



Implementation of Coloring and Puzzle Play Therapy to Reduce Hospitalization Anxiety in Preschoolers: A Case Study

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ABSTRACT

Background

Physical deterioration, environmental changes, medical treatment, and loss of control over daily activities may cause anxiety in preschool children hospitalized with bronchopneumonia.

Objective

To explore the outcomes of coloring therapy and puzzle play therapy in reducing hospitalization anxiety in preschool children with bronchopneumonia.

Methods

A descriptive case study was conducted involving two preschool children with hospitalization anxiety who received different play therapy interventions. Patient 1 (N) received coloring therapy, whereas patient 2 (A) received puzzle play therapy. Both interventions were administered once daily for 30 minutes over three consecutive days. Anxiety levels were assessed before and after the intervention using the Facial Image Scale (FIS).

Results

Hospitalization anxiety levels decreased in both children following the intervention. In patient 1 (N), the FIS score decreased from 20 (severe anxiety) before therapy to 9 (mild anxiety) after coloring therapy. In patient 2 (A), the FIS score decreased from 15 (severe anxiety) before therapy to 5 (no anxiety) after puzzle play therapy.

Conclusion

Both coloring and puzzle play therapies were effective in reducing hospitalization anxiety among preschool children. Puzzle play therapy demonstrated a greater reduction in anxiety levels, with participants achieving a state of no anxiety.



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Background

Bronchopneumonia is one of the lower respiratory tract infections that remains a leading cause of morbidity and mortality among children worldwide. This disease results from an infection affecting the lung tissue and bronchioles, commonly caused by bacteria, but it may also be triggered by viral or fungal agents (World Health Organization/WHO, 2022). The condition can be particularly severe in vulnerable populations, including infants, young children, older adults, and individuals with compromised immune systems (File, 2025; Huang *et al.*, 2025). Data from WHO (2022) indicated that broncho-pneumonia accounted for 740,180 deaths among children under five years of age in 2019, representing 14% of total deaths in this age group and 22% of all deaths among children aged 1 to 5 years. United Nations Children's Fund (2024) reported that approximately 700,000 children under the age of five die each year from bronchopneumonia equivalent to about 2,000 deaths per day including 190,000 newborns. According to the Indonesia Health Survey/SKI (2023), a total of 877,531 cases of bronchopneumonia were recorded, 15.3% of which occurred among children aged 1 to 4 years (Ministry of Health Republic of Indonesia, 2023). In the Special Capital Region of Jakarta (DKI Jakarta), Indonesia, there were approximately 78,659 cases of bronchopneumonia among children under five years of age during the 2019–2021 period (Jakarta Provincial Health Office, 2023). Agustin and Linda (2018) research found that the highest incidence of pneumonia occurred in children aged 12-23 months (38%), and the lowest in children aged 48-59 months (12%). The majority of toddlers were male (55.9%), had normal nutritional status (97.1%), were exclusively breastfed (61.8%), received measles and DPT immunizations (70.6%), and 100% lived in Jakarta.

In addition to its physiological impact, bronchopneumonia also has significant psychological effects, particularly when children require hospitalization. The unfamiliar hospital environment, invasive medical procedures, and separation from parents can trigger various emotional responses, one of the most common being anxiety (Yulianto, Idayati, & Sari, 2021). Preschool children are highly susceptible to hospitalization anxiety due to their emotional dependence on parents and sensitivity to environmental changes. Inadequate management may impair treatment adaptation, reduce compliance with medical procedures, and delay recovery (Deswita & Nursiam, 2023). Nurses have roles include caregivers, educators, advocates, collaborators, counselors, and change agents (Kozier, *et al.*, 2016). The role of nurses as care providers is crucial in creating a therapeutic and adaptive environment that can reduce anxiety and support the psychological recovery of children during hospitalization.

Assessing the level of hospitalization anxiety in children is an essential initial step in determining appropriate interventions. The use of assessment instruments suited to the child's developmental stage, such as the Facial Image Scale (FIS), enables nurses to objectively measure anxiety levels through the child's facial expressions (Buchanan & Niven, 2002). The results of this assessment serve as the basis for implementing non-pharmacological therapies such as play

therapy, music therapy, or relaxation therapy which have been proven effective in reducing anxiety among hospitalized children (Lorenza, Maryatun, & Ratrinaningsih, 2024).

One of the non-pharmacological interventions proven effective in reducing hospitalization anxiety is play therapy. Therapeutic play helps children express their emotions, develop coping strategies, and adapt to the hospital environment, thereby significantly reducing anxiety levels during hospitalization (Díaz-Rodríguez *et al.*, 2021; Kencana, Wanda, & Widya, 2025). Through play activities, children are able to channel their emotions, express themselves, and divert their attention away from frightening medical procedures (Agustina *et al.*, 2025).

Two types of play therapy that are commonly implemented in pediatric wards are coloring therapy and puzzle therapy. Both interventions have been reported to reduce hospitalization-related anxiety by providing distraction, promoting emotional expression, and enhancing children's adaptation to the hospital environment (Kartika, Winarsih, & Hartini, 2022; Satriana *et al.*, 2023). Riani, Afdhal, and Arsi (2025) conducted a quasi-experimental study assessing coloring therapy in reducing anxiety among hospitalized preschool children. The intervention group engaged in structured coloring activities using child-friendly images in a calm hospital environment, supported by nurse guidance, materials, and encouragement. Each session lasted 10–20 minutes daily. Results showed a significant reduction in anxiety scores from 33.44 to 20.75 ($p < 0.05$). The findings indicate that coloring therapy is an effective non-pharmacological intervention to reduce hospitalization-related anxiety. Puzzle play therapy has been shown to effectively reduce hospitalization anxiety in children. Administered in two 10–15-minute sessions over two days with anxiety assessed before and after intervention using the Face Anxiety Scale, the therapy significantly decreased anxiety levels, demonstrating strong therapeutic effectiveness ($p < 0.001$) (Mulhayati, Suryani, & Yasesas, 2022).

Based on the above description, the author is interested in conducting a case study involving two pediatric patients with bronchopneumonia who were hospitalized at Koja District General Hospital, North Jakarta, Indonesia. Previous studies typically examined only one type of play therapy and relied primarily on nurses' subjective observations. This current case study presents a novel approach by evaluating the comparative efficacy of coloring and puzzle therapies as specific non-pharmacological interventions for hospitalization-induced anxiety in preschool children with bronchopneumonia. The purpose of this case study is to describe the results of coloring therapy and puzzle play therapy in reducing hospitalization anxiety in preschool children with bronchopneumonia. These findings are expected to provide empirical evidence for the role of holistic nurses in supporting child growth and development.

Methods

This study employed a descriptive case study design conducted over a three-day period, from May 20 to May 22, 2025, at Koja District General Hospital, North Jakarta. The two cases were observed in two different wards. The data collection methods used in this study included anamnesis, observation, physical examination, and documentation review.

Case Description

Patient 1

N, a 3-year-old female child, was assessed on May 20, 2025, after being hospitalized for two days in Ward A with a medical diagnosis of bronchopneumonia. She was born through spontaneous delivery at 40 weeks of gestation, with a birth weight of 3.4 kg and a birth length of 50 cm. N was breastfed for two years. Her immunization history includes BCG, PCV, measles, and the follow-up measles immunization.

Patient 2

A, a 4-year-old female child, was assessed on May 20, 2025, during her second day of hospitalization in Ward B with a medical diagnosis of bronchopneumonia. A has a younger sibling. She was born through spontaneous delivery at full-term gestation, with a birth weight of 3 kg and a birth length of 48 cm. She was breastfed for two years. Her immunization history includes DPT, Polio, BCG, and Hepatitis B.

Physical assessment

The physical assessment of N revealed a body weight of 12.4 kg and a height of 96 cm. N exhibited shortness of breath, fever, and cough, along with signs of anxiety such as tension, irritability, fear of the nurse's presence, dependence on her parents, and avoidance of eye contact with strangers, including the researcher. The physical examination of A revealed a body weight of 13 kg and a height of 100 cm. The child experienced shortness of breath, runny nose, and cough. She also exhibited signs of anxiety, such as frequently asking to go home, showing fear upon the nurse's arrival, and crying when about to receive an injection.

Diagnostic Testing

Both patients underwent a complete blood count (CBC) and chest radiographic (X-ray). The chest radiographs of both patients demonstrated bilateral pulmonary infiltrates, with the final radiographic impression being consistent with bronchopneumonia. However, the complete blood count results are not presented in this report, as the authors focused exclusively on the chest radiographic findings, which were considered the primary diagnostic evidence relevant to this case study.

Diagnosis

The medical diagnosis of bronchopneumonia was established by the attending physician for both patients. This diagnosis was based on the integration of the patients' clinical assessment, chest radiographic findings, and laboratory investigations. No additional medical diagnoses were established by the attending physician for both patients.

Nursing Diagnosis

The nursing diagnosis for both patients was *Anxiety* related to a situational crisis (hospitalization), as evidenced by tension, irritability, fear of the nurse's presence, dependence on parents, avoidance of eye contact with strangers, frequent requests to go home, and crying during injections. The nursing diagnosis was established based on the *Indonesian Nursing Diagnosis Standard* with diagnosis code D.0080 (Indonesian National Nurses Association, 2017).

Therapeutical Intervention

Nursing interventions of coloring play therapy for N and puzzle play therapy for A was conducted by the researcher (DAA) over three consecutive days (May 20–22, 2025). Each play therapy session was conducted once daily for 30 minutes over three consecutive days. Before the therapy began, the researcher performed an initial measurement of anxiety level using the FIS. It was carried out by providing the respondents with a questionnaire consisting of 5 questions, followed by the presentation of five facial images: very happy, happy, neutral, sad, and very sad. The respondents were asked to select one of the five facial expressions that best represented how they felt before and after the play therapy sessions. Anxiety was reassessed after each session, with continuous observation, encouragement, praise, and positive reinforcement provided throughout the intervention.

The FIS consisted of five items assessing children's feelings during hospitalization, including how they feel in the hospital environment, when seeing the room and people around them, when unable to play at home as usual, when separated from their parents, and whether they feel anxious

or sad during hospitalization (Buchanan & Niven, 2002). Each item is rated on a 5-point scale/ score from 1 to 5. Score 1 represents very happy indicating no anxiety, score 2 represents happy indicating mild anxiety, score 3 represents neutral indicating moderate anxiety, score 4 represents sad indicating severe anxiety, and score 5 represents very sad indicating very severe anxiety. Each image selected by the respondent was assigned its corresponding score and recorded on the questionnaire scoring sheet. The scores from all selected images were then summed to obtain a total anxiety score. Based on the total score, anxiety was classified into five categories: no anxiety (1–5), mild anxiety (6–10), moderate anxiety (11–15), severe anxiety (16–20), and very severe anxiety (21–25). The FIS demonstrated good validity, with a correlation coefficient of $r = 0.70$ ($p < 0.001$). However, information regarding reliability testing was not reported in the original study by Buchanan and Niven (2002).

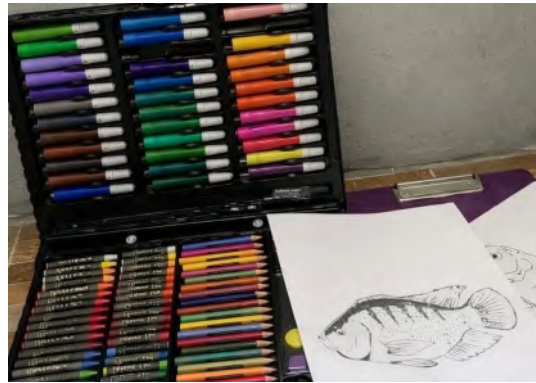


Figure 1. Coloring Tools

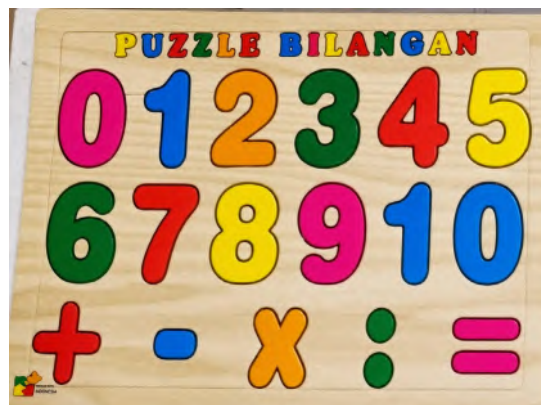


Figure 2. Number Puzzle



Figure 3. Block Puzzle

The intervention materials used in this case study included coloring tools (Figure 1), a number puzzle (Figure 2), and a block puzzle (Figure 3). These play materials were selected according to the developmental characteristics of preschool children and were used throughout the intervention sessions to reduce hospitalization anxiety.

Results

The evaluation of the implementation of coloring play therapy for N (3 years old) and puzzle play therapy for A (4 years old) over a three-day period is presented Table 1. Based on Table 1, there was a noticeable decrease in anxiety level in patient 1 (N) from severe anxiety (score 20) to mild anxiety (score 9), indicating an 11-point reduction. These findings suggest that coloring play therapy could decrease the anxiety score from 20 to 9 in patient N. Patient 2 (A) experienced a decrease in anxiety level from moderate to anxiety, with a reduction of 10 points in the post-intervention score compared to the pre-intervention score. These findings suggest that puzzle play therapy could reduce the anxiety score from 15 to 5 in patient A.

Table 1. Description of Anxiety Levels Pre and Post Coloring and Puzzle Therapy (3×24 Hours)

Type of Play Therapy	Day	Pre-Therapy Anxiety Level (Score)	Post-Therapy Anxiety Level (Score)
Coloring (Patient 1/ N)	1	Severe (20)	Severe (16)
	2	Severe (16)	Moderate (13)
	3	Moderate (13)	Mild (9)
Puzzle (Patient 2/ A)	1	Moderate (15)	Moderate (13)
	2	Moderate (12)	Mild (8)
	3	Mild (7)	No Anxiety (5)

Discussion

This case study found that both coloring play therapy and puzzle play therapy could reduce the hospitalization anxiety in two preschool children with bronchopneumonia. Play therapy is found to have a positive impact in reducing the level of anxiety in this current study. The literature review by Wahyudi *et al.* (2025) consistently demonstrated that play therapy improves adaptive behavior and reduces hospitalization-related anxiety across diverse pediatric populations. However, the included studies involved a broad age range (3–10 years), although several focused specifically on preschool children aged 3–6 or 4–6 years, which more closely resembles the participants in the present study. Moreover, anxiety was evaluated using heterogeneous instruments, including the Face Tool for Anxiety Assessment, Visual Facial Anxiety Scale, Children's State Anxiety Scale, Spence Children's Anxiety Scale, and parent-reported questionnaires, rather than the FIS. Despite these methodological differences, the review consistently supports the effectiveness of

developmentally appropriate play therapy in reducing psychological distress during hospitalization, thereby reinforcing the present findings.

