived that their newborn did not enjoy KC female mean score found 3.0±1.4, male mean score 2.9±1.5, in hot climate environment infant may become irritable 3.3±1.5 mean score male 3.0±1.4. another barrier result caregiver not comfort being able to see newborn during Female average score 3.3±1.4, male score 2.9±1.5. The mean score for the question mothers lack of bonding with the infant due to fear, anxiety, stigma about having a preterm infant female score 3.7±1.3, male 3.7±1.2, parents refuse to keep the baby at all female average score is 3.6±1.4, male average score 3.3±1.6. Also, for the question parents' reluctance for doing KC procedures female mean score found 3.6±1.3, and male mean score 3.7±1.3, result of insufficient private places for parents to do KC female mean score 3.8±1.4, male 3.7±1.4. Difficulty to assess baby's readiness and changes result mean score female 3.4 ±1.3, male 3.7±0.8, the study also found difficulty of KC of babies with chest tubes barriers mean score female 3.5±1.5, male mean scores 3.4±1.1. difficulty of KC of babies with ventilation finding mean score, female 3.7±1.4, male score 3.7±1.1, and founding result of different language miss understanding with parents average score female 3.1±1.6 male 3.5±1.4, result of the question the nurse herself refused to do KC procedure mean score female 3.5±1.5, male 3.3±1.5.

Table 15 Comparison of nurses and midwives' economic level with barrier mean scores

Barriers	Income less than expenses n=52	Income equal than expenses n=104	Income more than expenses n=9	X ² *	p**
	Mean±SD	Mean±SD	Mean±SD		
The hospital system does not allow for KC procedure.	3.8±1.5	3.6±1.4	3.9±1.3	1.57	0.45
Medical staff unwilling to allow KC	3.7±1.4	3.4±1.4	3.6±1.4	1.58	0.45
Advanced practice nurses do not allow to KC	3.3±1.7	3.3±1.6	3.4±1.6	0.01	0.99
Lack of nurse's knowledge about KC	3.9±1.3	4.1±0.9	4.4±1.0	1.97	0.38
Nurses feel that KC is an extra load beside their work	2.7±1.5	3.4±1.4	4.1±0.9	10.99	0.004
Nurses feel that KC makes difficult to administer care	3.0±1.5	3.2±1.4	3.3±1.5	0.58	0.75

Insufficient practicing and KC program effect on ability of nurse's activity confident of KC	3.9±1.3	3.9±1.3	3.9±1.4	0.04	0.98
Insufficient time for family care	3.8±1.3	3.5±1.5	4.1±1.1	2.11	0.34
Believe that technology like incubator is better than KC	2.5±1.6	2.5±1.5	3.1±1.4	1.23	0.54
Increase accidental falling during the procedure	2.8±1.4	2.8±1.3	3.6±1.2	2.45	0.29
Lack of nurse /midwives staff to parents participating KC	3.7±1.4	3.8±1.3	4.3±0.7	1.17	0.56
Parents lack of knowledge about KC	3.8±1.2	3.7±1.2	4.6±0.5	3.58	0.17
Mothers were less likely to accept KMC	3.5±1.4	3.3±1.3	3.9±1.7	2.73	0.26
Parents reported that they were simply told to perform KMC without explanation why or how to do	3.8±0.9	3.6±1.2	3.4±1.5	0.92	0.63
Caregiver perceived that their newborn did not enjoy KMC	3.2±1.4	2.9±1.4	3.8±1.3	4.22	0.12
In hot climate environment infant may become irritable	3.3±1.5	3.2±1.5	4.7±0.5	8.46	0.01
Caregivers not comfort being able to see newborn during KC	3.3±1.4	3.2±1.4	4.0±1.3	3.02	0.22
Mothers lack of bonding with the infant due to fear, anxiety, stigma about having a preterm infant	3.5±1.4	3.8±1.3	3.2±1.6	1.79	0.41
Parents refuse to keep the baby at all	3.7±1.2	3.5±1.4	2.9±1.7	1.74	0.42
Parents reluctance for doing KC procedures	3.7±1.2	3.4±1.4	4.3±1.0	4.23	0.12
Insufficient private places for parents to do KC	4.1±1.2	3.7±1.5	3.6±1.0	3.69	0.16
Difficulty to assess baby's readiness and changes	3.3±1.3	3.4±1.3	3.6±0.7	0.04	0.98
Difficulty of KC of babies with chest tubes	3.6±1.5	3.5±1.4	2.4±1.3	4.75	0.09

Difficulty of KC of babies with ventilation	4.0±1.2	3.5±1.4	4.1±1.4	6.09	0.03
Different language miss understanding with parents	3.2±1.6	3.1±1.5	3.9±0.9	1.74	0.4
The nurse herself effused to do KC procedure	3.5±1.5	3.5±1.4	3.7±1.5	0.22	0.89

* Kruskal Wallis test, ** Significant level at 0.05

Table 15 illustrates the comparison of economic level of nurses scores by mean of nurse's barriers. There are statistically differences in averages of some barrier with economic level groups. These are nurses feeling that KC is an extra load beside their work ($p=0.004$). According to the post-hoc analysis, the difference is due to the group whose income less than expenses ($p =0.003$).

There was a significant difference between the nurses' barriers that in hot climate environment infant may become irritable and the income level ($p = 0.01$). The difference is due to the group whose income more than expenses ($p =0.002$).

There was a significant difference between the nurses' barriers with difficulty of KC of babies with ventilation ($p=0.03$). The difference is due to the group whose income more than expenses ($p =0.01$). However, in the other barrier questions is no significant difference in economic level groups ($p>0.05$).

