
DETERMINANTS OF ANXIETY IN HOSPITALIZED PRESCHOOL CHILDREN

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ABSTRACT

Hospitalization is a stressful experience for preschool children, which can trigger anxiety due to unfamiliar surroundings, medical procedures, and separation from family. Understanding the factors that influence this anxiety is important to support children's psychological well-being. This study aims to identify the determinants of anxiety in preschool children who are hospitalized at the Siti Khadijah Islamic Hospital, Palembang. Methods A quantitative descriptive study was conducted in April 2024 involving 124 preschool children who were hospitalized. Data were collected through structured questionnaires filled out by caregivers and direct observation of children's behavior. The variables studied included age, gender, previous hospitalization experience, parental presence, type of illness, and length of hospitalization. Descriptive statistical analysis and correlation were used to process the data. The results of this study found several factors to have a significant effect on anxiety levels, such as the absence of parents, no previous hospitalization experience, invasive medical procedures, and longer hospitalization length. Age and gender also played a role; girls and younger children showed higher anxiety. The presence of parents, especially mothers, helped reduce anxiety. Children with previous hospitalization experience tended to adapt more easily. The conclusion of the study found that Anxiety of preschool children who are hospitalized is influenced by various factors such as age, gender, presence of parents, previous hospitalization experience, type of action and length of treatment. Family-based care approaches and parental presence are very important in reducing anxiety and supporting children's emotional health.

Keywords: Anxiety, Preschool Children, Hospitalization, Determinants.

INTRODUCTION

Hospitalization can be a distressing and potentially traumatic experience for preschool-aged children, who are developmentally unprepared to cope with unfamiliar environments, invasive procedures, and the emotional stress of separation from their caregivers (Zandt & Barrett, 2021; Richardson, 2020). Anxiety is a common psychological response in this age group during hospitalization and can significantly affect a child's emotional regulation, cooperation with treatment, and long-term perception of healthcare experiences (Bajpai, 2024; Aulia et al., 2024). At this critical developmental stage, children may misinterpret medical procedures as punishment, leading to heightened fear and behavioral regression.

Globally, anxiety disorders in children are estimated to affect 6.5% to 10% of the population, with hospitalization recognized as a prominent situational stressor (World Health Organization, 2022). In Asia, a growing body of literature highlights increasing emotional distress among hospitalized children, particularly those aged 3 to 6 years, as they struggle with physical discomfort and the absence of familial comfort (Kim, 2022; Glasper, 2021). In Indonesia, comprehensive national data remains limited, but observational studies and clinical reports suggest that hospitalized children frequently display signs of anxiety, such as excessive crying, clinging, irritability, and social withdrawal (Ministry of Health Republic Indonesia, 2023). A survey in pediatric wards across Java and Sumatra found that over 60% of hospitalized preschoolers exhibited moderate to high anxiety levels.

Regionally, in South Sumatera, especially in Palembang, the lack of published pediatric mental health data highlights a gap in localized understanding. However, informal assessments in pediatric wards suggest anxiety-related behaviors are prevalent. At

Siti Khadijah Islamic Hospital Palembang, a preliminary observation conducted in April 2024 revealed heightened anxiety in preschoolers during routine procedures such as intravenous insertions and nighttime transitions. Informal interviews with nurses and caregivers indicated that children without prior hospitalization experience or those unaccompanied by a parent especially their mother exhibited more distress, including physical resistance, inconsolable crying, and sleep disturbances.

Preschool-aged children are uniquely vulnerable due to their limited cognitive ability to understand illness and the purpose of hospitalization. They often perceive medical procedures as threatening, especially when not adequately prepared or supported. Common manifestations of anxiety include tantrums, bed-wetting, loss of appetite, sleep problems, and regression to earlier behaviors such as thumb-sucking (Hockenberry, 2024; Lyman, 2023). Several determinants contribute to these responses, including the child's age and gender, length of hospital stay, prior medical experiences, and the presence or absence of caregivers during hospitalization (Harrison, 2025). Younger children and females, in particular, are often observed to have stronger emotional reactions to medical stressors.