In this case study, anxiety levels decreased following the implementation of number and block puzzle play interventions in two preschool-aged children during hospitalization. These observations suggest a potential benefit of play-based interventions; however, the findings should be interpreted cautiously given the descriptive nature of the study. Although both therapies were beneficial, puzzle play therapy appeared to produce a greater reduction score in anxiety than coloring play therapy. The possible factors contributing to these findings and their implications for nursing practice are discussed below.

The Effectiveness of Coloring Play Therapy

The results of the case study indicate that coloring therapy has a positive impact in reducing the level of anxiety from severe anxiety to mild anxiety in a preschool child during hospitalization. Coloring therapy functions as a structured expressive activity that allows children to externalize emotions, improve focus, and regain a sense of control in unfamiliar hospital environments (Pattikayhatu & Houghty, 2024; Wahyudi *et al.*, 2025). These mechanisms are supported by evidence that art-based interventions promote relaxation, mindfulness, and emotional regulation, thereby reducing anxiety symptoms in pediatric populations (Pattikayhatu & Houghty, 2024; Wahyudi *et al.*, 2025). Coloring therapy also provides opportunities for positive interactions between children and their parents, nurses, or therapists, fostering emotional support and a sense of security during hospitalization. This supportive environment helps children feel less isolated, enhances their coping abilities, and contributes to a reduction in hospitalization-related anxiety (Patandung, Langingi, & Rembet, 2024; Riani, Afdhal, & Arsi, 2025).

The present findings are consistent with those of Herawati and Mariyani (2023), who reported that coloring play therapy significantly reduced hospitalization-related stress in preschool children aged 4–6 years, with mean stress scores decreasing from 21.09 to 13.13 ($p < 0.001$). Although their study assessed stress using a modified Hamilton Rating Scale for Anxiety (HRS-A) questionnaire rather than the FIS, both studies support coloring play therapy as an effective non-pharmacological intervention for reducing hospitalization-related psychological distress. This evidence reinforces the effectiveness of coloring play therapy as a non-pharmacological strategy for alleviating hospitalization-related distress in pediatric patients. Coloring play therapy significantly reduces anxiety levels in hospitalized children by providing distraction, emotional expression, and a sense of control over the environment (Desrina, Putra & Ulfa, 2023; Futri & Risdiana, 2023; Sudirman, Dodjo, & Aziz, 2023; Dewanti & Maryatun, 2023). From a neuropsychological perspective, engagement in enjoyable creative activities such as coloring is associated with activation of the brain's reward system, which may stimulate endorphin release and reduce stress-related physiological responses, including cortisol activity (Kaimal, Ray, & Muniz, 2016). This neurobiological response contributes to improved mood, emotional balance, and decreased anxiety intensity in children undergoing medical procedures (Kaimal, Ray, & Muniz, 2016; Pattikayhatu & Houghty, 2024).

Effectiveness of Puzzle Play Therapy

Puzzle play therapy has been recognized as an effective atraumatic care intervention for alleviating hospitalization-related anxiety among preschool children (Satriana *et al.*, 2023). Through cognitive engagement and distraction mechanisms, puzzle activities divert children's attention from stressful hospital stimuli, fostering relaxation, sustained concentration, and a greater sense of environmental control (Agramadani & Permatasari, 2026). Furthermore, puzzle play contributes to psychosocial development by strengthening problem-solving abilities, fine motor skills, and adaptive coping strategies, which collectively support emotional adjustment during hospitalization

(Satriana *et al.*, 2023; Sari *et al.*, 2024; Agramadani & Permatasari, 2026). These findings are consistent with previous studies conducted by Diansari, Soleman, & Ratrinaningsih (2024), Islamiyah, Novianti, & Anhusadar (2024), and Yulianto, Idayati, & Sari, (2021), which demonstrated that puzzle play therapy significantly reduces anxiety levels among preschool children during hospitalization. These results support the effectiveness of puzzle-based play interventions as a non-pharmacological strategy for alleviating hospitalization-related anxiety. By engaging children in enjoyable and cognitively stimulating activities, puzzle play therapy can enhance emotional comfort, promote adaptive coping mechanisms, and improve overall psychological well-being during medical treatment.

Comparison Between Coloring Therapy and Puzzle Play Therapy

The findings of this case study demonstrated that both coloring and puzzle play therapies effectively reduced anxiety level among preschool children. However, comparison of the two interventions showed that puzzle play therapy in Patient A (4 years old) produced a greater reduction in anxiety score than coloring therapy in Patient N (3 years old). Being one year older, Patient A exhibited more advanced cognitive and emotional development, including a greater ability to recognize and express emotions and a clearer understanding of the surrounding social environment. This level of developmental maturity likely enhanced the child's capacity to cope with anxiety. In contrast, Patient N was in an earlier stage of emotional regulation development. Patient N exhibited a higher level of anxiety than Patient A.

This difference may be explained by developmental characteristics related to early childhood cognitive maturation (Piaget, 1951; Demetriou *et al.*, 2024). According to Piaget's preoperational stage, children aged 2–7 years demonstrate progressive improvements in symbolic thinking, attention span, and problem-solving abilities, which become more advanced with age. Consequently, older preschool children tend to engage more effectively in structured cognitive activities such as puzzle play, which require sustained attention, logical sequencing, and active problem-solving. These cognitive demands may enhance distraction from anxiety-provoking hospital stimuli and increase perceived control, resulting in a stronger anxiolytic effect. In contrast, coloring therapy, although beneficial for emotional expression and relaxation, is less cognitively demanding and may function as a more passive form of distraction, particularly in younger children with limited attentional capacity (Piaget, 1951; Demetriou *et al.*, 2024).

In addition, anxiety reduction tends to occur more rapidly in older preschool children (around 4 years) compared to toddlers due to greater cognitive maturation, improved language comprehension, and more effective coping mechanisms (Demetriou *et al.*, 2024). At this developmental stage, children are increasingly able to differentiate reality from imagination and better understand simple explanations regarding medical procedures, whereas younger children are more prone to separation anxiety (Pujianti, Susanto, & Wijayanti, 2025). Furthermore, enhanced verbal communication skills at age 4 facilitate expression of pain and emotional distress, enabling more effective emotional support from caregivers and nurses (Ginting & Sembiring, 2024). Older preschool children also demonstrate more developed coping strategies, including distraction and engagement in therapeutic play, which support faster adaptation to unfamiliar hospital environments (Putri & Miradwiyana, 2024).

The findings of this case study differ from those reported by Pratiwi and Deswita (2013), who conducted a quasi-experimental study involving 30 children and found that coloring play therapy was more effective than puzzle play therapy in reducing anxiety scores. This discrepancy may be attributed to methodological differences, as the present study employed a case study design with only two participants, each receiving a different intervention, thereby limiting the comparability and generalizability of the findings.

Age

Both patients were of preschool age and demonstrated age-appropriate developmental abilities, including independence in simple daily activities such as eating without assistance, dressing, and following instructions from adults. Patient A, who was one year older, exhibited more advanced development than Patient N, particularly in the ability to express needs and desires using clearer and more comprehensible language. The reduction in anxiety observed in both cases may be attributed to the developmental characteristics of preschool-aged children, who possess limited cognitive capacity to comprehend illness, hospitalization, and medical procedures. Consequently, hospitalization is often perceived as a threatening experience that triggers anxiety (Hockenberry, Duffy, & Gibbs, 2023). Furthermore, emotional dependence on parents and exposure to an unfamiliar hospital environment may exacerbate psychological distress during hospitalization (Agramadani & Permatasari, 2026). Coloring and puzzle play therapies are developmentally appropriate interventions for preschool children because play represents a fundamental medium for emotional expression, adaptation, and coping. Consistent with previous studies, both interventions have been shown to effectively reduce hospitalization-related anxiety among preschool-aged children by providing distraction, enhancing emotional regulation, and promoting a sense of control over stressful situations (Kartika, Winarsih, & Hartini, 2022; Nazarius, Lautan, & Batari, 2024).

Gender

Both patients, N and A, are female. In general, girls tend to display more overt emotional expressiveness than boys, particularly in stressful situations such as hospitalization (Chaplin & Aldao, 2013). Emotional reactions such as crying, anxiety, resistance to procedures, and seeking parental comfort are more frequently observed and more openly expressed in girls compared to boys, which may be influenced by both socialization processes and biologically based differences in emotion regulation (Chaplin & Aldao, 2013). In pediatric nursing contexts, such differences are clinically relevant because they may affect how anxiety is identified and managed during hospitalization (Hockenberry, Duffy, & Gibbs, 2023).

Immunization

Both patients in this case study had a complete immunization status, indicating adherence to the recommended national immunization schedule. Full immunization is known to enhance specific and long-term immune protection, thereby reducing susceptibility to vaccine-preventable diseases and contributing to improved overall health outcomes in children during periods of hospitalization (WHO, 2024; Ministry of Health of the Republic of Indonesia, 2023). From a pediatric nursing perspective, immunized children generally exhibit better physiological resilience, which supports stability during acute care conditions (Hockenberry, Duffy, & Gibbs, 2023). In this context, both children demonstrated optimal physical readiness to participate in non-pharmacological interventions, including coloring and puzzle play therapy. Their stable clinical condition and adequate immune status likely facilitated better attention, cooperation, and engagement during therapeutic play. This condition may have contributed to optimizing the effectiveness of play-based nursing interventions in reducing hospitalization-related anxiety, as children with better physical stability are more capable of participating actively in structured therapeutic activities (Hockenberry, Duffy & Gibbs, 2023; WHO, 2024).

The Role of Nurses in Managing Hospitalization Anxiety Through Play Therapy

The results of the case study demonstrate that coloring and puzzle play therapy could reduce children's anxiety levels. This finding highlights the significant contribution of nurses to the effectiveness of play therapy through their roles as care providers, educators, and collaborators (Kozier *et al.*, 2016). The care provider role is carried out by integrating play therapy as part of

holistic nursing care. The actions include: 1) preparing a playroom decorated with colorful images, soft music, and age-appropriate coloring tools (paper, crayons, colored pencils) or puzzles; 2) scheduling playtime outside medical procedures to provide children with a “stress-free moment”; 3) encouraging children to choose their preferred pictures or puzzles (such as animals, cartoons, or vehicles); 4) accompanying and giving praise to help children feel appreciated and motivated; and 5) observing the child’s expressions throughout the activity to assess anxiety levels. Integrating play therapy into holistic nursing care significantly minimizes hospital-induced trauma and reduces pediatric anxiety. This approach synthesizes environmental optimization, procedural isolation, patient autonomy, and interactive accompaniment to accelerate psychological recovery (Gupta *et.al*, 2023).

The educator role in this case study is carried out by providing education to both the child and the parents about play therapy. It includes explaining the benefits of play as part of the healing process, teaching parents how to continue play activities at home to help the child remain calm and adaptive after hospital discharge, and facilitating play even during illness through activities and schedules appropriate to the child’s condition. Family involvement and parental participation in therapeutic play have been shown to enhance children’s coping abilities, reduce hospitalization-related anxiety, and support continuity of psychosocial care beyond the hospital setting (Agramadani & Permatasari, 2026).

The collaborator role of nurses in this case study was demonstrated through close cooperation with parents and family members in accompanying the child during play activities, thereby supporting the implementation of family-centered care throughout hospitalization. Nurses also collaborated with physicians to ensure that play therapy did not interfere with medical procedures, treatment schedules, or rest periods. In addition, nurses monitored and reported changes in the child’s behavior, emotional responses, and anxiety levels to physicians as part of the ongoing assessment of the child’s psychological condition. Such interdisciplinary collaboration among nurses, physicians, and family members is a fundamental component of atraumatic and family-centered care, contributing to improved coping abilities, reduced anxiety, and more positive hospitalization experiences for children (Alfiyanti *et al.*, 2024).

Study Limitations

This case study has several limitations. It included only two preschool children, each receiving a different intervention, which limits direct comparison and the generalizability of the findings. Individual clinical conditions, developmental differences, previous hospitalization experiences, and variations in parental involvement may also have influenced the outcomes. Furthermore, the hospital environment, including ongoing renovation activities and limited child-friendly facilities, may have affected the children’s responses to the interventions. Other limitation is that the intervention was conducted by the author. It could lead to bias. Additionally, the FIS scale was translated into Indonesian by the researcher without following a standardized instrument translation procedure, which may have affected measurement validity. Therefore, the findings should be interpreted cautiously. Nevertheless, this study provides preliminary evidence supporting coloring and puzzle play therapy for reducing hospitalization-related anxiety in preschool children. Future studies should include larger samples, independent outcome assessors, and more rigorous designs to strengthen the evidence.

Conclusion

This case study suggests that both coloring and puzzle play therapies may reduce hospitalization-related anxiety in preschool children, with puzzle play showing greater improvement in these cases. This study demonstrates that the reduction in anxiety is heavily influenced by

developmental characteristics, engagement levels, and cognitive abilities. Although limited by the case study design and small sample, the findings support the integration of structured play therapy into pediatric nursing practice as a simple, developmentally appropriate, non-pharmacological intervention to promote children's emotional well-being during hospitalization.

Informed Consent

This case study was conducted with the voluntary consent of both the patients and their parents. Written informed consent was obtained from the parents after they received a full explanation of the study objectives, procedures, and their rights as participants.

