Revista de Ciencias Médicas de Pinar del Río

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2026; 30(2026): e7021

REVIEW ARTICLE

Relevance of palliative care in neonates with acute renal failure

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Citar como: Citar como: Reascos-Chalacán MY, Enrríquez-Grijalva MF, Reascos-Chalacán AP. Relevancia de la atención paliativa en neonatos con insuficiencia renal aguda. Rev Ciencias Médicas [Internet]. 2026 [citado: fecha de acceso]; 30(S1): e7021. Disponible en: http://revcmpinar.sld.cu/index.php/publicaciones/article/view/7021

Recibido: 27 de diciembre de 2025
Aceptado: 04 de febrero de 2026
Publicado: 07 de mayo de 2026

ABSTRACT

Introduction: acute renal failure in neonates constitutes a critical condition, associated with high morbidity and mortality in intensive care units.
Objective: to analyze the relevance of palliative care in neonates with acute renal failure, evaluating its clinical and family impact.
Methods: a systematic review of the scientific literature was conducted across various databases. The search was performed using an algorithm with keywords and Boolean operators, allowing the identification of relevant sources. The selected studies, after applying inclusion and exclusion criteria, were critically analyzed considering timeliness, methodological quality, and thematic relevance, and were integrated into the final synthesis of the review.
Development: the reviewed studies highlight that palliative care in neonates with acute renal failure enables a comprehensive approach to pain management, fluid and electrolyte control, nutritional support, and renal replacement therapies with a humanized focus. The importance of emotional support for families, clear communication, and active parental participation in decision-making is emphasized. Likewise, the role of multidisciplinary teams integrating nephrologists, neonatologists, psychologists, and social workers is underscored. Although palliative care does not aim to cure, it optimizes quality of life and reduces suffering in patients and families.
Conclusions: neonatal palliative care in acute renal failure constitutes an essential strategy to ensure dignified and compassionate care. Its implementation strengthens quality of life, fosters communication with families, and promotes ethical decisions centered on patient well-being.

Keywords: Acute Kidney Injury; Palliative Medicine; Infant, Newborn.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2026; 30(2026): e7021

INTRODUCTION

Acute renal failure (ARF) is the rapid loss of kidney function over time, resulting in the accumulation of creatinine, urea, and other nitrogenous waste products, as well as imbalances in electrolytes and extracellular volume. It is known that morbidity and mortality in patients with uncomplicated ARF admitted outside the ICU—in intermediate or low-care units—differ from those with ARF associated with multiorgan failure. ARF is a marker of morbidity and mortality in pediatric and adult patients admitted to intensive care units, where chronic kidney disease leads to greater long-term morbidity. Information on ARF is more limited in newborns (NB), whose kidneys are more sensitive to hypoperfusion and low blood flow. Their physiological characteristics include low glomerular filtration rate, high vascular resistance, high plasma renin activity, low cortical perfusion, and low sodium reabsorption in the proximal tubule.[1]

Currently, ARF has become a common complication among hospitalized children, particularly in critically ill patients, occurring in various contexts and presenting a high incidence of acute renal failure. The etiology of ARF is multifactorial; the most prevalent form in pediatric patients is prerenal, which may result from multiple complications such as chronic diarrhea, hemorrhage, dehydration, decreased cardiac output, or sepsis—conditions frequently observed in pediatric patients, whether acquired, pre-existing, or inadequately managed. Sepsis is the leading cause of ARF in pediatric patients. Other causes include post-cardiac surgery, multiorgan failure, hematologic-oncologic diseases, trauma, and exposure to nephrotoxic agents (drugs, contrast media), which are the main causes of ARF in critically ill children, whereas in non-critically ill hospitalized children, the primary cause is exposure to nephrotoxic agents.[2]

As is known, acute kidney disease is a very difficult and complex condition for the patient to endure, necessitating comprehensive care and consideration of palliative care options, as it encompasses physical, psychological, and emotional factors affecting both the patient and the family. A multidisciplinary team is required, including a nephrologist, a family physician or palliative care specialist for pain management, a nurse, a nutritionist, and a psychologist, all working together to provide holistic care.[3]

End-of-life care must be sensitive to the needs of children and their families, as clinicians must understand the illness from the parents' perspective—they face the imminent death of their child. Thus, improving quality and appropriately guiding end-of-life care development in pediatrics is essential. Many countries have recognized the need for pediatric palliative care (PPC) units to provide comprehensive care to children with life-threatening or life-limiting illnesses.[4] Given the above, this review was conducted to analyze the relevance of palliative care in neonates with acute renal failure, evaluating its clinical and familial impact.

