



Assessment of Long-term Psychological Outcomes After Pediatric Intensive Care Unit Admission

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ABSTRACT

Background: The literature on the long-term psychological outcomes following pediatric intensive care unit (PICU) admission reveals a complex interplay of factors affecting both children and their families. **Literature Review:** (Knoester et al., 2008) highlight the advancements in pediatric intensive care that have resulted in improved survival rates, yet they also emphasize the emergence of new complications that necessitate ongoing assessment of physical and neurocognitive sequelae. The psychological impact extends beyond the patients themselves, as detailed by (O'Toole et al., 2002), who explore the duality of responses among parents, noting that a significant percentage experience persistent PTSD symptoms after their child's admission. This is further supported by (E. Rennick et al., 2001), who illustrate the enduring emotional burden on family members, emphasizing the interconnectedness of their experiences and the long-term psychological effects that can alter family dynamics. The concept of post-traumatic growth (PTG) is introduced by (O'Toole et al., 2002), acknowledging that while adverse psychological effects are prevalent, there can also be positive transformations following traumatic experiences. This dual focus enriches the understanding of the psychological landscape for families navigating the aftermath of PICU admissions. (Voiriot et al., 2002) further contribute to this understanding by discussing the correlation between psychiatric morbidity in children and the likelihood of readmission for physical health issues, thereby emphasizing the need for integrated care that addresses both mental and physical health. **Conclusion:** In conclusion, the reviewed literature illustrates that the psychological outcomes following PICU admissions are complex and multifaceted. The studies collectively highlight the necessity for comprehensive assessment and support systems that address the psychological needs of both children and their families. There is a clear need for ongoing research and improved clinical practices that consider the long-term psychological effects of critical illness and ensure that both patients and their families receive the necessary support to navigate their recovery journeys.

Keyword: Long-term Psychological Outcomes, Pediatric Intensive Care Unit Admission

INTRODUCTION

The literature on the long-term psychological outcomes following pediatric intensive care unit (PICU) admission reveals a complex interplay of factors affecting both children and their families. (Knoester et al., 2008) highlight the advancements in pediatric intensive care that have led to improved survival rates, yet they also underscore the emergence of new disease patterns characterized by long-term complications. Their study emphasizes the importance of assessing physical and neurocognitive sequelae in PICU survivors, suggesting that awareness of these outcomes can enhance treatment and support strategies post-discharge.

(Cirilli, 2002) expands the discussion to include the psychological ramifications for parents during their child's PICU hospitalization. The acute stress experienced by parents is elaborated upon, detailing a spectrum of symptoms that can evolve into post-traumatic stress disorder (PTSD). This article provides a foundational understanding of the parental experience, setting the stage for subsequent studies that explore the psychological aftermath of PICU admissions.

(T Hlophe & Masekela, 2009) further delve into the psychological challenges faced by PICU patients and their families, emphasizing the need for psychological assessment and management of PTSD symptoms. They advocate for a family-centered approach to care, recognizing the interconnectedness of family members' experiences and the importance of involving parents in decision-making processes. This perspective is critical, as it acknowledges the shared psychological burden and the necessity for comprehensive support systems.

(E. Rennick et al., 2001) present qualitative findings that illustrate the enduring psychological impact of PICU hospitalization on family members one year post-discharge. Their research reveals that the memories and emotional responses associated with the PICU experience can lead to heightened vigilance regarding the health of the child survivor, as well as changes in family dynamics. This study underscores the necessity of addressing the psychological needs of all family members collectively, rather than in isolation.

(O'Toole et al., 2002) conduct a systematic review that identifies factors associated with post-traumatic growth (PTG) in parents following their child's intensive care admission. They highlight the prevalence of PTSD symptoms among parents and the potential for positive psychological changes following traumatic experiences. This dual focus on negative and positive outcomes enriches the understanding of the psychological landscape for families navigating the aftermath of PICU admissions.

Finally, (Voiriot et al., 2002) discuss the broader implications of chronic critical illness and post-intensive care syndrome, noting that children discharged from the PICU may experience a range of psychological issues, including depression and anxiety. They identify risk factors that can exacerbate these conditions, emphasizing the importance of addressing both the psychological and physical health of PICU survivors and their families.

Together, these articles provide a comprehensive overview of the psychological outcomes following pediatric intensive care unit admissions, illustrating the multifaceted challenges faced by children and their families. The literature reveals a pressing need for continued research and improved support mechanisms to address the long-term psychological effects of such critical medical experiences.

