

Effectiveness of Play Therapy Method to Reduce Anxiety in Pediatric Patients in Pre-Anesthesia Phase

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Dikirim : 10 Juni 2026

Direvisi : 29 Juni 2026

Diterima : 30 Juni 2026

Abstrak: Pasien pediatrik yang menjalani prosedur pembedahan sangat rentan mengalami kecemasan praoperasi, yang berdampak negatif terhadap induksi anestesi, pemulihan, dan sikap jangka panjang terhadap layanan medis. Play therapy telah diidentifikasi sebagai intervensi nonfarmakologis yang menjanjikan untuk mengatasi masalah ini. Penelitian ini bertujuan untuk mengevaluasi efektivitas play therapy dalam menurunkan tingkat kecemasan pasien pediatrik di fase pre anestesi. Desain pra-eksperimental one-group pretest-posttest digunakan dengan melibatkan 30 pasien pediatrik usia 3–5 tahun yang dijadwalkan menjalani operasi elektif di RSUD Kabupaten Jombang, direkrut melalui purposive sampling. Kecemasan diukur menggunakan Modified Yale Preoperative Anxiety Scale (mYPAS) sebelum dan sesudah sesi play therapy selama 15 menit dengan modalitas boneka dan robot. Data dianalisis menggunakan Uji Wilcoxon Signed Rank Test. Sebelum intervensi, seluruh 30 responden (100%) dikategorikan cemas (rerata skor mYPAS $96,28 \pm 5,930$). Setelah play therapy, 25 responden (83,3%) tidak lagi mengalami kecemasan, dengan rerata skor menurun menjadi $29,04 \pm 12,266$. Analisis Wilcoxon menghasilkan $Z = -4,815$ ($p = 0,000$), yang mengindikasikan bahwa metode play therapy berpengaruh terhadap tingkat kecemasan pasien. Play therapy merupakan intervensi nonfarmakologis yang efektif untuk menurunkan kecemasan praoperasi pada pasien pediatrik dan perlu diintegrasikan ke dalam protokol standar asuhan keperawatan pre anestesi.

Kata kunci: anak, kecemasan, play therapy, pre anestesi, praoperasi

Abstract: Pediatric patients undergoing surgical procedures are highly susceptible to preoperative anxiety, which negatively affects anesthesia induction, recovery, and long-term attitudes toward medical care. Play therapy has been identified as a promising non-pharmacological intervention to address this issue. This study aimed to evaluate the effectiveness of play therapy in reducing anxiety levels among pediatric patients in the pre-anesthesia phase. A pre-experimental one-group pretest-posttest design was employed involving 30 pediatric patients aged 3–5 years scheduled for elective surgery at RSUD Kabupaten Jombang, recruited through purposive sampling. Anxiety was measured using the Modified Yale Preoperative Anxiety Scale (mYPAS) before and after a 15-minute play therapy session using doll and robot modalities. Data were analyzed using the Wilcoxon Signed Rank Test. Prior to intervention, all 30 respondents (100%) were categorized as anxious (mean mYPAS score 96.28 ± 5.930). Following play therapy, 25 respondents (83.3%) were no longer anxious, with mean scores declining to 29.04 ± 12.266 . Wilcoxon analysis yielded $Z = -4.815$ ($p = 0.000$), indicating that play therapy had a significant effect on patients' anxiety levels.

Play therapy is an effective non-pharmacological intervention for reducing preoperative anxiety in pediatric patients and should be integrated into standard pre-anesthesia care protocols.

Keywords: *anxiety, pediatric, play therapy, pre-anesthesia, preoperative*

1. Introduction

Surgical procedures represent a major source of psychological stress for children, often resulting in fear, anxiety, and behavioral dysregulation. Preoperative anxiety in pediatric patients is not merely a psychological phenomenon; it exerts direct physiological effects, including increased sympathetic nervous system activity, reduced anesthetic efficacy, prolonged induction time, and delayed postoperative recovery. In the long term, unmanaged preoperative anxiety may lead to increased analgesic requirements, sleep disturbances, poor appetite, and a negative orientation toward future medical encounters (Puriani & Allenidekania, 2021).

