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Maternal Experiences of Providing Skin-to-Skin Contact to Pre-term Infants in a Neonatal Intensive Care Unit in Jordan

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ABSTRACT

Background: Skin-to-skin contact (SSC) has been known to improve the mother-infant attachment process with a variety of positive outcomes. ***Objectives****:* This qualitative study aimed at exploring the Jordanian mothers' experiences in proving direct SSC to their pre-term infants in one Jordanian neonatal intensive care unit (NICU) after the introduction of this care approach for the first time. ***Design and Methods****:* A descriptive phenomenological research was conducted using semi-structured interviews with a purposive sample of 10 Jordanian mothers who provided SSC to their pre-term infants in an NICU. ***Results***: Three themes emerged from the data analysis. The first theme described how SSC has the power of physical closeness, in which SSC created a change from an anxiety state to a serenity state, as well as a positive 'back to the womb' feeling for mothers and their infants. The second theme described how SSC enhanced motherhood by promoting the mothers' feelings as mothers, facilitating bonding and promoting breastfeeding. The third theme identified was the barriers to providing SSC in Jordanian NICUs. ***Nursing Implications****:* SSC was found to have positive outcomes for both mothers and their neonates. SSC can enhance positive psychological (serenity and relaxation) and physiological (enhancing the respiration of neonates and promoting breastfeeding) outcomes. Ongoing support and counseling from health-care providers are essential to maximizing the benefits of SSC practice.

Keywords: Skin-to-skin contact, Experiences, Mothers, Neonates, Neonatal intensive care unit.

What does this paper add?

1. SSC has positive outcomes for both mothers and their neonates.
2. SSC may help parents and their neonates enhance positive psychological (serenity and relaxation) and physiological (enhancing the respiration of neonates and promoting breastfeeding) outcomes.
3. Some barriers to implementing SSC that need to be addressed are lack of privacy in the NICU and cultural barriers to fathers' participation.

Background

Kangaroo mother care (KMC) is a cost-effective approach that involves many elements including placing the pre-term or low birth-weight (LBW) infant in skin-to-skin contact (SSC) on the mother's bare chest, breastfeeding and early discharge from the hospital (Chan et al., 2016; Conde-Agudelo & Díaz-Rossello,

2016a). SSC has been known to improve the mother-infant attachment process with a variety of positive outcomes. Literature has recommended that SSC should be performed daily during NICU admission with a duration of at least one hour until a deep-sleep state occurs (Smith et al., 2012; Shattnawi & Al-Ali, 2019) and is recommended in both low-and high-tech NICU settings (Anderze, 2014; Safari et al., 2018).

Several positive outcomes of SSC have been described in the literature. These include enhanced emotional bonding and attachment process between mothers and their babies, optimum physiological stabilization of the infant and adaptation to the extra-uterine life, decreased maternal stress related to infants' hospitalization, reduced incidence of hypothermia, lower incidence of infectious disease and shorter length of stay for infants in the hospital (Cho et al., 2016; Conde-Agudelo & Díaz-Rossello, 2016b; Tully et al., 2016; Wang et al., 2021). Other studies reported that SSC early in the postpartum period improved maternal positive feelings toward breastfeeding practice and fostered greater maternal empowerment (Svensson et al., 2013; Safari et al., 2018). The empowering effect of SSC is demonstrated by improved competence in caring for infants, stronger bonding and improved role satisfaction (Potgieter & Adams, 2019).

Despite the overwhelming evidence confirming the benefits of KMC and SSC for both mothers and their infants, this care approach is not routinely implemented in the majority of Jordanian hospitals. A previous study has reported that nurses' uncertainty about the effectiveness of SSC might result in a lack of confidence in supporting this care approach in Jordanian NICUs (Shattnawi et al., 2019). In addition, although Jordanian nurses support the initial SSC between mothers and their newborn infants immediately after birth, they identified heavy workload, time constraints, staff shortage, lack of training and inappropriate settings as barriers to implement SSC in their practice (Shattnawi, 2017; Shattnawi et al., 2019). Staff shortage, time constraints, difficulty in deciding on eligibility for SSC, infant safety and interference with clinical procedures were identified as barriers to the implementation of SSC in NICUs by other researchers as well (Alenchery et al., 2018). NICUs in Jordan often have a more child-centered care environment, where parents are considered visitors (Shattnawi, 2015). The NICUs are designed to accommodate the high-tech environment, which restricted family involvement and created a barrier to the implementation of SSC (Shattnawi, 2017). The high-tech open physical environment also can create fear in the parents, discouraging them to be engaged in the care. In this premise, when mothers get an opportunity for SSC, their experience is unique and worth exploring.

