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Effective Occupational Therapy Interventions for Reducing Parental Stress in the Neonatal Intensive Care Unit

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Murden, OTS, 2022

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Focus Question

Which occupational therapy interventions are most effective at reducing the stress experienced by parents of infants in neonatal intensive care units (NICUs) that are learning to care for their newborn?

Case Scenario

Findings of a recent study have identified that out of all of the infants born in the United States, about 1 in 10 are hospitalized in the neonatal intensive care unit (Lakshmanan et al., 2019). Having a new infant can be an exciting time for parents; however, this experience can also come with many significant stressors, especially if you are a parent of an infant hospitalized in the NICU. Specific sources of stress for this population identified by one study can include the infant's illness, complex medical information, and concerns about the future of their infant's eventual outcome in terms of the consequences of their infant's prematurity (Alinejad-Naeini, Peyrovi, & Shoghi, 2021). An additional study found that parents in the NICU experience stress because of the intense environment, the unpredictability of their infant's health, and their lack of control for the safety of their infant (Soghier et al., 2020). Another study found that more specifically, parents feel they are not in control of their infant's health due to the multitude of medical personnel that are caring for the baby (Heidari, Hasanpour, & Fooladi, 2017). The noisy environment and altered routine cause parents to be distressed during their infant's NICU stay (Soghier et al., 2020). Another study found that parents often have questions regarding their infant's health and may not be able to have the answers right away (Heidari, Hasanpour, & Fooladi, 2017). If communication is not delivered appropriately, professionally, and in a timely manner, it can be an additional burden to the parents. The transition period between delivery and the first time seeing their infant in the NICU may feel long for parents as they anticipate caring for their baby. Furthermore, another study found that parents seeing their infant attached to different equipment can be stress-inducing as they view their babies as more "fragile" than the typical infant (Caporali et al., 2020). Overall, there are several sources of stress in the NICU setting that parents experience.

Stressors in the NICU can have detrimental effects on parental occupational performance. Cardin (2020) conducted a phenomenological study, which involved interviewing parents to get their perception of occupational performance in the NICU. Parents explained that they felt they second-guessed themselves and their role as a mother and/or father while their infant stayed in the NICU. They felt that they were unable to do the occupations that typical parents get to do such as: dressing their infant, kissing them, and changing their diapers. Being stressed about their inability to complete these occupations gave them a sense of occupational deprivation. The parents explained that their stress often resulted in episodes of grief, exhaustion, anger, and a sense of loneliness. Parents felt that they stopped performing their own activities of daily living and health management, as they were too stressed about their infant's well-being (Cardin, 2020). Mothers may be uniquely impacted, as they may experience feelings of hopelessness as well as a decrease in confidence in their parenting skills which can lead to the inability to cope and care for their preterm neonate (Alinejad-Naeini, Peyrovi, & Shoghi, 2021).

Several cultural factors influence the occupation of caring for children. Infants that stay in the NICU come from families of different religions, ethnicities, and economic statuses. The response that the parents have to the stress of the NICU is a combination of many variables of the parents' and infant's cultural aspects. How the family views healthcare also impacts their



ability to cope with the stress that the NICU entails. Additionally, one study found that the stress of parents in the NICU is dependent on several other factors, including parent gender, whether or not the infant is the first child, delivery type (vaginal or cesarean section), history of infertility, and/or medical history of the parents (Kawafha, 2018). In a qualitative study addressing parental gender and age, Pichler-Stachl et al. (2019) found that mothers experienced more stress as they got older, however, fathers did not. An additional study found that in general, mothers have higher stress scores than fathers as measured by the Parental Stressor Scale: Neonatal Intensive Care Unit (PSS) (Ionio et al., 2019). Currently, mothers are given more responsibility when caring for their infants in the NICU. Based on the findings of a quasi-experimental study conducted by Noergaard et al. (2018), medical professionals need to be aware that fathers should be treated as equal co-parents in the NICU setting. Unequal distribution of parenting responsibilities can lead to more stress on fathers and make them feel as if they are an unequal partner in their co-parenting experience (Noergaard et al., 2018). Equally distributing parental responsibilities can reduce stress for both parents and make them feel equal in their parenting relationship. Because of the many cultural factors that influence parental stress experienced in the NICU, it is crucial to have a holistic view of the infant and their parents. Another study found that understanding the influence of the nature of illness, financial, familial, and cultural contexts helps identify the families who are particularly vulnerable to stress can lead to better client-centered care, and can decrease stress (Murthy et al., 2021).

