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Effectiveness of Play Therapy for Reducing Anxiety Among Children with Thalassemia on Blood Transfusion : A Quasi-Experimental Study

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Abstract

Background: Children with thalassemia require lifelong, repeated blood transfusions, which frequently induce anxiety due to invasive procedures and unfamiliar clinical settings. If left unaddressed, anxiety can compromise treatment adherence and adversely impact psychological well-being. The present study investigates the effectiveness of play therapy in reducing anxiety among children with thalassemia undergoing blood transfusion.

Methods: A quasi-experimental one-group pretest–posttest design was used at Pringsewu Regional Hospital. A total of 26 children were recruited using a total sampling approach. The intervention consisted of coloring-based play therapy administered for 20–30 minutes prior to transfusion. Anxiety levels were measured using a standardized child anxiety questionnaire before and after the intervention. Data were analyzed using the Wilcoxon Signed Rank Test.

Result: Anxiety levels dropped significantly after the intervention. The median (IQR) anxiety score went from 40.42 before play therapy to 15.65 after. The difference between pretest and posttest scores was statistically significant ($p < 0.001$). Play therapy reduced anxiety in the participants.

Conclusion: Play therapy is an effective non-pharmacological intervention for reducing anxiety in children with thalassemia undergoing blood transfusion. Its implementation may support pediatric nursing care by improving emotional comfort and facilitating smoother treatment procedures.

Keywords: Anxiety, Children, Thalassemia.

BACKGROUND

Thalassemia is a hereditary blood disorder characterized by impaired hemoglobin production, necessitating lifelong, routine blood transfusions for affected individuals (1). Recent global estimates indicate that thalassemia imposes a significant health burden, with over 13 million individuals affected worldwide and approximately 100,000 to 120,000 new cases annually (2). In Indonesia, the number of diagnosed thalassemia cases has consistently increased in recent years, reflecting both improved case detection and ongoing disease transmission. This rising burden underscores the need for expanded long-term treatment and comprehensive care services (3, 4).

Repeated blood transfusions can be distressing for children. Fear of needles, pain, and unfamiliar hospital environments may trigger anxiety responses, including crying, restlessness, refusal of care, and sleep disturbances (5). If left unaddressed, anxiety can interfere with the treatment process and negatively impact both psychological and physical well-being in pediatric patients (6, 7).

Play therapy is a non-pharmacological strategy used to reduce anxiety in children (8). Play is a natural activity that enables children to express emotions, cope with stress, and gain a sense of control over their environment (9). Previous research demonstrates that play therapy effectively reduces anxiety in pediatric patients undergoing medical procedures. For example, coloring activities can distract children from distressing procedures and increase their comfort (10).

Recent evidence supports play therapy as an effective non-pharmacological intervention for reducing anxiety among hospitalized children (11). A randomized controlled trial conducted in 2022 to 2023 found that structured play-based interventions significantly reduced anxiety levels in children aged 3 to 10 years during hospitalization, emphasizing the value of therapeutic engagement in pediatric care settings (12). Similarly, a quasi-experimental study in 2025 reported that puzzle-based play therapy led to a marked reduction in anxiety, with children transitioning from moderate or severe anxiety to non-anxious conditions following the intervention.

Play therapy reduces anxiety by distracting children from stressful medical procedures, facilitating emotional expression, and enhancing their sense of control (13). Activities such as coloring, storytelling, and interactive games enable children to process fear and unfamiliar experiences in a safe, developmentally appropriate environment. This approach not only alleviates psychological distress but also improves cooperation during treatment and overall well-being. Furthermore, systematic and clinical studies indicate that various forms of therapeutic play, including puppet play and structured play sessions, consistently contribute to anxiety reduction and emotional stabilization in pediatric patients (14).