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BUKTI KORESPONDENSI
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Penulis : Diah Ayu Agustin*, Shofiyyul Izhan, Ika Melasari, Bambang Sucipto

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#930 Summary

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Desk rejection rate: **72.04%**
After-review rejection rate: **7.69%**

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Journal's acceptance rate: **25.81%**

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Desk rejection rate: **72.04%**

After-review rejection rate: **7.69%**

INDEXING



IN COLLABORATION WITH



**3. Bukti hasil review pertama dan
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**ARTICLE ASSESSMENT FORM
(DOUBLE BLIND-REVIEW)**

Title of the Article : **IMPLEMENTATION OF COLORING AND PUZZLE PLAY THERAPY TO REDUCE HOSPITALIZATION ANXIETY IN PRESCHOOLERS: CASE STUDY**

Journal : **Jurnal Persatuan Perawat Nasional Indonesia (JPPNI)**
<https://www.jurnal-ppni.org/ojs/index.php/jppni/index>

Article Number : 930

Part I

Article Assessment Form

No	Evaluation Item	Assessment Column*			Reviewer Advise	Author Response
		1	2	3		
A.	TITTLE					
1	The title consists of 15 words with proper English grammar.		x		The title needs English grammar revision	The title has been revised on page 1 line 1-2
B	ABSTRACT					
1	The abstract contains the following main elements: Background, Objective, Methods, Results, Conclusion		x		It should adjust the abstract format to JPPNI provisions	The abstract format has been revised on page line 6-18
2	Abstracts are presented in a good editorial, grammatical, and systematic manner.		X		The method should clarify that there are two subjects with different interventions.	The method has been revised on page 1 line 9-12.
			x		The results should include FIS scores before and after therapy.	The method has been added FIS scores on page 1 line 13-15

No	Evaluation Item	Assessment Column*			Reviewer Advise	Author Response
		1	2	3		
			x		The conclusion should be concise and focus more on the research findings.	The conclusion has been revised on page 1 line 16-18
B.	INTRODUCTION					
1	The background is able to explain issues, problem symptoms, problem formulation, objectives, gap, novelty and research contributions in a good and systematic manner.			x		
2			x		The novelty of the research needs to be clarified.	The novelty has been revised on page 3 line 43-49
3			x		The research objectives need to be emphasized at the end of the introduction.	The research objectives has been revised on page 3 line 50-57
4	Literature and theory are presented in concise and concise language so that they are able to direct the results of the synthesis of previous theories/research and other important concepts into the research models and hypotheses that are being developed.		x		The description of previous theories and research is still too long, it needs to be summarized.	The description of previous theories and research has been summarized on page 2 line 53-54-3, on page 3 line 1-30.
D.	RESEARCH METHOD					
1	Submission of research methods is presented in full (allowed in the form of a narrative or a combination of tables			x	The research method has been explained quite clearly.	

No	Evaluation Item	Assessment Column*			Reviewer Advise	Author Response
		1	2	3		
	and figures).					
2	The research method describes: type of research, population, sample, sampling techniques, research instruments (if any), pilot tests (if any), respondents/participants (if any), analysis tools, and hypothesis testing techniques (for quantitative research).		x		Information on the validity and reliability of the FIS instrument needs to be added.	The validity and reliability of the FIS instrument have been added on page 4 line 23-31
3			x		The basis for determining anxiety score categories needs to be explained.	The basis for determining anxiety score categories has been explained on page 4 line 54-56, on page 5 line 1-7
E.	RESULT AND DISCUSSION					
1	The results of the discussion already contain explanations of the research hypotheses and support for previous research results.			x	The results have answered the research objectives and shown changes in anxiety levels after the intervention.	
2	The presentation of the discussion is clear and in accordance with the results of the research.		x		The discussion is still too long and repeats a lot of theory, so it needs to be summarized	The discussion has been summarized on page 7 line 31-51
3			x		The comparison of the effectiveness of coloring and puzzle therapy needs to be presented with greater caution because it only involved two cases.	The comparison of the effectiveness of coloring and puzzle therapy has been revised on page 8 line 9-14
4			x		The limitations of the case study have not	The limitations of the case study have

No	Evaluation Item	Assessment Column*			Reviewer Advise	Author Response
		1	2	3		
					been explained	been added on page 11 line 2-22
F.	CONCLUSION AND ADVISE					
1	The conclusions have answered all research objectives and provided reasons for the research results			x	The conclusion aligns with the research results.	
2			x		The claim that puzzles are more effective needs to be clarified	The claim that puzzles are more effective has been clarified on page 9 line 32-49
3			x		The Conclusions can be summarized	The conclusion has been summarized on page 11 line 24-34
G.	REFERENCES					
1	The references used are relevant, appropriate, up-to-date, and sufficient		x		The reference format need to be standardized according to the JPPNI guidelines	The reference format has been revised on page 11 line 37-79, page 12 line 1-95, page 13 line 1-3
2	The literature sources used are at least 80% sourced from articles published by national or international journals and published in the last 10 years.		x		Please add the latest international references	the latest international references have been added on page 8, line 40-51
<i>Notes and Reviewer Advise:</i>						

**4. Bukti hasil revisi pertama artikel
yang disubmit
4 Juni 2026**

IMPLEMENTATION OF COLORING AND PUZZLE PLAY THERAPY TO REDUCE HOSPITALIZATION ANXIETY IN PRESCHOOLERS: CASE STUDY

ABSTRACT

Background: Physical deterioration, environmental changes, medical treatment, and loss of control over daily activities may cause anxiety in preschool children hospitalized with bronchopneumonia. **Objective:** To explore the outcomes of coloring therapy and puzzle play therapy in reducing hospitalization anxiety in preschool children with bronchopneumonia. **Methods:** A descriptive case study was conducted involving two preschool children with hospitalization anxiety who received different play therapy interventions. Patient 1 (N) received coloring therapy, whereas patient 2 (A) received puzzle play therapy. Both interventions were administered once daily for 30 minutes over three consecutive days. Anxiety levels were assessed before and after the intervention using the Facial Image Scale (FIS). **Results:** Hospitalization anxiety levels decreased in both children following the intervention. In patient 1 (N), the FIS score decreased from 20 (severe anxiety) before therapy to 9 (mild anxiety) after coloring therapy. In patient 2 (A), the FIS score decreased from 15 (severe anxiety) before therapy to 5 (no anxiety) after puzzle play therapy. **Conclusion:** Both coloring and puzzle play therapies were effective in reducing hospitalization anxiety among preschool children. Puzzle play therapy demonstrated a greater reduction in anxiety levels, with participants achieving a state of no anxiety.

Keywords: nurse, hospitalization anxiety, coloring, puzzles play, children.

INTRODUCTION

Bronchopneumonia is one of the lower respiratory tract infections that remains a leading cause of morbidity and mortality among children worldwide. This disease results from an infection affecting the lung tissue and bronchioles, commonly caused by bacteria, but it may also be triggered by viral or fungal agents. The condition is particularly serious for infants, young children, the elderly, and individuals with compromised immune systems (Hts, S.E.P. & Amalia, D. (2023).

Data from the World Health Organization/WHO (2022) indicate that

broncho-pneumonia accounted for 740,180 deaths among children under five years of age in 2019, representing 14% of total deaths in this age group and 22% of all deaths among children aged 1 to 5 years. UNICEF (2024) reported that approximately 700,000 children under the age of five die each year from bronchopneumonia—equivalent to about 2,000 deaths per day—including 190,000 newborns. According to the Indonesia Health Survey/SKI (2023), a total of 877,531 cases of bronchopneumonia were recorded, 15.3% of which occurred among children aged 1 to 4 years. In the Province of DKI Jakarta alone, the number of bronchopneumonia cases among children under five during the 2019–

1 2021 period reached approximately 78,659
2 (Jakarta Provincial Health Office, 2023).

3 Agustin, D.A, and Linda, S.E. (2018)
4 research found that the highest incidence of
5 pneumonia occurred in children aged 12-23
6 months (38%), and the lowest in children
7 aged 48-59 months (12%). The majority of
8 toddlers were male (55.9%), had normal
9 nutritional status (97.1%), were exclusively
10 breastfed (61.8%), received measles and DPT
11 immunizations (70.6%), and 100% lived in
12 Jakarta.

13 In addition to its physiological impact,
14 bronchopneumonia also has significant
15 psychological effects, particularly when
16 children require hospitalization. The
17 unfamiliar hospital environment, invasive
18 medical procedures, and separation from
19 parents can trigger various emotional
20 responses, one of the most common being
21 anxiety (Yulianto, A., Idayati and Sari, S.A.,
22 2021).

23 Preschool children are highly
24 susceptible to hospitalization anxiety due to
25 their emotional dependence on parents and
26 sensitivity to environmental changes.
27 Inadequate management may impair
28 treatment adaptation, reduce compliance with
29 medical procedures, and delay recovery
30 (Deswita & Nursiam, Y, 2023).

31 Nurses have roles include providing
32 nursing care, advocating, consulting,

33 educating, collaborating, and innovating.
34 (Agustin, D.A., 2018). The role of nurses as
35 care providers is crucial in creating a
36 therapeutic and adaptive environment that can
37 reduce anxiety and support the psychological
38 recovery of children during hospitalization.

39 Assessing the level of hospitalization
40 anxiety in children is an essential initial step
41 in determining appropriate interventions. The
42 use of assessment instruments suited to the
43 child's developmental stage, such as the
44 *Facial Image Scale* (FIS), enables nurses to
45 objectively measure anxiety levels through
46 the child's facial expressions. The results of
47 this assessment serve as the basis for
48 implementing non-pharmacological therapies
49 such as play therapy, music therapy, or
50 relaxation therapy—which have been proven
51 effective in reducing anxiety among
52 hospitalized children (Lorenza, E., Maryatun,
53 & Ratrinaningsih, S., 2024).

54 One of the non-pharmacological
55 interventions proven effective in reducing
56 hospitalization anxiety is play therapy.
57 Through play activities, children are able to
58 channel their emotions, express themselves,
59 and divert their attention away from
60 frightening medical procedures (Agustina, Y.,
61 Ringo, L. S., Sari, I. M., Rosuliana, N. E.,
62 Agustin, D. A. et al., 2025).

63 Two types of play therapy that are
64 commonly implemented in pediatric wards

1 are coloring therapy and puzzle therapy. Both
2 activities are safe, low-intensity interventions
3 for hospitalized preschool children with
4 bronchopneumonia, as they do not increase
5 respiratory workload and can be performed
6 with medical devices in place. These activities
7 reduce anxiety, promote relaxation, and
8 support cognitive and fine motor development
9 while maintaining functional abilities during
10 hospitalization.

11 Coloring play therapy promotes
12 relaxation, concentration, and a sense of
13 control, thereby reducing hospitalization
14 anxiety in children. Implemented in two 35-
15 minute sessions over consecutive days with
16 pre- and post-assessment, the intervention
17 significantly decreased anxiety levels,
18 demonstrating its effectiveness as a
19 therapeutic nursing strategy ($p < 0.05$).
20 (Gerungan, N., & Walelang, E., 2020).

21 Puzzle play therapy has been shown to
22 effectively reduce hospitalization anxiety in
23 children. Administered in two 10–15-minute
24 sessions over two days with anxiety assessed
25 before and after intervention using the Face
26 Anxiety Scale, the therapy significantly
27 decreased anxiety levels, demonstrating
28 strong therapeutic effectiveness ($p < 0.001$).
29 (Mulhayati, N., Suryani, M., & Yasesas, O.,
30 2022).

31 Based on the above description, the
32 author is interested in conducting a case study

33 involving two pediatric patients with
34 bronchopneumonia who were hospitalized at
35 Koja District General Hospital, under the title
36 *“Implementation of Coloring and Puzzle Play
37 Therapy Reduce Hospitalization Anxiety in
38 Preschool Children: Case Study.”*

39 This case study differs from previous
40 research on play therapy, which typically
41 examined only one type of play therapy and
42 relied primarily on nurses’ subjective
43 observations. The novelty of this case study
44 lies in the application of two different forms
45 of play therapy, coloring and puzzle play
46 therapy, to preschool children hospitalized
47 with bronchopneumonia, with anxiety
48 outcomes evaluated using the Facial Image
49 Scale (FIS).

50 The purpose of this case study is to
51 describe the results of coloring therapy and
52 puzzle play therapy in reducing
53 hospitalization anxiety in preschool children
54 with bronchopneumonia. These findings are
55 expected to provide empirical evidence for
56 the role of holistic nurses in supporting child
57 growth and development.

58 METHODS

61 This study employed a descriptive
62 case study design conducted over a three-day
63 period, from May 20 to May 22, 2025, at
64 Koja District General Hospital, North Jakarta.

1 The first case was observed in the Dori Ward
 2 on the 15th floor, and the second case in the
 3 Lumba-Lumba Ward. The sampling technique
 4 used was accidental sampling, which resulted
 5 in the selection of two preschool-aged
 6 children diagnosed with bronchopneumonia.

7 The data collection methods used in
 8 this study included anamnesis, observation,
 9 physical examination, and documentation
 10 review. The instruments utilized for data
 11 collection consisted of coloring and puzzle
 12 play tools, as well as a questionnaire
 13 employing the *Facial Image Scale* (FIS)
 14 method, which comprised five questions
 15 (Table 1).



Figure 1. Colouring Tools



Figure 2. Number Puzzle



Figure 3. Block Puzzle

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Coloring and puzzle play therapies were each conducted for 30 minutes. Anxiety levels were assessed before and after the intervention using the Facial Image Scale (FIS), developed by Buchanan, H. and Niven (2002). The instrument demonstrated good validity, with a correlation coefficient of $r = 0.70$ ($p < 0.001$). However, information regarding reliability testing was not reported in the original study by Buchanan and Niven.

32 Anxiety measurement was carried out
 33 by providing the respondents with a
 34 questionnaire consisting of 5 questions,
 35 followed by the presentation of five facial
 36 images: very happy, happy, neutral, sad, and
 37 very sad. The respondents were asked to
 38 select one of the five facial expressions that
 39 best represented how they felt before and after
 40 the play therapy sessions.

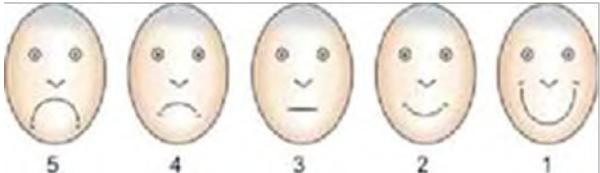


Figure 1. Facial Image Scale (FIS) of Anxiety Levels

42
 43
 44
 45 The descriptions of each facial expression are
 46 as follows:

- 47 Score 1 — Very happy (no anxiety)
- 48 Score 2 — Happy (mild anxiety)
- 49 Score 3 — Neutral (moderate anxiety)
- 50 Score 4 — Sad (severe anxiety)
- 51 Score 5 — Very sad (very severe anxiety)

52
 53 Table 1. Anxiety Level Questionnaire

No	Question	1	2	3	4	5
1	How do you feel today in this hospital?					
2	How do you feel when you see the room and the people here?					
3	What do you feel when you cannot play at home as usual?					
4	How do you feel when you cannot be with your parents all the time here?					
5	Do you feel anxious or sad in this hospitalized?					
	Final Score					

54 Each image selected by the respondent
 55 was assigned its corresponding score and
 56 recorded on the questionnaire scoring sheet.

1 The scores from all selected images were then
2 summed to obtain a total anxiety score. Based
3 on the total score, anxiety was classified into
4 five categories: **no anxiety** (1–5), **mild**
5 **anxiety** (6–10), **moderate anxiety** (11–15),
6 **severe anxiety** (16–20), and **very severe**
7 **anxiety** (21–25).

8

9 **Results**

10

11 **a. Nursing Assessment / Case Description**

12

13 **Patient 1**

14 N, a 3-year-old female child, was
15 assessed on May 20, 2025, after being
16 hospitalized for two days in the Dori Ward of
17 Koja District General Hospital with a medical
18 diagnosis of bronchopneumonia. She was
19 born through spontaneous delivery at 40
20 weeks of gestation, with a birth weight of 3.4
21 kg and a birth length of 50 cm. The child was
22 breastfed for two years. Her immunization
23 history includes BCG, PCV, measles, and the
24 follow-up measles immunization.

