

Changes in Anxiety Scores Following Storytelling Therapy Among Hospitalized Preschool Children: A Pre-Experimental Study

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Abstract

Hospitalization can be stressful for preschool children due to unfamiliar environments, disrupted routines, and medical procedures. Anxiety may affect children's comfort and cooperation during treatment. Storytelling is a child-friendly non-pharmacological intervention that may reduce anxiety through distraction and emotional support. This study aimed to evaluate changes in anxiety scores following a storytelling intervention among hospitalized preschool children. A quantitative pre-experimental one-group pretest-posttest design was used to assess changes in anxiety before and after the intervention. The study included 34 hospitalized preschool children aged 3–6 years at Siti Fatimah Az-Zahra Regional General Hospital, South Sumatra, Indonesia, recruited using purposive sampling. Anxiety was assessed immediately before and after the intervention using the Faces Anxiety Scale (FAS), a five-point visual scale scored from 0 to 4. The Wilcoxon Signed-Rank Test was used to analyze pre-post differences in anxiety scores. Before the intervention, the median anxiety score was 2 (IQR 1–2), with 20 children (58.8%) experiencing moderate anxiety and 14 (41.2%) experiencing mild anxiety. After the intervention, the median anxiety score decreased to 1 (IQR 0–1), with 17 children (50.0%) classified as having no anxiety, 14 (41.2%) having mild anxiety, and 3 (8.8%) having moderate anxiety. The Wilcoxon Signed-Rank Test demonstrated a significant difference in anxiety scores after the intervention ($Z = -5.058$, $p < 0.001$), with a large effect size ($r = 0.87$). The storytelling intervention was associated with an immediate reduction in anxiety scores among hospitalized preschool children. However, due to the absence of a control group, the findings should be interpreted cautiously and do not establish a definitive causal effect.

Keywords: anxiety, storytelling intervention, preschool children, hospitalization, pediatric nursing.

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INTRODUCTION

Hospitalization can be a stressful experience for preschool children because they are required to adapt to an unfamiliar environment, interact with healthcare providers, experience disruptions in daily routines, and undergo diagnostic or therapeutic procedures. During this developmental stage, children's cognitive and emotional capacities are still developing, which may limit their ability to understand illness, medical procedures, and the reasons for hospitalization. As a result, hospitalized children may experience anxiety, fear, crying, withdrawal behaviors, sleep disturbances, and decreased cooperation during treatment (Akay *et al.*, 2025; Çolak *et al.*, 2025; Gjørde *et al.*, 2021). Anxiety during hospitalization may negatively influence children's psychological well-being, coping ability, and adaptation to healthcare procedures, highlighting the importance of effective anxiety management as part of comprehensive pediatric nursing care.

Managing anxiety among hospitalized children requires interventions that are appropriate to their developmental characteristics and minimize additional psychological stress. Non-pharmacological interventions, including therapeutic play, distraction techniques, therapeutic communication, and story-based activities, have increasingly been integrated into pediatric nursing practice to support children's emotional adaptation during hospitalization (Mathias *et al.*, 2023). These approaches may help shift children's attention away from stressful experiences, promote positive coping mechanisms, and provide opportunities for emotional expression and interaction (Abdi *et al.*, 2025; Herman *et al.*, 2025). Therefore, incorporating developmentally appropriate non-pharmacological interventions into pediatric care may contribute to a more comfortable, supportive, and child-centered hospitalization experience.

Storytelling is considered a particularly suitable intervention for preschool children because it aligns with their developmental characteristics, including imagination, curiosity, and interest in interactive communication. Through storytelling activities, children can redirect their attention toward characters and events within the narrative rather than focusing on unfamiliar hospital environments or distressing procedures. In addition, storytelling may facilitate emotional expression, strengthen communication between children and caregivers or healthcare providers, and promote feelings of comfort and security. Previous studies have demonstrated that storytelling interventions can influence children's emotional responses and reduce psychological stress indicators during hospitalization (Claudino *et al.* 2021; Sari *et al.*, 2021; Valizadeh *et al.*, 2022).

