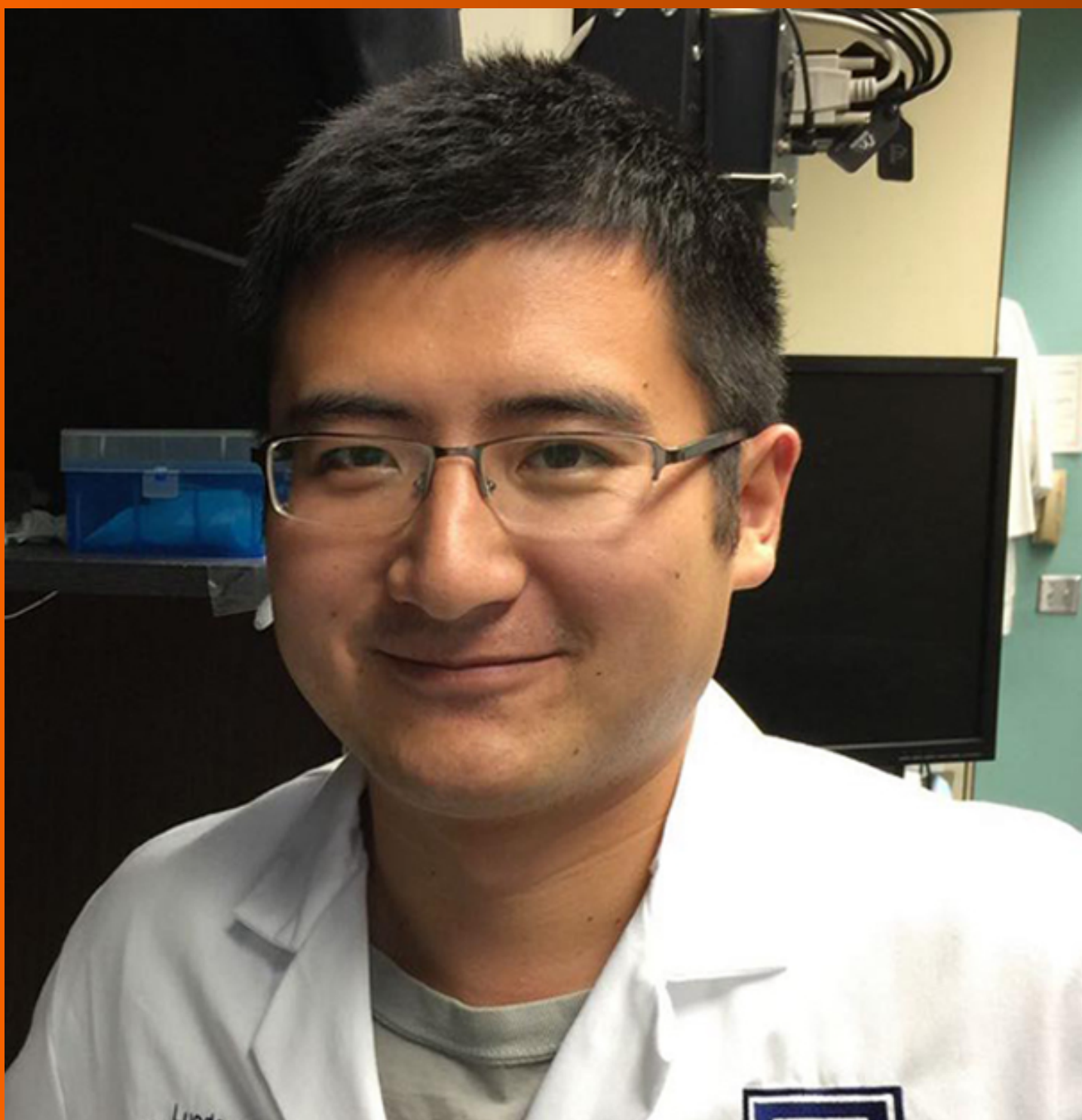


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Nurses' experiences of managing maternal anxiety during kangaroo mother care: A qualitative study in the neonatal intensive care units

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Abstract

BACKGROUND

The technologically intensive neonatal intensive care unit (NICU) environment often triggers substantial maternal anxiety. While kangaroo mother care (KMC) is a gold-standard intervention, its success depends heavily on the nurse's role in managing the mother's emotional burden and facilitating adaptation.

AIM

To explore neonatal nurses' experiences, perceptions, and strategies related to managing maternal anxiety during KMC.

METHODS

A qualitative descriptive design was employed. Data were collected through semi-structured, in-depth interviews with 15 nurses selected using criterion sampling. The data were analyzed using thematic analysis.

RESULTS

Five overarching themes emerged: Manifestations of maternal anxiety, its effects on the care process, nurses' anxiety management strategies, the emotional and professional impact on nurses, and clinical requirements for effective care. Nurses reported that anxiety most commonly stemmed from fear of harming the infant and concerns related to medical devices, often accompanied by observable emotional and physical distress. Anxiety occasionally limited participation in KMC and reduced the duration or quality of sessions. Effective management strategies included transparent information-sharing, therapeutic communication,

involvement of fathers, and peer modeling. While successful anxiety regulation enhanced nurses' professional satisfaction, environmental limitations and insufficient training that undermined professional confidence were identified as key systemic barriers.