25 The physical assessment of N revealed
26 a body weight of 12.4 kg and a height of 96
27 cm. The child exhibited shortness of breath,
28 fever, and cough, along with signs of anxiety
29 such as tension, irritability, fear of the nurse's
30 presence, dependence on her parents, and
31 avoidance of eye contact with strangers,
32 including the researcher.

33 **Patient 2**

34 A, a 4-year-old female child, was
35 assessed on May 20, 2025, during her second
36 day of hospitalization in the Lumba-Lumba
37 Ward of Koja District General Hospital with a
38 medical diagnosis of bronchopneumonia. A is
39 the first of two siblings. She was born through
40 spontaneous delivery at full-term gestation,
41 with a birth weight of 3 kg and a birth length
42 of 48 cm. She was breastfed for two years.
43 Her immunization history includes DPT,
44 Polio, BCG, and Hepatitis B.

45 The physical examination of A
46 revealed a body weight of 13 kg and a height
47 of 100 cm. The child experienced shortness of
48 breath, runny nose, and cough. She also
49 exhibited signs of anxiety, such as frequently
50 asking to go home, showing fear upon the
51 nurse's arrival, and crying when about to
52 receive an injection.

53

54 **b. Nursing Diagnosis**

55 The nursing diagnosis for both
56 patients was *Anxiety* related to a situational
57 crisis (hospitalization), as evidenced by
58 tension, irritability, fear of the nurse's
59 presence, dependence on parents, avoidance
60 of eye contact with strangers, frequent
61 requests to go home, and crying during
62 injections. The nursing diagnosis was
63 established based on the *Indonesian Nursing*
64 *Diagnosis Standard* with diagnosis code

1 D.0080 (Indonesian National Nurses
2 Association, 2017).

3

4 **c. Nursing Intervention**

5 The nursing interventions in this case
6 study included coloring play therapy for N
7 and puzzle play therapy for A. Each play
8 therapy session was conducted once daily for
9 30 minutes over three consecutive days.
10 Before the therapy began, the researcher
11 performed an initial assessment of anxiety
12 levels using a questionnaire based on the
13 *Facial Image Scale* (FIS). After each therapy
14 session was completed, the anxiety level was
15 reassessed.

16

17 **d. Nursing Implementation**

18 The first day of nursing
19 implementation for both respondents was
20 carried out on the same date, May 20, 2025.
21 Patient 1 participated in the morning session,
22 while Patient 2 participated in the afternoon
23 session. The implementation began with
24 establishing a trusting relationship with the
25 patients and their families, providing
26 explanations to the parents and children
27 regarding the objectives, procedures, and
28 informed consent of the play therapy, and
29 involving the parents in the play therapy
30 process. Subsequently, the researcher
31 assessed the patients' anxiety levels using the
32 *Facial Image Scale* (FIS), conducted coloring

33 play therapy with N and puzzle play therapy
34 with A, each lasting for 30 minutes, and then
35 reassessed the anxiety levels after the play
36 therapy session.

37 The second day of implementation
38 was conducted on May 21, 2025. The
39 researcher carried out therapeutic
40 communication with both patients and their
41 mothers, assessed the level of anxiety, and
42 provided the play materials—coloring sheets
43 and colored pencils for N, and a puzzle for A.
44 The researcher accompanied and observed the
45 children during the play, offering
46 encouragement and praise to the children for
47 their good performance in coloring and
48 completing the puzzle.

49 The third day of implementation was
50 carried out on May 22, 2025. The researcher
51 greeted the patients and their parents, invited
52 the children to participate in coloring and
53 puzzle activities, and measured their anxiety
54 levels before and after the play session. The
55 researcher also provided praise and positive
56 reinforcement to the children at the end of the
57 activity.

58

59 **e. Nursing Evaluation**

60 The evaluation of the implementation
61 of coloring play therapy for N (3 years old)
62 and puzzle play therapy for A (4 years old)
63 over a three-day period is presented as
64 follows:

Table 2. Description of Anxiety Levels Pre and Post Coloring Therapy (3×24 Hours)

Day to	Pre-Therapy	Post-Therapy
1	Severe (20)	Severe (16)
2	Severe (16)	Moderate (13)
3	Moderate (13)	Mild (9)

Table 2 shows the anxiety levels of *N* after receiving coloring play therapy for three consecutive days. There was a noticeable decrease in anxiety level from severe anxiety (score 20) to mild anxiety (score 9), indicating an 11-point reduction. These findings suggest that coloring play therapy is effective in reducing hospitalization-related anxiety among preschool-aged children.

Table 3. Description of Anxiety Levels Pre and Post Puzzle Play Therapy (3×24 Hours)

Day	Pre	Post
1	Moderate (15)	Moderate (13)
2	Moderate (12)	Mild (8)
3	Mild (7)	No Anxiety (5)

Table 3 illustrates the anxiety levels of *A* after receiving puzzle play therapy for three consecutive days. The findings show a decrease in anxiety levels from moderate to no anxiety, with a reduction of 10 points in the post-therapy score compared to the pre-intervention score. This result indicates that puzzle play therapy is effective in reducing the level of hospitalization-related anxiety in preschool-aged children.

Discussion

a. Age

Both patients were of preschool age and demonstrated age-appropriate developmental abilities, including independence in simple daily activities such as eating without assistance, dressing, and following instructions from adults. Patient *A*, who was one year older, exhibited more advanced development than Patient *N*, particularly in the ability to express needs and desires using clearer and more comprehensible language.

Coloring and puzzle play therapies were appropriate for both patients, as they were in Piaget's preoperational stage of development, during which children learn through symbols and imagination. Coloring therapy promotes recognition of colors and shapes while enhancing creativity and visual skills, whereas puzzle play develops logical thinking, pattern recognition, and the ability to organize pieces systematically.

b. Gender

Both patients, *N* and *A*, are female. In general, girls tend to be more expressive in displaying their emotions compared to boys, particularly in stressful situations such as hospitalization. Emotional responses such as crying, feeling anxious, resisting medical procedures, or seeking comfort from parents are more easily observed in girls.

1 c. Immunization

2 Both patients in this case study were
3 found to have complete immunization status.
4 Children who have received full
5 immunization generally possess a stronger
6 immune system, making them more resistant
7 to diseases and more likely to maintain good
8 physical condition during hospitalization.

9 Both children demonstrated optimal
10 physical readiness for non-pharmacological
11 therapy, and their stable condition and
12 positive response likely enhanced the
13 intervention's effectiveness in reducing
14 hospitalization anxiety.

16 d. The Effectiveness of Coloring Play 17 Therapy

18 The results of the case study indicate
19 that coloring therapy has a positive impact in
20 reducing the level of anxiety from severe
21 anxiety to mild anxiety among preschool
22 children during hospitalization. Coloring is a
23 form of therapy that not only helps children
24 express their emotions and improve
25 concentration, but also serves as a calming
26 creative activity that can stimulate the release
27 of endorphins—especially when the child
28 feels happy, satisfied with the coloring
29 results, or receives appreciation. This increase
30 in endorphin levels plays a role in reducing
31 stress and anxiety while contributing
32 positively to the child's mood and emotional

33 balance. Coloring therapy also creates
34 positive moments that can strengthen the
35 bond between the child and their parents,
36 nurses, or therapists who accompany them.
37 This sense of support helps the child feel less
38 alone, which in turn greatly assists in
39 reducing their anxiety during hospitalization.

40 The findings of this case study are
41 consistent with those of Herawati, D and
42 Mariyani (2023), who demonstrated that
43 coloring play therapy significantly reduced
44 hospitalization-related stress among preschool
45 children, with mean stress scores decreasing
46 from 21.09 to 13.13 ($p < 0.001$). This
47 evidence reinforces the effectiveness of
48 coloring play therapy as a non-
49 pharmacological strategy for alleviating
50 hospitalization-related distress in pediatric
51 patients.

52 This finding is further supported by
53 the studies of Desrina, Putra, Y., and Ulfa, M.
54 (2023), Futri, D. N., and Risdiana, R. (2023),
55 and Sudirman, A. A., Dodjo, D., and Aziz, R.
56 A. (2023), Dewanti, B. A., & Maryatun.
57 (2023), which consistently reported that
58 coloring play therapy is an effective non-
59 pharmacological intervention for reducing
60 anxiety in hospitalized preschool-aged
61 children.

63 f. Effectiveness of Puzzle Play Therapy

1 This case study demonstrates a
2 decrease in anxiety levels following the
3 implementation of number and block puzzle
4 play interventions, proving to be effective in
5 reducing anxiety among preschool-aged
6 children during hospitalization. Puzzle play
7 serves as a tool that supports the psychosocial
8 development of children, particularly at the
9 preschool stage. While engaging in puzzle
10 activities, children's attention is diverted from
11 feelings of anxiety, stimulating the release of
12 endorphins that promote joy and happiness. In
13 addition to these developmental benefits,
14 puzzle play also provides therapeutic effects
15 that help alleviate anxiety in children.

16 These findings are consistent with the
17 study conducted by Diansari, A., Soleman,
18 S.R., and Ratrinaningsih, S. (2024),
19 Islamiyah, Novianti, A. D., and Anhusadar, L.
20 (2024), Yulianto, A., Idayati and Sari, S.A.
21 (2021). These indicate that puzzle play
22 activities significantly reduce anxiety levels
23 experienced by preschool children during
24 hospitalization. This reinforces the role of
25 play therapy as a non-pharmacological
26 approach that can enhance children's comfort
27 and emotional well-being throughout the
28 period of medical care.

30 g. Comparison Between Coloring Therapy 31 and Puzzle Play Therapy

32 The findings of this case study
33 demonstrated that both coloring and puzzle
34 play therapies effectively reduced anxiety
35 level among preschool children. However,
36 comparison of the two interventions showed
37 that puzzle play therapy in Patient A (4 years
38 old) produced a greater reduction in anxiety
39 level than coloring therapy in Patient N (3
40 years old). This difference may be attributed
41 to age-related developmental factors. Being
42 one year older, Patient A had achieved more
43 advanced cognitive and emotional
44 development, including a greater ability to
45 recognize and express emotions and a clearer
46 understanding of the surrounding social
47 environment. This level of developmental
48 maturity likely enhanced the child's capacity
49 to cope with anxiety.

50
51 In contrast, Patient N was in an earlier
52 stage of emotional regulation development.
53 Children at this age remain highly dependent
54 on caregivers when confronted with
55 unfamiliar or distressing situations and have
56 not yet fully developed the ability to identify
57 the sources of their emotions. Consequently,
58 Patient N exhibited a higher level of anxiety
59 than Patient A. These findings suggest that
60 age-related developmental differences may
61 have been an important factor influencing the
62 magnitude of anxiety reduction observed
63 between the two patients.

1
2 The findings of this case study differ
3 from those reported by Pratiwi, E.S. and
4 Deswita (2013), who conducted a quasi-
5 experimental study involving 30 children and
6 found that coloring play therapy was more
7 effective than puzzle play therapy in reducing
8 anxiety scores. This discrepancy may be
9 attributed to methodological differences, as
10 the present study employed a case study
11 design with only two participants, each
12 receiving a different intervention, thereby
13 limiting the comparability and
14 generalizability of the findings.

15 16 **h. The Role of Nurses in Managing** 17 **Hospitalization Anxiety Through Play** 18 **Therapy**

19 The results of the case study
20 demonstrate that coloring and puzzle play
21 therapy are effective in reducing children's
22 anxiety levels. This finding highlights the
23 significant contribution of nurses to the
24 effectiveness of play therapy through their
25 roles as care providers, educators, and
26 collaborators.

27 The care provider role is carried out
28 by integrating play therapy as part of holistic
29 nursing care. The actions include: 1)
30 preparing a playroom decorated with colorful
31 images, soft music, and age-appropriate
32 coloring tools (paper, crayons, colored

33 pencils) or puzzles; 2) scheduling playtime
34 outside medical procedures to provide
35 children with a "stress-free moment"; 3)
36 encouraging children to choose their preferred
37 pictures or puzzles (such as animals, cartoons,
38 or vehicles); 4) accompanying and giving
39 praise to help children feel appreciated and
40 motivated; and 5) observing the child's
41 expressions throughout the activity to assess
42 anxiety levels.

43 The educator role is carried out by
44 providing education to both the child and the
45 parents about play therapy. This includes
46 explaining the benefits of play as part of the
47 healing process, teaching parents how to
48 continue play activities at home to help the
49 child remain calm and adaptive after hospital
50 discharge, and facilitating play even during
51 illness through activities and schedules
52 appropriate to the child's condition.

53 In the collaborator role, nurses work
54 together with parents and family members to
55 accompany the child during play activities,
56 consult with physicians to ensure that play
57 therapy does not interfere with medical
58 treatment or rest periods, and report
59 behavioral changes to assist physicians in
60 assessing the child's psychological response.
61 Nurses may also refer the child to a
62 psychologist for further therapy if severe
63 anxiety persists after the implementation of
64 play therapy.

Study Limitations

This case study has several limitations. It included only two preschool children, each receiving a different intervention, which limits direct comparison and the generalizability of the findings. Individual clinical conditions, developmental differences, previous hospitalization experiences, and variations in parental involvement may also have influenced the outcomes. Furthermore, the hospital environment, including ongoing renovation activities and limited child-friendly facilities, may have affected the children's responses to the interventions. Therefore, the findings should be interpreted with caution. Nevertheless, this study provides preliminary clinical evidence supporting the potential of coloring and puzzle play therapy as holistic nursing interventions to reduce hospitalization anxiety.

Conclusion

This case study suggests that both coloring and puzzle play therapies may reduce anxiety levels among preschool children during hospitalization. In the present cases, puzzle play therapy was associated with a greater reduction in anxiety level than coloring therapy. However, this finding should be interpreted cautiously because of

the case study design and the small number of participants.