METHODS

This study was designed as a systematic literature review to analyze the relevance of palliative care in neonates with acute renal failure. The search period was limited to 2010–2024 to include recent, high-impact research. Databases consulted included PubMed, SciELO, ScienceDirect, Elsevier, the Virtual Health Library, and Google Scholar, along with grey literature and secondary references from selected articles.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2026; 30(2026): e7021

The search strategy was based on keywords and Boolean operators such as "acute renal failure" OR "insuficiencia renal aguda" AND "palliative care" OR "cuidados paliativos" AND "neonates" OR "neonatos." Articles in Spanish, English, and Portuguese were considered to ensure a broad, multilingual perspective.

Inclusion criteria encompassed studies published within the defined timeframe, original research, systematic reviews, and meta-analyses directly addressing acute renal failure in neonates and its relationship with palliative care. Duplicates, articles without full access, irrelevant studies, and publications outside the temporal range were excluded.

The selection process occurred in several phases: identification of records, title and abstract screening, and full-text analysis. Initially, 85 records were obtained; 40 were removed due to duplication or lack of full access. After applying exclusion criteria, 15 articles were finally included in the qualitative synthesis. The procedure was represented using a PRISMA flow diagram showing the stages of identification, screening, eligibility, and inclusion.

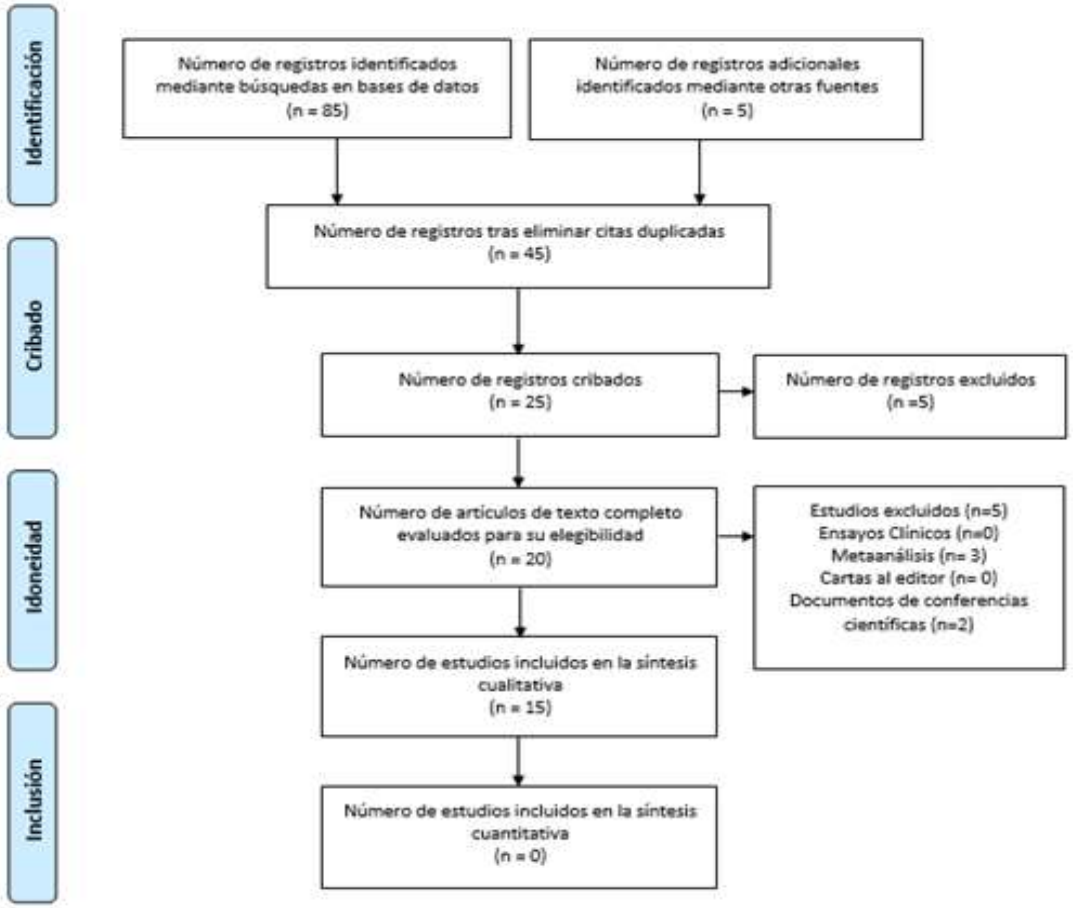

Fig. 1 Flowchart of the review process.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2026; 30(2026): e7021

Data extraction and analysis focused on key variables such as author, year, methodological design, study population, type of intervention, and main outcomes. Synthesis was performed qualitatively, integrating findings on clinical impact, quality of life, and the multidisciplinary approach in neonatal palliative care. No meta-analysis was conducted due to study heterogeneity, although consistent trends were identified that support the importance of palliative care in this vulnerable population.