The prevalence of preoperative anxiety among pediatric surgical patients has been reported to range from 41.7% to 75.44% across multiple countries (Liu *et al.*, 2022), with the World Health Organization (WHO) recognizing pediatric hospitalization stress as a global concern warranting systematic psychosocial response. In Indonesia, national health data compiled by the Ministry of Health indicate that more than 45% of the national population consists of children, and the National Health Survey recorded a morbidity rate of 14.91% among children aged 5–12 years in urban areas. The Central Bureau of Statistics (BPS) further reported a trend of increasing pediatric hospitalization in recent years, underscoring the growing burden of hospital-related anxiety among Indonesian children (Kementerian Kesehatan RI, 2023; Handanyani *et al.*, 2025). Approximately five million children undergo elective surgical procedures annually in North America alone, with up to 75% experiencing significant preoperative anxiety (Kaur & Singh, 2024), with anesthesia induction and parental separation identified as the two primary triggers (Puriani & Allenidekania, 2021).

Preschool-aged children (3–6 years) are particularly vulnerable due to their limited cognitive capacity to understand bodily functions and medical procedures. Common behavioral responses include food refusal, crying, repetitive questioning, sleep disturbances, and non-compliance with medical staff (Periyadi *et al.*, 2022). If left unaddressed, anxiety may lead to refusal of treatment, prolonged hospitalization, and worsening clinical outcomes. These reactions are further compounded by fear of bodily harm, parental separation, unfamiliar hospital environments, and exposure to invasive equipment such as arterial and intravenous

lines (Puriani & Allenidekania, 2021).

Play therapy is a structured psychological intervention that utilizes play as a therapeutic medium, making it a developmentally appropriate approach to managing anxiety in pediatric patients. Grounded in psychoanalytic theories (Freud and Erikson), developmental psychology (Piaget and Parten), and stress-coping theory (Lazarus and Folkman), play therapy facilitates emotional catharsis, non-verbal communication, cognitive restructuring, and the development of positive coping mechanisms (Kristiyana & Yudiarso, 2022). Through play, children are enabled to express fears, adapt to unfamiliar environments, and regain a sense of control, thereby reducing the psychological burden of hospitalization (Periyadi *et al.*, 2022).

Several studies have demonstrated the efficacy of play-based interventions in reducing pediatric anxiety. Susanti & Supriyanto (2023) reported a significant reduction in anxiety following coloring-based play therapy in preschool children. Aryani & Zaly (2021) confirmed similar outcomes using a one-group pre-test and post-test design. Anisha & Lestari (2022) found reductions from severe to no anxiety after puzzle-based play therapy, while Priati & Pramesti (2025) showed that both study subjects achieved anxiety-free status after 2–3 days of structured play intervention. These findings collectively support play therapy as an accessible, non-invasive, and effective strategy for perioperative pediatric anxiety management.

Despite growing evidence, Indonesian health policy — particularly Permenkes No. 66 Tahun 2016 — does not yet specifically mandate psychosocial support services for hospitalized children. A gap remains in clinical protocols that incorporate non-pharmacological anxiety management within pre-anesthesia care pathways, particularly in regional public hospitals where psychosocial resources are limited (Handanyani *et al.*, 2025).

A preliminary study at RSUD Kabupaten Jombang found that nearly 99% of 21 pediatric surgical patients exhibited anxiety during the pre-anesthesia phase, confirming the high prevalence and urgency of intervention. Anxiety levels in this study were measured using the Modified Yale Preoperative Anxiety Scale (mYPAS), a validated instrument comprising 22 items across five behavioral categories, selected for its established reliability and validity in pediatric preoperative assessment (Simarmata *et al.*, 2024; Utami *et al.*, 2025).

This study aims to evaluate the effectiveness of play therapy in reducing anxiety levels among pediatric patients in the pre-anesthesia phase at RSUD Kabupaten Jombang. Specific objectives include: (1) identifying respondent characteristics by age; (2) assessing anxiety levels before play therapy; (3) assessing anxiety levels after play therapy; and (4) analyzing whether play therapy produces a statistically significant reduction in anxiety scores. The

findings are expected to contribute evidence supporting play therapy as a standard non-pharmacological intervention, inform the development of psychosocial SOPs in pre-anesthesia settings, and support the adoption of family-centered care models in pediatric surgical units.