Recent evidence has increasingly supported the potential effectiveness of storytelling in reducing anxiety and fear among hospitalized children. A systematic review and meta-analysis involving eight studies reported that storytelling interventions were associated with reduced anxiety and fear among hospitalized children compared with standard care (Ku *et al.*, 2025). Similarly, a randomized controlled trial among children aged 3–10 years demonstrated that storytelling significantly reduced anxiety levels, with greater effects compared with play therapy (Abdi *et al.*, 2025). Another meta-analysis of 15 studies found that storybook-based interventions significantly decreased anxiety and fear among children receiving healthcare, although the magnitude of effects varied according to age, intervention characteristics, duration, and implementation timing (Akay *et al.*, 2025). These findings indicate that storytelling represents a simple, accessible, and developmentally appropriate approach for supporting emotional regulation in pediatric healthcare settings. However, evidence specifically focusing on preschool-aged children during hospitalization remains limited, indicating the need for further investigation in this population (Suraya *et al.*, 2025).

Despite the growing evidence regarding storytelling interventions, differences in participant characteristics, healthcare settings, intervention protocols, and anxiety measurement instruments

have contributed to variations in previous findings. In Indonesia, research examining storytelling therapy among hospitalized children remains limited, particularly among preschool-aged children, although several studies have reported reductions in anxiety following storytelling interventions (Lameky & Parinussa, 2025; Sari *et al.*, 2021). Furthermore, existing studies have not fully clarified the immediate effect of structured storytelling sessions on anxiety levels among preschool children experiencing hospitalization in Indonesian hospital settings. This research gap is clinically relevant because preschool children represent a vulnerable developmental group requiring interventions that are simple, safe, inexpensive, and easily implemented within routine pediatric nursing care.

The novelty of this study lies in evaluating the immediate effect of a structured storytelling intervention on anxiety levels specifically among hospitalized preschool children in an Indonesian hospital setting. By focusing on a developmentally appropriate and easily applicable nursing intervention, this study provides additional evidence regarding the role of storytelling as a complementary strategy to improve psychological comfort during pediatric hospitalization. Therefore, this study aimed to assess changes in anxiety levels among hospitalized preschool children before and immediately after a storytelling intervention at Siti Fatimah Az-Zahra Regional General Hospital, South Sumatra, Indonesia.

METHODS

Study Design and Setting

This study employed a quantitative pre-experimental design using a one-group pretest-posttest approach. The study was conducted in the Cemara Pavilion inpatient ward at Siti Fatimah Az-Zahra Regional General Hospital, South Sumatra, Indonesia, from June 29 to July 12, 2026. The study involved hospitalized preschool children aged 3–6 years who experienced anxiety during hospitalization.

Participants and Sampling

The study population consisted of 133 hospitalized preschool children. A total of 34 participants were recruited using purposive sampling based on predefined eligibility criteria. The inclusion criteria were children aged 3–6 years who were conscious, accompanied by a parent or family member, and able to participate in a storytelling session. Children with clinical conditions that made participation in a 15-minute storytelling intervention medically inappropriate or those experiencing emergency conditions during the study period were excluded or withdrawn from participation.

Written informed consent was obtained from the parent or legal guardian before enrollment. The sample size was determined using Slovin's formula with a 15% margin of error, as specified in the study protocol. However, this approach does not consider the expected effect size, significance level, statistical power, or planned statistical analysis; therefore, the sample size estimation represents a methodological limitation. Future studies should determine sample size using an a priori power analysis based on expected effect size, alpha level, and statistical power.

Data Collection and Measurement

Data were collected through direct observation, interviews with parents or caregivers, and medical record reviews. Participant characteristics included age, sex, and length of hospitalization. Anxiety levels were assessed using the Faces Anxiety Scale (FAS), a single-item visual scale consisting of five facial expressions scored from 0 to 4, with higher scores indicating greater anxiety.

The FAS assessment was conducted by asking each child to select the facial expression that best represented their current anxiety level. Anxiety was measured immediately before the storytelling intervention (pretest) and within 5 minutes after completion of the intervention (posttest) using the same assessment procedure.