Table 16 Comparison of nurses and midwives' experiences with barriers mean scores

Barriers	1 to 5 years n=14	6 to 10 years n=38	11 to 15 years n=46	16 to 20 years n=18	more than 20 n=49	X ² *	p**
	Mean±SD	Mean ±SD	Mean±SD	Mean±SD	Mean±SD		
The hospital system does not allow for KC procedure.	3.2±1.4	3.7±1.5	3.7±1.6	3.4±1.2	3.9±1.2	0.7	0.45
Medical staff unwilling to allow KC	2.9±1.4	3.3±1.5	4.0±1.3	3.3±1.4	3.4±1.3	10.18	0.03

Advanced practice nurses do not allow to KC	3.0±1.5	3.4±1.8	3.4±1.6	3.3±1.6	3.3±1.5	1.52	0.83
Lack of nurse's knowledge about KC	3.9±0.8	3.8±1.2	4.3±1.0	3.6±0.8	4.2±0.9	15.36	0.004
Nurses feel that KC is an extra load beside their work	2.3±1.2	3.2±1.4	3.4±1.5	2.9±1.3	3.3±1.4	7.55	0.11
Nurses feel that KC makes difficult to administer care	2.9±1.4	3.3±1.5	3.3±1.5	3.1±1.3	3.0±1.4	3.14	0.54
Insufficient practicing and KC program effect on ability of nurse's activity confident of KC	3.2±1.6	3.7±1.3	4.0±1.2	3.8±1.2	4.0±1.1	4.86	0.3
Insufficient time for family care	3.5±1.1	3.6±1.5	3.8±1.4	3.2±1.5	3.7±1.3	3.99	0.41
Believe that technology like incubator is better than KC	2.1±1.3	2.1±1.4	2.7±1.5	2.3±1.5	3.0±1.5	9.64	0.04
Increase accidental falling during the procedure	2.6±1.3	2.9±1.4	3.1±1.4	2.9±1.2	2.7±1.4	2.42	0.66
Lack of nurse /midwives	3.2±1.8	3.9±1.2	3.9±1.2	3.7±1.4	3.9±1.3	1.77	0.78

staff to parents participating KC							
Parents lack of knowledge about KC	3.3±1.5	4.1±1.0	3.8±1.3	3.4±1.2	3.9±1.1	5.22	0.27
Mothers were less likely to accept KMC	3.1±1.5	3.2±1.3	3.5±1.3	3.1±1.3	3.7±1.3	5.01	0.26
Parents reported that they were simply told to perform KMC without explanation why or how to do	3.6±1.2	3.7±1.1	3.8±1.2	3.6±1.2	3.6±1.2	1.13	0.89
Caregiver perceived that their newborn did not enjoy KMC	2.2±1.1	2.9±1.5	3.3±1.3	2.6±1.6	3.2±1.3	9.48	0.052
In hot climate environment infant may become irritable	2.5±1.6	3.3±1.6	3.6±1.5	3.4±1.1	3.3±1.4	5.59	0.23
Caregivers not comfortable being able to see newborn during KC	2.6±1.4	3.2±1.3	3.2±1.6	3.1±1.4	3.6±1.2	5.52	0.24
Mothers lack of bonding with the infant due	3.3±1.5	3.4±1.3	3.8±1.3	3.7±1.4	3.9±1.3	3.98	0.41

to fear, anxiety, stigma about having a preterm infant							
Parents refuse to keep the baby at all	3.9±1.4	3.3±1.5	3.5±1.4	3.3±1.3	3.9±1.2	4.86	0.3
Parents reluctance for doing KC procedures	3.4±1.6	3.3±1.4	3.4±1.4	3.6±1.1	4.0±1.1	5.98	0.2
Insufficient private places for parents to do KC	4.1±1.2	3.6±1.5	3.8±1.4	3.5±1.4	4.0±1.4	2.58	0.63
Difficulty to assess baby's readiness and changes	3.0±1.4	3.5±1.2	3.2±1.3	3.4±1.3	3.6±1.2	3	0.56
Difficulty of KC of babies with chest tubes	3.8±1.4	3.5±1.4	3.4±1.5	3.4±1.3	3.5±1.5	0.85	0.93
Difficulty of KC of babies with ventilation	3.9±1.3	3.7±1.4	3.5±1.5	3.3±1.5	3.9±1.3	3.45	0.48
Different language miss understanding with parents	2.9±1.6	3.2±1.5	3.1±1.6	3.0±1.6	3.4±1.5	2.11	0.71
The nurse herself effused to do KC procedure	3.8±1.5	3.5±1.5	3.5±1.5	3.3±1.6	3.6±1.4	1.16	0.88

* Kruskal Wallis test, ** Significant level at 0.05

Table 16 illustrates the comparison of barrier mean score and years of experience in maternal hospital of nurses and midwives. A significant difference was found between the years of experience of nurses and midwives with the barrier of “medical staff unwilling to allow KC” ($p=0.03$). The reason for the difference is the group with 1-5 years of experience ($p=0.04$).

Significant difference was found between the years of experience of nurses and midwives with the barrier of “lack of nurse’s knowledge about KC” ($p=0.004$). The reason for the difference is the group with 11-15 years of experience ($p=0.009$).

A significant difference was found between believing that technology such as incubator is better than KC and the experience of nurses and midwives ($p=0.04$). The reason for the difference according to the post-hoc analysis more than 20 years’ experience group ($p =0.01$).

CHAPTER FIVE

5. Discussion

Nearly 85% of the participants had heard about KC. 63% of the participants had some information about KC and about 20% practicing KC. (Table 2) illustrates that nearly 80% of the participants had no practice of KC. It's very essential for caregivers and nursing staff not only to be trained but to apply and practice the procedure. Health care givers do get confidence by practicing and experience, especially the junior nurses, this was found in a study assessing clinicians' knowledge and confidence to perform KC (Higman et al., 2014; Almutairi and Ludington-Hoe, 2016). In our study one in fifth participants had KC certificates. Our nurses require opportunities to get familiar with the importance of KC (Figure 2). In developed countries this KC training and practice is much higher. According to a study, over 82% of neonatal nurses practiced KC in their NICUs in the USA. More than 50% of all hospitals in South Africa also practice KC in some form or another (Victoria and Rubens, 2010; Berg et al., 2014).