2. Methods

Study Design. This study employed a pre-experimental one-group pretest-posttest design with a quantitative approach to examine differences in anxiety scores before and after intervention. The design involved a single group of subjects without a control group, with measurements taken at two time points to evaluate the effect of play therapy on pediatric preoperative anxiety (Notoatmodjo, 2012). This study was conducted at the pre-operative room of RSUD Kabupaten Jombang, located at Jalan KH. Wahid Hasyim No. 52, Jombang, East Java a teaching hospital equipped with complete surgical and anesthesia facilities that regularly manages pediatric surgical cases. Data collection was carried out over one month.

Participants. The population consisted of all pediatric patients with high anxiety levels scheduled for elective surgical procedures at RSUD Kabupaten Jombang. Based on medical records, 33 such patients were identified within the preceding month. Sample size was calculated using the Slovin formula ($e = 5\%$), yielding a minimum of 30 respondents. Participants were recruited using purposive sampling (Sugiyono, 2016; Asrulla *et al.*, 2023). Inclusion criteria were: (1) age 3–5 years; (2) scheduled for elective general anesthesia; (3) ASA physical status I–II; and (4) written informed consent provided by parent or legal guardian. Exclusion criteria were: (1) severe developmental disorder or autism spectrum disorder impairing communication; (2) chronic psychoactive medication use; (3) emergency surgical cases; and (4) medical conditions requiring routine premedication.

Intervention Protocol. Play therapy was administered in the pre-anesthesia room prior to surgical procedures using two modalities: doll-based and robot-based play. In the doll-based modality, children were invited to interact with a doll used to narrate medical scenarios and to encourage emotional expression. In the robot-based modality, children interacted with an interactive toy robot as a distraction and positive stimulus. Both modalities were delivered throughout the child's stay in the pre-anesthesia room, with each session lasting approximately 15 minutes, facilitated by a trained anesthesia nurse in the presence of the parent or guardian, following a standardized SOP.

Instrument. Anxiety levels were measured using the Modified Yale Preoperative Anxiety Scale (mYPAS), a validated observational instrument comprising 22 behavioral indicators

across five domains: activity, vocalization, emotional expression, state of arousal, and use of parent. Scores were interpreted as: < 30 = not anxious; ≥ 30 = anxious. The mYPAS demonstrated high inter-rater reliability ($ICC = 0.87$) (Suprianto, 2023). Play therapy participation was assessed using a behavioral observation checklist with established content validity ($CVI > 0.80$) and inter-rater reliability ($ICC = 0.82$) (Kristiyana & Yudiarso, 2022).

Data Collection Procedure. Data collection proceeded in three phases. In the preparation phase, institutional and ethical research clearance was obtained. In the implementation phase, written informed consent was obtained from parents or guardians, followed by pre-test mYPAS measurement, play therapy administration, and post-test mYPAS measurement. In the data processing phase, completed observation sheets were edited for completeness, coded numerically, and entered into SPSS for statistical analysis.

Data Analysis. Univariate analysis described respondent characteristics and anxiety score distributions. Bivariate analysis examined the effect of play therapy on anxiety levels. Data normality was assessed using the Shapiro-Wilk test; given non-normal distribution, the Wilcoxon Signed Rank Test was applied. Statistical significance was set at $p < 0.05$ (Sugiyono, 2016).

Ethical Considerations. This study adhered to established ethical principles. Written informed consent was obtained voluntarily from parents or guardians with full disclosure of the study's purpose, procedures, risks, and benefits (Sari *et al.*, 2025). Respondent anonymity was maintained using initials only (Selvia *et al.*, 2022). All data were kept strictly confidential and used solely for research purposes. Participation was entirely voluntary, with the right to withdraw at any time without consequence. All respondents were treated equitably without discrimination.