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5. Bukti hasil review kedua

4 Juli 2026

IMPLEMENTATION OF COLORING AND PUZZLE PLAY THERAPY TO REDUCE HOSPITALIZATION ANXIETY IN PRESCHOOLERS: A CASE STUDY

ABSTRACT

Background: Physical deterioration, environmental changes, medical treatment, and loss of control over daily activities may cause anxiety in preschool children hospitalized with bronchopneumonia. **Objective:** To explore the outcomes of coloring therapy and puzzle play therapy in reducing hospitalization anxiety in preschool children with bronchopneumonia. **Methods:** A descriptive case study was conducted involving two preschool children with hospitalization anxiety who received different play therapy interventions. Patient 1 (N) received coloring therapy, whereas patient 2 (A) received puzzle play therapy. Both interventions were administered once daily for 30 minutes over three consecutive days. Anxiety levels were assessed before and after the intervention using the Facial Image Scale (FIS). **Results:** Hospitalization anxiety levels decreased in both children following the intervention. In patient 1 (N), the FIS score decreased from 20 (severe anxiety) before therapy to 9 (mild anxiety) after coloring therapy. In patient 2 (A), the FIS score decreased from 15 (severe anxiety) before therapy to 5 (no anxiety) after puzzle play therapy. **Discussion:** Coloring and puzzle play therapies are developmentally appropriate for preschool children, as they stimulate cognitive, fine motor, interpersonal, and emotional development, thereby reducing hospitalization-related anxiety. **Conclusion:** Both coloring and puzzle play therapies were effective in reducing hospitalization anxiety among preschool children. Puzzle play therapy demonstrated a greater reduction in anxiety levels, with participants achieving a state of no anxiety.

Keywords: nurse, hospitalization anxiety, coloring, puzzles play, children. → write upright, not italic.

INTRODUCTION

Bronchopneumonia is one of the lower respiratory tract infections that remains a leading cause of morbidity and mortality among children worldwide. This disease results from an infection affecting the lung tissue and bronchioles, commonly caused by bacteria, but it may also be triggered by viral or fungal agents (World Health Organization, 2022). The condition is particularly serious for infants, young children, the elderly, and individuals with compromised immune systems (Hts & Amalia, 2023).

Data from the World Health Organization/WHO (2022) indicate that

broncho-pneumonia accounted for 740,180 deaths among children under five years of age in 2019, representing 14% of total deaths in this age group and 22% of all deaths among children aged 1 to 5 years. United Nations Children's Fund/UNICEF (2024) reported that approximately 700,000 children under the age of five die each year from bronchopneumonia equivalent to about 2,000 deaths per day including 190,000 newborns. According to the Indonesia Health Survey/SKI (2023), a total of 877,531 cases of bronchopneumonia were recorded, 15.3% of which occurred among children aged 1 to 4 years (Ministry of Health Republic of Indonesia, 2023).

In the Special Capital Region of Jakarta, there were approximately 78,659 cases of bronchopneumonia among children under five years of age during the 2019–2021 period (Jakarta Provincial Health Office, 2023). → not yet included in the reference

Agustin and Linda (2018) research found that the highest incidence of pneumonia occurred in children aged 12-23 months (38%), and the lowest in children aged 48-59 months (12%). The majority of toddlers were male (55.9%), had normal nutritional status (97.1%), were exclusively breastfed (61.8%), received measles and DPT immunizations (70.6%), and 100% lived in Jakarta.

In addition to its physiological impact, bronchopneumonia also has significant psychological effects, particularly when children require hospitalization. The unfamiliar hospital environment, invasive medical procedures, and separation from parents can trigger various emotional responses, one of the most common being anxiety (Yulianto *et al.*, 2021). → (Yulianto, Idayati, & Sari, 2021).

Preschool children are highly susceptible to hospitalization anxiety due to their emotional dependence on parents and sensitivity to environmental changes. Inadequate management may impair treatment adaptation, reduce compliance with

medical procedures, and delay recovery (Deswita & Nursiam, 2023).

Nurses have roles include caregivers, educators, advocates, collaborators, counselors, and change agents (Kozier *et al.*, 2016). The role of nurses as care providers is crucial in creating a therapeutic and adaptive environment that can reduce anxiety and support the psychological recovery of children during hospitalization.

Assessing the level of hospitalization anxiety in children is an essential initial step in determining appropriate interventions. The use of assessment instruments suited to the child's developmental stage, such as the *Facial Image Scale* (FIS), enables nurses to objectively measure anxiety levels through the child's facial expressions (Buchanan & Niven, 2002). The results of this assessment serve as the basis for implementing non-pharmacological therapies such as play therapy, music therapy, or relaxation therapy which have been proven effective in reducing anxiety among hospitalized children (Lorenza *et al.*, 2024) → (Lorenza, Maryatun, & Ratrinaningsih, 2024).

One of the non-pharmacological interventions proven effective in reducing hospitalization anxiety is play therapy. Therapeutic play helps children express their emotions, develop coping strategies, and adapt to the hospital environment, thereby

significantly reducing anxiety levels during hospitalization (Díaz-Rodríguez *et al.*, 2021, Kencana *et al.*, 2025 → Kencana, Wanda, & Widya, 2025). Through play activities, children are able to channel their emotions, express themselves, and divert their attention away from frightening medical procedures (Agustina *et al.*, 2025).

Two types of play therapy that are commonly implemented in pediatric wards are coloring therapy and puzzle therapy. Both interventions have been reported to reduce hospitalization-related anxiety by providing distraction, promoting emotional expression, and enhancing children's adaptation to the hospital environment (Kartika *et al.*, 2022 → Kartika, Winarsih, & Hartini, 2022; Satriana *et al.*, 2023).

Riani, Afdhal, and Arsi (2025) conducted a quasi-experimental study assessing coloring therapy in reducing anxiety among hospitalized preschool children. The intervention group engaged in structured coloring activities using child-friendly images in a calm hospital environment, supported by nurse guidance, materials, and encouragement. Each session lasted 10–20 minutes daily. Results showed a significant reduction in anxiety scores from 33.44 to 20.75 ($p < 0.05$). The findings indicate that coloring therapy is an effective non-pharmacological intervention to reduce hospitalization-related anxiety.

Puzzle play therapy has been shown to effectively reduce hospitalization anxiety in children. Administered in two 10–15-minute sessions over two days with anxiety assessed before and after intervention using the Face Anxiety Scale, the therapy significantly decreased anxiety levels, demonstrating strong therapeutic effectiveness ($p < 0.001$). (Mulhayati *et al.*, 2022) → (Mulhayati, Suryani, & Yasesas, 2022).

Based on the above description, the author is interested in conducting a case study involving two pediatric patients with bronchopneumonia who were hospitalized at Koja District General Hospital,

This case study differs from previous research on play therapy, which typically examined only one type of play therapy and relied primarily on nurses' subjective observations. This case study presents a novel approach by evaluating the comparative efficacy of coloring and puzzle therapies as specific non-pharmacological interventions for hospitalization-induced anxiety in preschool children with bronchopneumonia. Furthermore, this study demonstrates that the reduction in anxiety is heavily influenced by developmental characteristics, engagement levels, and cognitive abilities. These findings provide actionable insights for nurses to customize pediatric interventions based on the

unique psychological and cognitive profiles of each child.

The purpose of this case study is to describe the results of coloring therapy and puzzle play therapy in reducing hospitalization anxiety in preschool children with bronchopneumonia. These findings are expected to provide empirical evidence for the role of holistic nurses in supporting child growth and development.

METHODS

This study employed a descriptive case study design conducted over a three-day period, from May 20 to May 22, 2025, at Koja District General Hospital, North Jakarta. The two cases were observed in two different wards.

Case Description

Patient 1

N, a 3-year-old female child, was assessed on May 20, 2025, after being hospitalized for two days in Ward A with a medical diagnosis of bronchopneumonia. She was born through spontaneous delivery at 40 weeks of gestation, with a birth weight of 3.4 kg and a birth length of 50 cm. The child was breastfed for two years. Her immunization history includes BCG, PCV, measles, and the follow-up measles immunization.

Patient 2

A, a 4-year-old female child, was assessed on May 20, 2025, during her second day of hospitalization in Ward B with a medical diagnosis of bronchopneumonia. A is the first of two siblings. She was born through spontaneous delivery at full-term gestation, with a birth weight of 3 kg and a birth length of 48 cm. She was breastfed for two years. Her immunization history includes DPT, Polio, BCG, and Hepatitis B.

Physical assessment

The physical assessment of N revealed a body weight of 12.4 kg and a height of 96 cm. The child exhibited shortness of breath, fever, and cough, along with signs of anxiety such as tension, irritability, fear of the nurse's presence, dependence on her parents, and avoidance of eye contact with strangers, including the researcher.

The physical examination of A revealed a body weight of 13 kg and a height of 100 cm. The child experienced shortness of breath, runny nose, and cough. She also exhibited signs of anxiety, such as frequently asking to go home, showing fear upon the nurse's arrival, and crying when about to receive an injection.

Laboratory Testing

Explain here if there is laboratory testing conducted to the patient or not.

Diagnosis

Is there any medical diagnosis for these two patients? Please write here.

Nursing Diagnosis

The nursing diagnosis for both patients was *Anxiety* related to a situational crisis (hospitalization), as evidenced by tension, irritability, fear of the nurse's presence, dependence on parents, avoidance of eye contact with strangers, frequent requests to go home, and crying during injections. The nursing diagnosis was established based on the *Indonesian Nursing Diagnosis Standard* with diagnosis code D.0080 (Indonesian National Nurses Association, 2017).

Therapeutical Intervention

The researcher administered the nursing interventions of coloring play therapy for N and puzzle play therapy for A. ~~The participants were selected according to predefined inclusion criteria, including age, medical diagnosis, and nursing diagnosis.~~ Each play therapy session was conducted once daily for 30 minutes over three consecutive days. Before the therapy began, the researcher performed an initial assessment

of anxiety levels using a questionnaire based on the *Facial Image Scale* (FIS). After each therapy session was completed, the anxiety level was reassessed.

The data collection methods used in this study included anamnesis, observation, physical examination, and documentation review. The instruments utilized for data collection ~~consisted of coloring and puzzle play tools, as well as~~ was a questionnaire ~~of employing the Facial Image Scale (FIS) method (add citation),~~ which comprised five questions. ~~How to complete the questionnaire? How to interpret it? Explain in this paragraph.~~

The intervention materials used in this case study included coloring tools (Figure 1), a number puzzle (Figure 2), and a block puzzle (Figure 3). These play materials were selected according to the developmental characteristics of preschool children and were used throughout the intervention sessions to reduce hospitalization anxiety.

Figure 1. Colouring Tools

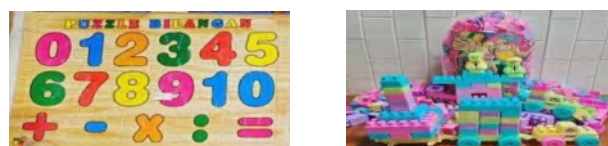


Figure2. Number Puzzle

Figure 3. Block Puzzle

Coloring and puzzle play therapies were each conducted for 30 minutes. Anxiety levels were assessed before and after the intervention using the **FIS Facial Image Scale (FIS)**, developed by Buchanan and Niven (2002).

The instrument demonstrated good validity, with a correlation coefficient of $r = 0.70$ ($p < 0.001$). However, information regarding reliability testing was not reported in the original study by Buchanan and Niven (2002). → move this paragraph to the previous paragraph that explaining about instrument.

Anxiety measurement was carried out by providing the respondents with a questionnaire consisting of 5 questions, followed by the presentation of five facial images: very happy, happy, neutral, sad, and very sad. The respondents were asked to select one of the five facial expressions that best represented how they felt before and after the play therapy sessions.

The **Facial Image Scale FIS** consists of five levels of facial expressions, where Score 1 represents very happy indicating no anxiety, Score 2 represents happy indicating mild anxiety, Score 3 represents neutral indicating moderate anxiety, Score 4 represents sad indicating severe anxiety, and Score 5 represents very sad indicating very

severe anxiety. → move this paragraph to the previous paragraph that explaining about instrument.

The anxiety level questionnaire in Table 1 consists of five items assessing children's feelings during hospitalization, including how they feel in the hospital environment, when seeing the room and people around them, when unable to play at home as usual, when separated from their parents, and whether they feel anxious or sad during hospitalization. Each item is rated on a 5-point scale from 1 to 5, and the final score represents the overall level of anxiety. → move this paragraph to the previous paragraph that explaining about instrument.

Each image selected by the respondent was assigned its corresponding score and recorded on the questionnaire scoring sheet. The scores from all selected images were then summed to obtain a total anxiety score. Based on the total score, anxiety was classified into five categories: no anxiety (1–5), mild anxiety (6–10), moderate anxiety (11–15), severe anxiety (16–20), and very severe anxiety (21–25). → move this paragraph to the previous paragraph that explaining about instrument.

The first day of nursing implementation for both respondents was carried out on the same date, May 20, 2025. Patient 1 participated in the morning session, while Patient 2 participated in the afternoon

session. The implementation began with establishing a trusting relationship with the patients and their families, providing explanations to the parents and children regarding the objectives, procedures, and informed consent of the play therapy, and involving the parents in the play therapy process. Subsequently, the researcher assessed the patients' anxiety levels using the **FIS Facial Image Scale (FIS)**, conducted coloring play therapy with N and puzzle play therapy with A, each lasting for 30 minutes, and then reassessed the anxiety levels after the play therapy session.

The second day of implementation was conducted on May 21, 2025. The researcher carried out therapeutic communication with both patients and their mothers, assessed the level of anxiety, and provided the play materials—coloring sheets and colored pencils for N, and a puzzle for A. The researcher accompanied and observed the children during the play, offering encouragement and praise to the children for their good performance in coloring and completing the puzzle.

The third day of implementation was carried out on May 22, 2025. The researcher greeted the patients and their parents, invited the children to participate in coloring and puzzle activities, and measured their anxiety levels before and after the play session. The

researcher also provided praise and positive reinforcement to the children at the end of the activity. **→ if the activity is the same in day 1, 2, and 3, please make it as one paragraph, avoid repetition of the explanation.**

Follow-up and Outcomes

The evaluation of the implementation of coloring play therapy for N (3 years old) and puzzle play therapy for A (4 years old) over a three-day period is presented **as follows:** in Table 1.

Table 1. Description of Anxiety Levels Pre and Post Coloring and Puzzle Therapy (3×24 Hours)

Type of Play Therapy	Day	Pre-Therapy Anxiety Level (Score)	Post-Therapy Anxiety Level (Score)
Coloring (Patient 1/ N)	1	Severe (20)	Severe (16)
	2	Severe (16)	Moderate (13)
	3	Moderate (13)	Mild (9)
Puzzle (Patient 2/ A)	1	Moderate (15)	Moderate (13)
	2	Moderate (12)	Mild (8)
	3	Mild (7)	No Anxiety (5)

Table 1 shows the anxiety levels of patient 1 (N) after receiving coloring play therapy for three consecutive days. There was a noticeable decrease in anxiety level from severe anxiety (score 20) to mild anxiety (score 9), indicating an 11-point reduction. **These findings suggest that coloring play therapy is effective in reducing hospitalization-related anxiety among**

preschool-aged children. → can we make a conclusion based on one case? It would be better to write that the coloring play therapy could decrease the anxiety score from 20 to 9 in patient N.