DEVELOPMENT

Perinatal palliative care focuses on improving the quality of life of patients with serious or terminal illnesses and is a clinical approach designed to anticipate, prevent, and treat physical, psychological, social, and spiritual suffering in fetuses and newborns with life-limiting or life-threatening conditions, extending support to their families. In neonates with acute kidney injury (AKI), these cares acquire crucial importance due to the fragility and vulnerability of these patients, which may result from multiple factors, including prenatal complications, hypoxia, infections, and congenital malformations.[5]

Acute kidney injury in neonates can manifest in various ways, including oliguria, edema, electrolyte imbalances, and systemic symptoms such as lethargy and irritability. Therefore, symptom management requires a multidisciplinary approach involving nephrologists, neonatologists, specialized neonatal intensive care nurses, and other health professionals. Perinatal palliative care addresses multiple aspects that holistically encompass the pediatric patient and their surroundings.[6]

Pain Management: Pain is one of the most frequent symptoms. The utility of validated neonatal pain scales to monitor intensity and evolution has been demonstrated.[5] Pain management is fundamental and a priority in palliative care. In neonates, this may include analgesics and non-pharmacological techniques such as skin-to-skin contact and non-nutritive sucking. Analgesics such as paracetamol and opioids at appropriate doses are used to relieve pain. Administration of these medications must be carefully monitored due to neonatal vulnerability and potential side effects, particularly constipation and urinary retention.[7]

The concept of "total pain"—encompassing biological, social, psychological, and spiritual components—must always be considered, especially in neonatal or pediatric patients. The WHO analgesic ladder and its principles are equally valid for children: by steps, by schedule, via the appropriate route, and tailored to each child. The same drugs used in adults—such as tramadol, morphine, fentanyl, and methadone—are employed for pain treatment. However, in pediatric patients, initial doses must be calculated based on weight (kg) and subsequently adjusted according to pain intensity. The recommended analgesic dose is the one that effectively relieves the patient's pain.[8]

Fluid and Electrolyte Management: Acute kidney injury can cause significant fluid and electrolyte imbalances. Therefore, ensuring adequate hydration and proper volume status is essential for prevention and treatment. Monitoring and adjusting fluid and electrolyte levels are crucial to avoid disorders such as hyperkalemia. This may involve careful administration of intravenous fluids, use of diuretics, and, in severe cases, peritoneal dialysis.[6]

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2026; 30(2026): e7021

Nutritional Support: Neonates with acute kidney injury may have feeding difficulties, affecting growth and development and potentially leading to malnutrition that exacerbates their condition. However, those capable of oral intake and without medical contraindications should receive oral feeding. For patients unable to feed orally, total parenteral or enteral nutrition (TPN) may be necessary to ensure essential nutrient delivery. TPN must be carefully formulated and administered according to the neonate's capacity to metabolize nutrients, avoiding further strain on already compromised kidneys.[9]

Renal Replacement Therapies: In severe AKI cases, renal replacement therapies such as peritoneal dialysis and hemodialysis may be considered. However, these interventions must be evaluated within the palliative care context, where the goal is comfort—not cure. The decision to use these therapies should be made collaboratively with parents and based on the neonate's overall prognosis and quality of life.[6]

General Care and Comfort Measures: Focus primarily on providing a comfortable, respectful environment for the patient and family, including good hygiene, basic care, a quiet setting with low noise and dim lighting, and active family involvement in care. Additionally, breastfeeding should be continued in cases where chosen by the family and permitted by the medical team.[9]

Emotional Support for the Family
Palliative care aims to support both the patient and the family comprehensively when cure is not possible, using effective communication to improve quality of life. Families of neonates with acute kidney injury experience significant emotional stress; therefore, palliative care must also focus on providing psychological and emotional support to parents and close relatives.[10]

- Clear and empathetic communication: Open, honest communication with the family is essential—explaining the neonate's condition, treatment options, and prognosis in a compassionate, understandable manner. The involved family members require both emotional support and clear, accurate information about the patient's health status.[11]
- Psychological support: Access to psychological services and counseling for parents can help manage stress, anxiety, and anticipatory grief. Hence, healthcare personnel must provide effective emotional support to enhance care quality, unify criteria, and foster greater sensitivity—strengthening personal, professional, and institutional image.
- Family involvement in care: Allowing and encouraging parents to participate in daily neonatal care can strengthen bonding and provide a sense of control and engagement in the care process.[9]

Palliative care also includes emotional and psychological support for the neonate's parents and family. The presence of an interdisciplinary team—including social workers, psychologists, and spiritual counselors—is essential to provide comprehensive support. This assistance helps families cope with the situation and make informed decisions about their child's care.