Based on these findings, these findings suggest that play therapy is an effective and practical nursing intervention for managing anxiety in children undergoing medical procedures, including those with thalassemia who receive regular blood transfusions. Implementing play therapy supports holistic pediatric care by addressing psychological and emotional needs during hospitalization. A study conducted at Pringsewu General Hospital (RSUD Pringsewu) revealed that among 26 children with thalassemia, approximately 73% experienced moderate to severe anxiety prior to undergoing blood transfusion. This condition underscores the substantial psychological burden associated with repeated invasive procedures in pediatric patients. Such findings highlight the urgent need for child-friendly and engaging therapeutic approaches that can effectively alleviate anxiety during medical interventions. Therefore, this study aims to examine the effectiveness of play therapy in reducing anxiety levels among children with thalassemia undergoing blood transfusion.

METHODS

Study Design

This study is quantitative with quasi-experimental design utilizing a one-group pretest–posttest format was employed (15). This approach was chosen to assess changes in anxiety levels before and after the implementation of play therapy among children with thalassemia. The lack of a control group restricts the ability to attribute observed changes in anxiety specifically to the intervention, as extraneous variables may have contributed to the outcomes.

Sample/Participants

The study was conducted in the thalassemia unit of Pringsewu General Hospital (RSUD Pringsewu), Indonesia, in September 2025. The target population consisted of all children diagnosed with thalassemia who were undergoing routine blood transfusion at the hospital. The sample size was determined using a total sampling technique, in which all eligible participants meeting the criteria during the study period were included, resulting in a total of 26 respondents (16, 17). This approach was considered appropriate given the limited number of eligible patients in the study setting. Inclusion criteriawere: (1) children diagnosed with thalassemia, (2) aged 5–12 years, (3) undergoing routine blood transfusion, (4) able to communicate and follow instructions, and (5) willing to participate with parental consent. Exclusion criteria included: (1) children with cognitive impairments or severe complications, (2) children in unstable clinical conditions, and (3) those who did not complete the intervention process (18).

Instruments

Anxiety levels were measured using the *Pratiwi Anxiety Questionnaire (2022)*, which has been previously developed for pediatric patients. The instrument consists of multiple items assessing emotional, behavioral, and physiological responses to anxiety. The instrument's validity was tested using Pearson's product-moment correlation, with all items demonstrating correlation coefficients (r) greater than the critical value (r-table), indicating that the instrument was valid. The reliability test showed a Cronbach’s alpha coefficient of 0.87, indicating good internal consistency and reliability of the instrument (19). The questionnaire’s scores classify anxiety as mild, moderate, severe, or panic. Higher scores indicate more anxiety (20).

Data Collection

Data collection was conducted in two stages. The pretest measurement was performed before the blood transfusion procedure to assess baseline anxiety levels. Following this, participants received the intervention in the form of coloring-based play therapy using child-preferred image themes for approximately 20–30 minutes. The posttest measurement was conducted immediately after the intervention and prior to the initiation of the transfusion procedure to evaluate changes in anxiety levels (21).

Data Analysis

Univariate analysis was used to describe the characteristics of respondents and the distribution of anxiety levels. Bivariate analysis was conducted using the Wilcoxon Signed Rank Test to compare pretest and posttest anxiety scores. A p-value of less than 0.05 was considered statistically significant (21)

Ethical Considerations

This study was approved by the Health Research Ethics Committee of Aisyah Pringsewu University with ethical approval number 2528/UAP.DK01/2/PT/XI/2025. Written informed consent was obtained from the parents or guardians of all participants prior to data collection (22).

RESULT AND DISCUSSION

Changes in Anxiety Levels Before and After Play Therapy

The distribution of anxiety levels among children with thalassemia showed a notable shift following the implementation of play therapy (Table 1). Initially, most participants experienced high levels of anxiety, with the majority categorized as severe (53.8%) and panic (23.1%). However, after the intervention, anxiety levels decreased substantially, with most children categorized as mild (53.8%) or experiencing no anxiety (42.3%).