CONCLUSION

Nurses function as critical external co-regulators who transform maternal fear into self-efficacy. Effective management requires a holistic integration of therapeutic communication, professional competence, and supportive NICU environments. Future initiatives should prioritize simulation-based training focused on the emotional dimensions of care and the ergonomic redesign of NICUs to support maternal mental health.

Key Words: Kangaroo mother care; Maternal anxiety; Neonatal nursing; Neonate; Newborn

Core Tip: This qualitative descriptive study examines how nurses in the neonatal intensive care unit address maternal anxiety during kangaroo mother care. The findings reveal that nurses are not only clinical practitioners but also emotional regulators who transform maternal fear into self-efficacy through therapeutic communication and modeling. In contrast to the predominant focus on burnout in the field, effectively managing anxiety leads to substantial professional fulfillment for nurses. The study emphasizes the importance of addressing ergonomic inadequacies in the neonatal intensive care unit and strengthening nurses' professional confidence through anxiety management training tailored to their needs.

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INTRODUCTION

The admission of premature and low birth weight infants to the neonatal intensive care unit (NICU) is a complex experience that profoundly affects not only the newborn's life but also the mother's psychological, emotional, and social adjustment processes. The NICU environment, characterized by advanced technology, intensive care routines, limited contact, and uncertainty, has been associated with increased maternal anxiety, stress, and psychological distress[1,2]. Research has demonstrated that mothers who have experienced premature birth may encounter elevated levels of anxiety, often attributable to perceived inadequacies in their capacities as parents. These inadequacies often manifest as concerns about protecting highly vulnerable infants due to their immaturity and dependence. Furthermore, these mothers may experience a sense of inadequacy in participating in their infants' care. This may adversely affect mother-infant bonding, breastfeeding processes, and long-term psychosocial outcomes[3,4].

In recent years, family-centered care approaches in the NICU have gained prominence, with practices aimed at minimizing separation between mother and baby and involving parents as active participants in care. Among these practices, kangaroo mother care (KMC) is distinguished by its low-cost, highly effective, and evidence-based. KMC involves placing the infant in skin-to-skin contact on the mother's (or father's) bare chest, typically wearing only a diaper, for prolonged and frequent periods[5-7].

A substantial body of research, including meta-analyses and systematic reviews, has demonstrated the efficacy of KMC in reducing neonatal mortality and morbidity, supporting thermoregulation, increasing breastfeeding rates, and lowering the risk of infection[5,6]. However, KMC offers benefits beyond biomedical outcomes, including improvements in maternal psychological well-being and adaptation to her parental role. A study demonstrated that KMC reduces stress levels in mothers, improves sleep quality, and alleviates anxiety symptoms[8]. Additionally, studies indicate that maternal self-efficacy is reinforced and mother-infant bonding is promoted[9].

The psychological effects of KMC extend beyond the mere act of physical contact, which is known to induce a sense of soothing. The neurobiological underpinnings of this care model can be attributed to three factors: Increased oxytocin release during skin-to-skin contact, suppression of stress hormones, and strengthening of emotional bonding. Bergman underscores the significance of a particular approach to skin-to-skin contact in perinatal care, emphasizing the utilization of oxytocin as a fundamental component of this strategy. Bergman argues that KMC should be regarded not merely as a "practice" but as a comprehensive perinatal health strategy. In this context, KMC can be conceptualized as a biopsychosocial intervention that regulates the mother's anxiety level[10]. However, the efficacy of KMC is contingent not only on its availability but also on the manner in which it is administered, the timing of its provision, the individual responsible for its delivery, and the supportive approaches utilized. The World Health Organization characterizes KMC as a transformative health innovation on a global scale, underscoring the critical role of health professionals, particularly nurses, in its widespread implementation[7]. Nurses play a pivotal role in the planning, implementation, and maintenance of KMC in the NICU. These professionals serve as mentors, providing guidance and emotional support to mothers, fostering their motivation, and offering a supportive environment.

Nevertheless, KMC does not automatically constitute a reassuring experience for all mothers. For novice mothers, those who have experienced a premature birth, or those unacquainted with the NICU environment, the practice of KMC can be accompanied by trepidations surrounding infant welfare, apprehensions regarding the execution of the procedure, and profound emotional distress. A qualitative study demonstrates that maternal perceptions and experiences of KMC are influenced by a variety of cultural, institutional, and individual factors[11]. In this context, nurses' communication style, manner of providing information, and level of emotional support play an essential role in the management of maternal anxiety.