When relating this topic to a theory, the Person-Environment-Occupation Model (PEO) most accurately depicts the relationship of parents caring for their infants in the neonatal intensive care unit. The PEO Model examines occupational performance through the transaction of person, environment, and occupation. By analyzing the person (parents), the environment (stressful NICU), and the occupation (caring for an infant), the PEO Model describes the goodness of fit amongst these three variables. The PEO model in Baptiste's (2017) textbook includes multiple components of the environment, such as physical, social, cultural, institutional, and virtual. Since there are multiple components of the NICU environment that increase stress, the PEO model was the lens used to examine stress and parental occupational performance within this environment. Parental occupational performance is the outcome of the transaction between the parents, the NICU, and caring for infants. Gibbs, Boshoff, & Lane (2010) found in their study that from this transaction, it can be determined that environmental factors within a NICU may have a constraining effect on parental occupational performance, resulting in a poor fit between person and environment.

Purpose Statement

John et al.'s (2018) study found that over half of the mothers in the NICU suffer from moderate to severe anxiety. This anxiety negatively impacts parents' abilities to engage in the occupation of caring for their child, which can have long-term consequences. Currently, there is a lack of research on occupational therapy-specific interventions that focus on reducing parental stress in the NICU setting. The purpose of this critically appraised topic (CAT) is to discover which stress-reducing occupational therapy interventions have a positive impact on the abilities of parents to successfully care for their infants in the NICU.

Methodology

The literature search was conducted March 4th-7th 2022. Searches occurred within occupational therapy and multidisciplinary databases which included Cumulative Index to



Nursing and Allied Health Literature (CINHAL,) PubMed, and OT Search. Articles were excluded if they were not in the English language and if they were published before 2017. The year exclusion criteria did not apply to three articles that were pertinent to the topic as the information was still relevant. Key terms searched were “occupational therapy,” “parents,” “neonatal intensive care unit,” “anxiety,” and “stress.” To increase the specificity of the search, the boolean search phrases “AND” or “OR” were used between search terms.

Types of Articles Reviewed

Initially, 30 articles were reviewed. From these, 26 articles were further reviewed, and 2 articles were added to further support the findings. In total, these articles consisted of 8 level I studies (Angelhoff et al., 2018; Caporali et al., 2020; Gibbs, Boshoff, & Lane, 2010; Holditch-Davis et al., 2014; Küçük Alemdar, Kardaş Özdemir, & Güdücü Tüfekci, 2018; Rubio-Grillo, 2019; Sabnis et al., 2019; Sanders & Hall, 2018), 3 level II studies (Hadian Shirazi et al., 2021; John et al.; 2018; Noergaard et al., 2018), 4 level III studies (Guttmann et al., 2020; Hames et al., 2020; Ionio et al., 2019; Kawafha, 2018), and 14 level NA studies (Alinejad-Naeini, Peyrovi, & Shoghi, 2021; Cardin, 2020; Grosik, 2013; Heidari, Hasanpour, & Fooladi, 2017; Hofbauer, Dieplinger, & Nydahl, 2021; Kehl et al., 2020; Kilcullen et al., 2022; Lakshmanan et al., 2019; Little et al., 2015; Mazur et al., 2021; Mouradian, DeGrace, & Thompson, 2013; Murthy et al., 2020; Pichler-Stachl et al., 2019; Soghier et al., 2020). An additional resource utilized for this CAT was a textbook, *Perspectives on Human Occupation: Theories Underlying Practice* (Baptiste, 2017).

Table 1

Articles Reviewed in the Synthesis

Author and publication date	Level of Evidence/Study Type	Research Question/Aim	Population
Alinejad-Naeini, Peyrovi, & Shoghi (2021)	N/A, Qualitative Study	To report coping strategies of mothers with preterm neonate during maternal role attainment in NICU	12 mothers of preterm neonates admitted to NICU's of hospitals affiliated to Iran University of Medical Sciences, and 5 nurses
Angelhoff et al. (2018)	Level I, Randomized Control Trial	To evaluate the effect of continuous SSC on sleep quality and mood in parents of preterm infants born <33 weeks of gestation as well as parent-infant interaction and salivary cortisol	100 parents from 50 families, parents of single preterm infants born <33 weeks of gestation