5.1 Personal beliefs

In our study majority of participants 64.5% agreed that all neonatal babies allow to collaborate KC procedures, 34.6% of the participants agreed on statements that “the Only low weight and premature should take the place of KC (Table 3). Studies show that babies with low birth weight have more benefit from kangaroo care, but kangaroo care should be applied to all babies (Alpanamayi, 2014; Boundy, et al., 2015, Ankit and Sushma 2019).

In our study less than half of the participants believe that babies on a ventilator, with IV fluid and chest tubes should not be allowed for KC (Table 3). These beliefs are a result of lack of knowledge as KC is now considered a fundamental component of developmentally appropriate therapy for hospitalized preterm infants (Ludington et al., 2013). In a study To investigate Irish neonatal nurses' knowledge and beliefs of KC results indicated nurses' uncertainty regarding kangaroo care with intubated infants, and infants requiring blood pressure support, umbilical lines and phototherapy. These results show the need to provide

education on KC to foster the development of more positive beliefs and increase staff knowledge of potential adverse effects (Flynn et al., 2010; Cattaneo et al., 2018).

Majority of the nurses (76%) in our study support that parents should be part of KC procedure (Table 3). The belief of inclusion of parents in KC procedure was also found worth effort by 70.9% of the nurses included in a study (Flynn et al., 2010). Similarly, in a study comparing nurse's perceptions of KC, it showed that 90.2% of non-experienced and 82.6% of experienced nurses agreed on parenting roles (Zhang et al., 2018). 81% of participants agreed that parents should practice on KC (Table 3). Providing parents with support, assistance and encouragement to practice KC was agreed by more than 90% of the nurses as the authors revealed that all parents should be encouraged to practice KC (Chia et al., 2006). In our study majority of the participants 84% believe that KC promotes connection between parent and baby. A study in assessing nurse's knowledge and belief supports this finding of our study. It shows that 90.3% of nurses agreed on the benefits of KC for both infants and parents (Flynn et al., 2010). Again, the belief that KC promotes bonding was strongly agreed by 74% of the nurses (Chia et al., 2006).

This study 29.7% of the participants agree that KC causes discontinuous patient care (Table 3). In a study this belief was agreed by 16% of nurses stating that KC took too much time and work and this was identified as disadvantages of KC as it required time and caused interrupted caregiving (Engler et al., 2002). In a study have shown that it is difficult for caregivers to find sufficient time due to the number of patients and busy working conditions on the other hand 57.2% of the nurses agreed that the lack of flexibility in NICUs prevented parents from visiting for KC and several respondents were concerned that performing KC would interrupt patient caregiving and interfere with the completion of nursing tasks (Deng et al., 2018).

Only 18% of our participants found KC is useful only for breastfeeding (Table 3). Compared to our results, a study finds that not all respondents agreed that KC results in more effective breastfeeding, nearly half (44.1%) of the respondents were uncertain about the effects of KC on breastfeeding (Sellick et al., 2006). Responses are different though studies have shown that KC promotes exclusive breastfeeding. they concluded that the exclusive

breast-feeding rate at the end of three months was more in the KC group compared to the control group in addition to better physical growth especially in LBW infants (Geeta Gathwala et al., 2010). Similarly, a study done in Iran indicated that there was a 4.1-time increase in exclusive breastfeeding by KC and better weekly growth compared to conventional methods of care (M. Heidarzadeh et al., 2013).

80.6% Majority of the participants agreed that KC improves more comfortable caring for their babies (Table 3). Based on that the babies receiving KC show statistically significant improvement, 78.3% of the experienced nurses believe that increases the quality of care in their unit (Zhang et al., 2018). On the other hand, the perception of nurses differs regarding preterm infants as the study identified that 79% of nurses identified that the transfer to the parental chest was the most stressful part of the KC for the preterm infant (Chia et al., 2006).

Collaboration between nurses and parents is considered as an important factor for implementation of KC. In our study the majority of participants 44.2% stated that collaboration between the nurse and the parents is essential during KC (Table 3). This was also obvious in a Swedish NICU where mothers' experience with babies receiving KC from birth to discharge was investigated. These mothers accepted KC very well provided that they received help and support (Thernström and Hedberg, 2010). In our study 81% of participants believe that KC improves baby's outcome (Table 3) as also evidence show that KC is leading to the reduced mortality rate of infants, and belief of nurses regarding the significant survival benefits of KC have been assessed. Similarly, over 80% of experienced nurses believed that KC positively affected outcomes of preterm infants (Zhang et al., 2018).

Majority of the participants think that fathers should share KC procedures (Table 3). 97% of participants in an Australian NICU encouraged fathers in the participation of KC although they had belief that fathers needed additional support and encouragement to overcome the initial fear of holding their tiny infant (Chia et al.,2006). The situation differs when it comes to Iraq and other countries with similar sociocultural norms within the region, where husbands are usually not the caregivers of the newborns and less likely to have any active role in practicing KMC. A study in Pakistan showed that although husbands showed willingness to

practice KMC for the health and survival of their newborns, they ought to have little time to practice KC due to their responsibilities of working outside home or they also may suffer challenges of prevailing customs and socio-cultural norms (Jamali et al., 2019).

In our study, we could not find a relationship between the kangaroo care beliefs of nurses and their education level (Table 5). In other studies, unlike our study, it was found that there is a relationship between educational level and KC belief, as the education level of nurses increased, their CK belief levels also increased; in a study performed in NICU shows KC was practiced more commonly by higher expert nurses of NICUs and that nurse perceptions and knowledge of KC were positive (Strand, H. 2012). Also the ‘not experienced in KC’ group perceived more barriers to KC implementation than did the ‘experienced in KC’ group this was addressed in a recent study; In the ‘experienced in KC’ group, over 90% considered KC beneficial to the parent-baby relationship and attachment, and over 80% believed that KC positively affected outcomes of preterm infants (Zhang et al., 2018).

