

Section: Paediatric Nursing

Puzzle play therapy to reducing pre-transfusion anxiety in patient with thalassemia

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Abstract

Thalassemia, a chronic blood disorder, requires regular blood transfusions, which can cause significant anxiety in children during the pre-transfusion period. If left unmanaged, this anxiety can negatively impact the child's comfort, cooperation, and overall healing process. This study aimed to investigate the effectiveness of puzzle play therapy as a non-pharmacological intervention to reduce pre-transfusion anxiety in a child with thalassemia. A descriptive case study approach was employed, involving a child with thalassemia major who undergoes routine blood transfusions. Data were collected through nursing assessments, observations of the child's behaviour before and after the intervention, and documentation based on the nursing process stages. Puzzle play therapy was provided during the pre-transfusion waiting period as an engaging distraction tailored to the child's developmental stage. The results showed a reduction in anxiety symptoms following the intervention, evident in the child's calmer demeanour, increased cooperation, and active participation during the pre-transfusion process. These findings suggest that puzzle play therapy is an effective nursing intervention for reducing pre-transfusion anxiety in children with thalassemia. Incorporating puzzle play therapy into holistic paediatric nursing care can provide a valuable supportive strategy in child-friendly healthcare settings. With promoting a more positive experience for children undergoing blood transfusions, this intervention can enhance their overall care and well-being.

Keywords: Paediatric nursing, puzzle play therapy, symptoms management, thalassemia, well-being

Introduction

Thalassemia is an autosomal recessive hemoglobinopathy characterized by defective synthesis of one or more globin chains of haemoglobin, resulting in chronic haemolytic anaemia (Fibach & Rachmilewitz, 2017). Globally, approximately 7% of the population—some 80–90 million individuals—carry thalassemia mutations, with highest prevalence in the Mediterranean, Middle East, and Southeast Asia (Dordevic et al., 2025). In Indonesia, carrier rates range 6–10%, and transfusion-dependent thalassemia major affects over 9,000 patients nationwide (Wahidiyat et al., 2022). Repeated red blood cell transfusions are required to maintain haemoglobin ≥ 9 g/dL, but incur risks of iron overload, bone deformities, growth retardation, endocrinopathies, and cardiomyopathy. Current management combines scheduled transfusions, iron chelation, splenectomy when indicated, and emerging curative options such as hematopoietic stem cell transplantation (Farmakis et al., 2022). Pre-transfusion anxiety is a frequent psychosocial complication in paediatric thalassemia patients (Islam et al., 2025). Manifestations range from restlessness and crying to refusal of procedures, potentially prolonging treatment time, increasing procedural distress, and diminishing treatment adherence. Then based on National Economic Survey (SUSENAS) report, 35% children from 72% population in Indonesia had been hospitalized and 45% had gotten an anxiety such a cry and afraid to meet with people (Suryani & Bakri, 2021). Consequently, nursing frameworks emphasize atraumatic care—strategies that minimize procedural distress through preparation, education, and distraction.

Play therapy is a well-documented non-pharmacological intervention that engages children in age-appropriate activities to express emotions, build coping skills, and divert attention from medical procedures. Puzzle play, in particular, stimulates concentration, fine motor skills, and problem-solving, while providing a sense of mastery and enjoyment (Sholikhah et al., 2024). Prior studies in paediatric settings demonstrate that puzzle play reduces anxiety scores significantly (Abdi et al., 2025; Sravya & Nirmala, 2025). These findings support the rationale for integrating puzzle play into the nursing process for thalassemia patients undergoing transfusion. This report describes the application of evidence-based puzzle play therapy to reduce pre-transfusion anxiety in a 10-year-old child with thalassemia major at RS PKU Muhammadiyah Wonosobo. It reviews assessment, nursing diagnosis, planning, implementation, and evaluation, and discusses outcomes in light of relevant literature.