		concentrations at the time of discharge	
Caporali et al. (2020)	Level I, Meta-analysis	To analyze the greatest sources of stress in the NICU	N/A
Gibbs, Boshoff, & Lane (2010)	N/A, Literature Review	To apply the PEO model to parents in the NICU and caring with their infants	N/A
Grosik et al. (2013)	Level IV, Survey	To ascertain what internal stressors play a role in determining the NICU experience for parents, as well as to assess external stressors	119 parents of neonatal infants, born at 24 weeks to full term, in the 28-bed level 3 NICU of a mid-Atlantic, Magnet-designated acute care hospital with 665 licensed beds
Guttmann et al. (2020)	Level III, Wilcoxon Rank Test to compare Pretest and Post-test scores	To understand how bedside cameras effect stress of parents in the NICU	21 parents who used a bedside camera and 27 who did not
Hadian Shirazi et al. (2021)	Level III, Repeated Measures Mann Whitney test	To determine how training fathers on supporting their wives impacts stress levels in the NICU	50 families with babies in the NICU
Hames et al. (2020)	Level III, Questionnaire	To determine how stress changes between admission and discharge	64 mothers and 20 fathers of 68 infants
Heidari, Hasanpour, & Fooladi (2017)	N/A, Qualitative Study	To interview parents and medical staff about the stressful environment of the NICU	21 participants that were recruited by purposive sampling from having an infant in the NICU, along with medical

			personnel
Hofbauer, Dieplinger, & Nydahl (2021)	N/A, Qualitative (Grounded Theory)	To explore the meaning of diaries for parents at the neonatal intensive care unit	5 mothers and 3 fathers of infants born before 37 weeks and admitted to the NICU
Holditch-Davis et al. (2014)	Level I, Randomly Assigned 3 Group Longitudinal Design	To examine the effects of ATVV and KC on maternal psychological distress and the mother–infant relationship (infant responsiveness, maternal perceptions of the child indicated by worry and child vulnerability, mother–infant interactive dimensions, HOME total score) as compared to an attention control group	240 mothers and infants previously in the NICU
John et al. (2018)	Level II, Cohort Study	To assess the effect of activity-based group therapy on maternal anxiety in the NICU when compared to a control group	Mothers of infants admitted to the NICU (25 in Phase 1, 35 in Phase 2)
Kawafha (2018)	Level III, Cross Sectional Design	To explain the association between certain infant and parental characteristics with their stress levels	376 parents with hospitalized infants in the NICU, collected through convenience sampling
Kehl et al. (2020)	N/A, Mixed Methods	To evaluate whether creative music therapy (CMT) can	16 couples (32 total parents) and their prematurely born



		alleviate anxiety, stress, and depressive symptoms in parents and support the bonding process with their infant	infants
Kilcullen et al. (2022)	N/A, Exploratory Study	To understand the impact of live-streaming vision of infants in NICU to their parents	28 parents of infants in the NICU
Küçük Alemdar, Kardaş Özdemir, & Güdücü Tüfekci (2018)	Level I, Randomized Pre- and Posttest Controlled Trial	To investigate the effect of spiritual care on levels of stress in mothers with infants in a neonatal intensive care unit	62 mothers of infants in the NICU
Little et al. (2015)	N/A, Qualitative Interview	To explore existing barriers and challenges to Early Intervention (EI) referral, enrollment, and service provision for very low birth weight infants	44 parents of very low birth weight children in addition to 32 key informants from Early Intervention, NICUs, and outpatient clinics
Mazur et al. (2021)	N/A, Qualitative Interview	To study the effectiveness of <i>My Flight Plan</i> , a preparedness tool for parents prior to their infant's discharge from the NICU	15 parents that were recruited via a Facebook group - who had an infant discharged from the NICU between 2014 and 2019
Mouradian, DeGrace, & Thompson (2013)	N/A, Qualitative Interview Level III, Pretest-Posttest	To implement art therapy by offering scrapbooking to parents with infants in the NICU To gain parental	40 parents with infants in the Oklahoma Health Sciences Center NICU



		perception on implementing scrapbooking within the NICU to relieve stress	
Noergaard et al. (2018)	Level II, Quasi experimental Study with Questionnaires	To investigate the impact of a more father friendly NICU on paternal stress and their participation in childcare	109 fathers with infants in the NICU
Rubio-Grillo (2019)	Level I, Systematic Review	To determine the importance of occupational therapy practice in the NICU setting	N/A
Sanders & Hall (2018)	N/A, Literature Review	To apply the principles of trauma-informed care, within the framework of the Polyvagal Theory as described by Porges	N/A

Synthesis

Theoretical Base

The goal of this CAT was to understand the relationship between parents, their ability to care for their infants, and the stressful environment of the NICU. This CAT was used to explore the ways in which parents who have infants in the NICU can benefit from occupational therapy to reduce stress and improve parental occupational performance. The PEO model was used to grasp the transactional relationship between parents (person), the stressful environment of the NICU (environment), and caring for an infant (occupation) (Baptiste, 2017). The model allowed for analysis of how parents care for their infants in the NICU and if there is a good or poor fit between these three variables. The literature provided evidence that the stress stemming from the NICU environment is a poor fit with the parental occupation of caring for an infant (Gibbs, Boshoff, & Lane, 2010). The goal of this CAT is to understand the ways that occupational therapy can create a good fit between person, environment, and occupation.