Despite the abundance of studies in the literature addressing the effectiveness of KMC and maternal experiences, research focusing on the perspective of nurses, who play a pivotal role in managing this process, remains scarce on a global scale. While international literature has extensively documented the clinical and biomedical outcomes of KMC, qualitative evidence exploring the specific strategies and professional lived experiences of nurses in managing maternal anxiety is limited worldwide. This scarcity is particularly prominent within the Turkish healthcare context, where such qualitative explorations are even more fragmented. For instance, a study by Tas Arslan *et al*[12] revealed that KMC has positive effects on maternal knowledge level, perceptions, and bonding, while also emphasizing that obstacles in implementation are often related to a lack of professional support and guidance. However, even in the national context, there is a clear need for more in-depth research that directly captures the "voice" and management strategies of nurses.

A review of the extant literature reveals an emerging consensus on the growing significance of mental health support for families with infants admitted to NICUs. Osborne and colleagues emphasize that the admission process to the NICU is a significant source of psychological stress for families and that interdisciplinary approaches, particularly nursing-led interventions, should be strengthened to manage this stress[1]. In this context, the experiences of nurses in recognizing, normalizing, and managing mothers' anxiety during KMC can inform clinical practice.

Beyond promoting the newborn's physiological stability, KMC is a multidimensional care approach that strengthens the mother's psychological well-being and adaptation to her parenting role. However, achieving this objective is contingent upon a comprehensive understanding of the professional roles and experiences of nurses in this process. The objective of this study is to qualitatively explore and describe nurses' experiences in managing mothers' anxiety during KMC, to contribute to the development of family-centered care practices at NICUs. Moreover, the data obtained from this study can provide a foundation for the development of educational programs or guidelines intended for nurses.

The study was guided by the following research questions: Research question 1: What are nurses' accounts of their experiences managing mothers' anxiety during KMC? Research question 2: What manifestations of anxiety are observed in mothers during the KMC process? Research question 3: What is the perception among nurses regarding maternal anxiety, and what strategies are employed to address this concern? Research question 4: What are the effects of the process of managing maternal anxiety on nurses' emotional states and care approaches? Research question 5: What types of support do nurses require to effectively manage maternal anxiety?

MATERIALS AND METHODS

Research design

This study employed a qualitative descriptive design that is appropriate for providing a comprehensive summary of experiences in everyday language. This approach is widely used in healthcare research to explore practitioners' perspectives directly. Data collection followed an inductive process to allow themes to emerge from participants' narratives rather than from researchers' prior assumptions. However, interpretation of the findings was conceptually informed by Bandura's self-efficacy theory and Gross's process model of emotion regulation. These frameworks served as analytical lenses to illuminate how nurses function as "external co-regulators", transforming maternal fear into parental self-efficacy. Accordingly, the study adopted a flexible and exploratory qualitative approach.

Participants

The study group consisted of nurses working in NICUs in public or private hospitals in Türkiye. The study sample consisted of 15 nurses who met the predefined inclusion criteria.

Criterion sampling, a purposive sampling method, was employed in the selection of the sample. Criterion sampling was used to ensure that participants had direct experience with the phenomenon under study[13]. The fundamental criterion for inclusion in this study was the possession of at least one year of professional experience in a NICU, in conjunction with the implementation of KMC. This criterion was determined to ensure that participants had been sufficiently exposed to mothers' emotional responses and anxieties during the KMC process. The participants' varied sociodemographic characteristics, professional experience durations, and individual perspectives contributed to an in-depth examination of different aspects of the phenomenon.

In qualitative research, the sample size is not predetermined; rather, it is shaped according to the principle of data saturation. The point at which additional data obtained from further interviews no longer reveals new themes or concepts is considered to be data saturation[14]. The sample size was not predetermined but was guided by the principle of data saturation and the concept of "information power"[15]. Saturation was assessed during the concurrent data analysis process; it was achieved when the final three interviews yielded no new codes or subthemes, indicating that further data collection would not provide additional insights into the phenomenon. To ensure a diverse perspective, a purposive criterion sampling method was used to include participants from both public and private NICUs across Türkiye.

To identify suitable candidates for the study, an informative announcement regarding the research was disseminated *via* the social media platforms of the Children's Nurses Association. The aforementioned announcement contained pertinent information regarding the purpose of the research, the target audience, the research process, and the researcher whom nurses wishing to participate in the study should contact. Nurse participants were evaluated based on predetermined inclusion and exclusion criteria, and those who met the criteria were included in the study. Nurse participants were required to be employed in a NICU and to have performed KMC at least five times. They were also required to be willing to participate in the study voluntarily, to provide both written and verbal informed consent, and to be able to communicate in Turkish. Participants who did not complete the interview, discontinued the interview, or wished to withdraw from the study at any stage were not included in the study. The characteristics of the participants are presented in [Table 1](#).

Data collection

The data for the study were collected through semi-structured in-depth individual interviews. The semi-structured interview form utilized for the interviews was developed by the researchers in accordance with the pertinent literature. The interview guide included questions regarding the nurses' sociodemographic and professional characteristics, in addition to open-ended questions designed to elicit their experiences, perceptions, and emotional responses concerning the management of maternal anxiety during KMC. The content validity of the interview form was ensured by obtaining the opinions of three academics specializing in pediatric nursing. In the event that further elucidation was required to ensure the comprehensiveness of the participants' narratives, follow-up (probe) questions were posed during the interviews.