A large body of published literature on the KMC has focused on the effect of SSC on the physiological outcomes of newborns. Only a few studies have explored mothers' experiences of SSC, especially when implemented and experienced for the first time. This qualitative study is part of a larger KMC implementation project in Jordan. It aims to explore the Jordanian mothers' experiences of SSC to their pre-term infants in a Jordanian NICU after the introduction of the practice of KMC.

Methods

Design and Setting

A descriptive qualitative design was used for this study. This design was chosen, because it would provide an in-depth, accurate and comprehensive description of the essence of the mothers' real-life experiences of providing SSC to their pre-term infants, particularly when little is known about the phenomenon under study in the Jordanian context (Doyle et al., 2020). This qualitative study is part of a multi-stage project that involved both quantitative and qualitative methods (Shattnawi & Al-Ali, 2019; Shattnawi et al., 2019). The purpose of this part of the project was to explore the mothers' experiences of providing SSC to their pre-term/ LBW infants, utilizing a qualitative approach. The study was carried out in a high-tech, level III 30-bed NICU in a 678-bed referral hospital in northern Jordan. The study was approved by the Institutional Review Boards (IRBs) of the primary researcher's university and the hospital.

Sample and Sampling Procedure

A purposive sample of mothers who agreed to participate in the study was utilized. Mothers of stable pre-term infants (gestational age between 28-36 weeks), who participated in the first stage of this project and provided SSC for their infants, were then interviewed after obtaining a second consent. The following inclusion criteria were applied: healthy mothers of medically stable pre-term infants (those who can breathe unassisted and have no major health concern), who are

able to communicate in Arabic and who had provided SSC more than 5 times. Mothers of pre-term infants with high-risk health conditions and/or receiving respiratory therapy with a ventilator were excluded. Mothers who met the inclusion criteria were approached in person by the primary researcher and were invited to participate. While the original plan was to recruit 15 mothers, data saturation was achieved after 10 interviews. When no new information was gained through further interviews, further recruitment was discontinued. The research team did not know any of the women who participated prior to the invitation. No incentives were given to any of the participants.

Data Collection

Data was collected using face-to-face in-depth interviews to capture the mothers' experiences of SSC approach within the NICU. Each mother was informed about the purpose of the study and was offered full information about options of withdrawal at any stage of the interview. Semi-structured, open-ended questions were used, which allowed the mothers to reflect on their personal experiences of being part of their infants' care. The interviews were conducted in a place and time convenient to the participants, where a private conversation was feasible. Demographic data was collected from the mothers and included the mother's age, number of children, level of education, details about the child in the NICU (age, weight and gender), number of SSC sessions and mode of delivery. An interview guide was used to direct the interviews, which was developed based on the previous literature and was updated based on the initial analysis of the first interviews. The researchers are doctorally prepared faculty members who are fluent in Arabic language, familiar with the Jordanian culture and had experience in newborn care and qualitative research. All three researchers were present at all interviews and had specific roles. After the initial introduction and verification of the consent, the primary researcher started with a general opening question "tell me about your experience of the SSC with your infant". Additional questions, such as "how did you feel when providing skin-to-skin contact for your infant?" were asked depending on the flow of the interview. Probing questions, such as "please, help me understand that" or "tell more about that" were employed when more clarification was needed. Each interview took approximately 40-50 minutes. All the interviews were conducted between March and August 2017 and most of the interviews were conducted in the evening.

All interviews were recorded using a digital audio recorder with the woman's consent. Interviews were conducted in Arabic, manually analyzed, independently audited and validated by the co-PI before finalizing the themes. Pseudonyms and numbers were assigned to the participants. All the data was stored in a password-protected computer and confidentiality and anonymity were ensured. Data was transcribed and anonymized to ensure confidentiality and privacy.

Data Analysis

All interviews were audio-recorded and were conducted in Arabic. The recordings were transcribed, cleaned and translated into English for analysis. Back-translation was performed to validate the integrity of the translation by the primary researcher who is fluent in both Arabic and English. Thematic analysis was used to analyze the data (Braun & Clarke, 2006). First, the researchers familiarized themselves with the data by actively reading and re-reading through the entire transcripts before coding and searching for meaning. Each researcher independently read and re-read the transcripts. Second, an initial list of codes was developed by each researcher independently. Third, after coding, the researchers met, compared the codes, analyzed and formed themes and sub-themes. In the next phase, the researchers reviewed the transcripts, codes and themes, debated, developed a consensus on different themes and described how they fit together. In the fifth phase, the researchers worked to define and further refine the final themes.

Trustworthiness

Trustworthiness was ensured for the study. The themes that emerged were shared with the participants (member-checking) to confirm that the findings were reflective of their experiences to ensure credibility. An external auditor also was consulted to validate the codes and themes identified by the researchers. This helped achieve confirmability that the findings are derived from the data. In addition, transferability was ensured through a thick description of the findings and an audit trail that allows the readers to understand how we arrived at the themes that may enable them to replicate the process.