The anxiety levels of patient 1 (A) after receiving puzzle play therapy for three consecutive days. The findings show a decrease in anxiety levels from moderate to no anxiety, with a reduction of 10 points in the post-therapy score compared to the pre-intervention score. This result indicates that puzzle play therapy is effective in reducing the level of hospitalization-related anxiety in preschool-aged children. → see comment in previous paragraph.

Discussion

The main finding of this case study is found that both coloring play therapy and puzzle play therapy were effective in reducing hospitalization anxiety among two preschool children with bronchopneumonia. Both interventions were associated with a reduction in anxiety levels following three consecutive days of play therapy. Although both therapies were beneficial, puzzle play therapy appeared to produce a greater reduction score in anxiety than coloring play therapy in the present current study cases. The possible factors contributing to these findings and their

implications for nursing practice are discussed below.

The Effectiveness of Coloring Play Therapy

The results of the case study indicate that coloring therapy has a positive impact in reducing the level of anxiety from severe anxiety to mild anxiety among preschool children during hospitalization. Coloring therapy functions as a structured expressive activity that allows children to externalize emotions, improve focus, and regain a sense of control in unfamiliar hospital environments (add citation). These mechanisms are supported by evidence that art-based interventions promote relaxation, mindfulness, and emotional regulation, thereby reducing anxiety symptoms in pediatric populations (Pattikayhatu *et al.*, 2024 → Pattikayhatu & Houghty, 2024; Wahyudi *et al.*, 2025).

Furthermore, systematic reviews confirm that play therapy enhances adaptive behavior and significantly reduces psychological distress during hospitalization (Wahyudi *et al.*, 2025). → in this systematic review, how old are the respondents? Are those studies using the same instrument as in this study? Discuss more in this paragraph.

From a neuropsychological perspective, engagement in enjoyable creative

activities such as coloring is associated with activation of the brain's reward system, which may stimulate endorphin release and reduce stress-related physiological responses, including cortisol activity (Kaimal et al., 2016) → (Kaimal, Ray, & Muniz, 2016). This neurobiological response contributes to improved mood, emotional balance, and decreased anxiety intensity in children undergoing medical procedures (Kaimal et al., 2016 → → Kaimal, Ray, & Muniz, 2016; Pattikayhatu et al., 2024 → Pattikayhatu & Houghty, 2024;).

Coloring therapy also provides opportunities for positive interactions between children and their parents, nurses, or therapists, fostering emotional support and a sense of security during hospitalization. This supportive environment helps children feel less isolated, enhances their coping abilities, and contributes to a reduction in hospitalization-related anxiety (Patandung et al., 2024 → Patandung, Langingi, & Rembet, 2024; Riani et al., 2025 → Riani, Afdhal, & Arsi, 2025).

The findings of this case study are consistent with those of the finding reported by Herawati and Mariyani (2023), who demonstrated that coloring play therapy significantly reduced hospitalization-related stress among preschool children, with mean stress scores decreasing from 21.09 to 13.13

($p < 0.001$). Do they use the same instrument as what used in this current study? This evidence reinforces the effectiveness of coloring play therapy as a non-pharmacological strategy for alleviating hospitalization-related distress in pediatric patients.

~~These findings are supported by previous studies reporting that~~ coloring play therapy significantly reduces anxiety levels in hospitalized children by providing distraction, emotional expression, and a sense of control over the environment (Desrina et al., 2023; Putri & Risdiana, 2023; Sudirman et al., 2023 → Sudirman, Dodjo, & Aziz, 2023; Dewanti & Maryatun, 2023).

Effectiveness of Puzzle Play Therapy

This case study demonstrates a decrease in anxiety levels following the implementation of number and block puzzle play interventions, proving to be effective in reducing anxiety among preschool-aged children during hospitalization → please do not overclaim because it is a case study. Puzzle play therapy has been recognized as an effective atraumatic care intervention for alleviating hospitalization-related anxiety among preschool children (add citation). Through cognitive engagement and distraction mechanisms, puzzle activities divert children's attention from stressful

hospital stimuli, fostering relaxation, sustained concentration, and a greater sense of environmental control (add citation). Furthermore, puzzle play contributes to psychosocial development by strengthening problem-solving abilities, fine motor skills, and adaptive coping strategies, which collectively support emotional adjustment during hospitalization (Satriana *et al.*, 2023; Sari *et al.*, 2024; Agramadani & Permatasari, 2026).

These findings are consistent with previous studies conducted by Diansari *et al.* (2024) → Diansari, Soleman, & Ratrinaningsih (2024), Islamiyah *et al.* (2024) → Islamiyah, Novianti, & Anhusadar (2024), and Yulianto *et al.* (2021) → (Yulianto, Idayati, & Sari, 2021), which demonstrated that puzzle play therapy significantly reduces anxiety levels among preschool children during hospitalization. These results support the effectiveness of puzzle-based play interventions as a non-pharmacological strategy for alleviating hospitalization-related anxiety. By engaging children in enjoyable and cognitively stimulating activities, puzzle play therapy can enhance emotional comfort, promote adaptive coping mechanisms, and improve overall psychological well-being during medical treatment.

Comparison Between Coloring Therapy and Puzzle Play Therapy

The findings of this case study demonstrated that both coloring and puzzle play therapies effectively reduced anxiety level among preschool children. However, comparison of the two interventions showed that puzzle play therapy in Patient A (4 years old) produced a greater reduction in anxiety level score than coloring therapy in Patient N (3 years old).

Being one year older, Patient A exhibited more advanced cognitive and emotional development, including a greater ability to recognize and express emotions and a clearer understanding of the surrounding social environment. This level of developmental maturity likely enhanced the child's capacity to cope with anxiety. In contrast, Patient N was in an earlier stage of emotional regulation development. Patient N exhibited a higher level of anxiety than Patient A.

This difference may be explained by developmental characteristics related to early childhood cognitive maturation (Piaget, 1951; Demetriou *et al.*, 2024). According to Piaget's preoperational stage, children aged 2–7 years demonstrate progressive improvements in symbolic thinking, attention span, and problem-solving abilities, which become more advanced with age. Consequently, older

preschool children tend to engage more effectively in structured cognitive activities such as puzzle play, which require sustained attention, logical sequencing, and active problem-solving. These cognitive demands may enhance distraction from anxiety-provoking hospital stimuli and increase perceived control, resulting in a stronger anxiolytic effect. In contrast, coloring therapy, although beneficial for emotional expression and relaxation, is less cognitively demanding and may function as a more passive form of distraction, particularly in younger children with limited attentional capacity (Piaget, 1951; Demetriou *et al.*, 2024).

In addition, anxiety reduction tends to occur more rapidly in older preschool children (around 4 years) compared to toddlers due to greater cognitive maturation, improved language comprehension, and more effective coping mechanisms (Demetriou *et al.*, 2024). At this developmental stage, children are increasingly able to differentiate reality from imagination and better understand simple explanations regarding medical procedures, whereas younger children are more prone to separation anxiety (Pujianti *et al.*, 2025) → (Pujianti, Susanto, & Wijayanti, 2025). Furthermore, enhanced verbal communication skills at age 4 facilitate expression of pain and emotional distress, enabling more effective emotional support

from caregivers and nurses (Ginting & Sembiring, 2024). Older preschool children also demonstrate more developed coping strategies, including distraction and engagement in therapeutic play, which support faster adaptation to unfamiliar hospital environments (Putri & Miradwiyana, 2024).

The findings of this case study differ from those reported by Pratiwi and Deswita (2013), who conducted a quasi-experimental study involving 30 children and found that coloring play therapy was more effective than puzzle play therapy in reducing anxiety scores. This discrepancy may be attributed to methodological differences, as the present study employed a case study design with only two participants, each receiving a different intervention, thereby limiting the comparability and generalizability of the findings.

Age

Both patients were of preschool age and demonstrated age-appropriate developmental abilities, including independence in simple daily activities such as eating without assistance, dressing, and following instructions from adults. Patient A, who was one year older, exhibited more advanced development than Patient N, particularly in the ability to express needs and

desires using clearer and more comprehensible language.

The reduction in anxiety observed in both cases may be attributed to the developmental characteristics of preschool-aged children, who possess limited cognitive capacity to comprehend illness, hospitalization, and medical procedures. Consequently, hospitalization is often perceived as a threatening experience that triggers anxiety (Hockenberry *et al.*, 2021) → (Hockenberry, Duffy, & Gibbs, 2021). Furthermore, emotional dependence on parents and exposure to an unfamiliar hospital environment may exacerbate psychological distress during hospitalization (Agramadani & Permatasari, 2026).

Coloring and puzzle play therapies are developmentally appropriate interventions for preschool children because play represents a fundamental medium for emotional expression, adaptation, and coping. Consistent with previous studies, both interventions have been shown to effectively reduce hospitalization-related anxiety among preschool-aged children by providing distraction, enhancing emotional regulation, and promoting a sense of control over stressful situations (Kartika *et al.*, 2022 → Kartika, Winarsih, & Hartini, 2022; Nazarius *et al.*, 2024 → Nazarius, Lautan, & Batari, 2024).

Gender

Both patients, N and A, are female. In general, girls tend to display more overt emotional expressiveness than boys, particularly in stressful situations such as hospitalization (add citation). Emotional reactions such as crying, anxiety, resistance to procedures, and seeking parental comfort are more frequently observed and more openly expressed in girls compared to boys, which may be influenced by both socialization processes and biologically based differences in emotion regulation (Chaplin & Aldao, 2013). In pediatric nursing contexts, such differences are clinically relevant because they may affect how anxiety is identified and managed during hospitalization (Hockenberry *et al.*, 2021) → (Hockenberry, Duffy, & Gibbs, 2021).

Immunization

Both patients in this case study had a complete immunization status, indicating adherence to the recommended national immunization schedule. Full immunization is known to enhance specific and long-term immune protection, thereby reducing susceptibility to vaccine-preventable diseases and contributing to improved overall health outcomes in children during periods of hospitalization (WHO, 2024; Ministry of

Health of the Republic of Indonesia, 2023). From a pediatric nursing perspective, immunized children generally exhibit better physiological resilience, which supports stability during acute care conditions (Hockenberry *et al.*, 2021) → (Hockenberry, Duffy, & Gibbs, 2021).

In this context, both children demonstrated optimal physical readiness to participate in non-pharmacological interventions, including coloring and puzzle play therapy. Their stable clinical condition and adequate immune status likely facilitated better attention, cooperation, and engagement during therapeutic play. This condition may have contributed to optimizing the effectiveness of play-based nursing interventions in reducing hospitalization-related anxiety, as children with better physical stability are more capable of participating actively in structured therapeutic activities (Hockenberry *et al.*, 2021 → Hockenberry, Duffy, E. A., & Gibbs, 2021; WHO, 2024).

The Role of Nurses in Managing Hospitalization Anxiety Through Play Therapy

The results of the case study demonstrate that coloring and puzzle play therapy are effective in reducing children's anxiety levels. This finding

highlights the significant contribution of nurses to the effectiveness of play therapy through their roles as care providers, educators, and collaborators (Kozier *et al.*, 2016).

The care provider role is carried out by integrating play therapy as part of holistic nursing care. The actions include: 1) preparing a playroom decorated with colorful images, soft music, and age-appropriate coloring tools (paper, crayons, colored pencils) or puzzles; 2) scheduling playtime outside medical procedures to provide children with a “stress-free moment”; 3) encouraging children to choose their preferred pictures or puzzles (such as animals, cartoons, or vehicles); 4) accompanying and giving praise to help children feel appreciated and motivated; and 5) observing the child's expressions throughout the activity to assess anxiety levels. Integrating play therapy into holistic nursing care significantly minimizes hospital-induced trauma and reduces pediatric anxiety. This approach synthesizes environmental optimization, procedural isolation, patient autonomy, and interactive accompaniment to accelerate psychological recovery (Gupta *et.al*, 2023)

The educator role in this case study is carried out by providing education to both the child and the parents about play therapy. This includes explaining the benefits of play as

part of the healing process, teaching parents how to continue play activities at home to help the child remain calm and adaptive after hospital discharge, and facilitating play even during illness through activities and schedules appropriate to the child's condition. Family involvement and parental participation in therapeutic play have been shown to enhance children's coping abilities, reduce hospitalization-related anxiety, and support continuity of psychosocial care beyond the hospital setting (Agramadani & Permatasari, 2026).

The collaborator role of nurses in this case study was demonstrated through close cooperation with parents and family members in accompanying the child during play activities, thereby supporting the implementation of family-centered care throughout hospitalization. Nurses also collaborated with physicians to ensure that play therapy did not interfere with medical procedures, treatment schedules, or rest periods. In addition, nurses monitored and reported changes in the child's behavior, emotional responses, and anxiety levels to physicians as part of the ongoing assessment of the child's psychological condition. Such interdisciplinary collaboration among nurses, physicians, and family members is a fundamental component of atraumatic and family-centered care, contributing to

improved coping abilities, reduced anxiety, and more positive hospitalization experiences for children (Alfiyanti *et al.*, 2024)

Study Limitations

This case study has several limitations. It included only two preschool children, each receiving a different intervention, which limits direct comparison and the generalizability of the findings. Individual clinical conditions, developmental differences, previous hospitalization experiences, and variations in parental involvement may also have influenced the outcomes. Furthermore, the hospital environment, including ongoing renovation activities and limited child-friendly facilities, may have affected the children's responses to the interventions. Therefore, the findings should be interpreted with caution. Nevertheless, this study provides preliminary clinical evidence supporting the potential of coloring and puzzle play therapy as holistic nursing interventions to reduce hospitalization anxiety.

Other limitation is that the intervention was conducted by the author. It could lead to bias. Add suggestion for future study.

Conclusion

This case study suggests that both coloring and puzzle play therapies may reduce anxiety levels among preschool children during hospitalization. In the present cases, puzzle play therapy was associated with a greater reduction in anxiety level than coloring therapy. However, this finding should be interpreted cautiously because of the case study design and the small number of participants.

What is the implication of this case study?

Patients' Perspective

Initially, the child appeared anxious and hesitant to engage in activities during hospitalization. During puzzle play therapy, the child showed increasing interest in completing the puzzle and actively participated in the sessions. According to the parent, the child became more relaxed, less irritable, and more cooperative with nursing procedures. The child also appeared to enjoy the activity and showed reduced anxiety by the end of the intervention period.

Informed Consent

.... (if the patients could not give informed consent, explain from the parents/main caregiver)

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→ for all the references, add DOI.

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Implementation of Coloring and Puzzle Play Therapy to Reduce Hospitalization Anxiety in Preschoolers: A Case Study

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ABSTRACT

Background

Physical deterioration, environmental changes, medical treatment, and loss of control over daily activities may cause anxiety in preschool children hospitalized with bronchopneumonia.