The comparison of experiences and knowledge of nurses about KC by personal beliefs (Table 6) shows that there is statistically a significant relationship between personal beliefs and nurse’s heard about KC ($p=0.03$) majority of participants said yes in medium score 83.3%. As revealed by studies assessing knowledge and attitudes of nursing staff and mothers towards KC; Lack of KC training of all nursing staff 70.2% at antenatal clinics and hospitals even if they are not directly involved in the procedure, was one of the main obstacles to the successful implementation of KC (Almutairi and Ludington., 2016).

5.2 Knowledge and experience

In our study the majority of participants agree that babies are satisfied during KC (90%) and that KC increases deep sleeping (84%) and cry less (82%) (Table 7). This is consistent with the authors finding that KC is an effective method to meet babies needs for warmth, growth, wellbeing, breastfeeding, protection from infection, stimulation, safety and love. Similarly, the majority of Australian neonatal nurses in the literature commented that KC keeps the infant warm and promotes sleep (Chia et al., 2006; Elias and Ramu, 2014).

Majority of our participants think that KC procedure helps baby's temperature regulation (82%) (Table 7). Thermoregulation is important to newborns, and much more important to premature and LBW-born. Children who are premature lose heat faster than babies on term, because they have less fat to insulate their bodies (Smola and Lawson, 2019). Similarly, almost all of the nurses identified that KC has no negative effects on the baby's temperature (Flynn et al., 2010). In our study 50.9% of the participants agreed that “KC is suggested to babies within 28 weeks” (Table 7). Compared to the studies nearly a similar figure as 60% of respondents agreed that gestational age and birth weight are not contraindications to KC practice. On the other hand, there were considerable uncertainties about the practice of KC in infants weighing <1000 g and the associated risks of neonatal injuries and infections (Engler et al., 2002; Al-Shehri and Binmanee , 2019).a high range of participants agreed with mothers are more comfortable and decrease of stress during KC 86.8%, KC increase the confidence of mother in breast feeding 86.1%, in other studies majority of nurses agree that Kangaroo care enhances the parents’ confidence 55.9%, . Kangaroo care results in more effective breastfeeding 32.4%, not all respondents agreed that KC results in more effective breastfeeding, or disagreed with the statement that the benefits of KC are overstated. Of note is that nearly half the respondents were uncertain about the effects of KC on breastfeeding (Chia et al.,2006).

The majority of our participants 90.3% agreed that KC shows satisfied for babies (Table7), in other studies encouraging kangaroo care are more than half agree on the item that gives satisfaction (56%) Appeared among babies (Kyungsook, 2011), also shows the high range of participants stated that KC application have earlier breast feeding 87.3%. Similarly, this is consistent with the literature findings considering KC as promoting maternal-infant bonding and enhancing successful breastfeeding (Al-Shehri and Binmanee, 2019). In another study neonatal nurses surveyed assisted and encouraged parents to provide KC and the majority agreed on the benefits of KC for both infants and parents. Results also identified practical concerns with the practice of KC and some uncertainty that KC promotes breastfeeding (Chia et al., 2006).

In our study, we could not find a relationship between the kangaroo care knowledge of nurses and their education level and their experience (Table 9). On the other hand, these rates are much higher compared with knowledge of the nurses of KC in our study, as only 20.6% had knowledge of KC (Figure 2). Similarly, it was found in a study that less than 20% of the 996 NICUs in the United States routinely practice kangaroo care, due in part to the inadequate knowledge and skills confidence of nurses and the nurses' knowledge (Almutairi and Ludington-Hoe, 2016). Another study in assessing nurses' knowledge found that 60% of the nurses did not practice KC as they had not any training (Solomons and Rosant, 2012). This rate of untrained nurses is slightly lower in China (Zhang et al., 2018). Also, in a study it was found that nurses engaged in KC practice particularly those concerning maternal-neonatal relationships or work experience at maternity hospitals (47.7%) had reasonable knowledge levels among NICU nurses. in contrast in general hospital 69.9% had no KC experience (Al-Shehri and Binmanee, 2019).

5.3 Barriers

When we evaluate the barriers in the issue of KC, many reasons have been revealed that make it difficult or prevent the application of KC by nurses and midwives. In terms of insufficient knowledge level and inadequacy of KC practice (Table 11) the participants stated "Very Effective 41.5%" and "Effective 34.1%" barrier methods. We might see a lower rate in developed countries but it's still a major barrier as revealed that lack of knowledge and inadequate practice of KC have been found by 55% of all nurses working in NICU in the USA (Engler et al., 2002). In our study, nurses and midwives stated that institutional policies also create a barrier in terms of KC implementation. In our study total of the participants marked the status of preventing the application of the institution policies from the KC application as "Very Effective"43.6% and "Effective"14.6% (Table 11). Hospital policies and guidelines to support implementation of KC has a major role. Prevalence of facilities is crucial to support this procedure. In different studies this rate is lower as results show that 20% of nurses found lack of guidelines as a barrier. Authors believed that any care is influenced by facilities of the setting in addition to socio-cultural and religious status of the country (Engler et al., 2002; Mousaviasal et al., 2016).

One of the other obstacles mentioned by nurses and midwives is that the nurses do not have enough time and the number of nurses is insufficient. The majority of the participants stated that there is not enough time for family care and this is a barrier in practice “Very Effective 35.2%” and “Effective 28.4%” (Table 11). Lack of nursing staff to parents during KC and that the number of the nurses are insufficient of our participants shown in Table 1 that gives information about nurses to patient range (79% of them give care to >5 patients). According to a study 16% of nurses working in NICU stated that KC takes too much time and work (Chia et al., 2006). Though this rate is lower than in our study, insufficient time was considered a disadvantage when KC was done during times of staff shortage.

