Nonpharmacological Pain Management in Neonates

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Nonpharmacological pain reduction techniques such as sucrose administration, swaddling, and skin to skin contact greatly reduce pain in the neonatal population while reducing adverse effects of pharmacological use, promoting bonding, and family centered care. Many neonates in the emergency and intensive care settings experience multiple painful procedures throughout their admission. Newborn infants in the intensive care unit are exposed to numerous painful procedures. (Pavlyshyn & Sarapuk, 2023). While all procedures cannot be completely painless, it is crucial to limit the intensity of pain, and comfort these clients to promote emotional and physical well-being. This paper explores multiple approaches to neonatal pain management without the use of pharmacological interventions.

Neonates are shown to have fully developed pain receptors, causing untreated pain to have lasting effects and trauma. (Kunkov, 2025). "Management of pain and distress in emergency settings is imperative for the care of all injured patients but becomes a more complex undertaking in the care of children." (Stewart, Crawford, & Stoner, 2025 p. 553). It is crucial to treat pain in the neonate client to prevent further physiological and psychological trauma. Successful pain management in neonates is critical to preserve optimal neurodevelopment. (Shaw, 2024). Although it was previously suspected that neonates have immature responses to feeling pain, it is now well established that full-term and preterm newborns have the neuroanatomical pathways necessary for nociception, proven with laboratory markers. (Pavlyshyn & Sarapuk, 2023).

There are several ways to assist in achieving pain relief of the neonate client that do not involve using pharmacological interventions. Pharmacological interventions may leave room for mathematical error and are susceptible to having multiple adverse effects. Some methods studied

highlight a decrease in pain when applying nonpharmacological methods for pain management such as sucrose administration, swaddling, skin to skin contact and using a multimethod approach. Pain reduction in the neonate promotes family centered care and encourages bonding between the client and parent during the hospital admission. While caring for a neonate client, intervention requires a holistic understanding of pain and distress. (Stewart, Crawford, & Stoner, 2025). Effective pain management provides lower heart rates, higher oxygenation saturation, and lower pain scores in newborns. (Shaw, 2023).

Non-nutritive sucking and sucrose administration is a frequently used technique to assist in pain management in the neonatal population. Neonates receiving non-nutritive sucking typically score four points lower immediately after a painful procedure and five points lower when calming down from peak distress compared to newborns receiving no pain management strategies. (Riddell, 2023). In the circumstance of venous blood sampling, non-nutritive sucking was shown to decrease pain significantly in a neonate client. (Yadollahzadeh, 2025). Clinical trials have shown that infants offered pacifiers for non-nutritive sucking and/or sucrose during painful stimuli have less intense pain responses (less crying, lower heart rate) compared with those who did not receive any nonpharmacological intervention for pain management. (Roue, 2025). In pre-term and full-term neonates non-nutritive sucking may reduce the intensity of pain. (Riddell, 2023). During procedures such as gastric tube insertion, catheterization of the bladder, and echocardiography, sucrose administration has shown benefits in improving pain scores. (Yadollahzadeh, 2025).

Swaddling or tucking, in the neonate population is shown to decrease pain throughout medical procedures. “Facilitated tucking (containing the infant using a care-giver's hands on both head and lower limbs to maintain a 'folded-in' position), and swaddling (wrapping the infant

tightly in a blanket to prevent excessive limb movement) are among the most promising strategies that may reduce pain behaviors in preterm newborns." (Riddell, 2023). During procedures such as endotracheal suctioning, facilitated tucking position can lead to a significant reduction of pain. (Yadollahzadeh, 2025). Swaddled newborns have lower heartrates, higher oxygenation and lower pain scores, along with a decreased duration of crying after procedures when swaddled. (Shaw, 2024). Immediately after the painful procedure, swaddled preterm newborns may score, on average, four points lower than newborns receiving no strategies when calming down from distress. (Riddell, 2023).