Table 1. Distribution of Anxiety Levels Before and After Play Therapy

Anxiety Level	Pretest n (%)	Posttest n (%)
No anxiety	0 (0.0)	11 (42.3)
Mild Anxiety	2 (7.7)	14 (53.8)
Moderate Anxiety	4 (15.4)	1 (3.8)
Severe Anxiety	14 (53.8)	0 (0.0)
Panic Level Anxiety / Panic	6 (23.1)	0 (0.0)
Total	26 (100)	26 (100)

Further analysis of anxiety scores using non-parametric statistics demonstrated a meaningful reduction after the intervention. The median anxiety score decreased from 40.00 (IQR: 35–45) before the intervention to 16.00 (IQR: 12–20) after the intervention (Table 2).

Table 2. Changes in Anxiety Scores Before and After Play Therapy

Variable	Median (IQR)
Pretest Score	40.00 (35–45)
Posttest Score	16.00 (12–20)

Note: Pretest; postest = 40.00;16.00

The Wilcoxon Signed Rank Test indicated a statistically significant difference between pretest and posttest anxiety scores ($Z = -4.45$, $p < 0.001$), suggesting that anxiety levels decreased following the intervention. The calculated effect size ($r = 0.87$) reflects a strong magnitude of change (Table 3).

Table 3. Effect of Play Therapy on Anxiety Levels (Wilcoxon Test)

Variable	Median (IQR)	Z-value	p-value	Effect size (r)
Pretest	40.00 (35–45)			
Posttest	16.00 (12–20)	-4.45	<0.001	0.87

Note : Wilcoxon Test Z Value = -4.45 <P 0,001

DISCUSSION

Effectiveness of Play Therapy in Reducing Anxiety Among Children with Thalassemia

Children with thalassemia are repeatedly exposed to invasive procedures, which can shape persistent emotional responses such as fear and anticipatory anxiety. Within this context, play therapy offers a developmentally appropriate medium through which children can process these experiences (13). Rather than relying on verbal expression, children often communicate emotions through symbolic and creative activities. Coloring-based play therapy provides a non-threatening way to externalize feelings of discomfort and uncertainty. This approach can directly help regulate emotions and has been shown to reduce anxiety and psychological distress associated with medical procedures (11).

Additionally, the study found that play therapy offers cognitive distraction by redirecting the child's attention away from anxiety-provoking stimuli such as needles or clinical equipment. Engagement in structured activities like play therapy shifted children's focus to the task at hand, noticeably reducing the intensity of their anticipatory anxiety. These effects were especially significant in pre-procedural settings, where anxiety typically peaks. Over time, repeated participation in play therapy was found to enhance positive perceptions of the medical environment and support the development of adaptive coping strategies.(23)

The study's observed patterns align with previous research demonstrating that therapeutic play reduces anxiety in pediatric populations. Notably, the findings specifically highlight that children with thalassemia who participate in play-based interventions exhibit improved emotional responses and greater cooperation during repeated transfusions. This extends established observations from general hospitalization research to the unique context of chronic care. The study thereby clarifies that play therapy is particularly effective for children facing ongoing procedures, offering added insight into its role in managing chronic medical anxiety.(11)

Physiological Mechanisms of Anxiety Reduction

From a physiological perspective, anxiety is closely linked to activation of the sympathetic nervous system, which prepares the body to respond to perceived threats. This response is often characterized by increased heart rate, muscle tension, and heightened alertness. Engaging in calming, enjoyable activities, such as coloring, may help counterbalance this response by activating the parasympathetic nervous system (24). This shift promotes relaxation and physiological stability. Consequently, children may experience a reduction in both emotional and physical manifestations of anxiety (25).

Play therapy may also influence the regulation of stress-related hormones. Anxiety-provoking situations are commonly associated with elevated levels of cortisol and adrenaline. When children are engaged in positive, engaging activities, the production of these hormones may decrease, contributing to a calmer state (9, 26). In addition, sensory engagement during play, such as visual focus and repetitive motor activity, can create a soothing effect similar to relaxation techniques. These combined processes highlight the interconnected nature of children's psychological and physiological responses (27).