The insufficient level of knowledge of families about KC was found to be an important barrier for nurses and midwives. as the nurses responded with “Very Effective 34.4%” and “Effective 34.1 %” (Table 11). Similarly, in the same socio-cultural status, studies highlighting KC practice, knowledge, and perception among NICU nurses in Riyadh, Saudi Arabia, even a higher rate 90% is given by nurses regarding providing information to the parents about KC (Al-Shahri and Binmanee, 2019). Also, in Iran authors found that 68.18% of nurses found parent’s inadequate education and understanding about KC the most important barrier (Mousaviasal et al., 2016).

The average answers by responders for questions that “medical staff are unwilling to allow KC “was “Very Effective 36.7%”. Our participants' response to “advanced practice nurses not allowed to KC” was “Very Effective 35.4%” (Table 11). But in other studies, it shows that only 25.6% of nurses find reluctance to practice KC among nurses (Ojo et al., 2020). “KC is an overload” responded by 42% of nurses with “Very Effective 25.3%” and “Effective 18.5%”. In other studies, assessing perception of nurses and barriers to KC application this barrier was somewhat influential by 60.3% of the respondents (Jeong and Kim, 2016).

In our study the answer to “KC difficulty to be administered” was “very effective 35%” (Table 11). in other studies, in China a higher rate of nurses 62% found KC difficult to be administered due to insufficient space or nursing staff (Zhang et al., 2018). In order to administer KC in any setting, it requires many factors. One of these factors as claimed by the

author is that 60% of the nurses claimed lack of continuous attendance as the main barrier (Musaviasl et al., 2016). Again, difficulties in applying KC reflected the low adherence of the professionals to the model as eight nurses' speeches revealed partial knowledge, lack of practical experience and barriers related to team resistance and lack of institutional support (Silva, et al., 2018). “Insufficient practice on KC program effect on ability of nurse’s confidence of KC” answered with “very effective 40.5%” and “very effective 33.1%”. Authors nowadays emphasize on educating nurses and caregivers to feel confident in applying KC procedure. As the author reveals that confidence in knowledge of KC was significantly lower in NICU nurses who spend <75% in direct care of babies and who had not received training (Higman et al., 2015).

“The answer of the participants whether technology as an incubator is better than Kangaroo Care” was “very effective 16%” and “effective 14.7” (Table 11). For KC to replace the incubator is a conflict. A research in Nigeria comparing utilizing techniques of traditional incubator care and KC related to the care of LBW and preterm infants 35.2% of the nurses found that incubator is better (Ojo et al., 2020). Authors have shown positive and negative characteristics among both techniques, and suggested further research required to determine whether or not one method should be used exclusively in place of the other (Smola et al., 2019). Respondents to “KC increases accidental falling during the procedure” were “very effective 16%” and “effective 16.8%” (Table 11). This fear was reported by 26.8% of nurses in a research in Saudi Arabia assessing Kangaroo Mother Care practice, knowledge and perception as they had marked uncertainties about the risk of injuries and infections (Al Shehri and A Binmanee, 2019).

Responses to “lack of nurses to parents participating KC” was “very effective 37.8%” and “effective 31.1%” (Table 11). This was similarly the situation by 56.4% of experienced and 61.3% of inexperienced nurses as the study indicates (Zhang et al., 2018). Also found by 42,1% of nurses that inability to provide adequate time to families during KC when the nurses are busy (Al Shehri and A Binamnee, 2019). Responses to “lack of parents' knowledge about KC” was “very effective 34.4%” and “effective 34.4%”. This factor as a barrier might differ according to different cultures for e.g. a study was done in Nepal and found by 73.6% of

nurses that the most important barriers to KC implementation was patient education (Srijana et al., 2016). Participants' response to “mothers were less likely to accept KC” was “very effective 27.2%” and “Effective 24.7%”. Similarly, studies show that 40% of nurses found adoption of KC by families were supportive (Seidman et al., 2015). This reluctance of KC by parents was found to be more in a study done in Nigeria as 67.2% of nurses reported parent’s reluctance to KC application (Ojo et al., 2020).

Participants' response was “very effective 28.6%” and “effective 31.7%” regarding that the “Parents reported that they were simply told to perform KC without explanation” (Table 11). Extending information by the nursing staff to the parents is very essential. A study done in three hospitals, when queried regarding the nurses’ role in supporting KC, only 55% of hospital B nurses, 50% of hospital A nurses, and 29% of hospital C nurses felt strongly that nurses should be supportive in helping mothers provide KC to their infants (Karen et al., 2010). Inability to provide adequate time to families during KC found by 62% of nurses as somewhat influential (Jeong and Kim, 2016). In another study some mothers experienced that they had not received enough information in addition to that sometimes nurses' attitude made mothers doubtful (Dalby et al., 2011). Participants' response was “very effective 21.1%” and “effective 18.6%” regarding that the “Caregivers perceived that their newborn did not enjoy KC” and “Very effective 28.1%” and “Effective 25.0%” parents observed that their infant became irritable with hot climate. Based on evidence, babies feel safe and comfortable during KC. This is consistent with the authors finding that KC is an effective method to meet babies needs for warmth, growth, wellbeing, breastfeeding, protection from infection, stimulation, safety and love (Elias and Ramu, 2014).

That “The babies on a ventilator and chest tubes difficult to be put on KC procedure” responded with “very effective 37.8% (Table 11)” and “effective 31.1%”. No doubt that KC is now considered a fundamental component of developmentally appropriate therapy for hospitalized preterm infants (Ludington et al., 2013). In a study To investigate Irish neonatal nurses’ knowledge and beliefs of KC results indicated nurses’ uncertainty regarding kangaroo care with intubated infants, and infants requiring blood pressure support, umbilical lines and phototherapy. 74.2% of neonatal nurses believed that intubated infants should be allowed

participate in KC. The author suggests the need to provide education on KC to foster the development of more positive beliefs and increase staff knowledge of potential adverse effects (Flynn et al., 2010).