Results

Ten mothers participated in the study. Their demographic data is given in Table 1. All the mothers performed SSC at least five times at varying times during the day. There was one mother with twins and she placed both infants together when she provided SSC.

Table 1. Participants' characteristics

	Mothers' age	Number of children	Educational level	Child's gestational age (weeks)	Child's weight	Child's gender	Number of SSC sessions	Type of birth
1	30	2	Bachelor	36	2500	F	8	CS
2	36	4	Diploma	31	1755	F	5	CS
3	36	6	Diploma	36	2400	M	7	CS
4	24	1	Bachelor	33	1770	M	6	NVD
5	36	5	Master	36	2550	M	7	NVD
6	37	5	Master	36	2600	M	5	NVD
7*	30	2	Bachelor	32	1400	M/F	5	CS
8	28	3	Bachelor	28	1030	F	6	CS
9	32	3	Secondary school	35	1900	F	7	NVD
10	31	3	Bachelor	36	2500	M	8	NVD

Note: N=10; M=Male; F=Female; CS=Caesarian Section; NVD=Normal Vaginal Delivery; * indicates mothers of twins and considered as a single experience.

Three themes emerged from the data analysis (Table 2). The first theme was the power of proximity. In this, the women indicated that SSC has the power of physical closeness, in which SSC created a change from an anxiety state to a serenity state and a positive 'back to the womb' feeling for the mothers and their babies. The second theme described how the SSC enhanced motherhood through promoting the mothers' feelings as mothers, facilitated bonding and promoted breastfeeding. Barriers to providing SSC in Jordanian NICUs was the third theme. Details of each theme are described below.

Table 2. Themes and sub-themes

Themes	Sub-themes
The power of physical proximity	▪ From anxiety to serenity ▪ 'Back to the womb'
Enhancing motherhood	▪ Feeling like a mother ▪ Facilitating bonding ▪ Promoting breastfeeding
Barriers to provide SSC	▪ Lack of privacy ▪ Cultural barriers to father involvement

Theme 1: The Power of Proximity

From Anxiety to Serenity

The mothers described how providing SSC introduced a "wonderful" feeling of comfort, relief, happiness, rest and safety, as well as a state of serenity that eased their nervousness. This is evident from some of their statements (interviewee number is given in brackets). For example, one mother described these moments as peaceful moments: *"I felt safe [it is really safe for me], serene and peaceful"* (2). Another mother described the period of separation as being the worst:

"Honestly, the period of being separated from him was the worst 10 days in my life, I was emotionally unstable, I used to wake up at night feeling that I was supposed to be holding my baby who isn't on my side anymore. The baby needs to be at his mother's side always" (4).

A mother of twins described her feelings when she put them together on her chest for the first time: "*When I put them on my chest, I burst into tears. It was an indescribable feeling"* (7).

Another mother indicated that SSC created a peaceful state:

"A lot of pleasure and an indescribable feeling to give your love and affection to your baby just by holding him; the moment you hold him, he calms down and you feel that he enters a state of peace and comfort and sleeps peacefully" (3).

The SSC created an immediate mood change for some mothers: "*Your mood becomes much better immediately…I mean it's like that the whole world is in a place and my baby and I are alone in another world" (10).*

Not only does SSC promote calmness and serenity for the mothers, but also this was the case for the babies as perceived by the mothers. The mothers described an immediate change in their babies' state, from being anxious and fussy to a 'peaceful' and calm state: *"He immediately got quieter when they put him on my chest; I used to wake him up to give the feed, he then goes back to his sleep and they return him to the incubator in a peaceful state" (3).*

They have also noticed a change in their babies' physical state: *"He looks healthier; he did not need oxygen when in this position" (3).*

They felt that this position has positive effects on their infants even when they are in pain or hungry: *"When he cries, I carry him into my chest; he immediately calms down, becomes calmer and calmer … even if he is hungry or in pain. As soon as his head touches my chest, he enters a quiet state" (5).*

'Back to the Womb'

Mothers described holding their babies in this position as if the baby was returned to their womb, which put them in a '*beautiful and nice calming*' state. *"I felt relief when I held him, a beautiful, nice calming feeling. It was like he returned inside me. I felt more kindness towards him and had a beautiful and wonderful feeling (6).*

The 'back to womb' feeling was also perceived to be felt by their babies, as they responded immediately to the SSC in a very positive way. According to the majority of the mothers, SSC created a positive atmosphere for the baby as if they were 'back in the womb'. The mothers described how SSC has affected their infants and put them in a calm, quiet and resting state. Their infants seemed to be feeling safe, happy and relaxed.

"She feels safe on my chest as if she is back in my womb and she feels my care and love" (2).