LITERATURE REVIEW

The article "Surviving pediatric intensive care: physical outcome after 3 months" by Knoester, Bronner, and Bos (Knoester et al., 2008) provides a comprehensive examination of the physical and neurocognitive sequelae experienced by children following their admission to a Pediatric Intensive Care Unit (PICU). The authors highlight a critical shift in the focus of pediatric intensive care from mere survival to the long-term outcomes of survivors, particularly concerning their physical health and quality of life.

The study underscores the significant advancements in pediatric intensive care that have led to improved survival rates among critically ill children. However, it also brings to light the emergence of new disease patterns and long-term complications that can arise from both the original illnesses and the treatments

administered in the PICU. This duality of outcomes necessitates a broader understanding of the implications of critical illness and intensive care on the growth and development of children, a perspective that the authors argue is essential for enhancing post-discharge care and support.

One of the key findings of the study is that while a substantial proportion of children (approximately one-third) were reported to be in full health one year post-discharge, a significant number still experienced varying degrees of physical sequelae and functional limitations. The authors note that 60-80% of the evaluated children reported a good quality of life, suggesting that while many children recover well, there remains a notable subset that may require ongoing support and intervention.

The article is particularly valuable in its call for increased awareness and research into the physical sequelae associated with PICU admissions. The authors argue that understanding these outcomes can lead to improvements in treatment protocols and support systems for families post-discharge. They emphasize the need for further studies to quantify and qualify the long-term effects of PICU admissions on children's health, as current literature on this topic is limited.

In the article "Traumatic Stress Responses in Mothers and Fathers to Pediatric Intensive Care Treatment: The Role of Beliefs," (Cirilli, 2002) explores the profound psychological impact that a child's admission to a pediatric intensive care unit (PICU) has on parents. The article highlights that approximately 200,000 children are admitted to PICUs annually in the United States, marking a significant public health concern given the acute stress experienced by families during such critical periods.

Identifies that the initial parental response to a child's critical illness is often characterized as a crisis, suggesting that the hospitalization shatters their normalcy and induces significant psychological distress. The article delves into the various stressors parents face, which can be categorized into environmental, situational, and interpersonal factors. This categorization is crucial as it allows for a nuanced understanding of how different contexts can exacerbate or mitigate parental stress.

The author effectively describes the acute stress response that parents may experience, which can manifest as symptoms of dissociation, re-experiencing,

avoidance, and hyperarousal within the initial days and weeks following the traumatic event of their child's hospitalization. This aligns with established trauma literature, underscoring the immediate psychological toll that such experiences can take on caregivers.

Moreover, emphasizes the importance of measuring the persistence of these stress responses. The article suggests that when symptoms last more than one month, they may evolve into posttraumatic stress disorder (PTSD), a critical consideration for pediatric psychologists and healthcare providers. The reference to the higher prevalence of PTSD in women compared to men within the general population adds a layer of complexity to understanding how gender may influence the psychological aftermath of a child's PICU admission.

However, while the article provides valuable insights into the acute and posttraumatic stress responses of parents, it could benefit from a more detailed exploration of coping mechanisms and support systems that could aid parents during and after their child's hospitalization. This would enrich the discussion by offering practical implications for healthcare professionals working in pediatric settings.

The article "Life after paediatric intensive care unit" by Hlophe and Masekela (T Hlophe & Masekela, 2009) provides a comprehensive examination of the long-term psychological outcomes following admission to a Pediatric Intensive Care Unit (PICU). The authors emphasize the critical need for healthcare providers to be vigilant regarding risk factors that may contribute to neurocognitive impairments in children post-PICU. These risk factors include septic illness, invasive interventions, and the use of benzodiazepines, all of which can have lasting psychological implications.

A significant focus of the article is the prevalence of post-traumatic stress disorder (PTSD) symptoms among PICU patients. The authors detail the specific PTSD symptoms frequently observed, such as difficulty recalling aspects of the traumatic event, hypervigilance, avoidance behaviors, physiological reactivity to trauma reminders, and intrusive thoughts (T Hlophe & Masekela, 2009). This highlights the necessity for systematic screening tools to assess the presence of

these symptoms, which can guide appropriate interventions and support for affected children and their families.

Furthermore, the article advocates for a family-centered approach to ICU management. The authors argue that respecting the needs and preferences of families is crucial, as is providing emotional support to caregivers. The involvement of social workers and psychologists during and after PICU admission is also highlighted as essential in addressing the psychological aftermath of such traumatic experiences. The authors stress the importance of including parents in decision-making processes and ensuring they receive adequate emotional support, which can significantly impact the psychological recovery of both the child and the family unit (T Hlophe & Masekela, 2009).