All interviews were conducted by the second author (Cafri İ) *via* Zoom, an online video conferencing platform, to ensure consistency and maintain methodological rigor throughout the data collection process. Prior to the interviews, the participants were thoroughly informed about the purpose, scope, and voluntary nature of the research. Written and verbal informed consent was obtained prior to data collection. Prior to commencement of the interview, the informed consent form was displayed on the screen. Following the acquisition of verbal consent from the participant, the written consent form was shared in Google Docs format *via* the platform's chat section. Participants completed the consent form electronically *via* Google Docs. The consent form included participants' identity information, which was stored separately from the research data (audio recordings and transcripts) to ensure the anonymity of the participants.

The interviews were conducted by a researcher who had received training in and experience with qualitative research methods. The duration of each interview ranged from 30 minutes to 45 minutes. With the participants' consent, the interviews were recorded in audio and video format, and the recordings were used solely as research data. During the interview process, nonverbal cues such as participants' emotional responses, pauses, and emphases were also recorded by the researcher in the form of field notes. The research process was conducted in accordance with the Consolidated Criteria for Reporting Qualitative Research[16].

Ethical considerations

The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the Ethics Committee of Bahçeşehir University (Approval No. E-85646034-604.01-119913). Prior to the interviews, all participants were provided with a detailed explanation of the study's aim and procedures. Informed consent was obtained electronically from all nurses. The principles of autonomy and confidentiality were strictly maintained; participants were informed of their right to withdraw from the study at any time without any negative consequences. To ensure anonymity, all personal identifiers were removed from the transcripts, and participants were assigned code numbers (e.g., participant 1, participant 2). Data were stored on a password-protected platform accessible only to the research team.

Thematic analysis

The data analysis was conducted in accordance with the six-stage thematic analysis method developed by Braun and Clarke[17]. The following stages comprise the process: (1) Acquaintance with the data; (2) Initial coding; (3) Thematic analysis; (4) Thematic review; (5) Thematic definition and naming; and (6) Report writing.

In the initial phase of the analysis, the audio recordings of the interviews were transcribed verbatim by two researchers. The transcripts were then compared with the audio recordings to ensure accuracy. The organization of the data set and the management of the coding process were facilitated by MAXQDA 2020 qualitative data analysis software. To enhance analytic rigor, three researchers independently coded the transcripts. Subsequently, the researchers convened to deliberate on the codes and potential themes, engaging in a thorough review of the themes until a consensus was achieved. In the final stage, the analysis was completed by checking whether the identified themes comprehensively reflected the participants' subjective experiences and narratives.

Trustworthiness

Trustworthiness was established in accordance with the criteria of credibility, dependability, confirmability, and transferability. Credibility was enhanced through in-depth individual interviews and investigator triangulation during data analysis. Conducting all interviews by a single researcher contributed to procedural consistency.

Dependability was supported through detailed documentation of the data collection and analysis processes. Confirmability was strengthened through bracketing, reflexive journaling, and transparent reporting of analytic decisions. Transferability was addressed by providing rich descriptions of the research context, participants, and procedures, enabling readers to determine the applicability of findings to similar settings.

Table 1 Descriptive characteristics of participants (*n* = 15), *n* (%) / median (interquartile range)

Characteristics	
Gender	
Female	13 (86.7)
Male	2 (13.3)
Educational level	
High school	1 (6.7)
Bachelor's degree	5 (33.3)
Master's degree	7 (46.6)
Doctorate	2 (13.4)
Age (years)	27 (25-30)
Professional experience (years)	6 (1.5-10)
NICU experience (years)	4.5 (1-10)

NICU: Neonatal intensive care unit.

RESULTS

The thematic analysis generated five overarching themes and associated subthemes: (1) Manifestations and indicators of maternal anxiety; (2) Effects of maternal anxiety on the care process; (3) Nurses' strategies for managing anxiety; (4) Emotional and professional impacts on nurses; and (5) Clinical requirements and recommendations for anxiety management. The thematic framework is summarized in [Table 2](#).

Theme 1: Manifestations and indicators of maternal anxiety during KMC

This theme describes the various ways maternal anxiety is exhibited and recognized by nurses within the high-tech NICU environment. It captures the transition from physiological distress to emotional overload as mothers encounter the fragility of their infants. There are four subthemes under this theme: (1) Fear of harming the infant; (2) Fear related to medical devices and technology; (3) Somatic symptoms; and (4) Emotional expressions.

Fear of harming the infant: Participants described intense apprehension regarding the physical fragility of premature infants, particularly during the initial skin-to-skin contact. Nurses reported that this fear was particularly pronounced during the first skin-to-skin contact and was often related to mothers' concerns about handling a medically fragile infant. "This anxiety is most intense the first time they hold their baby. Because the baby is in intensive care, mothers think they might harm the infant just by touching them. After they try KMC once, they start asking questions like 'When can I come again?' or 'When can I hold my baby again?' (laughs)" (participant 2; female, 27 years old). "The smaller the baby and the more severe the prematurity, the higher the mothers' anxiety. Some mothers are even afraid to hold their baby's hand at first. But once they get used to it, the anxiety almost disappears" (participant 7; female, 28 years old).