Theme 2: Enhancing Motherhood

Feeling Like a Mother

The mothers described how SSC was a transitional practice from being totally detached to being 'like a mother' and being involved in providing care. Mothers described the SSC experience as a significant moment that made them 'feel like a mother'. One mother described how practicing SSC gave her a feeling of closeness and enhanced her motherhood feeling:

"*When my baby is asleep on my chest, I feel that I am her mother and that I am closer to her" (1).*

Some mothers suggested that being detached from their infants was tiring and unacceptable, but after they initiated SSC, the mothers began to have feelings that the baby belonged to them:

"*The feeling was very tiring, especially because I can't hold or touch him. I can't understand that a mother is not being able to hold her baby, but today when they put him on my chest, I felt that he is still in my womb and I am still pregnant and started to feel like a mother, the motherhood feeling that I heard about. I felt that he is mine now. I want to take him with me home" (4).*

Besides feeling like a mother, SSC was a good practice for the mothers to improve their confidence in taking care of their infants. They reported a better understanding of the baby's needs and a more relaxed mode when giving care to the baby: *"I have more confidence in myself now. I can take care of him here, but still I am not sure how to deal with him at home" (4).*

Facilitating Bonding

The mothers felt that placing their infants skin-to-skin has improved bonding with their infants. One mother described her feelings as '*a very good feeling'.*

Mothers described how practicing SSC increased their attention to the baby, improved relationships and "*got them to know the baby better*". This mother added: "*My attention to her and her cues has increased and our relationship has improved*" (1).

SSC has also increased the mothers' willingness to visit their children more often and to participate in their care. A mother stated that because of SSC, she decided to visit her infant more frequently. "*I felt more connected to him than before. I felt closer to him. I decided to come to the NICU every day so I can hug, hold and 'breastfeed' him* (3). This connection eased their tension about holding their child. *"There is more proximity between us and more interaction while I am holding him to my chest. It is not like the rest of my children; it is a different link" (5).*

Promoting Breastfeeding

The connection between SSC and successful breastfeeding is broadly recognized. Our results also suggest that SSC greatly influences and supports early and successful breastfeeding. The mothers stated that SSC helped them in initiating breastfeeding for their pre-term infants and stimulated milk production.

"*This is the only one of my children that I have a lot of milk for her, not like any of my other children who have stopped breastfeeding because of the lack of breast milk…" (9).*

Mothers described that providing SSC made them want to breastfeed. One mother said "*This time I felt more relaxed and I felt that I needed to breastfeed him. I feel the 'letdown'* (4).

Theme 3: Perceived Barriers to Provide SSC

Although mothers reported positive aspects of providing SSC for their pre-term infants, some have reported barriers to the practice of SSC in the NICU. These barriers include a lack of privacy in the NICU and cultural barriers to the father's involvement.

Lack of Privacy

The mothers reported some privacy issues that made them feel uncomfortable during the SSC sessions. At the time of the study, there was no private space in the NICU for SSC sessions. There was no convenient space next to the infant incubator for the mother to stay and SSC was never encouraged. The crowded space in the NICUs with incubators and other assistive devices is not conducive for private personal time with the infants. Even if a screen is provided for partial privacy, the cultural aspect of modesty and the potential presence of other men discouraged mothers from performing SSC. The mothers expressed that it was difficult to practice SSC because of lack of privacy:

"*It's not enough to have a screen; mothers need to have more space and more privacy so that they can feel more comfortable" (2).*

The mothers expressed discomfort as they might be exposed to a sudden entrance of a stranger to the unit while learning and practicing SSC:

"*I prefer to do it in a private room, in a bed where you can relax more and do not have to worry about someone (male) who may enter the room" (2).*

Cultural Barriers Related to Fathers' Participation

The NICU lacked space to accommodate both the parents; thus, the presence of fathers in the unit was rare. Fathers were not offered any support to practice SSC. Some mothers reported a desire for fathers' involvement in SSC. However, they suggested that the fathers' involvement is restricted by the cultural perception that infant care is primarily the mother's responsibility and that providing SSC by the father is '*unacceptable'*.

"I learned that fathers can do it too, but it is not possible here at the unit. You know it's not acceptable here; you know the culture" (2).

The mothers suggested that fathers can learn SSC so that they can practice it at home and therefore be involved in the child's care:

"But he can do it at home. He may get to know the baby better and know how to deal with him" (2).

Another mother said*: "I wish they [nurses] can teach the father to do this type of care; he then can do it at home and may free me and give me some time to take care of the other children" (5).*

While the mothers expressed barriers to SSC, such as lack of privacy and paternal presence, other barriers, such as knowledgeable staff to support them and lack of time for nurses, might have affected SSC facilitation as well.