Impact of NICU Environment on Occupational Performance

Short-Term Effects-

Both babies and their parents may experience a stressful stay in the NICU which produces many short-term effects on occupational performance. Grosik (2013) conducted a study that identified different stressors having short-term effects on parents with an infant in the NICU.



Such stressors consisted of sights and sounds, forming a relationship with the infant, the infant's appearance and behavior, and medical treatment of the infant in the NICU (Grosik, 2013). Additionally, if the parents do not feel that they are being supported within the NICU, they will have increased stress (Heidari, Hasanpour, & Fooladi, 2017). Grosik (2013) summarized that parents face the repercussions of these stressors by feeling inadequate as a caregiver in the NICU and being unable to cope with their emotions. Outside of dealing with the stress of their infant's health, the caregiver also struggles to deal with personal stressors. Personal stressors identified were meeting the daily needs of other children, child care for siblings while visiting the infant, and meeting financial obligations. The overall stress experienced in the NICU impacts parents' ability to cope with these personal stressors, as their mind is consumed with their infant's health (Grosik et al., 2013).

Long-Term Effects

Along with the short-term effects that are faced while families are in the NICU, some of the effects of stress last beyond discharge. Grosik (2013) concluded: "The birth of a premature baby, events in the NICU, and the NICU environment can be so stressful that it can lead to family decomposition and posttraumatic stress disorder" (p. 37). These effects on the family can form either due to a lack of education in the NICU or the parents' inability to be present for the discharge information. Because of this, most parents leave the hospital being ill-prepared (Mazur et al., 2021). This lack of preparedness when leaving the hospital affects the way parents care for their fragile infant at home. Infants that leave the NICU may have more precautions than a typical baby, therefore parental confidence in caregiver abilities at home is essential (Caporali et al., 2020). Parents feeling stressed or anxious about their occupational competence in caregiving can negatively affect their occupational performance. This, in turn, affects the way the baby copes with their new home environment (Mazur et al., 2021). These effects of parents being unprepared when their infant is discharged last longer than the stay at the NICU and carry into the infant's and parents' home life. Grosik (2013) explained that parents being unprepared to care for their infants can cause trauma to children and have serious consequences on the parent-child relationship. Furthermore, the experience in the NICU can be traumatic which can lead to 'toxic stress,' dysregulation of the hypothalamic/pituitary/adrenal axis and ultimately lead to decreased regulation of cortisol secretion in the brain (Sanders & Hall, 2018). Decreased cortisol regulation in the brain can lead to fatigue, dizziness, weight loss, muscle weakness, and mood changes (Sanders & Hall, 2018).

Role of Occupational Therapy in Stress Reduction for NICU Parents

Benefits of Occupational Therapy-

Rubio-Grillo (2019) explained that occupational therapy views each client holistically, which entails looking at the client as a whole - considering their needs emotionally and physically. In addition, occupational therapists keep their practice client-centered, which often entails involving family members in collaboration. Client-centered practice includes understanding personal characteristics, familial circumstances, cultural contexts, financial needs, and the nature of the illness (Murthy et al., 2021). Rubio-Grillo (2019) examined the application of client-centered care of occupational therapy intervention in the NICU setting. Not only do occupational therapists recognize the parents as occupational beings, but the infant is equally treated as such. Occupational therapists are able to include the parents of the infant in therapy to ensure proper outcomes for each of the cooperating occupational beings. Occupational therapists



are able to use collaborative care to develop interventions that improve the interaction between parents and infants during their co-occupational experiences. Occupational therapists can empower and facilitate parental occupational participation by creating successful habits and routines for both the parents and the infant (Rubio-Grillo, 2019).

Limitations of Services

Several barriers to services in the early intervention system have been identified including: systemic barriers, lack of funding and staffing, state and federal regulations, and communication with families and medical providers (Little et al., 2015). Other limitations of services stemmed from the parent's inability to be present in the NICU, impacting their capacity to obtain the necessary information needed to successfully care for their new infant (Mazur et al., 2021).