Fear related to medical devices and technology: Nurses described the presence of monitors, cables, and alarms as a significant source of distress. According to participants, mothers often focused intensely on the equipment, which increased their tension during KMC sessions. "For a mother, seeing so many devices and cables attached to her baby is extremely distressing. When they first see this, holding their baby seems impossible. During KMC, they become so tense trying not to touch any wires or equipment that sometimes this tension is transmitted to the baby" (participant 4; female, 29 years old). "There are so many devices in the NICU that increase their anxiety. Sometimes during KMC, mothers focus so much on the monitor sounds that they don't even hear us" (participant 9; male, 26 years old).

Somatic symptoms: Beyond verbalized fears, participants identified physical manifestations of anxiety that reflect the visceral nature of the maternal experience. These responses indicate that anxiety is often expressed through involuntary bodily movements such as tremors, which nurses must recognize to ensure the safety of the KMC session. "When we place the baby on the mother's chest, their hands start shaking and they look at us anxiously. Then they begin to cry. This may result both from anxiety and from emotional overload" (participant 8; female, 25 years old).

Emotional expressions: This subtheme covers the direct emotional outbursts and the state of hypervigilance observed by nurses. The participants' responses suggest that mothers remain in a state of high alert, constantly seeking reassurance from the nursing staff to mitigate their fear of the unknown. "They openly tell us they feel anxious. If it's their first time, we stay next to them. But later, when we have other tasks and must leave them alone, even the smallest sound from a device makes them call us nervously" (participant 11; female, 29 years old). "You can tell how anxious they are just from the questions they ask" (participant 9; male, 26 years old).

Table 2 Themes and subthemes related to the management of maternal anxiety during kangaroo mother care

Main themes	Subthemes
Manifestations and indicators of maternal anxiety	(1) Fear of harming the infant; (2) Fear related to medical devices and technology; (3) Somatic symptoms; and (4) Emotional expressions
Effects of anxiety on the care process	(1) Anxiety as a barrier to participation; (2) Negative impact on care quality and continuity; and (3) Situations in which anxiety does not affect the process/motivational effects
Nurses' management strategies	(1) Information provision and therapeutic communication; (2) Utilization of paternal support; (3) Peer/role modeling (exposure to experienced mothers); and (4) Gradual familiarization and allowing time
Effects on nurses	(1) Professional satisfaction and fulfillment; (2) Happiness/pleasure associated with successful care; and (3) Feeling of being a "healing/therapeutic agent"
Clinical requirements and recommendations	(1) Improvements in the physical environment; (2) Nurse education and orientation programs; (3) Institutional mentorship and experience sharing; and (4) Establishment of parent support groups

Theme 2: Effects of maternal anxiety on participation in KMC and the care process

This theme describes the dual impact of anxiety on the implementation and continuity of KMC. It explores how high levels of anxiety can lead to avoidance behaviors and technical interruptions, while also acknowledging cases where anxiety acts as a catalyst for increased maternal vigilance. There are three subthemes under this theme: (1) Anxiety as a barrier to participation; (2) Negative impact on care quality and continuity; and (3) Situations in which anxiety does not affect the process/motivational effects.

Anxiety as a barrier to participation: Nurses reported that high levels of maternal anxiety often functioned as a psychological barrier, leading to avoidance or the postponement of the practice. The participants' responses indicate that when fear outweighs the mother's perceived competence (self-efficacy), it directly hinders the decision to initiate skin-to-skin contact. "Sometimes they are so anxious that they refuse to participate in care" (participant 15; male, 28 years old).

Negative impact on care quality and continuity: Beyond initial participation, this subtheme addresses how anxiety interferes with the technical effectiveness and emotional depth of the sessions. Nurses observed that anxiety prevents the mother from achieving the necessary state of relaxation, which is essential for maximizing the physiological benefits of KMC. "I think this anxiety problem mostly occurs during the first attempt. It can be difficult to provide full and effective KMC. Because of anxiety, the session becomes shorter and the mother cannot fully relax, so the baby cannot feel that warmth and energy either" (participant 4; female, 29 years old).

Situations in which anxiety does not affect the process/motivational effects: Interestingly, several nurses emphasized that anxiety did not always hinder participation; rather, the act of KMC itself served as a regulatory mechanism. These responses suggest that the desire to help the infant often overcomes the mother's fear, transforming anxiety into a catalyst for engagement and, in turn, reducing anxiety. "No matter how anxious they are, once they hold their baby, they forget everything. All they want is to help their baby. So, I don't think anxiety really interferes" (participant 6; female, 26 years old). "Mothers may be anxious, but KMC is actually one of the best ways to reduce that anxiety. Once the baby is placed on their chest, their fear disappears. I've never seen anxiety severe enough to disrupt care" (participant 13; female, 29 years old).