Discussion

Ten mothers shared their experiences of SSC with their pre-term babies in the NICU. They described the positive outcomes of SSC and the barriers to SSC. The

findings of the current study are crucial to understanding the mothers' experiences in providing direct SSC to their pre-term infants. This in turn would provide healthcare providers and policymakers with appropriate research evidence regarding integrating SSC practice in NICUs. It is worth noting that the literature on SSC focused on quantitative research rather than on the qualitative aspect of SSC in the Mediterranean region. Unless the essence of the experience is explored, the information on feelings and experience will not be available for others to learn from. Additionally, KMC and SSC are still under-researched topics in this region and to our knowledge, this study is one of a few studies conducted on SSC in this region.

It is well known that separating mothers from their pre-term neonates may have negative psychological outcomes; i.e., anxiety, stress and lack of control for both mothers and neonates (Obeidat et al., 2009). In the current study, mothers reported that proximity and closeness to their neonates during SSC eased their feelings of anxiety and nervousness as well as those of their neonates'. Baylis et al. (2014) and He et al. (2021) also reported similar findings.

The SSC practice has frequently been associated with the improvement of neonates' hemodynamic state (Korraa et al., 2014; Shattnawi & Al-Ali, 2019). The current study is not an exception; mothers reported that the respiration of their infants has improved when they put them in an upright position during SSC, which in turn reduced their need for oxygen therapy. Placing neonates in an upright position during SSC would push their diaphragms down and thereby ease the breathing effort and improve pulmonary functions (Parmar et al., 2009; Kato et al., 2021; Lee et al., 2021).

In congruence with previous literature (Leonard & Mayers, 2008; Athanasopoulou & Fox, 2014; Stevens et al., 2014; Cho et al., 2016), our study revealed important benefits of SSC, such as enhanced motherhood feelings and mother-baby emotional bond. The reason behind this might be the increased levels of oxytocin hormone in the mother. Vittner et al. (2018) found that 60 minutes of SSC increased the level of oxytocin hormone in the mother's saliva. Similarly, in the current study, mothers reported a calming and relaxing effect of SSC on their infants. This may be because of the increased oxytocin-hormone level in the infant's plasma (Weber et al., 2018). Another interesting finding is the strong emotional effect of SSC on mothers. Participants described this feeling as if the neonate would get "back to the womb". Furthermore, some participants reported that SSC positions promoted breastfeeding and even helped initiate it for some mothers. One of the mothers reported that SSC enabled her neonate to recognize her smell, and this, in turn, stimulated milk production. These findings are consistent with previous research (Safari et al., 2018; Karimi et al., 2019; Wang et al., 2021).

Although women in our study identified positive outcomes of SSC on both neonates and mothers, they described some barriers too. These include lack of privacy in the NICU and cultural barriers for fathers to practice SSC. The layout of the NICU is in an open floor plan, where curtains/screens are provided for some privacy. The culture of Jordan is unique in that women must be modest and breastfeeding or performing SSC in the presence of others, particularly men, is not appreciated (Hamlan et al., 2015). To thwart the effect of these barriers, it is ideal to provide NICUs with private rooms for mothers to practice KMC with their neonates. The current NICU layout is not an option and even if a private room close to the unit is available, monitoring the baby during SSC is not feasible. However, using appropriate gowns and screens may help maintain modesty and privacy for mothers. In addition, raising awareness through the media and community meetings is crucial to encourage fathers to get involved in this practice (Blomqvist et al., 2012).

Barriers to practicing SSC for full-term neonates in NICUs are multi-factorial and some of them are similar to those for pre-term neonates. NICU nurses reported that lack of privacy hindered practicing KMC for neonates in Saudi Arabia (Al-Shehri & Binmanee, 2021). Caregivers' preference for traditional baby-care practices has hindered the adoption of SSC for their newborns (Boo & Jamli, 2007). Resistance of the health-care personnel towards practicing SSC at birth also was reported as a barrier to practicing SSC later (Kymre, 2014). In contrast, Al-Shehri and Binmanee (2021) reported that the majority of NICU nurses (92.8%) encouraged mothers to practice KMC. Although the shortage of staff and workload are barriers reported by healthcare providers (Alenchery et al., 2018), their support is crucial to the practice of SSC in NICUs (Smith et al., 2017). However, asking parents to practice SSC is not sufficient without appropriate explanation and adequate support with positioning and close monitoring (Lemmen et al., 2013).

Implications for Nursing

In light of our findings, efforts should be made to integrate KMC and SSC in NICUs. Nurses should identify time to support parents to perform SSC. Emotional preparation and actual support to practice SSC must be provided. Regular in-services to nurses are necessary to equip them to highlight the benefits of SSC and the importance of SSC by fathers. Men must also be educated on this topic for making appropriate changes. Strategies to enhance NICU nurses' knowledge and skills to improve their counseling abilities on the benefits of SSC to integrate KMC in their practice must be emphasized. Incentives for such practice can also provide an impetus for nurses. Additionally, nursing students must be taught the importance of SSC, so that they can use their skills to support parents. This can help nurses in times of nurse shortage. Nurses must feel comfortable to support SSC for stable pre-term infants, so that they can develop the confidence to support SSC for sicker infants as well.