Clinical Implications and Practical Applications

The findings of this study demonstrate the value of play therapy in pediatric clinical settings. Coloring-based play therapy is cost-effective and straightforward to implement, requiring neither specialized equipment nor extensive training. This approach is particularly suitable for healthcare facilities with limited resources. Its simplicity facilitates integration into routine pre-procedural care without disrupting clinical workflows. These characteristics enhance the likelihood of sustained implementation (28).

Clinically, reducing anxiety has the potential to improve cooperation during medical procedures. Children who are more relaxed tend to be more receptive to care and less resistant to interventions. This can facilitate smoother transfusions and decrease stress for both patients and healthcare providers. Although this study did not directly assess procedural outcomes, it demonstrated reduced anxiety, suggesting possible indirect benefits. These findings emphasize the importance of addressing emotional needs as part of comprehensive care (29).

Practice Implications and Recommendations for Pediatric Care

Pediatric nurses should incorporate brief play therapy sessions for children before procedures as a regular part of patient preparation. This action supports child-centered care by fostering emotional well-being along with physical treatment. Nurses are encouraged to involve caregivers in these sessions to further promote the child's sense of security and support.

Despite these encouraging observations, several limitations exist. The lack of a control group prevents determining whether the intervention alone caused the observed changes. Factors like familiarity with the procedure or caregiver presence could also affect anxiety. The small sample size and single setting may reduce the generalizability of the results. Self-report instruments may introduce measurement bias.

Future research should use randomized controlled trials to provide stronger evidence for play therapy's effectiveness. Researchers are encouraged to increase sample sizes and include multiple settings to ensure the findings are widely applicable. Comparing different types of play interventions is also recommended to identify the most effective methods for managing anxiety in children. These steps are key to advancing evidence-based pediatric care.

CONCLUSION

Play therapy has been shown to directly reduce anxiety in children with thalassemia undergoing repeated blood transfusions, as evidenced by decreased anxiety following the intervention. Engaging in simple, enjoyable activities enables children to feel more at ease in clinical environments, which are often stressful and unfamiliar. While the findings suggest that play therapy enhances emotional comfort, these results should be interpreted with caution due to the absence of a comparison group and the restriction of the sample to a single setting. Nevertheless, the intervention is practical, cost-effective, and easily integrated into routine pediatric care, making it a valuable consideration for nursing practice. Further rigorous research involving broader populations is necessary to clarify its impact and support wider clinical adoption.

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AUTHOR'S CONTRIBUTION STATEMENT

FK: Conceptualization, Writing – Original Draft, Review & Editing. TPS: Data collection, Formal analysis, Writing – Original Draft. RP: Manuscript review. S: Methodology. IA: Validation.

CONFLICTS OF INTEREST

The authors declare no conflict of interest

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors acknowledge the use of Grammarly and DeepL to support language editing, enhance clarity, and improve the overall readability and structure of the manuscript. The use of these tools did not influence the scientific content of the study