Objective

To explore the outcomes of coloring therapy and puzzle play therapy in reducing hospitalization anxiety in preschool children with bronchopneumonia.

Methods

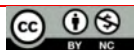
A descriptive case study was conducted involving two preschool children with hospitalization anxiety who received different play therapy interventions. Patient 1 (N) received coloring therapy, whereas patient 2 (A) received puzzle play therapy. Both interventions were administered once daily for 30 minutes over three consecutive days. Anxiety levels were assessed before and after the intervention using the Facial Image Scale (FIS).

Results

Hospitalization anxiety levels decreased in both children following the intervention. In patient 1 (N), the FIS score decreased from 20 (severe anxiety) before therapy to 9 (mild anxiety) after coloring therapy. In patient 2 (A), the FIS score decreased from 15 (severe anxiety) before therapy to 5 (no anxiety) after puzzle play therapy.

Conclusion

Both coloring and puzzle play therapies were effective in reducing hospitalization anxiety among preschool children. Puzzle play therapy demonstrated a greater reduction in anxiety levels, with participants achieving a state of no anxiety.



Background

Bronchopneumonia is one of the lower respiratory tract infections that remains a leading cause of morbidity and mortality among children worldwide. This disease results from an infection affecting the lung tissue and bronchioles, commonly caused by bacteria, but it may also be triggered by viral or fungal agents (World Health Organization/WHO, 2022). The condition can be particularly severe in vulnerable populations, including infants, young children, older adults, and individuals with compromised immune systems (File, 2025; Huang *et al.*, 2025). Data from WHO (2022) indicated that broncho-pneumonia accounted for 740,180 deaths among children under five years of age in 2019, representing 14% of total deaths in this age group and 22% of all deaths among children aged 1 to 5 years. United Nations Children's Fund (2024) reported that approximately 700,000 children under the age of five die each year from bronchopneumonia equivalent to about 2,000 deaths per day including 190,000 newborns. According to the Indonesia Health Survey/SKI (2023), a total of 877,531 cases of bronchopneumonia were recorded, 15.3% of which occurred among children aged 1 to 4 years (Ministry of Health Republic of Indonesia, 2023). In the Special Capital Region of Jakarta (DKI Jakarta), Indonesia, there were approximately 78,659 cases of bronchopneumonia among children under five years of age during the 2019–2021 period (Jakarta Provincial Health Office, 2023). Agustin and Linda (2018) research found that the highest incidence of pneumonia occurred in children aged 12-23 months (38%), and the lowest in children aged 48-59 months (12%). The majority of toddlers were male (55.9%), had normal nutritional status (97.1%), were exclusively breastfed (61.8%), received measles and DPT immunizations (70.6%), and 100% lived in Jakarta.

In addition to its physiological impact, bronchopneumonia also has significant psychological effects, particularly when children require hospitalization. The unfamiliar hospital environment, invasive medical procedures, and separation from parents can trigger various emotional responses, one of the most common being anxiety (Yulianto, Idayati, & Sari, 2021). Preschool children are highly susceptible to hospitalization anxiety due to their emotional dependence on parents and sensitivity to environmental changes. Inadequate management may impair treatment adaptation, reduce compliance with medical procedures, and delay recovery (Deswita & Nursiam, 2023). Nurses have roles include caregivers, educators, advocates, collaborators, counselors, and change agents (Kozier, *et al.*, 2016). The role of nurses as care providers is crucial in creating a therapeutic and adaptive environment that can reduce anxiety and support the psychological recovery of children during hospitalization.

Assessing the level of hospitalization anxiety in children is an essential initial step in determining appropriate interventions. The use of assessment instruments suited to the child's developmental stage, such as the Facial Image Scale (FIS), enables nurses to objectively measure anxiety levels through the child's facial expressions (Buchanan & Niven, 2002). The results of this assessment serve as the basis for implementing non-pharmacological therapies such as play therapy, music therapy, or relaxation therapy which have been proven effective in reducing anxiety among hospitalized children (Lorenza, Maryatun, & Ratrinaningsih, 2024).

One of the non-pharmacological interventions proven effective in reducing hospitalization anxiety is play therapy. Therapeutic play helps children express their emotions, develop coping strategies, and adapt to the hospital environment, thereby significantly reducing anxiety levels during hospitalization (Díaz-Rodríguez *et al.*, 2021; Kencana, Wanda, & Widya, 2025). Through play activities, children are able to channel their emotions, express themselves, and divert their attention away from frightening medical procedures (Agustina *et al.*, 2025).

Two types of play therapy that are commonly implemented in pediatric wards are coloring therapy and puzzle therapy. Both interventions have been reported to reduce hospitalization-related anxiety by providing distraction, promoting emotional expression, and enhancing children's adaptation to the hospital environment (Kartika, Winarsih, & Hartini, 2022; Satriana *et al.*, 2023). Riani, Afdhal, and Arsi (2025) conducted a quasi-experimental study assessing coloring therapy in reducing anxiety among hospitalized preschool children. The intervention group engaged in structured coloring activities using child-friendly images in a calm hospital environment, supported by nurse guidance, materials, and encouragement. Each session lasted 10–20 minutes daily. Results showed a significant reduction in anxiety scores from 33.44 to 20.75 ($p < 0.05$). The findings indicate that coloring therapy is an effective non-pharmacological intervention to reduce hospitalization-related anxiety. Puzzle play therapy has been shown to effectively reduce hospitalization anxiety in children. Administered in two 10–15-minute sessions over two days with anxiety assessed before and after intervention using the Face Anxiety Scale, the therapy significantly decreased anxiety levels, demonstrating strong therapeutic effectiveness ($p < 0.001$) (Mulhayati, Suryani, & Yasesas, 2022).

Based on the above description, the author is interested in conducting a case study involving two pediatric patients with bronchopneumonia who were hospitalized at Koja District General Hospital, North Jakarta, Indonesia. Previous studies typically examined only one type of play therapy and relied primarily on nurses' subjective observations. This current case study presents a novel approach by evaluating the comparative efficacy of coloring and puzzle therapies as specific non-pharmacological interventions for hospitalization-induced anxiety in preschool children with bronchopneumonia. The purpose of this case study is to describe the results of coloring therapy and puzzle play therapy in reducing hospitalization anxiety in preschool children with bronchopneumonia. These findings are expected to provide empirical evidence for the role of holistic nurses in supporting child growth and development.

Methods

This study employed a descriptive case study design conducted over a three-day period, from May 20 to May 22, 2025, at Koja District General Hospital, North Jakarta. The two cases were observed in two different wards. The data collection methods used in this study included anamnesis, observation, physical examination, and documentation review.

Case Description

Patient 1

N, a 3-year-old female child, was assessed on May 20, 2025, after being hospitalized for two days in Ward A with a medical diagnosis of bronchopneumonia. She was born through spontaneous delivery at 40 weeks of gestation, with a birth weight of 3.4 kg and a birth length of 50 cm. N was breastfed for two years. Her immunization history includes BCG, PCV, measles, and the follow-up measles immunization.

Patient 2

A, a 4-year-old female child, was assessed on May 20, 2025, during her second day of hospitalization in Ward B with a medical diagnosis of bronchopneumonia. A has a younger sibling. She was born through spontaneous delivery at full-term gestation, with a birth weight of 3 kg and a birth length of 48 cm. She was breastfed for two years. Her immunization history includes DPT, Polio, BCG, and Hepatitis B.

Physical assessment

The physical assessment of N revealed a body weight of 12.4 kg and a height of 96 cm. N exhibited shortness of breath, fever, and cough, along with signs of anxiety such as tension, irritability, fear of the nurse's presence, dependence on her parents, and avoidance of eye contact with strangers, including the researcher. The physical examination of A revealed a body weight of 13 kg and a height of 100 cm. The child experienced shortness of breath, runny nose, and cough. She also exhibited signs of anxiety, such as frequently asking to go home, showing fear upon the nurse's arrival, and crying when about to receive an injection.

Diagnostic Testing

Both patients underwent a complete blood count (CBC) and chest radiographic (X-ray). The chest radiographs of both patients demonstrated bilateral pulmonary infiltrates, with the final radiographic impression being consistent with bronchopneumonia. However, the complete blood count results are not presented in this report, as the authors focused exclusively on the chest radiographic findings, which were considered the primary diagnostic evidence relevant to this case study.

Diagnosis

The medical diagnosis of bronchopneumonia was established by the attending physician for both patients. This diagnosis was based on the integration of the patients' clinical assessment, chest radiographic findings, and laboratory investigations. No additional medical diagnoses were established by the attending physician for both patients.

Nursing Diagnosis

The nursing diagnosis for both patients was *Anxiety* related to a situational crisis (hospitalization), as evidenced by tension, irritability, fear of the nurse's presence, dependence on parents, avoidance of eye contact with strangers, frequent requests to go home, and crying during injections. The nursing

diagnosis was established based on the *Indonesian Nursing Diagnosis Standard* with diagnosis code D.0080 (Indonesian National Nurses Association, 2017).

Therapeutical Intervention

Nursing interventions of coloring play therapy for N and puzzle play therapy for A was conducted by the researcher (DAA) over three consecutive days (May 20–22, 2025). Each play therapy session was conducted once daily for 30 minutes over three consecutive days. Before the therapy began, the researcher performed an initial measurement of anxiety level using the FIS. It was carried out by providing the respondents with a questionnaire consisting of 5 questions, followed by the presentation of five facial images: very happy, happy, neutral, sad, and very sad. The respondents were asked to select one of the five facial expressions that best represented how they felt before and after the play therapy sessions. Anxiety was reassessed after each session, with continuous observation, encouragement, praise, and positive reinforcement provided throughout the intervention.

The FIS consisted of five items assessing children's feelings during hospitalization, including how they feel in the hospital environment, when seeing the room and people around them, when unable to play at home as usual, when separated from their parents, and whether they feel anxious or sad during hospitalization (Buchanan & Niven, 2002). Each item is rated on a 5-point scale/score from 1 to 5. Score 1 represents very happy indicating no anxiety, score 2 represents happy indicating mild anxiety, score 3 represents neutral indicating moderate anxiety, score 4 represents sad indicating severe anxiety, and score 5 represents very sad indicating very severe anxiety. Each image selected by the respondent was assigned its corresponding score and recorded on the questionnaire scoring sheet. The scores from all selected images were then summed to obtain a total anxiety score. Based on the total score, anxiety was classified into five categories: no anxiety (1–5), mild anxiety (6–10), moderate anxiety (11–15), severe anxiety (16–20), and very severe anxiety (21–25). The FIS demonstrated good validity, with a correlation coefficient of $r = 0.70$ ($p < 0.001$). However, information regarding reliability testing was not reported in the original study by Buchanan and Niven (2002).

The intervention materials used in this case study included coloring tools (Figure 1), a number puzzle (Figure 2), and a block puzzle (Figure 3). These play materials were selected according to the developmental characteristics of preschool children and were used throughout the intervention sessions to reduce hospitalization anxiety.



Figure 1. Coloring Tools



Figure 2. Number Puzzle



Figure 3. Block Puzzle

Results

The evaluation of the implementation of coloring play therapy for N (3 years old) and puzzle play therapy for A (4 years old) over a three-day period is presented Table 1. Based on Table 1, there was a noticeable decrease in anxiety level in patient 1 (N) from severe anxiety (score 20) to mild anxiety (score 9), indicating an 11-point reduction. These findings suggest that coloring play therapy could decrease the anxiety score from 20 to 9 in patient N. Patient 2 (A) experienced a decrease in anxiety level from moderate to anxiety, with a reduction of 10 points in the post-intervention score compared to the pre-intervention score. These findings suggest that puzzle play therapy could reduce the anxiety score from 15 to 5 in patient A.

Table 1. Description of Anxiety Levels Pre and Post Coloring and Puzzle Therapy (3×24 Hours)

Type of Play Therapy	Day	Pre-Therapy Anxiety Level (Score)	Post-Therapy Anxiety Level (Score)
Coloring (Patient 1/ N)	1	Severe (20)	Severe (16)
	2	Severe (16)	Moderate (13)
	3	Moderate (13)	Mild (9)
Puzzle (Patient 2/ A)	1	Moderate (15)	Moderate (13)
	2	Moderate (12)	Mild (8)
	3	Mild (7)	No Anxiety (5)

Discussion

This case study found that both coloring play therapy and puzzle play therapy could reduce the hospitalization anxiety in two preschool children with bronchopneumonia. Play therapy is found to have a positive impact in reducing the level of anxiety in this current study. The literature review by Wahyudi *et al.* (2025) consistently demonstrated that play therapy improves adaptive behavior and reduces hospitalization-related anxiety across diverse pediatric populations. However, the included studies involved a broad age range (3–10 years), although several focused specifically on preschool children aged 3–6 or 4–6 years, which more closely resembles the participants in the present study. Moreover, anxiety was evaluated using heterogeneous instruments, including the Face Tool for Anxiety Assessment, Visual Facial Anxiety Scale, Children's State Anxiety Scale, Spence Children's Anxiety Scale, and parent-reported questionnaires, rather than the FIS. Despite these methodological differences,

the review consistently supports the effectiveness of developmentally appropriate play therapy in reducing psychological distress during hospitalization, thereby reinforcing the present findings.

In this case study, anxiety levels decreased following the implementation of number and block puzzle play interventions in two preschool-aged children during hospitalization. These observations suggest a potential benefit of play-based interventions; however, the findings should be interpreted cautiously given the descriptive nature of the study. Although both therapies were beneficial, puzzle play therapy appeared to produce a greater reduction score in anxiety than coloring play therapy. The possible factors contributing to these findings and their implications for nursing practice are discussed below.

The Effectiveness of Coloring Play Therapy

The results of the case study indicate that coloring therapy has a positive impact in reducing the level of anxiety from severe anxiety to mild anxiety in a preschool child during hospitalization. Coloring therapy functions as a structured expressive activity that allows children to externalize emotions, improve focus, and regain a sense of control in unfamiliar hospital environments (Pattikayhatu & Houghty, 2024; Wahyudi *et al.*, 2025). These mechanisms are supported by evidence that art-based interventions promote relaxation, mindfulness, and emotional regulation, thereby reducing anxiety symptoms in pediatric populations (Pattikayhatu & Houghty, 2024; Wahyudi *et al.*, 2025). Coloring therapy also provides opportunities for positive interactions between children and their parents, nurses, or therapists, fostering emotional support and a sense of security during hospitalization. This supportive environment helps children feel less isolated, enhances their coping abilities, and contributes to a reduction in hospitalization-related anxiety (Patandung, Langingi, & Rembet, 2024; Riani, Afdhal, & Arsi, 2025).