Several potentially relevant clinical and contextual factors, including primary diagnosis, invasive procedures, pain intensity, previous hospitalization experience, time since admission, use of sedative or analgesic medication, and parental anxiety, were not systematically assessed. These factors may have influenced children's anxiety levels and could not be fully controlled in this study. Future research should incorporate these variables to improve adjustment for potential confounding factors.

Storytelling Intervention

The storytelling intervention was delivered individually by the researcher using age-appropriate storybooks in a designated area of the pediatric ward. Before each session, the researcher explained the procedure to the child and parent or caregiver, assessed baseline anxiety using the FAS, and allowed the child to select one storybook from the available options.

Each storytelling session lasted approximately 15 minutes and followed a standardized procedure. The selected stories were appropriate for children aged 3–6 years based on language complexity, storyline structure, and content suitability, without themes considered frightening or distressing. Each participant received one storytelling session with the same duration and intervention procedure.

Parents or caregivers remained present during the session but were not actively involved in storytelling. All interventions were delivered by the same researcher to minimize variations in implementation. Any interruptions caused by clinical procedures or ward activities were documented. Following completion of the storytelling session, anxiety levels were reassessed using the FAS within 5 minutes.

Data Analysis

Data analysis was performed using IBM SPSS Statistics version 26.0. Participant characteristics were presented using frequency distributions and percentages. Because FAS scores represent ordinal data ranging from 0 to 4, changes in anxiety levels before and after the intervention were analyzed using the Wilcoxon Signed-Rank Test. Statistical significance was determined at a p -value < 0.05 .

Ethical Considerations

Ethical approval was obtained from the Research Ethics Committee of Universitas Muhammadiyah Ahmad Dahlan Palembang, Indonesia (Ethical Approval No. 004923/KEP Universitas Muhammadiyah Ahmad Dahlan Palembang/2026), issued on June 25, 2026. Written informed consent was obtained from parents or legal guardians before participation. Participant confidentiality was maintained throughout the study.

RESULTS AND DISCUSSION

A total of 34 preschool children participated in this study (Table 1). The majority of participants were male (18 children; 52.9%). Regarding age distribution, children aged 3 and 5 years each accounted for 11 participants (32.4%), followed by those aged 4 years (10 participants; 29.4%) and 6 years (2 participants; 5.9%). In terms of hospitalization duration, 15 participants (44.1%) had been hospitalized for 2 days, 11 participants (32.4%) for 3 days, and 8 participants (23.5%) for 1 day.

Other clinical characteristics, including primary diagnosis, disease severity, pain status, and previous hospitalization experience, were not systematically assessed in this study and therefore were not included in the analysis.

Table 1. Characteristics of the Participants (n = 34)

Characteristic	Frequency (n)	Percentage %
Sex		
Male	18	52.9
Female	16	47.1
Age		
3 years	11	32.4
4 years	10	29.4
5 years	11	32.4
6 years	2	5.9
Hospitalization duration		
1 day	8	23.5
2 days	15	44.1
3 days	11	32.4

Table 2 presents the distribution of FAS anxiety scores and anxiety categories before and after the storytelling intervention. The median anxiety score decreased from 2 (IQR 1–2) before the intervention to 1 (IQR 0–1) after the intervention. Prior to the intervention, most participants were categorized as experiencing moderate anxiety (20 participants; 58.8%), while 14 participants (41.2%) experienced mild anxiety. Following the storytelling intervention, 17 participants (50.0%) were categorized as having no anxiety, 14 participants (41.2%) experienced mild anxiety, and only 3 participants (8.8%) remained in the moderate anxiety category.