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REFERENCES

1. Mardhiyah A, Panduragan SL, Mediani HS, Yosep I. Factors Associated With Quality of Life Among Adolescent With Beta Thalassemia in Indonesia: A Cross-Sectional Study. Sage Open Nursing. 2024;10:23779608241255638. doi: 10.1177/23779608241255638.
2. Tuo Y, Li Y, Li Y, Ma J, Yang X, Wu S, et al. Global, regional, and national burden of thalassemia, 1990-2021: a systematic analysis for the global burden of disease study 2021. EClinicalMedicine. 2024;72:102619. doi: 10.1016/j.eclinm.2024.102619.
3. Friska Kamila Nabilasefanty PZR. Management Thalassemia in Indonesia : A Literature Review. International Journal of Health and Medicine. 2024;2(1):92-9. doi: 1efe0.62951/ijhm.v2i1.214.
4. Ain N. Kajian keluarga dalam upaya pencegahan penyakit thalassemia mayor di Indonesia : family study in the effort to prevent thalassemia major in Indonesia. Jurnal Kedokteran STM (Sains dan Teknologi Medik). 2025;8(2):185-93. doi: 10.30743/stm.v8i2.908.
5. Wangi K, Shaleha R, Wijaya E, Birriel B. Psychosocial Problems in People Living with Thalassemia: A Systematic Review. Sage Open Nursing. 2025;11:23779608251323811.doi: 10.1177/23779608251323811.
6. Huhtala S, Palomaa AK, Tuomikoski AM, Pölkki T. Effectiveness of distraction-based interventions for relieving anxiety, fear, and pain in hospitalized children during venous blood sampling: a systematic review protocol. JBI Evid Synth. 2024;22(5):889-95. Epub 20240501. doi: 10.11124/jbies-22-00057. PMID: 37921627
7. Othman A, Abdul Ghani MSA, Taib F, Mohamad N. Psychological distress and coping strategies among the caretakers of children with transfusion-dependent thalassemia. Front Pediatr. 2022;10:941202. Epub 20220822. doi: 10.3389/fped.2022.941202. PMID: 36071883
8. Alifiani H. Effect of Play Therapy on Preoperative Child Anxiety Level. Professional Evidence-Based Research and Advances in Wellness and Treatment. 2024;1(1):54-66. doi: /10.69855/perawat.v1i1.413.
9. Hüzmeli H, Semerci R, Kebudi R. The effect of therapeutic play on fear, anxiety, and satisfaction levels of pediatric oncology patients receiving chemotherapy. Journal of Pediatric Nursing. 2024;77:e195-e201. doi: 10.1016/J.Pedn.2024.04.029.
10. Kyriakidis I, Tsamagou E, Magos K. Play and medical play in teaching pre-school children to cope with medical procedures involving needles: A systematic review. J Paediatr Child Health. 2021;57(4):491-9. Epub 20210312. doi: 10.1111/jpc.15442. PMID: 33710698.
11. Abdi F, Karamoozian A, Lotfilou M, Gholami F, Shaterian N, Niasar AA, et al. Effect of play therapy and storytelling on the anxiety level of hospitalized children: a randomized controlled trial. BMC Complement Med Ther. 2025;25(1):23. Epub 20250124. doi: 10.1186/s12906-025-04767-4. PMID: 39856674
12. Taşpinar P, Uysal G, Açikgöz A. The effect of therapeutic play on anxiety and fear levels in 6-12-year old children undergoing central venous catheter insertion in a pediatric hematology-oncology unit: A randomized controlled trial. Eur J Oncol Nurs. 2026;80:103049. Epub 20251117. doi: 10.1016/j.ejon.2025.103049. PMID: 41325693.