Skin-to-skin contact also often referred to as 'kangaroo care,' provides pain management to the neonate while promoting bonding with the parent and family centered care. While in a NICU or emergency setting, neonates may be at risk of being exposed to painful procedures. This was confirmed by the EDIN pain scale and laboratory markers. (Pavlyshyn & Sarapuk, 2023). Dopamine and cortisol levels as pain and stress hormones were reliably high and normalized after skin to skin contact with a parent. (Pavlyshyn & Sarapuk, 2023). Studies show positive outcomes of the skin to skin contact method in relevance to reducing neonatal pain. Parents and caregivers may participate in providing these measures if they have been instructed how to safely perform them which in return is promoting family centered care and bonding with the neonate. (Roue, 2025).

There are many nonpharmacological means of pain relief that a provider may initiate using clinical judgement, however in some cases there is not a need to limit these to singular interventions. In the neonatal setting, studies show that a combination of non-nutritive sucking and swaddling provide sufficient pain relief. Multimodal approaches to pain control utilizing swaddling, non-nutritive sucking, and oral sucrose provides an analgesic effect on newborns

undergoing painful procedures. (Shaw, 2024). When assessing a neonatal client, providers should seek nonpharmacological interventions as a first line defense as there is less room for error and adverse effects. A multimodal approach to nonpharmacological interventions of swaddling, non-nutritive sucking, and oral sucrose have shown to have stronger benefits on pain relief than using a singular method, such as swaddling alone. (Shaw, 2024). Combinations of nonpharmacologic interventions may eliminate or minimize the need for pharmacological pain management, reducing the risk of adverse effects. (Roue, 2025). Non-nutritive sucking, facilitated tucking, and swaddling may reduce pain symptoms and behaviors in neonates. (Riddell, 2023). Combined nonpharmacological techniques lead to better outcomes in neonatal pain control compared to single nonpharmacological techniques. (Yadollahzadeh, 2025). The use of these interventions provides a simple, safe, and economical alternative to alleviating pain in a neonate. (Yadollahzadeh, 2025).

Relating knowledge of multiple pain relief techniques outside of pharmacological approaches effects the nursing practice by providing the client with the best possible care and outcome. Outside of pharmacological approaches to pain relief, there are many combinations of non-pharmacological pain relief that can reduce pain while also promoting family support and bonding. Family centered care will have increased positive outcomes on the client and family. Registered nurses should be knowledgeable on various alternatives to pharmacological pain management to provide optimal care in the clinical setting.

The use of nonpharmacological pain management in neonates greatly impacts patient care. Providing nonpharmacological pain management allows nurses to provide holistic, safe, and family centered care. Being knowledgeable on different approaches will be beneficial to the nurse, client, and family by promoting infant-parent bonding throughout the hospital admission.

Although the infant is receiving the procedures, keeping them comfortable and at a minimal pain level will provide relief and build rapport and trust between the nurse and family. A family centered care approach is ideal in the neonate emergency and intensive care settings and including family in a structured environment is crucial to calming parental anxiety which parental anxiety can exacerbate child's pain and anxiety response. (Stewart, Crawford, & Stoner, 2025). Using nonpharmacological methods for pain relief will foster a positive environment and minimize distress for all involved in care. Using nonpharmacological pain management in neonates decreases the level of stress and anxiety that caretakers and families leading to a better treatment experience for the neonate and family as a unit. (Yadollahzadeh, 2025). Nurses are to advocate for their clients, and in doing so using nonpharmacological techniques as a first line defense to pain is promoting client well-being.

In conclusion, it is important within the nursing practice to understand and remain educated on multiple approaches to manage pain in infants aside from pharmacological intervention. It is essential to provide effective pain management in the neonatal population as this is crucial to providing the least amount of stress throughout healthcare experience for the neonate and family. By relating the evidence-based practice of alternative pain management there will be better outcomes for the neonate within the hospital setting. Sucrose administration, skin to skin, and swaddling have been shown to successfully reduce pain in alternative to pharmacological measures. Minimizing infant pain will reduce stress and anxiety of the neonate and family correlating with the optimal healthcare experience and ensuring family centered care. Nonpharmacological pain management reduction techniques are a safe approach to maintaining minimal pain responses in neonates.

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