Theme 3: Nurses' approaches to managing maternal anxiety

This theme describes the multi-faceted interventions and interpersonal strategies nurses employ to mitigate maternal anxiety and facilitate the successful implementation of KMC. Nurses act as clinical educators and emotional mediators, using a variety of techniques to transform the mother's fear into confidence. There are four subthemes under this theme: (1) Information provision and therapeutic communication; (2) Utilization of paternal support; (3) Peer/role modeling (exposure to experienced mothers); and (4) Gradual familiarization and allowing time.

Information provision and therapeutic communication: Participants described transparent information-sharing and structured education as the primary tools for reducing uncertainty. By explaining the medical equipment and the physiological benefits of KMC, nurses facilitate a "cognitive reappraisal" where mothers begin to view the NICU environment as a supportive space rather than a threatening one. This increased understanding directly bolsters maternal confidence. "Every mother is anxious when entering the NICU for the first time. That's natural. But when we calmly explain the devices, the cables, and reassure them that KMC won't harm their baby, they become much more relaxed" (participant 5; female, 28 years old). "Education is the most important factor. When mothers understand the purpose and benefits of KMC, they become more motivated. They think, 'I can help my baby' and they come back even more eager next time" (participant 8; female, 25 years old).

Utilization of paternal support: This subtheme addresses the strategic involvement of fathers as a source of emotional reassurance. Nurses observed that paternal presence creates a supportive "dyad", where the shared experience of the NICU reduces the mother's sense of isolation and provides the necessary strength to overcome initial hesitations. "Having the father there reduces the mother's anxiety. She feels supported and stronger. Mothers who come alone seem more anxious" (participant 7; female, 28 years old). "Sometimes fathers are even more anxious than mothers. While

calming the father, mothers automatically become calmer themselves" (participant 14; female, 27 years old).

Peer/role modeling (exposure to experienced mothers): Peer modeling emerged as a distinct strategy to enhance maternal self-efficacy through "vicarious experiences". Observing other mothers successfully performing KMC helps normalize the high-tech environment and provides a social proof that reduces fear and increases the mother's belief in her own caregiving capabilities. "Seeing other mothers practicing KMC is very encouraging. Of course, we respect privacy. But when they see another mother doing it successfully, their confidence increases and their anxiety decreases" (participant 1; female, 27 years old). "If a mother is too anxious to understand what we explain, I show her another mother doing KMC. Once they see it, they gain confidence and agree to try" (participant 12; female, 26 years old).

Gradual familiarization and allowing time: This subtheme describes the importance of a patient, non-pressured approach in situations where anxiety is resistant to immediate intervention. Nurses acknowledged that respecting the mother's pace and allowing for gradual familiarization is essential for maintaining a therapeutic relationship and ensuring long-term participation. "Sometimes, no matter what we do, we can't reduce their anxiety. In those cases, it's better not to force them and to try again another day" (participant 10; female, 28 years old).

Theme 4: Emotional and professional effects of managing maternal anxiety on nurses

This theme describes the positive emotional and professional outcomes experienced by nurses as a result of successfully managing maternal anxiety and facilitating KMC. It highlights how the transition from maternal distress to confidence acts as a significant source of professional fulfillment and reinforces the nurse's professional identity. There are three subthemes under this theme: (1) Professional satisfaction and fulfillment; (2) Happiness/pleasure associated with successful care; and (3) Feeling of being a "healing/therapeutic agent".

Professional satisfaction and fulfillment: Participants expressed deep professional pride when witnessing the clinical and emotional progress of the mother-infant dyad. The participants' responses indicate that successfully managing a mother's anxiety provides a psychological reward that transcends routine clinical duties, fostering a sense of accomplishment in their specialized role. "Seeing a mother's anxiety decrease and watching her hold her baby makes us happy too. We can see improvements in the baby's oxygen saturation or pain levels. KMC even increases breast milk production. This is professionally very satisfying" (participant 8; female, 25 years old).

Happiness/pleasure associated with successful care: This subtheme addresses the intrinsic motivation and joy nurses derive from prioritizing KMC. Nurses reported that the immediate and visible benefits of the practice create a positive feedback loop, leading them to favor this intervention over more mechanical clinical tasks. "KMC is my favorite intervention. If a mother comes and I'm not busy, I immediately prioritize it. No matter how good my clinical care is, I don't think it's as fast or effective as KMC" (participant 3; female, 27 years old).

Feeling of being a "healing/therapeutic agent": Participants highlighted that facilitating KMC allows them to perceive themselves as "therapeutic agents" who initiate revolutionary change in the infant's health. This perception shifts the nurse's role from a technical caregiver to an essential facilitator of biological and emotional stability, enhancing their commitment to the profession. "This practice gives me great professional satisfaction. When I see the baby stabilize, I feel grateful to be a neonatal nurse. KMC is revolutionary for our field" (participant 12; female, 26 years old).