Furthermore, most of the interventions described in the studies reviewed were not occupational therapy-specific, but rather they were interventions utilized by nurses or other health professionals (Alinejad-Naeini, Peyrovi, & Shoghi, 2021; Hofbauer, Dieplinger, & Nydahl, 2021; Kawafha, 2018; Kilcullen et al., 2022; Küçük Alemdar, Kardaş Özdemir, & Güdücü Tüfekci, 2018; Noergaard et al., 2018). While nurses are an essential component to the multidisciplinary care team in the NICU, occupational therapists have the specific skills and knowledge to provide intervention services in this setting. Occupational therapists' expertise in interventions will allow parents to be successful in the occupation of caring for their new infant (Rubio-Grillo, 2019).

Current Interventions for Stress Reduction for NICU Parents

Intervention types

Several kinds of interventions have been utilized by various disciplines to reduce parental stress in the NICU setting. Some interventions focused on strengthening the mother-infant connection, including practicing skin-to-skin contact (also known as Kangaroo Care), auditory-tactile-visual-vestibular intervention (ATVV), and bedside cameras and telehealth (Angelhoff et al., 2018; Guttman et al., 2020; Holditch-Davis et al., 2014; Kilcullen et al., 2022). Other interventions focused on coping strategies, activity-based interventions, and education. Such interventions consisted of creative music therapy, spiritual care, group therapy, self-reinforcement, NICU diaries, scrapbooking, and a discharge checklist (Alinejad-Naeini, Peyrovi, & Shoghi, 2021; Hadian Shirazi et al., 2021; Hofbauer, Dieplinger, & Nydahl, 2021; John et al., 2018; Kehl et al., 2020; Küçük Alemdar, Kardaş Özdemir, & Güdücü Tüfekci, 2018; Mazur et al., 2021; Mouradian, DeGrace, & Thompson, 2013; Alinejad-Naeini, Peyrovi, & Shoghi, 2021). Regardless of the type of intervention utilized, each intervention shared the common goal of reducing the stress of parents in the NICU.

Impact of Interventions

Overall, each of the studies reviewed reported positive outcomes, having significantly reduced parental stress. Such a decrease in stress is thought to be directly correlated with the increase of information parents receive regarding the infant's condition prior to discharge (Hames et al., 2020). Mazur et al. (2021) explained that a discharge checklist allowed for proper education prior to discharge which created parental confidence at home and reduced stress. Additionally, scrapbooking was used as a form of art therapy for parents with infants in the NICU. This intervention relieved stress by allowing parents to express their emotions through art and create a distraction with a healthy hobby (Mouradian, DeGrace, & Thompson, 2013).



Similarly, creative music therapy was used to aid parents in channeling their artistic abilities. Kehl et al. (2020) stated: “The parents reported that they experienced closeness and intimacy during creative music therapy. The music, humming, and monochord’s vibrations which were passed on from the parents to their premature infant, seemed to create a new way of connecting” (p. 12). Furthermore, the reduced levels of stress of the parent in the NICU have positive effects on the infant (Gibbs, Boshoff, & Lane, 2010). In a study that focused on spiritual care, mothers stated that spiritual practices allowed them to cope with their children’s health problems and helped to ease their stress in such a difficult time (Küçük Alemdar, Kardaş Özdemir, & Güdücü Tüfekci, 2018). Group therapy interventions helped to decrease stress by diminishing mothers’ sense of isolation, providing a distraction from the illness of their infant, and giving them hope for the future (John et al., 2018). Self-reinforcement strategies were found to reduce stress by allowing mothers to gain a sense of control over their situation (Alinejad-Naeini, Peyrovi, & Shoghi, 2021). NICU diaries written by healthcare staff and family visitors contributed to stress reduction in parents by providing them with a sense of communication with the child beyond a physical level, offering a break from the technology and monitor-dominant environment, strengthening the relationship between the care team and the parents, and filling in the gaps of time in which parents could not be present with their infant (Hofbauer, Dieplinger, & Nydahl, 2021). Each of the interventions had various approaches to reducing stress, but all of them achieved the common goal of reducing parental stress in the NICU.

Summary

Overall, 31 articles were reviewed and 29 were chosen for further review. The articles included topics on parental stress in the NICU, the impacts of parental stress on the occupation of caring for a newborn, and interventions available to reduce parental stress in the NICU. The following main points were found:

- Parental stress is a prevalent issue in the NICU setting, and not only negatively impacts the parent(s), but also has detrimental effects on the infant. (Gibbs, Boshoff, & Lane, 2010; John et al., 2018).
- Current interventions directed toward reducing parental stress in the NICU are shown to be effective, as seen in each study observed.
- Although plenty of interventions currently exist, not all of these interventions are occupational therapy specific. Many of the articles found for this CAT were pulled from nursing journals. However, this area of practice is also applicable to occupational therapy. The gap in the literature highlights the need for occupational therapy to further develop their presence in the NICU setting.