The present findings are consistent with those of Herawati and Mariyani (2023), who reported that coloring play therapy significantly reduced hospitalization-related stress in preschool children aged 4–6 years, with mean stress scores decreasing from 21.09 to 13.13 ($p < 0.001$). Although their study assessed stress using a modified Hamilton Rating Scale for Anxiety (HRS-A) questionnaire rather than the FIS, both studies support coloring play therapy as an effective non-pharmacological intervention for reducing hospitalization-related psychological distress. This evidence reinforces the effectiveness of coloring play therapy as a non-pharmacological strategy for alleviating hospitalization-related distress in pediatric patients. Coloring play therapy significantly reduces anxiety levels in hospitalized children by providing distraction, emotional expression, and a sense of control over the environment (Desrina, Putra & Ulfa, 2023; Putri & Risdiana, 2023; Sudirman, Dodjo, & Aziz, 2023; Dewanti & Maryatun, 2023). From a neuropsychological perspective, engagement in enjoyable creative activities such as coloring is associated with activation of the brain's reward system, which may stimulate endorphin release and reduce stress-related physiological responses, including cortisol activity (Kaimal, Ray, & Muniz, 2016). This neurobiological response contributes to improved mood, emotional balance, and decreased anxiety intensity in children undergoing medical procedures (Kaimal, Ray, & Muniz, 2016; Pattikayhatu & Houghty, 2024).

Effectiveness of Puzzle Play Therapy

Puzzle play therapy has been recognized as an effective atraumatic care intervention for alleviating hospitalization-related anxiety among preschool children (Satriana *et al.*, 2023). Through cognitive engagement and distraction mechanisms, puzzle activities divert children's attention from stressful hospital stimuli, fostering relaxation, sustained concentration, and a greater sense of environmental control (Agramadani & Permatasari, 2026). Furthermore, puzzle play contributes to psychosocial development by strengthening problem-solving abilities, fine motor skills, and adaptive coping strategies, which collectively support emotional adjustment during hospitalization (Satriana *et al.*, 2023; Sari *et al.*, 2024; Agramadani & Permatasari, 2026). These findings are consistent with previous studies conducted by Diansari, Soleman, & Ratrinaningsih (2024), Islamiyah, Novianti, & Anhusadar (2024), and Yulianto, Idayati, & Sari, (2021), which demonstrated that puzzle play therapy significantly reduces anxiety levels among preschool children during hospitalization. These results support the effectiveness of puzzle-based play interventions as a non-pharmacological strategy for alleviating hospitalization-related anxiety. By engaging children in enjoyable and cognitively stimulating activities, puzzle play therapy can enhance emotional comfort, promote adaptive coping mechanisms, and improve overall psychological well-being during medical treatment.

Comparison Between Coloring Therapy and Puzzle Play Therapy

The findings of this case study demonstrated that both coloring and puzzle play therapies effectively reduced anxiety level among preschool children. However, comparison of the two interventions showed that puzzle play therapy in Patient A (4 years old) produced a greater reduction in anxiety score than coloring therapy in Patient N (3 years old). Being one year older, Patient A exhibited more advanced cognitive and emotional development, including a greater ability to recognize and express emotions and a clearer understanding of the surrounding social environment. This level of developmental maturity likely enhanced the child's capacity to cope with anxiety. In contrast, Patient N was in an earlier stage of emotional regulation development. Patient N exhibited a higher level of anxiety than Patient A.

This difference may be explained by developmental characteristics related to early childhood cognitive maturation (Piaget, 1951; Demetriou *et al.*, 2024). According to Piaget's preoperational stage, children aged 2–7 years demonstrate progressive improvements in symbolic thinking, attention span, and problem-solving abilities, which become more advanced with age. Consequently, older preschool children tend to engage more effectively in structured cognitive activities such as puzzle play, which require sustained attention, logical sequencing, and active problem-solving. These cognitive demands may enhance distraction from anxiety-provoking hospital stimuli and increase perceived control, resulting in a stronger anxiolytic effect. In contrast, coloring therapy, although beneficial for emotional expression and relaxation, is less cognitively demanding and may function as a more passive form of distraction, particularly in younger children with limited attentional capacity (Piaget, 1951; Demetriou *et al.*, 2024).

In addition, anxiety reduction tends to occur more rapidly in older preschool children (around 4 years) compared to toddlers due to greater cognitive maturation, improved language comprehension, and more effective coping mechanisms (Demetriou *et al.*, 2024). At this developmental stage, children are increasingly able to differentiate reality from imagination and better understand simple explanations regarding medical procedures, whereas younger children are more prone to separation anxiety (Pujianti, Susanto, & Wijayanti, 2025). Furthermore, enhanced verbal communication skills at age 4 facilitate expression of pain and emotional distress, enabling more effective emotional support from caregivers and nurses (Ginting & Sembiring, 2024). Older preschool children also demonstrate more developed coping strategies, including distraction and engagement in therapeutic play, which support faster adaptation to unfamiliar hospital environments (Putri & Miradwiyana, 2024).

The findings of this case study differ from those reported by Pratiwi and Deswita (2013), who conducted a quasi-experimental study involving 30 children and found that coloring play therapy was more effective than puzzle play therapy in reducing anxiety scores. This discrepancy may be attributed to methodological differences, as the present study employed a case study design with only two participants, each receiving a different intervention, thereby limiting the comparability and generalizability of the findings.

Age

Both patients were of preschool age and demonstrated age-appropriate developmental abilities, including independence in simple daily activities such as eating without assistance, dressing, and following instructions from adults. Patient A, who was one year older, exhibited more advanced development than Patient N, particularly in the ability to express needs and desires using clearer and more comprehensible language. The reduction in anxiety observed in both cases may be attributed to the developmental characteristics of preschool-aged children, who possess limited cognitive capacity to comprehend illness, hospitalization, and medical procedures. Consequently, hospitalization is often perceived as a threatening experience that triggers anxiety (Hockenberry, Duffy, & Gibbs, 2021). Furthermore, emotional dependence on parents and exposure to an unfamiliar hospital environment may exacerbate psychological distress during hospitalization (Agramadani & Permatasari, 2026). Coloring and puzzle play therapies are developmentally appropriate interventions for preschool children because play represents a fundamental medium for emotional expression, adaptation, and coping. Consistent with previous studies, both interventions have been shown to effectively reduce hospitalization-related anxiety among preschool-aged children by providing distraction, enhancing emotional regulation, and promoting a sense of control over stressful situations (Kartika, Winarsih, & Hartini, 2022; Nazarius, Lautan, & Batari, 2024).

Gender

Both patients, N and A, are female. In general, girls tend to display more overt emotional expressiveness than boys, particularly in stressful situations such as hospitalization (Chaplin & Aldao, 2013). Emotional reactions such as crying, anxiety, resistance to procedures, and seeking parental comfort are more frequently observed and more openly expressed in girls compared to boys, which may

be influenced by both socialization processes and biologically based differences in emotion regulation (Chaplin & Aldao, 2013). In pediatric nursing contexts, such differences are clinically relevant because they may affect how anxiety is identified and managed during hospitalization (Hockenberry, Duffy, & Gibbs, 2021).

Immunization

Both patients in this case study had a complete immunization status, indicating adherence to the recommended national immunization schedule. Full immunization is known to enhance specific and long-term immune protection, thereby reducing susceptibility to vaccine-preventable diseases and contributing to improved overall health outcomes in children during periods of hospitalization (WHO, 2024; Ministry of Health of the Republic of Indonesia, 2023). From a pediatric nursing perspective, immunized children generally exhibit better physiological resilience, which supports stability during acute care conditions (Hockenberry, Duffy, & Gibbs, 2021). In this context, both children demonstrated optimal physical readiness to participate in non-pharmacological interventions, including coloring and puzzle play therapy. Their stable clinical condition and adequate immune status likely facilitated better attention, cooperation, and engagement during therapeutic play. This condition may have contributed to optimizing the effectiveness of play-based nursing interventions in reducing hospitalization-related anxiety, as children with better physical stability are more capable of participating actively in structured therapeutic activities (Hockenberry, Duffy & Gibbs, 2021; WHO, 2024).

The Role of Nurses in Managing Hospitalization Anxiety Through Play Therapy

The results of the case study demonstrate that coloring and puzzle play therapy could reduce children's anxiety levels. This finding highlights the significant contribution of nurses to the effectiveness of play therapy through their roles as care providers, educators, and collaborators (Kozier *et al.*, 2016). The care provider role is carried out by integrating play therapy as part of holistic nursing care. The actions include: 1) preparing a playroom decorated with colorful images, soft music, and age-appropriate coloring tools (paper, crayons, colored pencils) or puzzles; 2) scheduling playtime outside medical procedures to provide children with a "stress-free moment"; 3) encouraging children to choose their preferred pictures or puzzles (such as animals, cartoons, or vehicles); 4) accompanying and giving praise to help children feel appreciated and motivated; and 5) observing the child's expressions throughout the activity to assess anxiety levels. Integrating play therapy into holistic nursing care significantly minimizes hospital-induced trauma and reduces pediatric anxiety. This approach synthesizes environmental optimization, procedural isolation, patient autonomy, and interactive accompaniment to accelerate psychological recovery (Gupta *et.al*, 2023).

The educator role in this case study is carried out by providing education to both the child and the parents about play therapy. It includes explaining the benefits of play as part of the healing process, teaching parents how to continue play activities at home to help the child remain calm and adaptive after hospital discharge, and facilitating play even during illness through activities and schedules appropriate to the child's condition. Family involvement and parental participation in therapeutic play have been

shown to enhance children's coping abilities, reduce hospitalization-related anxiety, and support continuity of psychosocial care beyond the hospital setting (Agramadani & Permatasari, 2026).

The collaborator role of nurses in this case study was demonstrated through close cooperation with parents and family members in accompanying the child during play activities, thereby supporting the implementation of family-centered care throughout hospitalization. Nurses also collaborated with physicians to ensure that play therapy did not interfere with medical procedures, treatment schedules, or rest periods. In addition, nurses monitored and reported changes in the child's behavior, emotional responses, and anxiety levels to physicians as part of the ongoing assessment of the child's psychological condition. Such interdisciplinary collaboration among nurses, physicians, and family members is a fundamental component of atraumatic and family-centered care, contributing to improved coping abilities, reduced anxiety, and more positive hospitalization experiences for children (Alfiyanti *et al.*, 2024).

Study Limitations

This case study has several limitations. It included only two preschool children, each receiving a different intervention, which limits direct comparison and the generalizability of the findings. Individual clinical conditions, developmental differences, previous hospitalization experiences, and variations in parental involvement may also have influenced the outcomes. Furthermore, the hospital environment, including ongoing renovation activities and limited child-friendly facilities, may have affected the children's responses to the interventions. Therefore, the findings should be interpreted with caution. Nevertheless, this study provides preliminary clinical evidence supporting the potential of coloring and puzzle play therapy as holistic nursing interventions to reduce hospitalization anxiety. Other limitation is that the intervention was conducted by the researcher. It could lead to bias. Additionally, the FIS scale was translated into Indonesian by the researcher without following a standardized instrument translation procedure, which may have affected measurement validity. Therefore, the findings should be interpreted cautiously. Nevertheless, this study provides preliminary evidence supporting coloring and puzzle play therapy for reducing hospitalization-related anxiety in preschool children. Future studies should include larger samples, independent outcome assessors, and more rigorous designs to strengthen the evidence.

Conclusion

This case study suggests that both coloring and puzzle play therapies may reduce hospitalization-related anxiety in preschool children, with puzzle play showing greater improvement in these cases. This study demonstrates that the reduction in anxiety is heavily influenced by developmental characteristics, engagement levels, and cognitive abilities. Although limited by the case study design and small sample, the findings support the integration of structured play therapy into pediatric nursing practice as a simple, developmentally appropriate, non-pharmacological intervention to promote children's emotional well-being during hospitalization.

Informed Consent

This case study was conducted with the voluntary consent of both the patients and their parents. Written informed consent was obtained from the parents after they received a full explanation of the study objectives, procedures, and their rights as participants.

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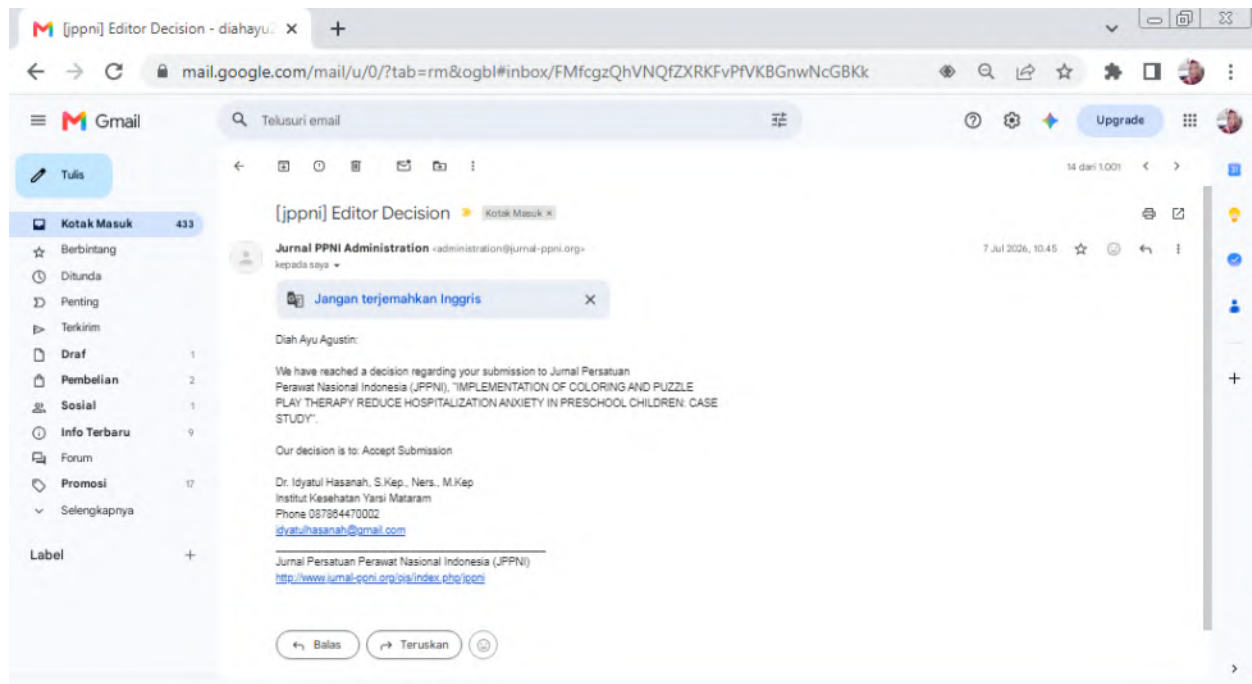
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