Theme 5: Clinical requirements and recommendations for managing maternal anxiety during KMC

This theme describes the environmental and institutional changes necessary to optimize the management of maternal anxiety and improve the quality of KMC. Nurses highlighted that successful KMC is not only an interpersonal process but is also contingent upon physical conditions and organizational support systems. There are four subthemes under this theme: (1) Improvements in the physical environment; (2) Nurse education and orientation programs; (3) Institutional mentorship and experience sharing; and (4) Establishment of parent support groups.

Improvements in the physical environment: Participants emphasized that the physical layout and ergonomic comfort of the NICU are critical for anxiety reduction. Nurses suggested that privacy and comfort are not mere luxuries but essential requirements that directly influence a mother's sense of safety and her ability to bond with the infant without physical strain. "First of all, there should be mother-infant rooms. Mothers should be able to stay with their babies at all times and practice KMC whenever possible. This could enhance their adaptation and help reduce their anxiety" (participant 15; male, 28 years old). "To reduce a mother's anxiety, we must also consider her comfort. Mothers need to feel physically comfortable during KMC. In our unit, there is only one armchair. If it is occupied, mothers have to sit on regular chairs while holding their babies. Because they are uncomfortable, their fear of harming the baby increases. Therefore, there should definitely be a dedicated chair next to every incubator" (participant 2; female, 27 years old).

Nurse education and orientation programs: This subtheme addresses the need for structured training for healthcare providers. The participants' responses indicate that a nurse's own "perceived competence" is vital; mothers can sense a nurse's hesitation, which in turn escalates maternal anxiety. Therefore, comprehensive education and hands-on experience are recommended to ensure nurses present themselves as confident professionals. "Every nurse working in the NICU should receive detailed training on KMC and regularly update their knowledge. We observe that when mothers understand its importance and benefits, their anxiety decreases" (participant 4; female, 29 years old). "My biggest recommendation for newly graduated nurses is that they should learn this care technique thoroughly. I think KMC should be one of the most emphasized practices during the orientation period" (participant 10; female, 28 years old).

old). “New nurses also need hands-on experience with KMC. Mothers can sense when a nurse is unsure, and this increases their anxiety. Therefore, we must present ourselves as confident and competent professionals” (participant 11; female, 29 years old).

Institutional mentorship and experience sharing: Participants recommended utilizing social modeling as an institutional strategy. By facilitating interactions between anxious mothers and experienced peers, the unit can provide “social proof” that normalizes the KMC experience, often more effectively than professional explanations alone. “When we see an anxious mother, I think we should bring her together with mothers who already have experience in the NICU or who are close to discharge. Hearing about KMC from experienced mothers might be more effective than explanations from healthcare professionals” (participant 12; female, 26 years old).

Establishment of parent support groups: This subtheme emphasizes the role of the family unit in anxiety management. Nurses suggested that institutionalizing the presence of fathers as part of the care team provides a collective emotional buffer, strengthening the mother’s resilience within the NICU environment. “Mothers should definitely come to the NICU with fathers. In this way, they can support each other and experience less anxiety” (participant 7; female, 28 years old).

DISCUSSION

This study provides a comprehensive perspective on the nature of maternal anxiety experienced during the KMC process in the NICU and highlights the critical role assumed by nurses in managing this anxiety. The findings demonstrate that the technologically intensive NICU environment and the physiological fragility of the infant generate a pronounced fear of harming the baby among mothers. However, through guidance, education, and emotional support strategies, nurses were able to transform this initially distressing experience into a constructive and empowering one. The results indicate that during KMC, nurses are not merely managing a clinical procedure; rather, they function as facilitators who actively regulate maternal anxiety. When effectively managed, this process not only strengthens mothers’ adaptation to their parental role but also serves as a profound source of professional satisfaction for nurses.

In the present study, nurses emphasized that the most salient sources of maternal anxiety were the infant’s perceived vulnerability and the fear of interfering with medical devices. These findings are consistent with previous research identifying barriers that limit mothers’ ability and confidence to provide care within the NICU environment[18-20].

Among the strategies employed to address this intense anxiety, nurses most frequently identified transparent information-sharing and therapeutic communication as the most effective approaches. Our findings demonstrate that calmly introducing the equipment, explaining the purpose of the devices, and clarifying the physiological benefits of KMC reduce mothers’ fear of the unknown. This finding can be interpreted within the framework of maternal self-efficacy, which refers to a mother’s belief in her capacity to provide adequate care. The literature indicates that uncertainty and insufficient knowledge exacerbate anxiety, whereas structured education restores a sense of control and enhances self-efficacy[21,22].

Another prominent strategy used by nurses was the inclusion of fathers in the process and the utilization of peer support. The findings related to paternal presence were twofold: Some nurses described fathers as a strong source of emotional support for mothers, whereas others noted that fathers themselves could exhibit higher levels of anxiety. These observations align with contemporary literature suggesting that fathers in the NICU require psychological support comparable to that of mothers[23-25]. Furthermore, the strategy of exposing anxious mothers to other mothers successfully performing KMC - peer modeling - emerged as one of the most noteworthy findings of the study. From the perspective of Bandura[26] social learning theory, this can be conceptualized as learning through vicarious experience. Observing another mother successfully providing care under similar circumstances appears to foster the belief, “I can do this too”, thereby facilitating coping and reducing anxiety[27].