The purpose of researching this topic was to examine the current literature regarding occupational therapy-specific interventions focused on reducing parental stress in the NICU. It has been concluded that while more research needs to be conducted on this topic, the current interventions utilized to reduce parental stress in the NICU show great promise and should continue to be expanded on by occupational therapy practitioners in this setting.

Clinical Bottom Line

Which occupational therapy interventions are most effective at reducing the stress experienced by parents of infants in NICUs that are learning to care for their newborn?

To understand the effects of the stressful NICU environment on parents in their occupation of caring for their infant, the PEO model was used. This model was used to examine



the transactional relationship between the person (parents), the environment (NICU), and the occupation (caring for an infant) (Baptiste, 2017). Becoming a parent and caring for an infant is stressful for many different reasons, so it is crucial to consider how the context of the NICU increases parental anxiety. This stress can impact parental performance patterns, which, in turn, affects their occupational performance in caring for their infant (Gibbs, Boshoff, & Lane, 2010). Because there are increased stressors within the NICU environment, examining these effects on parents and infants is important for the health and well-being of both occupational beings (Soghier et al., 2020). Understanding the transactional relationship between the person, environment, and occupation allows occupational therapists to develop interventions to improve the goodness of fit (Baptiste, 2017; Gibbs, Boshoff, & Lane, 2010). Implementing stress-coping strategies within the NICU is essential because parental stress has been proven to have short and long-term effects on the parents and the infants (Grosik, 2013; Mazur et al., 2021). Some of the main effects included emotional burden, lack of healthy coping strategies, feelings of inadequacy as a caregiver, family decomposition, posttraumatic stress disorder, unpreparedness, and toxic stress (Grosik, 2013; Mazur et al., 2021; Sanders & Hall, 2018).

After reviewing the literature on the stress that parents face in the NICU environment, it was found that there is an abundance of information on this topic. However, the amount of research found on occupational therapy-specific interventions was inadequate. Despite there being a lack of occupational therapy-specific interventions, the multidisciplinary interventions described for this CAT were found to improve quality of life and successful participation in daily activities. Findings from these studies align with the distinct value of occupational therapy, showing that occupational therapy's involvement in the NICU setting is appropriate and important. The stress reduction interventions included in this CAT focused on education, parental confidence, healthy hobbies, emotional expression, intimacy between parents and infants, spiritual coping strategies, self-reinforcement skills, and written explanations regarding infant's health (Alinejad-Naeini, Peyrovi, & Shoghi, 2021; Hofbauer, Dieplinger, and Nydahl, 2021; Kehl et al., 2021; Küçük Alemdar, Kardaş Özdemir, & Güdücü Tüfekci, 2018; Mazur et al., 2021; Mouradian, DeGrace, & Thompson, 2013).

The findings that have been reviewed will be beneficial for the growing presence of occupational therapists in the NICU environment. Implementing holistic and client-centered care enables occupational therapists to increase occupational performance for the infant's parents as a caregiver (Rubio-Grillo, 2019). Overall, Sabnis et al. (2019) explained an occupational therapists' role in the NICU as unique. Stress reduction and education are the main aspects of occupational therapy interventions for parents with an infant in the NICU (Sabnis et al., 2019). By providing the proper resources for these interventions, occupational therapists can reduce the short and long-term effects of stress, contributing to successful parental occupational performance (Grosik, 2019).