This study has implications for nursing research. Although our study findings contribute to the body of knowledge on mothers' experiences with SSC during their stay in the hospital with their neonates, we recommend further research to be conducted to explore their ongoing practices (i.e., continuity and proper practice of SSC after discharge from the hospital). Additionally, nurses can explore the length of stay of infants who had SSC and who did not have SSC and compare their findings. Duration of breastfeeding and incidence of infections later in life also can be examined. Research exploring the experience of NICU nurses in facilitating SSC also can shed light on the barriers that they experience. This can help administrators address those barriers and impact outcomes. Timing of initiation of SSC and infant outcome on weight gain, length of stay and transition to home can also be investigated. This study has implications for policy and advocacy as well.

Administrators and policymakers must advocate for structural changes and design baby-friendly NICUs to provide private spaces to facilitate SSC. This is very critical in the Jordanian context, where families follow traditions of modesty and privacy. Overall, it is essential to raise the awareness of parents, health-care workers and policymakers about the importance of SSC to promote neonates' health and ultimately family health.

Strengths and Limitations

The main strength of the study is that the women were willing to share their experiences. Interviews in Arabic allowed them to express their feelings and experiences uncorrupted. They all had similar experiences and their reports align well with those of previous similar studies.

As with other qualitative studies, this study has some limitations. This study was conducted only in one NICU in Jordan. The findings may not be comparable to women in other regions in Jordan. Mothers' experiences may not be the same as those in other countries or cultures. The experience of mothers in Jordan or the Middle East cannot be compared to that of mothers in other parts of the world because of the unique family and cultural norms and traditions. As with other qualitative studies, the sample size is small. This study was not intended to draw conclusions or make generalizations, but rather to explore the unique experiences of Jordanian mothers who provided SSC for their pre-term infants.

Conclusions

SSC was found to have positive outcomes for both mothers and their neonates. SSC can help parents and their neonates enhance positive psychological (serenity and relaxation) and physiological (enhancing respiration of the neonates and promoting breastfeeding) outcomes. Thus, continuous support and counseling from health-care providers are essential to maximize the benefits of SSC practice.

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Conflict of Interest

Authors have no conflict of interest to declare.

REFERENCES

Alenchery, A. J., Thoppil, J., Denis Britto, C., Villar De Onis, J., Fernandez, L., & Rao, P. N. S. (2018). Barriers and enablers to skin-to-skin contact at birth in healthy neonates-a qualitative study. *BMC pediatrics, 18* (48). https://doi.10.1186/s12887-018-1033-y.

Al-Shehri, H., & Binmanee, A. (2021). Kangaroo mother care practice, knowledge and perception among NICU nurses in Riyadh, Saudi Arabia. *International Journal of Pediatrics and Adolescent Medicine*, Elsevier, *8* (1), 29-34. https://doi.10.1016/J.IJPAM.2019.11.003.

Anderze, A. (2014). Parental experiences of providing skin-to-skin care to their newborn infant-Part 1: A qualitative systematic review. *International Journal of Qualitative Studies on Health and Well-being*, *9*.

Athanasopoulou, E., & Fox, J. (2014). Effects of kangaroo mother care on maternal mood and interaction patterns between parents and their pre-term, low birth-weight infants: A systematic review. *Infant Mental Health Journal*, *35* (3), 245-262. https://doi.10.1002/imhj.

Baylis, R., Ewald, U., Gradin, M., Hedberg Nyqvist, K., Rubertsson, C., & Thernström Blomqvist, Y. (2014). First-time events between parents and pre-term infants are affected by the designs and routines of neonatal intensive-care units. *Acta Paediatrica* (Oslo, Norway), *103* (10), 1045-1052. https://doi.10.1111/APA.12719.

Blomqvist, Y.T., Rubertsson, C., Kylberg, E., Jöreskog, K., & Nyqvist, K.H. (2012). Kangaroo mother care helps fathers of pre-term infants gain confidence in the paternal role. *Journal of Advanced Nursing, 68* (9), 1988-1996. https://doi.10.1111/J.1365-2648.2011.05886.X.

Boo, N.Y., & Jamli, F.M. (2007). Short duration of skin-to-skin contact: Effects on growth and breastfeeding. *Journal of Paediatrics and Child Health*, *43* (12), 831-836. https://doi.10.1111/J.1440-1754.2007.01198.X.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3* (2), 77-101. https://doi.10.1191/1478088706qp063oa.