While much of the existing literature has predominantly focused on workload and burnout among NICU nurses[28, 29], the nurses in this study reported that successfully managing maternal anxiety and initiating KMC generated feelings of happiness and professional fulfillment. This finding diverges from studies emphasizing the perceived difficulties associated with KMC implementation[30,31]. Cai *et al*[32] reported that, despite acknowledging the benefits of KMC, healthcare professionals in China experienced reduced intrinsic motivation due to heavy workloads and limited financial incentives. Whereas those studies highlighted conflicts with parents and perceived clinical risks as barriers, the nurses in our study framed the process not as a burden but as a source of professional meaning and satisfaction.

In addition, nurses’ accounts revealed that the effective management of maternal anxiety is influenced not only by individual communication skills but also by the physical and institutional conditions of the clinical environment. Ergonomic inadequacies and privacy concerns, identified in our study as factors complicating anxiety management, have similarly been described as major environmental barriers to KMC implementation[27]. However, our findings suggest that these shortcomings represent more than logistical inconveniences; they directly hinder maternal relaxation and the ability to focus on the infant, thereby diminishing the effectiveness of nursing interventions. In settings where maternal comfort and privacy are not ensured, it becomes substantially more difficult for nurses to provide effective emotional regulation and anxiety reduction.

Finally, the lack of experience and training, which contributed to nurses feeling insufficiently prepared to manage maternal anxiety, was also consistent with previous research. Maniago *et al*[31] identified inadequate knowledge as one of the most significant barriers to KMC implementation. However, our findings further indicate that this knowledge gap is

not merely a technical limitation but may directly exacerbate maternal anxiety. As reflected in participants' statements, mothers readily perceive nurses' hesitation during care procedures, and this perceived uncertainty intensifies their own fears. Accordingly, educational interventions designed to enhance nurses' professional confidence may constitute an effective strategy for reducing maternal anxiety.

This study has several strengths and limitations. Among its primary strengths are its focus on nurses' roles as emotional regulators and the professional satisfaction derived from managing maternal anxiety, offering a valuable counter-narrative to burnout-focused literature. Additionally, the inclusion of participants from both public and private NICUs and the grounding of findings in Bandura[26] social learning theory enhance the study's analytical depth.

However, several limitations should be acknowledged. First, although data saturation was achieved, with the final interviews yielding no new thematic insights, the sample size of 15 nurses reflects the specific experiences of the participants and may not capture the full breadth of the phenomenon. Second, the study's focus on the Turkish healthcare context may limit the transferability of the findings to other healthcare systems. Third, recruitment through the social media platforms of professional associations may have introduced selection bias toward a more proactive and digitally engaged cohort of nurses, potentially limiting broader applicability. Fourth, the use of online interviews may have limited the capture of subtle nonverbal cues compared to face-to-face interactions. However, the online environment may also have provided a psychologically safer space for participants to share sensitive professional experiences more openly, potentially reducing social desirability bias associated with formal clinical settings. Finally, reliance on self-reported and retrospective accounts introduces the possibility of recall bias.

CONCLUSION

This study demonstrates that the KMC process in NICUs is not merely a clinical intervention aimed at meeting the infant's physiological needs; rather, it constitutes a complex psychosocial interaction in which intense maternal anxiety is actively managed. Our findings indicate that nurses assume a pivotal role in this process not only as care providers but also as "emotional regulators" who help mothers cope with fear and uncertainty. Furthermore, the study offers valuable insight into how strategies such as transparent information-sharing, therapeutic communication, and peer modeling can transform mothers' fear of harming their infants into a sense of self-efficacy. Notably, this transformation benefits not only mothers but also nurses themselves. In contrast to the dominant emphasis on burnout within the literature, successfully managing maternal anxiety emerged as an important source of professional satisfaction and motivation for nurses.

However, our findings clearly demonstrate that achieving this optimal outcome cannot be attributed solely to individual nursing effort. System-level barriers - including ergonomic inadequacies within the NICU, lack of privacy, and diminished professional confidence related to insufficient training - substantially hinder effective anxiety management. Nurses' hesitation arising from technical or environmental constraints may be directly perceived by mothers and can inadvertently intensify maternal anxiety, underscoring that nursing competence is a prerequisite for effective anxiety regulation.

In summary, the effective management of maternal anxiety during KMC requires a holistic approach that integrates strong communication skills, a supportive physical environment, and reinforced professional self-confidence among nurses. Building upon these findings, future research should prioritize the development and evaluation of simulation-based training programs aimed at enhancing nurses' professional competence in both the emotional and technical dimensions of KMC. Additionally, longitudinal studies are needed to explore the long-term impact of ergonomically redesigned, privacy-oriented NICU environments on maternal mental health and neonatal developmental outcomes.

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