References

- Alinejad-Naeini, M., Peyrovi, H., & Shoghi, M. (2021). Self-reinforcement: Coping strategies of Iranian mothers with preterm neonate during maternal role attainment in NICU; a qualitative study. *Midwifery*, *101*, 103052. <https://doi.org/10.1016/j.midw.2021.103052>
- Angelhoff, C., Blomqvist, Y. T., Sahlén Helmer, C., Olsson, E., Shorey, S., Frostell, A., & Mörelius, E. (2018). Effect of skin-to-skin contact on parents' sleep quality, mood, parent-infant interaction and cortisol concentrations in neonatal care units: Study protocol of a randomised controlled trial. *BMJ Open*, *8*(7), 1-6. <https://doi.org/10.1136/bmjopen-2018-021606>
- Baptiste, S. (2017). The person-environment-occupation model. In J. Hinojosa, P. Kramer, & C. Royeen (Eds.), *Perspectives on human occupation: Theories underlying practice* (2nd ed., pp. 137-159). F.A. Davis Company.
- Caporali, C., Pisoni, C., Gasparini, L., Ballante, E., Zecca, M., Orcesi, S., & Provenzi, L. (2020). A global perspective on parental stress in the neonatal intensive care unit: A meta-analytic study. *Journal of Perinatology*, *40*(12), 1739-1752. <https://doi.org/10.1038/s41372-020-00798-6>
- Cardin, A. D. (2020). Parents' perspectives: An expanded view of occupational and co-occupational performance in the neonatal intensive care unit. *The American Journal of Occupational Therapy*, *74*(2), 1-12. <https://doi.org/10.5014/ajot.2020.034827>
- Gibbs, D., Boshoff, K., & Lane, A. (2010). Understanding parenting occupations in neonatal intensive care: Application of the person-environment-occupation model. *British Journal of Occupational Therapy*, *73*(2), 55-63. <https://doi.org/10.4276/030802210x12658062793762>
- Grosik, C., Snyder, D., Cleary, G. M., Breckenridge, D. M., & Tidwell, B. (2013). Identification of internal and external stressors in parents of newborns in intensive care. *The Permanente Journal*, *17*(3), 36-41. <https://doi.org/10.7812/TPP/12-105>
- Guttmann, K., Patterson, C., Haines, T., Hoffman, C., Masten, M., Lorch, S., & Chuo, J. (2020). Parent stress in relation to use of bedside telehealth, an initiative to improve family-centeredness of care in the neonatal intensive care unit. *Journal of Patient Experience*, *7*(6), 1378-1383. <https://doi.org/10.1177/2374373520950927>
- Hadian Shirazi, Z., Ghasemloo, H., Razavinejad, S. M., Sharifi, N., & Bagheri, S. (2022). The effect of training the fathers to support their wives on stress and self-efficacy in mothers of premature newborns hospitalized in NICU: A quasi-experimental study. *BMC Pregnancy and Childbirth*, *22*(1), 102. <https://doi.org/10.1186/s12884-022-04413-8>



- Hames, J. L., Gasteiger, C., McKenzie, M. R., Rowley, S., Serlachius, A. S., Juth, V., & Petrie, K. J. (2021). Predictors of parental stress from admission to discharge in the neonatal special care unit. *Child: Care, Health & Development*, 47(2), 243–251. <https://doi.org/10.1111/cch.12829>
- Heidari, H., Hasanpour, M., & Fooladi, M. (2017). Stress management among parents of neonates hospitalized in NICU: A qualitative study. *Journal of Caring Sciences*, 6(1), 29–38. <https://doi.org/10.15171/jcs.2017.004>
- Hofbauer, J. M., Dieplinger, A.-M., & Nydahl, P. (2021). The meaning of NICU-diaries to parents of premature children in the neonatal intensive care unit: Trust that everything will be fine. *Journal of Neonatal Nursing*, 27(6), 432–438. <https://doi.org/10.1016/j.jnn.2021.06.005>
- Holditch-Davis, D., White-Traut, R. C., Levy, J. A., O'Shea, T. M., Geraldo, V., & David, R. J. (2014). Maternally administered interventions for preterm infants in the NICU: Effects on maternal psychological distress and mother–infant relationship. *Infant Behavior and Development*, 37(4), 695–710. <https://doi.org/10.1016/j.infbeh.2014.08.005>
- Ionio, C., Mascheroni, E., Colombo, C., Castoldi, F., & Lista, G. (2019). Stress and feelings in mothers and fathers in NICU: Identifying risk factors for early interventions. *Primary Health Care Research & Development*, 20, 1-7 <https://doi.org/10.1017/s1463423619000021>
- John, H. B., Philip, R. M., Santhanam, S., Padankatti, S. M., Sebastian, T., Balan, I., & Rajapandian, E. (2018). Activity based group therapy reduces maternal anxiety in the neonatal intensive care unit - a prospective cohort study. *Early Human Development*, 123, 17–21. <https://doi.org/10.1016/j.earlhumdev.2018.07.001>
- Kawafha, M. M. (2018). Parental stress in the neonate intensive care unit and its association with parental and infant characteristics. *Journal of Neonatal Nursing*, 24(5), 266–272. <https://doi.org/10.1016/j.jnn.2018.05.005>
- Kehl, S. M., La Marca-Ghaemmaghami, P., Haller, M., Pichler-Stachl, E., Bucher, H. U., Bassler, D., & Haslbeck, F. B. (2020). Creative music therapy with premature infants and their parents: A mixed-method pilot study on parents' anxiety, stress and depressive symptoms and parent-infant attachment. *International Journal of Environmental Research and Public Health*, 18(1), 265. <https://doi.org/10.3390/ijerph18010265>
- Kilcullen, M. L., Kandasamy, Y., Evans, M., Kanagasigam, Y., Atkinson, I., van der Valk, S., Vignarajan, J., & Baxter, M. (2022). Parents using live streaming video cameras to view infants in a regional NICU: Impacts upon bonding, anxiety and stress. *Journal of Neonatal Nursing*, 28(1), 42–50. <https://doi.org/10.1016/j.jnn.2021.03.013>