In our study, we could not find a relationship between age and nurses' barrier to KC the questions (Table 12). However, there was a statistically significant difference in mean (3.5 ± 1.5) of the barrier question of increased falling during the procedure among the <30 years of age. Other studies show that there was no difference in comparing age with barriers toward KC (Jeong and Kim, 2016). KC simulation training session to teach nurses how to transfer air, an infant on nasal cannula, an infant on continuous positive airway pressure and an infant on mechanical ventilation from an incubator to his or her mother shows that the skills training significantly improved nurses' comfort and competency with the procedure (Almutairi and Ludington, 2016).

Table 13 illustrates that the average score for “the hospital system does not allow for KC procedure”; (chi-square= 6.89, p-value=0.05), that “medical staff are unwilling to allow KC” ;(chi-square= 15.1 p-value=0.001) and “advanced practice nurses do not allow KC” (chi-square=7.1, p-value=0.05), is significantly higher in the school nurses' group in comparison with higher educated group. The average score for the question “caregivers not comfortable being able to see their newborn children during KC” is significantly lower (chi-square=8.77, p-value=0.03) among participants who had a postgraduate educational level in comparison with other groups. The average score of participants in answering “if incubators are better than KC” (Table 13). was significantly higher in school nurses than other groups (chi-square= 9.02, p-value=0.02). A study done in Korea, of the participants, 33.6% reported the practice of KC in their NICU, with 75.6% wanting to receive training in KC and 31.3% having received KC education. Most of the participants agreed that KC enhances attachment, parental confidence, and effective breast feeding but they reported a negative perception in providing KC for premature infants weighing less than 1000 grams or intubated premature infants. Major barriers to practicing KC were safety of infants, possible work overload for nurses, as well as absence of consistent guidelines. Similarly, higher negative perceptions (p-value=0.004) were seen by junior college than more advanced nurse's groups, for e.g. fear that intubation may be

missed found to be a great obstacle to KC, also fear related to the safety of overweight children, fear that tubular line may fall out. The perception and disability of KC showed a negative correlation. The higher the awareness of KC is, the more disability it is to KC (Jeong and Kim, 2016)

Table 14 illustrates that the comparison of gender by means of nurse's barriers we did not find a significant difference ($p > 0.05$). Similarly, a study about knowledge and attitude of Nigerian Health workers concerning Kangaroo Care found no relation between gender and knowledge attitude level towards Kangaroo Care (Okoh and Onubogu, 2018).

Table 15 illustrates the comparison of economic status of nurses scores by mean of nurse's barriers. Nurses feel that KC is an extra load beside their work. The average score for this question is lower (chi-square = 10.9, p-value = 0.004) in groups with less income than expenses in comparison with other groups. Financing for implementation of KC is an important factor to be noted. a study addressed this point. Financing should be augmented with policies guidelines, role definitions to enable health care workers to allocate protected time for KC. (Laber et al., 2016). "In a hot climate environment infant may become irritable" The average score for this question for a group of "income is more than their expenses" is higher (chi-square = 8.6, p-value = 0.01) in comparison with other groups. In other surveys, the results found that 80.7 percent and 85.5 percent of nurses in the survey sample provided accurate full responses about immediate nursing treatment and steps that should be taken to keep preterm babies warm, respectively. (Elzubeir, 2015).

caregivers mentioned discomfort in some areas due to the hot climate, parents observed their infant became irritable or "stinky" during KC In all, 80 percent of babies were found to be dressed in excess of what was prescribed (the method suggests only diapers, a hat and socks be worn at maximum). "irritable," or "the baby may become irritable in this hot environment, and the baby may develop a rash." (Quasem et al., 2003).

Table 16 illustrates "The mean score for the question of medical staff unwilling to allow KC" is significantly higher (chi-square = 10.18, p-value = 0.03) in the group who has employment experience between 11 to 15 years. Similarly, the average score among those

who have experienced between 11 to 15 years was significantly higher (chi-square= 15.36 p-value=0.004) in comparison with other groups for “Lack of nurse’s knowledge about KC”. The average score for the question “Caregiver perceived that their newborn did not enjoy KC” is higher (chi-square= 9.48, p-value=0.05) in the group who have experience between 16 to 10 years. In another study in general comparison of the level of perception and barriers towards KC according to nurses’ experiences; statistically no significant differences were found (Jeong and Kim, 2016).

CHAPTER SIX

6. Conclusion and recommendation

6.1 Conclusion

- In our study, where we evaluated the information beliefs and barriers of nurses and midwives about kangaroo care;
- Nearly 85% of the participants had heard about KC. 63% of the participants had some information about KC. As the study showed the majority had knowledge of KC, only minority (20%) of the participants were practicing KC.
- Assessment of the participant’s knowledge indicated that majority of the participant were knowledgeable regarding benefits of Kangaroo Care in terms of babies’ satisfaction, oxygen saturation, reduction of apnea and regulation of breathing, temperature regulation, deep sleeping, earlier start with breastfeeding, reducing pain, reducing crying and reducing mortality and morbidity.
- About half of the participants suggested the procedure to babies within 28 weeks of gestation. The majority supported that Kangaroo Care influences positively on mother stress and increases her confidence in breastfeeding.
- The majority of our participants had positive beliefs regarding application of KC to all babies regardless of prematurity and low weight babies with less effective response regarding some babies like those with iv fluid, chest tubes, babies on ventilator, improving baby’s outcome and the quality of health service.
- Majority find parents more comfortable for caring their babies during KC. They belief that KC is useful for breastfeeding and it enhances parent and baby connection.