This study on puzzle play therapy to reduce pre-transfusion anxiety in patients with thalassemia is important because it addresses a significant concern in the care of children with chronic illnesses. Thalassemia, a genetic

disorder requiring regular blood transfusions, can lead to increased anxiety and stress in children, particularly during the pre-transfusion period (Mazzone et al., 2009; Othman et al., 2022). Unmanaged anxiety can negatively impact the child's comfort, cooperation, and overall well-being, potentially affecting their treatment outcomes and quality of life. By investigating the effectiveness of puzzle play therapy as a non-pharmacological intervention, this study provides valuable insights into a potentially effective and easily implementable strategy for reducing anxiety in children with thalassemia. The findings of this study can inform the development of holistic paediatric nursing care and child-friendly healthcare settings, ultimately enhancing the care and well-being of children with thalassemia and potentially other chronic conditions. Furthermore, this study highlights the importance of considering the emotional and psychological needs of children with chronic illnesses, and the potential benefits of incorporating play therapy and other non-pharmacological interventions into their care plans.

Case Description

A 10-year-old boy with β -thalassemia major, managed at RS PKU Muhammadiyah Wonosobo since 2020, was admitted for his routine pre-transfusion evaluation. His treatment regimen consisted of packed red blood cell transfusions every 3–4 weeks to maintain haemoglobin between 9 and 10 g/dL, supplemented by subcutaneous deferoxamine chelation therapy. On admission, his vital signs were within expected baseline ranges—temperature 36.7 °C, heart rate 112 bpm, blood pressure 98/58 mmHg, respiratory rate 20 breaths/min, and SpO₂ 98% on room air—and physical examination confirmed pallor and grade-2 hepatosplenomegaly (liver palpable 4 cm and spleen 5 cm below the costal margin). Pre-transfusion laboratory results showed a haemoglobin level of 8.2 g/dL and serum ferritin of 1,200 ng/mL; renal and hepatic function tests were within normal limits. To quantify procedural anxiety, the Faces Image Scale (FIS) was administered. The patient initially selected the fourth of five cartoon faces (FIS = 4), indicative of moderate-to-severe anxiety, and concurrently exhibited tachycardia, diaphoresis of the palms, restlessness, and verbal expressions of fear (“I’m scared of the needle.”). Based on these findings, two nursing diagnoses were formulated: (1) Anxiety related to an invasive procedure, evidenced by FIS score = 4, elevated heart rate, diaphoresis, and avoidance behaviors; and (2) Knowledge deficit concerning the transfusion process, evidenced by patient questions and expressed uncertainty about procedural steps.

In collaboration with the haematologist and child-life specialist, the paediatric nurse developed a care plan with the following SMART goals: reduce the FIS score from 4 to < 2 within 20 minutes of intervention, maintain heart rate below 100 bpm during venipuncture, and complete the transfusion without behavioural refusal. Drawing on evidence-based practice, puzzle play therapy was selected as the primary non-pharmacological intervention. A jigsaw puzzle depicting his favourite cartoon characters was provided, and a quiet corner adjacent to the transfusion chair was arranged for the activity. Fifteen minutes before IV access, the patient began assembling the puzzle under the nurse’s supportive observation while his mother offered verbal encouragement. Continuous cardiac monitoring demonstrated a reduction in heart rate to 94 bpm within ten minutes of play. Immediately prior to venipuncture, reassessment via the FIS showed a selection of the second-happiest face (FIS = 2), indicating only mild anxiety. The nurse performed venous cannulation successfully on the first attempt without distress, and during the subsequent two-hour transfusion, the child intermittently engaged with the puzzle, maintaining calm and cooperative behaviour throughout. Evaluation of outcomes confirmed that all objectives were met: the patient’s FIS score decreased from 4 to 2, heart rate remained stable between 90–98 bpm during cannulation, and no pharmacological anxiolytics were required. The patient completed the puzzle, displayed positive affect, and did not exhibit resistance or distress. These results demonstrate the effective integration of an evidence-based puzzle play intervention into the paediatric nursing process, yielding measurable improvements in both subjective anxiety measures and objective physiological parameters.