3. Results and Discussion

This study involved 30 pediatric patients scheduled for elective surgical procedures at the pre-anesthesia room of RSUD Kabupaten Jombang. Univariate analysis revealed that the majority of respondents were male ($n = 21$; 70%). Age distribution showed that 12 respondents (40%) were aged 3 years, while 9 each (30%) were aged 4 and 5 years. Regarding accompanying family members, 21 children (70%) were accompanied by their mother and 9 (30%) by their father. All 30 respondents (100%) had no prior surgical history.

Table 1. Anxiety Levels Before and After Play Therapy Intervention (n = 30)

Anxiety Category	mYPAS Score	Pre-therapy n (%)	Post-therapy n (%)
Anxious	> 30	30 (100%)	5 (16.7%)
Not Anxious	< 30	0 (0%)	25 (83.3%)
Total		30 (100%)	30 (100%)

Prior to the play therapy intervention, all 30 patients (100%) were categorized as anxious based on mYPAS. Following the intervention, 25 patients (83.3%) were classified as not anxious, while 5 patients (16.7%) remained anxious, representing a marked reduction in anxiety prevalence.

Table 2. Descriptive Statistics of mYPAS Scores Pre- and Post-Therapy (n = 30)

Time Point	N	Minimum	Maximum	Mean	SD
Pre-therapy	30	75.00	100.00	96.28	5.930
Post-therapy	30	23.30	65.00	29.04	12.266

Descriptive statistics showed a mean mYPAS score of 96.28 (SD = 5.930) before intervention and 29.04 (SD = 12.266) after intervention, indicating a substantial reduction in anxiety scores.

Table 3. Normality Test Results (Shapiro-Wilk)

Variable	Sig.	Interpretation
Pre-therapy	0.000	Not normally distributed
Post-therapy	0.000	Not normally distributed

Normality testing using the Shapiro-Wilk test yielded significance values of 0.000 for both pre- and post-therapy scores, indicating non-normal data distribution. Accordingly, the Wilcoxon Signed Rank Test was applied for bivariate analysis.

Table 4. Wilcoxon Signed Rank Test

		N	Mean Rank	Sum of Ranks
Post-therapy-Pre-therapy	Negatif Ranks	30 ^a	15.50	465.00
	Positive Ranks	0 ^b	.00	.00
	Ties	0 ^c		
	Total	30		

Based on the Wilcoxon Signed-Rank Test, the results indicated that there were 30 negative ranks, 0 positive ranks, and 0 ties. This finding demonstrates that all 30 participants experienced a decrease in anxiety scores after receiving the play therapy intervention compared

to their pre-intervention scores. No participants showed an increase in anxiety scores, and none remained unchanged following the intervention.

Table 5. Wilcoxon Signed Rank Statistic Test

Statistical Parameter	Value
Z	-4.815
Asymp. Sig. (2-tailed)	0.000

The Wilcoxon Signed Rank Test yielded $Z = -4.815$ with $p = 0.000$ (< 0.05), confirming a statistically significant reduction in anxiety following play therapy. Indicating that play therapy had a significant effect on patients' anxiety levels.

All 30 pediatric patients (100%) exhibited anxiety prior to the play therapy intervention, as evidenced by behavioral indicators including avoidance of healthcare personnel, continuous crying and screaming, extreme agitation, panic, and inability to separate from parents. This finding aligns with the theoretical framework of anxiety proposed by Freud (Ally & Aloka, 2024), which describes anxiety as an emotional response to subjective individual appraisal, often driven by unconscious processes. In children, this response is amplified by their limited cognitive capacity to distinguish between punishment and medical treatment, leading preschool-aged children to interpret medical procedures as threatening (Faidah & Marchelina, 2022). Consistent with Puriani & Allenidekania (2021), preoperative anxiety in children poses a significant clinical challenge, as it can increase analgesic requirements, slow postoperative recovery, and negatively shape future attitudes toward medical care. The finding that all respondents had no prior surgical history further supports the notion that children without previous hospitalization experience tend to exhibit higher anxiety levels due to the absence of established coping mechanisms (Modjo *et al.*, 2025).