Chan, G.J., Valsangkar, B., Kajeepeta, S., Boundy, E.O., & Wall, S. (2016). What is kangaroo mother care? Systematic review of the literature. *Journal of Global Health*, *6* (1). https://doi.10.7189/jogh.06.010701.

Cho, E.-S., Kim, S.-J., Kwon, M. S. Cho, H., Kim, E.H., Jun, E.M., & Lee, S. (2016). The effects of kangaroo care in the neonatal intensive-care unit on the physiological functions of pre-term infants, maternal-infant attachment and maternal stress. *Journal of Pediatric Nursing*, *31* (4), 430-8. https://doi.10.1016/j.pedn.2016.02.007.

Conde-Agudelo, A., & Díaz-Rossello, J.L. (2016a). Kangaroo mother care to reduce morbidity and mortality in low-birthweight infants. *The Cochrane Database of Systematic Reviews*, *8* (8), CD002771. https://doi.10.1002/14651858.CD002771.pub4.

Conde-Agudelo, A., & Díaz-Rossello, J.L. (2016b). Kangaroo mother care to reduce morbidity and mortality in low-birthweight infants. In: Conde-Agudelo, A. (ed.), The *Cochrane Database of Systematic Reviews*. Chichester, UK: John Wiley & Sons, Ltd. https://doi.10.1002/14651858.CD002771.pub4.

Doyle, L., McCabe, C., Keogh, B., Brady, A., McCann, M. (2020). An overview of qualitative descriptive design within nursing research. *Journal of Research in Nursing*, *25* (5), 443-455. https://doi.10.1177/1744987119880234.

Hamlan, A.M., Bani Khaled, M.H., & Habahbeh, A.A. (2015). Perceived barriers of breastfeeding among Jordanian mothers. *Jordan Medical Journal*, *49* (3), 155-165. https://doi.10.12816/0024907.

He, F.B., Axelin, A., Ahlqvist-Björkroth, S., Raiskila, S., Löyttyniemi, E., & Lehtonen, L. (2021). Effect of close collaboration with parents' intervention on parent-infant closeness in NICU. *BMC Pediatrics*, *21* (1). https://doi.10.1186/S12887-020-02474-2.

Karimi, F.Z., Sadeghi, R., Maleki-Saghooni, N., & Khadivzadeh, T. (2019). The effect of mother-infant skin-to-skin contact on success and duration of first breastfeeding: A systematic review and meta-analysis. *Taiwanese Journal of Obstetrics & Gynecology*, *58* (1), 1-9. https://doi.10.1016/J.TJOG.2018.11.002.

Kato, Y., Takemoto, A., Oumi, C., Hisaichi, T., Shimaji, Y., Takaoka, M., Moriyama, H., Hirata, K., & Wada, K. (2021). Effects of skin-to-skin care on electrical activity of the diaphragm in pre-term infants during neurally adjusted ventilatory assist. *Early Human Development,* Elsevier, *157*, 105379. https://doi.10.1016/J.EARLHUMDEV.2021.105379.

Korraa, A.A., El Nagger, A.A., Mohamed, R.A., & Helmy, N.M. (2014). Impact of kangaroo mother care on cerebral blood flow of pre-term infants. *Italian Journal of Pediatrics*. BioMed Central. Ltd., *40* (1), 83-83. https://doi.10.1186/S13052-014-0083-5.

Kymre, I.G. (2014). NICU nurses' ambivalent attitudes in

skin-to-skin care practice. *International Journal of Qualitative Studies on Health and Well-being*, *9* (8049), 1-9. https://doi.10.3402/qhw.v9.23297.

Lee, J., Parikka, V., Lehtonen, L., & Soukka, H. (2021). Parent-infant skin-to-skin contact reduces the electrical activity of the diaphragm and stabilizes respiratory function in pre-term infants. *Pediatric Research*. https://doi.10.1038/S41390-021-01607-2.

Lemmen, D., Fristedt, P., & Lundqvist, A. (2013). Kangaroo care in a neonatal context: Parents' experiences of information and communication of nurse-parents. *The Open Nursing Journal*, *7*, 41-48. https://doi.10.2174/1874434601307010041.

Leonard, A., & Mayers, P. (2008). Parents' lived experience of providing kangaroo care to their pre-term infants: Research. *Health SA Gesondheid*. http://reference.sabinet.co.za/sa_epublication_article/health_v13_n4_a4.

Obeidat, H.M., Bond, E.A., & Callister, L.C. (2009). The parental experience of having an infant in the newborn intensive-care unit. *The Journal of Perinatal Education*, Lamaze International, *18* (3), 23. https://doi.10.1624/105812409X461199.