Table 2. Anxiety Levels Before and After Storytelling Therapy (n = 34)

Anxiety assessment	Median (IQR)	Anxiety category	n	%
Pre-intervention	2 (1–2)	No anxiety	0	0.0
		Mild anxiety	14	41.2
		Moderate anxiety	20	58.8
		Severe anxiety	0	0.0
		Very severe anxiety	0	0.0
Post-intervention	1 (0–1)	No anxiety	17	50.0
		Mild anxiety	14	41.2
		Moderate anxiety	3	8.8
		Severe anxiety	0	0.0
		Very severe anxiety	0	0.0

The Wilcoxon Signed-Rank Test demonstrated a statistically significant difference in anxiety scores following the storytelling intervention ($Z = -5.058, p < 0.001$). As presented in Table 3, anxiety scores decreased in 29 of 34 participants after the intervention, with a mean rank of 15.00 and a total rank of 435.00. No participants showed an increase in anxiety scores, while five participants showed no change between pretest and posttest scores. These findings indicate that the observed changes were predominantly characterized by a reduction in anxiety scores following the storytelling intervention.

Table 3. Wilcoxon Signed-Rank Test of Anxiety Scores Before and After Storytelling Therapy

Comparison	n	Mean Rank	Sum of Ranks
Negative ranks (Pretest < Posttest)	0	0.00	0.00
Positive ranks (Pretest > Posttest)	29	15.00	435.00
Ties (Pretest = Posttest)	5	—	—
Total	34		
Statistical Test	Value		
Z	-5.058		
p-value (2-tailed)	<0.001		

The present study demonstrated a significant reduction in anxiety scores following a storytelling intervention among hospitalized preschool children. Anxiety scores decreased after the intervention, with 29 of 34 participants showing reduced anxiety levels, indicating that storytelling was associated with improved emotional responses during hospitalization. These findings suggest that storytelling may serve as a feasible complementary approach to support anxiety management among preschool children in hospital settings. However, because this study used a one-group pretest–posttest design without a control group, the observed reduction should be interpreted as an association rather than a confirmed causal effect.

The reduction in anxiety may be explained by the distracting and engaging characteristics of storytelling. During storytelling sessions, children's attention may be redirected from unfamiliar hospital environments, medical procedures, and perceived threats toward narratives, characters, and visual elements within the story. This attentional shift may help create a more positive emotional experience and reduce psychological distress. In addition, storytelling facilitates interaction between children and caregivers or healthcare providers, which may enhance feelings of security, attention, and emotional support. These characteristics are particularly relevant for preschool children because storytelling corresponds with their developmental preference for imagination, symbolic thinking, and simple narratives. A systematic review of 15 studies reported that storybook-based interventions were associated with reduced anxiety and fear among pediatric patients, although the magnitude of effects varied according to age, intervention characteristics, duration, and timing ([Akay et al., 2025](#)).

The current findings are consistent with previous studies investigating storytelling interventions among hospitalized children. [Sari et al. \(2021\)](#) reported decreased anxiety among hospitalized preschool children following picture-book storytelling, accompanied by an increased proportion of children classified as anxiety-free. Similarly, [Santoso and Nurjanah \(2021\)](#) found that storytelling using finger puppets reduced anxiety among hospitalized preschool children. More recently, [Lameky and Parinussa \(2025\)](#) reported similar improvements in anxiety levels following storytelling therapy among preschool children during hospitalization. The consistency of these findings supports the potential applicability of storytelling as a developmentally appropriate non-pharmacological intervention in pediatric nursing care.

Higher-level evidence also supports the potential benefits of storytelling interventions. [Ku et al. \(2025\)](#), through a synthesis of eight studies, reported that storytelling was beneficial in reducing anxiety and fear among hospitalized children compared with standard care. The authors highlighted the importance of standardized intervention delivery and adequate healthcare provider training to optimize implementation. Furthermore, [Abdi et al. \(2025\)](#) demonstrated that storytelling significantly reduced anxiety among hospitalized children aged 3–10 years in a randomized

controlled trial, with effects greater than play therapy. These findings further support storytelling as a child-friendly intervention that may be integrated into pediatric healthcare services.