- Küçük Alemdar, D., Kardaş Özdemir, F., & Güdücü Tüfekci, F. (2017). The effect of spiritual care on stress levels of mothers in NICU. *Western Journal of Nursing Research*, 40(7), 997–1011. <https://doi.org/10.1177/0193945916686775>
- Lakshmanan, A., Kubicek, K., Williams, R., Robles, M., Vanderbilt, D. L., Mirzaian, C. B., Friedlich, P. S., & Kipke, M. (2019). Viewpoints from families for improving transition from NICU-to-home for infants with medical complexity at a Safety Net Hospital: A qualitative study. *BMC Pediatrics*, 19(1). <https://doi.org/10.1186/s12887-019-1604-6>
- Little, A. A., Kamholz, K., Corwin, B. K., Barrero-Castillero, A., & Wang, C. J. (2015). Understanding barriers to early intervention services for preterm infants: Lessons from two States. *Academic Pediatrics*, 15(4), 430–438. <https://doi.org/10.1016/j.acap.2014.12.006>
- Mazur, K. M., Desmadryl, M., VanAntwerp, K., Ziegman, C., Nemshak, M., & Shuman, C. J. (2021). Implementing evidence-informed discharge preparedness tools in the NICU. *Advances in Neonatal Care*, 21(5), 111-119. <https://doi.org/10.1097/anc.0000000000000836>
- Mouradian, L. E., DeGrace, B. W., & Thompson, D. M. (2013). Art-based occupation group reduces parent anxiety in the neonatal intensive care unit: A mixed-methods study. *The American Journal of Occupational Therapy*, 67(6), 692–700. <https://doi.org/10.5014/ajot.2013.007682>
- Murthy, S., Guddattu, V., Lewis, L., Nair, N. S., Haisma, H., & Bailey, A. (2021). Stressors and support system among parents of neonates hospitalised with systemic infections: Qualitative study in South India. *Archives of Disease in Childhood*, 106(1), 20–29. <https://doi.org/10.1136/archdischild-2020-319226>
- Noergaard, B., Ammentorp, J., Garne, E., Fenger-Gron, J., & Kofoed, P.-E. (2018). Fathers' stress in a neonatal intensive care unit. *Advances in Neonatal Care*, 18(5), 413–422. <https://doi.org/10.1097/anc.0000000000000503>
- Pichler-Stachl, E., Urlesberger, P., Mattersberger, C., Baik-Schneditz, N., Schwabegger, B., Urlesberger, B., & Pichler, G. (2019). Parental stress experience and age of mothers and fathers after preterm birth and admission of their neonate to neonatal intensive care unit; a prospective observational pilot study. *Frontiers in Pediatrics*, 7, 439. <https://doi.org/10.3389/fped.2019.00439>
- Rubio-Grillo, M. H. (2019). Performance of an occupational therapist in a neonatal intensive care unit. *Colombia Medica*, 30-39. <https://doi.org/10.25100/cm.v50i1.2600>
- Sabnis, A., Fojo, S., Nayak, S. S., Lopez, E., Tarn, D. M., & Zeltzer, L. (2019). Reducing parental trauma and stress in neonatal intensive care: Systematic review and meta-



analysis of hospital interventions. *Journal of Perinatology*, 39(3), 375–386.
<https://doi.org/10.1038/s41372-018-0310-9>

Sanders, M. R., & Hall, S. L. (2017). Trauma-informed care in the newborn intensive care unit: Promoting safety, security and connectedness. *Journal of Perinatology*, 38(1), 3–10.
<https://doi.org/10.1038/jp.2017.124>

Soghier, L. M., Kritikos, K. I., Carty, C. L., Glass, P., Tuchman, L. K., Streisand, R., & Fratantoni, K. R. (2020). Parental depression symptoms at neonatal intensive care unit discharge and associated risk factors. *The Journal of Pediatrics*, 227, 163-169.
<https://doi.org/10.1016/j.jpeds.2020.07.040>