13. Thomas S, White V, Ryan N, Byrne L. Effectiveness of play therapy in enhancing psychosocial outcomes in children with chronic illness: A systematic review. J Pediatr Nurs. 2022;63:e72-e81. Epub 20211111. doi: 10.1016/j.pedn.2021.10.009. PMID: 34776315.
14. Halemani K, Issac A, Mishra P, Dhiraaj S, Mandelia A, Mathias E. Effectiveness of Preoperative Therapeutic Play on Anxiety Among Children Undergoing Invasive Procedure: a Systematic Review and Meta-analysis. Indian J Surg Oncol. 2022;13(4):858-67. Epub 20220709. doi: 10.1007/s13193-022-01571-1. PubMed PMID: 36687245; PubMed Central PMCID: PMC9845488.
15. Capili B, Anastasi JK. An Introduction to Types of Quasi-Experimental Designs. Am J Nurs. 2024;124(11):50-2. Epub 20241024. doi: 10.1097/01.Naj.0001081740.74815.20. PubMed PMID: 39446515; PubMed Central PMCID: PMC11741180.
16. Campbell S, Greenwood M, Prior S, Shearer T, Walkem K, Young S, et al. Purposive sampling: complex or simple? Research case examples. Journal of Research in Nursing. 2020;25(8):652-61. doi: 10.1177/1744987120927206. PubMed PMID: 34394687.
17. PhD J, Ma, Faugier J, Sargeant M. Sampling Hard to Reach Populations. Journal of Advanced Nursing. 1997;26:790-7. doi: 10.1046/j.1365-2648.1997.00371.x.
18. Wang P, Wei C, McFarland W, Raymond HF. The Development and the Assessment of Sampling Methods for Hard-to-Reach Populations in HIV Surveillance. Journal of Urban Health. 2024;101(4):856-66. doi: 10.1007/s11524-024-00880-w.
19. Tavakol M, Dennick R. Making sense of Cronbach's alpha. Int J Med Educ. 2011;2:53-5. Epub 20110627. doi: 10.5116/ijme.4dfb.8dfd. PubMed PMID: 28029643; PubMed Central PMCID: PMC4205511.
20. Taber KS. The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. Research in Science Education. 2018;48(6):1273-96. doi: 10.1007/s11165-016-9602-2.
21. O'Connell NS, Dai L, Jiang Y, Speiser JL, Ward R, Wei W, et al. Methods for Analysis of Pre-Post Data in Clinical Research: A Comparison of Five Common Methods. J Biom Biostat. 2017;8(1):1-8. doi: 10.4172/2155-6180.1000334. PubMed PMID: 30555734; PubMed Central PMCID: PMC6290914.
22. Varkey B. Principles of Clinical Ethics and Their Application to Practice. Medical Principles and Practice. 2020;30(1):17-28. doi: 10.1159/000509119.
23. Mil S, Auliya, N., & Nurillah, D. Fun Cognitive Games: A Play Therapy Approach to Alleviate Anxiety in Preschool Children with Thalassemia. Jurnal Pendidikan Anak Usia Dini Undiksha. 2024;12(2):235-43. doi: 10.23887/paud.v12i2.74791.
24. Khedr DKM, El-said SG, Darwish AA, Wahba NM. Stress, anxiety and depression among adolescents suffering from thalassemia. Port Said Scientific Journal of Nursing. 2021.
25. Sari TT, Rahmartani LD, Wirahmadi A, Selene NB, Iskandar SD, Wahidiyat PA. Psychological Burden among Pediatric Thalassemia Major Patients in Indonesia: A Review. Thalassemia Reports. 2024;14(2):33-43. PubMed PMID: doi:10.3390/thalassrep14020005.
26. Setiawati S, Wanda, D., Agustini, N., Whulanza, Y., & Keliat, B. A. The Effects of Therapeutic Play for Reducing Impact Hospitalization Pre and School-Age In Hospital: A Systematic Review. Poltekita: Jurnal Ilmu Kesehatan. 2024;18(3):228-44. doi: 10.33860/jik.v18i3.3722.
27. Herman H, Deswita, Puspita Sari Y. The Effect of Play Therapy on Hospitalization Anxiety Among Pre-School Children (3-6 Years). NERS Jurnal Keperawatan. 2025;21:106-11. doi: 10.25077/njk.v21i1.212.
28. Ibrahim HA, Arbianingsih, Amal, A. A., & Huriati. The Effectiveness of Play Therapy in Hospitalized Children with Cancer: Systematic Review. Journal Of Nursing Practice,. 2020;3(2):233-43. doi: 10.30994/jnp.v3i2.92.

29. Tang MJ. Enhancing Paediatric Radiology Experiences: Integrating Play and Child Life Therapy Techniques for Optimal Patient Cooperation. Journal of Medical Imaging and Radiation Sciences. 2024;55(3). doi: 10.1016/j.jmir.2024.101651.