The psychological mechanisms underlying the potential benefits of storytelling may involve emotional regulation and positive interpersonal engagement. [Brockington et al. \(2021\)](#) reported that storytelling among hospitalized children was associated with increased oxytocin levels, reduced salivary cortisol, and improved emotional responses compared with an active control condition. Although physiological parameters were not assessed in the present study, these findings provide a possible explanation for how storytelling may influence emotional responses during hospitalization. Therefore, the effect of storytelling may extend beyond simple distraction by involving supportive interaction and emotional engagement.

The findings are also consistent with broader evidence regarding non-pharmacological interventions for pediatric anxiety. Play-based and therapeutic activities have been recognized as supportive approaches that may improve children's emotional well-being and adaptation to hospitalization ([Gjærde et al., 2021](#)). Similarly, [Godino-Iáñez et al. \(2020\)](#) reported that play therapy may reduce psychological distress and improve healthcare experiences among hospitalized children. Within this context, storytelling can be considered a specific form of therapeutic activity that combines distraction, communication, and emotional support.

Nevertheless, previous findings regarding storytelling effectiveness have not been entirely consistent. [Valizadeh et al. \(2022\)](#) found no significant difference in anxiety between children receiving storytelling and control groups in a randomized clinical trial involving hospitalized children with fractures. Differences in clinical characteristics, pain experiences, intervention procedures, measurement instruments, and timing may explain these variations. In addition, [Ku et al. \(2025\)](#) highlighted that storytelling outcomes may differ according to geographical setting and assessment methods. Therefore, the findings of the present study should be interpreted within the specific characteristics of preschool children hospitalized in the study setting.

From a nursing perspective, storytelling represents a simple, low-cost, and accessible intervention that may be incorporated into atraumatic and child-centered nursing care. The intervention requires minimal resources and can support therapeutic communication between nurses and children. Providing children with opportunities to select appropriate stories and participate in interactive storytelling may enhance engagement and create a more supportive hospitalization experience. However, storytelling should be considered a complementary intervention and should not replace comprehensive anxiety assessment or other indicated psychological and clinical management strategies.

Several limitations should be considered. The one-group pretest–posttest design without a control group limits causal interpretation because changes in anxiety may also have been influenced by adaptation to hospitalization, parental support, clinical improvement, or other concurrent experiences. The small sample size, purposive sampling, and single-center setting may limit generalizability. Furthermore, anxiety was assessed only immediately before and after the intervention using the Faces Anxiety Scale, preventing evaluation of long-term effects. Several potential confounding factors, including pain intensity, disease severity, previous hospitalization experience, parental anxiety, invasive procedures, medication use, and other concurrent interventions, were not systematically controlled. Additionally, the absence of intervention fidelity assessment and blinding may have introduced potential bias.

Overall, this study indicates that storytelling was associated with a short-term reduction in anxiety among hospitalized preschool children. The findings support previous evidence regarding storytelling, therapeutic play, and other developmentally appropriate interventions as supportive

strategies in pediatric care. Future studies should employ randomized controlled designs with larger samples, standardized storytelling protocols, intervention fidelity assessment, blinded outcome measurement, and longer follow-up periods to determine the independent effect and sustainability of storytelling interventions in reducing pediatric anxiety.

CONCLUSION

The storytelling intervention was associated with a significant reduction in anxiety scores among hospitalized preschool children in this study. The intervention represents a developmentally appropriate, child-centered, and accessible non-pharmacological approach that may support emotional comfort and anxiety management in pediatric nursing care. However, the findings should be interpreted cautiously because the one-group pretest–posttest design without a control group limits causal interpretation. Further studies using randomized controlled designs, larger and more diverse samples, multiple healthcare settings, standardized intervention protocols, and longer follow-up periods are recommended to confirm the effectiveness and sustainability of storytelling interventions.

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AUTHOR CONTRIBUTION STATEMENT (Mandatory)

The authors declare that the contribution of each author to the preparation of this manuscript is as follows: MM contributed to conceptualization, investigation, formal analysis, and writing the original draft. CS contributed to methodology, supervision, and writing, review and editing. DE contributed to methodology, supervision, and writing, review and editing. NA contributed to writing, review and editing. ACW contributed to writing, review and editing. All authors reviewed and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest related to the publication of this article.

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