Parmar, V.R., Kumar, A., Kaur, R., Parmar, S., Kaur, D., Basu, S., Jain, S., & Narula, S. (2009). Experience with kangaroo mother care in a neonatal intensive-care unit (NICU) in Chandigarh, India. *Indian Journal of Pediatrics, 76* (1), 25-28. https://doi.10.1007/S12098-009-0024-2.

Potgieter, K.L., & Adams, F. (2019). The influence of mother-infant skin-to-skin contact on bonding and touch. *South African Journal of Occupational Therapy*, The Occupational Therapy Association of South Africa (OTASA), *49* (2) 11-17. https://doi.10.17159/2310-3833/2019/VOL49N2A3.

Safari, K., Saeed, A.A., Hasan, S.S., & Moghaddam-Banaem, L. (2018). The effect of mother and newborn early skin-to-skin contact on initiation of breastfeeding, newborn temperature and duration of third stage of labor. *International Breastfeeding Journal,* BioMed Central, *13* (1), 1-8. https://doi.10.1186/S13006-018-0174-9.

Shattnawi, K.K. (2015). Suspended liminality: Breastfeeding and becoming a mother in two NICUs. *International Journal of Advanced Nursing Studies*, *4* (2), 75-84. https://doi.10.14419/ijans.v4i2.4877.

Shattnawi, K.K. (2017). Healthcare professionals' attitudes and practices in supporting and promoting the breastfeeding of pre-term infants in NICUs. *Advances in Neonatal Care*, *17* (5), 390-399. https://doi.10.1097/ANC.0000000000000421.

Shattnawi, K.K., & Al-Ali, N. (2019). The effect of short duration skin-to-skin contact on premature infants' physiological and behavioral outcomes: A Quasi-experimental study. *Journal of Pediatric Nursing*, *46*. https://doi.10.1016/j.pedn.2019.02.005.

Shattnawi, K.K., Al-Ali, N., & Alnuaimi, K. (2019). Neonatal nurses' knowledge and beliefs about kangaroo mother care in neonatal intensive-care units: A descriptive, cross-sectional study. *Nursing and Health Sciences*, *21* (3). https://doi.10.1111/nhs.12605.

Smith, E.R., Bergelson, I., Constantian, S., Valsangkar, B., & Chan, G.J. (2017). Barriers and enablers of health system adoption of kangaroo mother care: A systematic review of caregiver perspectives. *BMC Pediatrics*, *17* (35). https://doi.10.1186/s12887-016-0769-5.

Smith, P., Moore, K., & Peters, L. (2012). Implementing baby-friendly practices: Strategies for success. *MCN, The American Journal of Maternal Child Nursing*. *37* (4), 228-233. https://doi.10.1097/NMC.0B013E318251054E.

Stevens, J., Schmied, V., Burns, E., & Dahlen, H. (2014). Immediate or early skin-to-skin contact after a Caesarean section: A review of the literature. *Maternal and Child Nutrition*, 456-473. https://doi.10.1111/mcn.12128.

Svensson, K.E., Velandia, M.I., Matthiesen, A.S., Welles-Nyström, B.L., & Widström, A.M. (2013). Effects of mother-infant skin-to-skin contact on severe latch-on problems in older infants: A randomized trial. *International Breastfeeding Journal*, *8* (1). https://doi.10.1186/1746-4358-8-1.

Tully, K.P., Holditch-Davis, D., White-Traut, R.C., David, R., O'Shea, T.M., & Geraldo, V. (2016). A test of kangaroo care on pre-term infant breastfeeding. *Journal of Obstetric, Gynecologic & Neonatal Nursing*. Elsevier, *45* (1), 45-61. https://doi.10.1016/J.JOGN.2015.10.004.

Vittner, D., McGrath, J., Robinson, J., Lawhon, G., Cusson, R., Eisenfeld, L., Walsh, S., Young, E., & Cong, X. (2018). Increase in oxytocin from skin-to-skin contact enhances development of parent-infant relationship. *Biological Research for Nursing*, *20* (1), 54-62. https://doi.10.1177/1099800417735633.

Wang, Y., Zhao, T., Zhang, Y., Li, S., & Cong, X. (2021). Positive effects of kangaroo mother care on long-term

breastfeeding rates, growth and neurodevelopment in pre-term infants. *Breastfeeding Medicine : The Official Journal of the Academy of Breastfeeding Medicine, 16* (4), 282-291. https://doi.10.1089/BFM.2020.0358.

Weber, A., Harrison, T.M., Sinnott, L., Shoben, A., & Steward, D. (2018). Associations between nurse-guided variables and plasma oxytocin trajectories in premature infants during initial hospitalization. *Advances in Neonatal Care : The Official Journal of the National Association of Neonatal Nurses*. *18* (1), E12-E23. https://doi.10.1097/ANC.0000000000000452.