Following the play therapy intervention, 25 out of 30 respondents (83.3%) transitioned to the non-anxious category, with mean mYPAS scores declining from 96.28 to 29.04. This substantial reduction can be attributed to neurophysiological and psychological mechanisms of play. During play, the brain releases neurotransmitters including dopamine and serotonin, which produce positive mood effects and reduce anxiety while increasing cerebral blood flow, resulting in a more relaxed and cooperative state (Kristiyana & Yudiarso, 2022). From a developmental perspective, Piaget's theory of play (Rahayu, 2021) supports these findings by emphasizing that play serves as both a physical and emotional developmental medium. Vygotsky's Zone of Proximal Development (ZPD) framework (Ma'mun *et al.*, 2024) further suggests that pre-anesthesia play therapy enables children to build understanding of medical

procedures and reduce fear of unfamiliar stimuli. This was operationalized through doll-based and robot-based play, which allowed children to symbolically engage with medical contexts in a safe and enjoyable manner (Safitri & Irdawati, 2025).

Bivariate analysis demonstrated a statistically significant effect of play therapy on reducing anxiety levels. The Wilcoxon signed-rank test showed that all participants ($n = 30$, 100%) exhibited lower post-intervention anxiety scores than their baseline scores, as indicated by the presence of 30 negative ranks. No participants experienced an increase in anxiety following the intervention (positive ranks = 0), and no participant demonstrated unchanged anxiety scores (ties = 0). These findings indicate that the intervention consistently reduced anxiety across the entire study population. These findings are consistent with Diansari *et al.* (2024), who demonstrated that play-based distraction significantly reduces anxiety in preschool-aged children during hospitalization. Similarly, Emilia *et al.* (2024) found that age-appropriate play therapy effectively reduces anxiety, improves cooperation, and enhances overall clinical outcomes compared to standard care. Malita *et al.* (2024) further corroborated these outcomes, while Periyadi *et al.* (2022) noted that play therapy satisfies children's need for creative activity, diverting attention from procedural discomfort.

Five respondents (16.7%) remained anxious post-intervention, which may reflect individual variability in anxiety sensitivity or the depth of fear response in children encountering a medical environment for the first time. These cases highlight the need for individualized assessment and potentially more intensive play therapy protocols for children with higher anxiety baselines.

This study has several limitations. The absence of a control group limits causal inference. The single-site setting and short one-month data collection period may affect generalizability. Future studies using randomized controlled trial designs with larger, multi-site samples are recommended. Long-term follow-up to assess sustainability of anxiety reduction effects would also add value to the literature.

4. Conclusion

After summarizing the findings, discuss their implications. Explain how your results contribute to existing knowledge, address gaps in the literature, or offer practical applications for nursing practice, education, or policy. This is your opportunity to demonstrate the relevance and impact of your work.

This study aimed to evaluate the effectiveness of play therapy in reducing anxiety levels

among pediatric patients in the pre-anesthesia phase at RSUD Kabupaten Jombang. Findings demonstrated that prior to intervention, all 30 respondents (100%) exhibited anxiety, reflecting the universal vulnerability of preschool-aged children to preoperative psychological stress in the absence of prior hospitalization experience.

Following the play therapy intervention using doll and robot modalities, a substantial and statistically significant reduction in anxiety was observed. A total of 25 respondents (83.3%) transitioned to the non-anxious category, with mean mYPAS scores declining from 96.28 to 29.04. The Wilcoxon Signed Rank Test confirmed the significance of this change ($p = 0.000$), indicating non-normal data distribution. Accordingly, the Wilcoxon Signed Rank Test was applied for bivariate analysis.

These findings affirm that play therapy is an effective, safe, and developmentally appropriate non-pharmacological strategy for managing preoperative anxiety in pediatric patients. The results contribute to the growing evidence base supporting the integration of psychosocial interventions within pediatric perioperative care. Healthcare institutions are encouraged to incorporate play therapy into standard operating procedures for pre-anesthesia nursing care and to adopt family-centered care approaches involving parents as active participants in anxiety management. Future research utilizing randomized controlled trial designs, larger multi-site samples, and long-term follow-up is recommended to further substantiate these findings.

Acknowledgement

The authors would like to express gratitude to RSUD Kabupaten Jombang for granting permission to conduct this study, and to all pediatric patients and their families who voluntarily participated. Special thanks to the anesthesia nursing staff for their cooperation in data collection.

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