Discussion

The present case demonstrates that puzzle play therapy can serve as an effective non-pharmacological intervention to reduce pre-transfusion anxiety in paediatric thalassemia patients. Prior to the intervention, the patient exhibited moderate-to-severe anxiety (FIS = 4), tachycardia (112 bpm), diaphoresis, and reluctance toward venipuncture. Fifteen minutes of guided puzzle play resulted in a rapid reduction of his anxiety to a mild level (FIS = 2) and a concurrent decrease in heart rate to 94 bpm. Together, these studies support the hypothesis that cognitive engagement in structured play effectively distracts attention from painful stimuli and diminishes physiological arousal associated with procedural anxiety (Rischer et al., 2020; Robinson et al., 2013; Rad & Wippert, 2024). Mechanistically, puzzle play engages the child’s concrete operational thinking, promoting concentration, fine motor coordination, and a sense of mastery. With allocating cognitive resources to problem-solving and visual pattern recognition, the child’s ability to process fear-related stimuli decreases. In this case, the choice of a 100-piece puzzle tailored to patient’s personal interests further enhanced motivation and absorption. The immediate engagement observed—evidenced by overt signs of enjoyment and focus—likely facilitated the rapid autonomic shift from sympathetic activation toward a calmer state.

Several factors contributed to the intervention’s success. First, developmental appropriateness: at 10 years old, the patient possessed the cognitive capacity to undertake and enjoy a moderately complex puzzle, whereas

simpler activities might not have sufficiently engaged his attention. Second, environmental support: the nurse established a quiet, child-friendly space free of extraneous noise or interruptions, consistent with atraumatic care principles. Third, therapeutic rapport and family involvement: the nurse's empathic communication and the mother's continuous encouragement fostered a secure atmosphere, reinforcing the child's confidence to participate. Family-centered care models emphasize parental presence as a key element in alleviating paediatric anxiety. Indeed, the patient frequently glanced at his mother for reassurance, which contributed to his sustained cooperation. Despite these positive outcomes, several limitations must be acknowledged. As a single-case report, this study lacks a control condition or comparison group, limiting generalizability. The use of the FIS—a unidimensional, self-report instrument—captures only a snapshot of the child's emotional state and may not reflect longer-term or multidimensional aspects of anxiety. Additionally, the novelty effect of introducing a new play activity could have temporarily heightened distractibility; subsequent sessions might yield attenuated responses. Future investigations should employ randomized controlled designs, incorporate multiple validated anxiety measures (e.g., physiological biomarkers, observer ratings), and compare puzzle play against alternative distraction techniques such as virtual reality or music therapy.

Distraction techniques such as puzzle play therapy have also been proven to reduce children's perception or fear and anxiety towards invasive procedures (Koller & Goldman, 2012). The multidisciplinary collaboration inherent in this case underscores the importance of teamwork in paediatric transfusion care (LaFrance et al., 2019). The paediatric nurse led the intervention, but seamless coordination with the haematologist ensured proper timing of transfusion relative to the play session. Laboratory and blood-bank personnel provided timely blood products, reducing waiting periods that can exacerbate anxiety. Although no child-life specialist was available, integrating such expertise could further enrich interventions through specialized guidance on therapeutic play and developmental psychology. This case reinforces the body of evidence supporting puzzle play therapy as a viable, low-cost strategy to mitigate procedural anxiety in children with thalassemia. With addressing both psychological and physiological components of stress, this intervention promotes smoother procedural workflows and more positive healthcare experiences. Future research should explore scalability across diverse paediatric populations, optimal dosing of play sessions, and integration into standardized paediatric nursing protocols.

Conclusion

Puzzle play therapy served as an effective, low-cost, non-pharmacological intervention to alleviate pre-transfusion anxiety in a 10-year-old thalassemia patient. It produced rapid anxiety reduction, physiological stabilization, and full procedural cooperation. Incorporating play therapy into paediatric nursing supports atraumatic care principles and enhances treatment adherence. Future research should include randomized controlled trials comparing puzzle play with other distraction methods, investigate optimal session durations, and assess long-term impacts on psychosocial well-being in thalassemia populations.

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