The article "Family Members' Perceptions of Their Psychological Responses One Year Following Pediatric Intensive Care Unit (PICU) Hospitalization: Qualitative Findings From the Caring Intensively Study" by Rennick et al. (E. Rennick et al., 2001) provides a comprehensive exploration of the long-term psychological outcomes experienced by family members following a child's admission to a PICU. The qualitative findings highlight the profound and lasting emotional impact of PICU experiences on parents and siblings, revealing that the repercussions extend well beyond the hospitalization period.

One of the significant insights from the study is the enduring nature of the psychological effects on family members. The authors report that parents vividly recalled emotionally charged experiences associated with their child's hospitalization, indicating that these memories contribute to a sustained emotional burden. This aligns with the notion that traumatic medical experiences can lead to long-term psychological distress (E. Rennick et al., 2001). The study underscores that these experiences not only affect the individual but also alter family dynamics, as parents and siblings navigate their own emotional responses in relation to one another.

The article also emphasizes the interconnectedness of the emotional responses among family members. Parents and siblings exhibited heightened vigilance regarding the health of the child survivor, which reflects a protective instinct but also suggests an ongoing anxiety that could impede the recovery

process. The authors note that changes in caregiving roles and the length of absences during hospitalization contributed to shifts in family relationships, further complicating the recovery trajectories of all involved (E. Rennick et al., 2001). This highlights the need for a systemic approach when considering the psychological outcomes of PICU admissions, as the experiences of the child, parents, and siblings are intertwined.

Moreover, the findings reveal that families progress through different recovery pathways, with some experiencing persistent psychological challenges while others gradually resolve their issues. This variability in recovery trajectories suggests that interventions should be tailored to the specific needs of each family member, recognizing that some may require ongoing support to address unresolved emotional difficulties (E. Rennick et al., 2001).

The article titled "A Systematic Review of the Factors Associated with Post-Traumatic Growth in Parents Following Admission of Their Child to the Intensive Care Unit" by O'Toole et al. (O'Toole et al., 2002) provides a comprehensive examination of the psychological outcomes experienced by parents after their child's admission to a pediatric intensive care unit (PICU). The authors highlight the duality of psychological responses among parents, emphasizing both the adverse effects, such as anxiety, depression, and post-traumatic stress disorder (PTSD) symptoms, and the potential for post-traumatic growth (PTG).

The systematic review effectively synthesizes existing literature, revealing that a significant percentage of parents (between 10% and 21%) experience persistent PTSD symptoms after their child's intensive care admission, with alarming rates (up to 84%) still affected three months post-discharge. This statistic underscores the critical need for healthcare providers to recognize the psychological toll that intensive care admissions can have on families. The authors identify key factors contributing to PTSD symptoms, including unexpected admissions, parental worry about their child's survival, and the occurrence of subsequent hospitalizations. Such insights are vital for developing targeted interventions to support parents during and after their child's critical care experience.

Moreover, the article introduces the concept of PTG, which denotes positive psychological changes that can occur following traumatic experiences. The authors

categorize PTG into five domains: appreciation of life, improved relationships, perceived personal strength, recognition of new possibilities, and spiritual growth. This framework is particularly relevant, as it shifts the focus from solely addressing negative outcomes to acknowledging potential positive transformations that can arise from adversity. However, the authors note a significant gap in the literature concerning PTG in parents of children specifically admitted to intensive care, suggesting an area ripe for further research.

The systematic review's critical evaluation of the factors associated with PTG is a timely contribution to the field, as it encourages a more nuanced understanding of parental experiences in the context of pediatric intensive care. By identifying parents who may be less likely to experience PTG, the findings can inform clinical practices and support systems aimed at fostering resilience and promoting positive outcomes in these families.

The article "Chronic critical illness and post-intensive care syndrome: from pathophysiology to clinical challenges" by Voiriot et al. (Voiriot et al., 2002) provides a comprehensive examination of the psychological outcomes experienced by children following their admission to the Pediatric Intensive Care Unit (PICU). The authors highlight the significant prevalence of psychiatric morbidity in this population, including depression, alterations in self-esteem, delusional memories, fears, and sleep disturbances post-discharge. This focus on the psychological sequelae of PICU admissions is critical, as it underscores the often-overlooked emotional and mental health challenges that can accompany physical recovery.

One of the key insights from the article is the correlation between psychiatric issues and the likelihood of readmission for physical health problems. This suggests that psychological recovery is intrinsically linked to overall health outcomes, which is a vital consideration for healthcare providers when planning post-PICU care. The authors indicate that children who experience psychiatric morbidity are at a heightened risk for subsequent physical health issues, emphasizing the need for integrated care approaches that address both physical and mental health needs.