Acute renal failure in neonates is a severe medical condition that can have devastating consequences. When conventional treatments prove ineffective or impose excessive burden on the fragile patient, palliative care emerges as a humanitarian alternative. Thus, treating pain and all symptoms experienced by children at the end of life is both a deontological and ethical imperative for all healthcare personnel—to safeguard the patient's life until ensuring a dignified death when necessary. While curing the disease may be impossible, alleviating suffering is an obligation—both to allow the child to enjoy life and to provide parents and families with greater peace, while

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2026; 30(2026): e7021

enabling professionals to feel useful and effective. This is achieved through a wide range of available therapies, including opioids, neuropathic pain analgesics, co-analgesics, and newer approaches offering targeted relief; in severe cases, renal replacement therapies may be used with a palliative, comfort-oriented focus.[5,12]

The objective of prenatal palliative care is to promote the best possible quality of life for any fetus or newborn with a life-limiting or life-threatening illness and for their family—from diagnosis through the child's death and parental bereavement. It is therefore a coordinated, comprehensive care approach that may extend over days, months, or years, often combined with specific disease treatment and palliative center care—including pain management, fluid control, and parenteral nutritional support for the neonate, among others.[5]

Parents play a central role in decision-making and care planning. Consequently, they also require support in managing uncertainty and the complications of the disease and its treatments. It is essential that families receive assistance with anticipatory grief and life changes associated with caregiving burden, potential isolation, and burnout. After the child's death, bereavement support continues for at least 13 months through phone calls, meetings with professionals, or condolence letters.[12]

Acute kidney injury in neonates is a sudden kidney dysfunction that may result from various causes, such as hypoxia, sepsis, dehydration, or congenital anomalies. In severe cases, it can lead to multiorgan deterioration and high mortality. Within palliative care, the goal is to provide comprehensive support addressing both the physical and emotional needs of the neonate and family. Withdrawal of artificial hydration and nutrition, if already established, must be individualized and discussed in advance by the team and agreed upon with the parents. Clear language should be used, explaining that withdrawal is proposed in the child's best interest and that all available measures will be taken to ensure comfort.[9]

It is important to note that palliative care provides relief from pain and other distressing symptoms, views dying as a normal part of life, neither hastens nor postpones death, integrates psychological and spiritual aspects, offers support to help patients live as actively as possible until death—thereby improving quality of life and potentially positively influencing the disease course—and supports the family in coping with the illness.[13]

Organ transplantation in neonates with kidney injury receiving palliative care is a complex issue dependent on multiple factors, such as the neonate's overall health status. Palliative care patients often have severe, complex medical conditions; if the neonate has multiple comorbidities or limited life expectancy, transplantation may not be viable. Eligibility criteria for transplantation include not only the severity of kidney injury but also the patient's overall stability, absence of active infections, and assessment of the ability to tolerate surgery and postoperative immunosuppressive therapy. The medical team's evaluation is vital to determine transplant feasibility, considering all medical factors, the neonate's prognosis, and expected quality of life. Additionally, the decision involves the neonate's parents or guardians, who must be fully informed of the risks, benefits, and long-term implications of kidney transplantation in a neonate with complex medical conditions.[14]

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Rev Ciencias Médicas. 2026; 30(2026): e7021

CONCLUSIONS

Palliative care in neonates with acute renal failure is an essential strategy to improve the quality of life for patients and their families by integrating medical and emotional support that ensures respectful accompaniment in a critical context. Its implementation requires a multidisciplinary, multimodal approach encompassing symptom control, fluid and electrolyte management, nutritional support, renal replacement therapies, and psychosocial support—always guided by ethical principles that prioritize the neonate's well-being and respect family values. Clear, empathetic communication with parents is fundamental to facilitate informed decisions and strengthen trust in the care process. Although benefits are evident, further research is needed to establish specific clinical guidelines and ensure universal access to high-quality palliative care for this vulnerable population.

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