- Majority had belief of the importance of including parents in KC procedure and that they should practice the procedure.
- Collaboration between nurses and parents considered very essential factor for implementation of KC by majority of participants.
- There is statistically a significant relationship between personal beliefs and nurse's heard about KC. Lack of KC training of all nursing staff at antenatal clinics and hospitals even if they are not directly involved in the procedure, was one of the main obstacles to the implementation of KC
- When we evaluate the barriers in the issue of KC, many reasons have been revealed that make it difficult or prevent the application of KC by nurses. In our study, nurses and midwives stated that institutional policies also create a barrier in terms of KC implementation.
- The minority of the nurses had higher education. In addition, most of them had no certification for KC training. Lack of practice, experience and training had influenced KC implementation.
- Insufficient practice on KC program had effect on ability of nurse's confidence of KC. As was seen by uncertainty and fear of accidents and feeling that KC makes it difficult to administer care. This fear was more obvious among the nurses of <30 years of age.
- The lower the education, the less awareness of KC benefit. Technology like incubators found to be better than KC, was significantly higher in school nurses than other groups. Difficulty to assess the baby's readiness and changes was reported as effective barrier.
- Other identified barriers were, poor or no training opportunities and no time for practicing KC was found by most of the participants, in addition, lack of staff has restricted KC application, this scored higher in the group who has employment experience between 11 to 15 years.
- Medical staff reluctance scored higher in the group who has employment experience between 11 to 15 years.
- One of the other major obstacles mentioned by nurses and midwives is that the nurses do not have enough time and the number of nurses is insufficient. The majority of the

participants stated that there is not enough time for family care and this is a barrier in practice, Lack of nursing staff to parents during KC and that the number of the nurses are insufficient (79% of them give care to >5 patients).

- Among effective barriers related to parents reported by the participants was, lack of nurses to parents participating KC, lack of parents' knowledge about KC, mothers were less likely to accept KC, parents reported that they were simply told to perform KC without explanation”.
- Another significant barrier was that in a hot climate environment infant may become irritable. The average score for this question for a group of “income is more than their expenses” is higher. Sweating in summer and cold temperatures in winter might harm the babies during KC practice is one of the cultural barriers to KC.

6.2 Recommendation

- Hospitals rules and guidelines create a barrier for application of Kangaroo Care Enhance the hospital system to include the Kangaroo Care in their guidelines will support the procedure.
- Reluctance of nurse advance because of insufficient number of nurses and midwives result insufficient of time and over load, Communicate with health authorities to increase nurse numbers to reduce workload and enhance one to one health care.
- The low Certification, and low Educational level on Kangaroo Care effect on practicing the kangaroo care application for that Implementation and practicing the Kangaroo Care process after obtaining the certificate elevate stander of this process.
- Insufficient Kangaroo Care practice program effect ability of nurses and midwives, to develop practice guidelines and protocols to ensure application of procedure according to the up to date standards.
- Within low training and application Kangaroo Care, arranging workshops for training, practising by authorities will promote confidence about Kangaroo Care.

- Parents lack of knowledge and perform Kangaroo Care without explanation, raising the health care givers and parent's belief about Kangaroo Care by arranging educational sessions to explain the benefits and risks for the parents.
- Insufficient private places make difficulty for implementation of Kangaroo Care preparing materials, place and professional nurse to arrange training courses for the nurses and midwives.

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Kangaroo Care Questionnaire

These questions are directed to you for the aim of research to explore the determination of Maternity hospital in Erbil. The research is about evaluation of knowledge of nurses on kangaroo care. You are invited to fill questionnaire without writing your names. It will be used for only Narmin Mohammed Omer master thesis. If you have any question or explanation you can email me (narmin.omer60@gmail.com) Thank you for your participation and spending time to complete this questionnaire.

This questionnaire has many parts socio demographic, personal belief, personal knowledge, and barriers, in each part you will see the questions and in return, the answer is given according to what is written.

1- I understood the importance of the study. Yes No

2- I have had opportunities to ask any question related to the study and any questions that I have asked have been answered to my satisfaction. yes No

3- I consent voluntarily to participate as a participant in this research. yes No

PART ONE: Socio demographic characteristics

No	Socio demographic question
1	How old are you (Age)? <input type="text"/> years old
2	Gender Female <input type="checkbox"/> Male <input type="checkbox"/>
3	Marital status: Married <input type="checkbox"/> How many children you have ----- Unmarried <input type="checkbox"/>
4	Religion <input type="text"/>

	Muslim <input type="checkbox"/> Christian <input type="checkbox"/> Others <input type="checkbox"/>
5	Economic status My income less than my expense <input type="checkbox"/> My income is equal expense <input type="checkbox"/> My income is more than my expense <input type="checkbox"/>

PART TWO: Education and Experience

No	education and experience
6	Educational level: <input type="checkbox"/> School nurses <input type="checkbox"/> Preparation of nursing and midwife Nurse <input type="checkbox"/> Midwife <input type="checkbox"/> <input type="checkbox"/> institute degree Nurse <input type="checkbox"/> Midwife <input type="checkbox"/> <input type="checkbox"/> Baccalaureate degree Nurse <input type="checkbox"/> Midwife <input type="checkbox"/> <input type="checkbox"/> Master degree Nurse <input type="checkbox"/> Midwife <input type="checkbox"/> <input type="checkbox"/> Doctoral degree Nurse <input type="checkbox"/> Midwife <input type="checkbox"/>
7	Experienced year employment 1 to 5 years <input type="checkbox"/> 6 to 10 years <input type="checkbox"/> 11 to 15 years <input type="checkbox"/> 16 to 20 years <input type="checkbox"/> More than 20 years <input type="checkbox"/>
8	Experienced in maternity hospital <input type="checkbox"/> years
9	What is the range of nurse to patient in your department in maternity hospital? 1= 1 Nurse to Baby <input type="checkbox"/> 2 = 1 Nurse to Baby <input type="checkbox"/> 3 = 1 Nurse to Baby <input type="checkbox"/> 4 = 1 Nurse to Baby <input type="checkbox"/> 5 = 1 Nurse to Baby or more babies <input type="checkbox"/>

PART THREE: this part is about your belief and your conviction of Kangaroo skin-to skin care. Before answering the question, you can answer the follow:

1 0	Have you ever heard about Kangaroo skin-to-skin care? <input type="checkbox"/> Yes <input type="checkbox"/> No			
1 1	Do you know any information about kangaroo skin-to skin care? yes <input type="checkbox"/> No <input type="checkbox"/>			
1 2	You have any certificate about kangaroo care? yes <input type="checkbox"/> No <input type="checkbox"/>			
1 3	Have you any apply kangaroo care for your child yes <input type="checkbox"/> No <input type="checkbox"/> If No, why.....			
1 4	10- Have you practice on Kangaroo care? <input type="checkbox"/> Yes what type of practice----- ----- what is the duration of practice? <input type="checkbox"/> No Why not.....			
N o	Personal beliefs	Agree	disagree	Sometimes agree
1 5	All neonatal babies should be allowed to collaborate KC			
1 6	Only low birth weight and premature babies should take place of KC			
1 7	Babies on ventilator should not be allowed for KC			

18	KC should not have allowed babies with IV fluid treatment			
19	KC should not be allowed babies with IVF treatment			
20	Parents should be a part of the procedure of KC			
21	Parents should practice on KC			
22	KC promote connection between parent and baby			
23	KC cause result in discontinue patient care			
24	KC takes a lot of nurse's time			
25	I believe KC useful only for breast feeding			
26	KC is not practical with some unstable babies			
27	KC improve the quality of health services			
28	All parents should approach KC in NICU			
29	Collaboration between the nurse and the parent's is essential during KC.			
30	KC will improve baby's outcome			
31	Parents more comfortable for caring their babies during KC			
32	Belief father should share kangaroo care procedure			

RART FOUR: these questions It depended on the qualification of your knowledge on Kangaroo care

No		Yes	No
33	Have you ever done KC procedure alone or with others or only see it? <input type="checkbox"/> I did it alone <input type="checkbox"/> I did it with others <input type="checkbox"/> I only saw it		
34	KC shows satisfied for babies		
35	KC decrease oxygen saturation		
36	KC procedure helps baby's temperature regulation		
37	KC make babies deep sleeping and increase the duration and quieter		
38	Mothers are more comfortable and decrease of stress during KC		
39	KC can reduce apnea and regulate breathing of newborn babies		
40	KC is suggested to babies within 28 weeks		
41	Babies with KC application have earlier breast feeding		
42	Increased of infection within KC procedure		
43	KC Increase the confidence of the mother in breastfeeding		
44	KC reduce crying of baby		
45	KC reduce pain in baby		
46	KC can help to short stay in hospital		
47	KC can reduce mortality and morbidity, newborn babies		

PART FIVE: These questions are related to barriers that which direction to nurse procedure for KC In maternity hospital. Your answer will be in three options.

No	Barriers KC	Very effective	effective	Sometimes effective	Do not know the effect	No effective
48	The hospital system does not allow for KC procedure.					
49	Medical staff unwilling to allow KC					
50	Advanced practice nurses not allow to KC					
51	Lack of nurse's knowledge about KC					
52	Nurses feel that KC is an extra load beside their work					
53	Nurses feel that KC makes difficult to administer care					
54	Insufficient practicing and KC program effect on ability of nurse's activity confident of KC					
55	Insufficient time for family care					
56	Believe that technology like incubator is better than KC					
57	Increase accidental falling during the procedure					
58	Lack of nurse /midwives staff to parents participating KC					
59	Parents lack of knowledge about KC					

60	Mothers were less likely to accept KMC					
61	Parents reported that they were simply told to preform KMC without explanation why or how to do					
62	Caregiver perceived that their newborn did not enjoy KMC					
63	In hot climate environment, infant may become irritable					
64	Caregivers not comfort being able to see newborn during KC					
65	Mothers lack of bonding with the infant due to fear, anxiety, stigma about having a preterm infant					
66	Parents refuse to keep the baby at all					
67	Parents reluctance for doing KC procedures					
68	Insufficient private places for parents to do KC					
69	Difficulty to assess baby's readiness and changes					
70	Difficulty of KC of babies with chest tubes					
71	Difficulty of KC of babies with ventilation					
72	Different language miss understanding with parents					
73	The nurse herself effused to do KC procedure					

حكومة إقليم كردستان / العراق
وزارة الصحة
المديرية العامة لصحة اربيل
قسم التخطيط



حكومة إقليم كردستان / عراق
وزارة الصحة
بهرێۆهه رایهتی گهستی ته ندرۆستی ههولێر
بهشی پلان

Kurdistan Region Government/ Iraq
Ministry of Health
General Directorate of Health – Erbil

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Directorate of Health - Erbil
Director Bureau

To: Whom it may concern.
Subject: Study Abroad.

Dear Sir/Madam

We would like to inform you that we accept the student (Narmin Muhammed Omer) master student in nursing to do her thesis in our hospital to complete her master degree.

Regards

Dr. Chato Muhammed Amin
Acting General Director
General Directorate of Health - Erbil

Dr. Chato Muhammed Amin Muhammed
Director General DOH - Erbil

أقليم كردستان
اربيل-تقاطع
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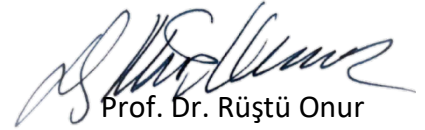


**YAKIN DOĐU ÜNİVERSİTESİ
BİLİMSEL ARAŞTIRMALAR ETİK
KURULU**

**ARAŞTIRMA PROJESİ DEĐERLENDİRME
RAPORU**

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Yakin Dođu Üniversitesi Hemşirelik Fakültesi öğretim üyelerinden Yrd. Doç. Dr. Serap Tekbaş'ın sorumlu araştırmacısı olduđu, YDU/2020/78-1065 proje numaralı ve “**Assessment of Nurses' Knowledge, Beliefs and Barriers Regarding to Kangaroo Care in Erbil.**” başlıklı proje önerisi kurulumuzca online toplantıda deđerlendirilmiş olup, etik olarak uygun bulunmuştur.



Prof. Dr. Rüstü Onur

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