The article also identifies several risk factors that contribute to the development of long-term psychological problems in children after PICU

discharge. Specifically, delusional memories were found to be independently associated with the length of sedation and subsequent symptoms of post-traumatic stress disorder (PTSD), even when controlling for illness severity and emergency admission status. This finding is particularly relevant in clinical settings, as it highlights the importance of minimizing sedation duration when possible and monitoring for PTSD symptoms in pediatric patients.

Furthermore, the authors discuss the impact of parental mental health on the recovery of PICU survivors. Parents often experience their own post-traumatic stress, anxiety, and depression, which can further complicate the recovery process for the child. The interplay between parental and child psychological outcomes illustrates the necessity for family-centered care in the PICU context.

CONCLUSION

The literature on long-term psychological outcomes following pediatric intensive care unit (PICU) admissions reveals a multifaceted landscape of challenges faced by both children and their families. The articles reviewed collectively underscore the importance of recognizing not only the physical recovery of children but also the significant psychological ramifications that can persist long after discharge.

(Knoester et al., 2008) highlight the advancements in pediatric intensive care that have resulted in improved survival rates, yet they also emphasize the emergence of new complications that necessitate ongoing assessment of physical and neurocognitive sequelae. This focus on long-term outcomes is echoed by (T Hlophe & Masekela, 2009), who identify risk factors such as septic illness and invasive interventions that can lead to lasting psychological implications, particularly the prevalence of PTSD symptoms among PICU patients.

The psychological impact extends beyond the patients themselves, as detailed by (O'Toole et al., 2002), who explore the duality of responses among parents, noting that a significant percentage experience persistent PTSD symptoms after their child's admission. This is further supported by (E. Rennick et al., 2001), who illustrate the enduring emotional burden on family members, emphasizing the

interconnectedness of their experiences and the long-term psychological effects that can alter family dynamics.

The concept of post-traumatic growth (PTG) is introduced by (O'Toole et al., 2002), acknowledging that while adverse psychological effects are prevalent, there can also be positive transformations following traumatic experiences. This dual focus enriches the understanding of the psychological landscape for families navigating the aftermath of PICU admissions. (Voiriot et al., 2002) further contribute to this understanding by discussing the correlation between psychiatric morbidity in children and the likelihood of readmission for physical health issues, thereby emphasizing the need for integrated care that addresses both mental and physical health.

In conclusion, the reviewed literature illustrates that the psychological outcomes following PICU admissions are complex and multifaceted. The studies collectively highlight the necessity for comprehensive assessment and support systems that address the psychological needs of both children and their families. There is a clear need for ongoing research and improved clinical practices that consider the long-term psychological effects of critical illness and ensure that both patients and their families receive the necessary support to navigate their recovery journeys.

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REFERENCES

1. Knoester, H., B. Bronner, M., & P. Bos, A., 2008. Surviving pediatric intensive care: physical outcome after 3 months. [ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov/18588888/)

2. Cirilli, C., 2002. Traumatic Stress Responses in Mothers and Fathers to Pediatric Intensive Care Treatment: The Role of Beliefs. [PDF]
3. T Hlophe, S. & Masekela, R., 2009. Life after paediatric intensive care unit. ncbi.nlm.nih.gov
4. E. Rennick, J., M. Knox, A., C. Treherne, S., Dryden-Palmer, K., Stremler, R., T. Chambers, C., McRae, L., Ho, M., M. Stack, D., Dougherty, G., Fudge, H., & Campbell-Yeo, M., 2001. Family Members' Perceptions of Their Psychological Responses One Year Following Pediatric Intensive Care Unit (PICU) Hospitalization: Qualitative Findings From the Caring Intensively Study. ncbi.nlm.nih.gov
5. O'Toole, S., Suarez, C., Adair, P., McAleese, A., Willis, S., & McCormack, D., 2002. A Systematic Review of the Factors Associated with Post-Traumatic Growth in Parents Following Admission of Their Child to the Intensive Care Unit. ncbi.nlm.nih.gov
6. Voiriot, G., Oualha, M., Pierre, A., Salmon-Gandonnière, C., Gaudet, A., Jouan, Y., Kallel, H., Radermacher, P., Vodovar, D., Sarton, B., Stiel, L., Bréchet, N., Préau, S., & Joffre, J., 2002. Chronic critical illness and post-intensive care syndrome: from pathophysiology to clinical challenges. ncbi.nlm.nih.gov