The consequences of unmanaged hospital-related anxiety can be profound. In the short term, it may interfere with medical compliance and delay recovery. Over time, unresolved anxiety can lead to healthcare avoidance, long-term emotional trauma, and negative behavioral outcomes (Hockenberry, 2023; Israeli et al., 2022). Theoretical frameworks such as Lazarus and Folkman's Stress and Coping Theory underscore the importance of understanding how children appraise stressors and utilize coping resources, particularly in high-stress environments like hospitals. Prior studies (Shamsi, 2023;

Ramamurthy et al., 2024; Wisuda, 2020) have consistently identified parental presence and familiar routines as protective factors. Given the frequent observation of anxiety symptoms among preschoolers at Siti Khadijah Islamic Hospital and the absence of targeted anxiety-reduction interventions, a structured examination of its determinants is both timely and necessary. This study aims to explore the determinants of anxiety in hospitalized preschool children at Siti Khadijah Islamic Hospital, Palembang, in order to inform future improvements in pediatric care and family-centered hospital practices.

METHOD

Study Design

This research employed a quantitative cross-sectional study design to identify the determinants of anxiety in hospitalized preschool-aged children. The cross-sectional approach was chosen to enable systematic data collection at a single point in time, providing a snapshot of the children's psychological state in relation to multiple influencing factors. This design is particularly well-suited for exploring associations between demographic, clinical, and environmental variables within the hospital context. To further examine these associations and determine the most influential predictors, both bivariate and multivariate logistic regression analyses were conducted. This analytical strategy allowed for the identification of statistically significant determinants of anxiety, while controlling for potential confounders, thereby offering a more robust understanding of the independent effects of each variable.

Study Setting and Period

The study was conducted at Siti Khadijah Islamic Hospital, a well-established healthcare facility in Palembang, South Sumatra, Indonesia. The data collection period took place in April 2024, within the pediatric inpatient ward. This setting was chosen due to its

consistent admission of preschool-aged children and its relevance to the local healthcare context. During this period, children aged 3 to 6 years who were undergoing hospitalization for various acute or chronic medical conditions were observed and assessed.

Population and Sample

The study population comprised hospitalized preschool-aged children between 3 and 6 years old who met the established inclusion criteria. A total of 124 respondents were selected using a total sampling technique, whereby all eligible children admitted to the pediatric ward of Siti Khadijah Islamic Hospital, Palembang, during the study period in April 2024 were included. This sampling method was chosen due to the relatively limited and well-defined target population, allowing for comprehensive inclusion without the need for randomization.

The sample size of 124 was determined based on hospital inpatient admission records, which showed that approximately 130 preschool-aged children were hospitalized during the one-month data collection period. After applying the inclusion and exclusion criteria, 124 children were found eligible and were included in the final analysis. Using total sampling ensured complete representation of the accessible population and minimized the risk of sampling bias. This approach is supported in methodological literature for studies involving finite populations within a limited timeframe (Jane Flanagan, 2024).

Data Collection Instruments

Two primary instruments were utilized to gather data. First, a structured questionnaire, completed by the child's caregiver, was used to collect demographic and clinical information. This included variables such as the child's age, gender, parental presence during hospitalization, prior hospitalization experience, type of illness or procedure (categorized as invasive or non-invasive), and the length of

hospital stay. Second, a behavioral observation checklist was employed to assess anxiety-related behaviors. This checklist was developed based on established indicators of pediatric anxiety, including facial expressions of distress (e.g., frowning, grimacing), crying episodes, verbal expressions of fear (e.g., saying "I'm scared" or "Don't do it"), clinging to caregivers or medical staff, withdrawal or refusal to interact, and physical resistance during medical procedures or routine nursing care. Observations were conducted systematically by trained researchers during various hospital settings such as during vital sign measurements, medication administration, and interactions with unfamiliar staff. To ensure consistency and accuracy, researchers followed a standardized protocol and recorded behaviors in real-time using a structured observation sheet.

Data Collection Procedure

The data collection process was conducted in coordination with pediatric nurses, who assisted in identifying eligible participants. After obtaining informed consent from parents or legal guardians, caregivers were asked to complete the structured questionnaire during visiting hours. Concurrently, trained observers assessed the children's behavior during specific times of the day, particularly during medical interventions such as intravenous insertions, medication administration, and bedtime routines. These observations were non-intrusive and carried out in a manner that respected the comfort and well-being of the children.

Variables

In this study, the dependent variable was the level of anxiety in hospitalized preschool children, measured through observable behaviors such as crying, clinging, verbal expressions of fear, and resistance to medical procedures. These behaviors reflected the children's

emotional state and anxiety levels. The independent variables included age (3–4 and 5–6 years), as younger children are more vulnerable to anxiety; gender, with girls often displaying higher emotional expressiveness; parental presence, as children with parents present experience lower anxiety; previous hospitalization experience, as familiarization with the hospital reduces anxiety; type of illness or procedure (invasive or non-invasive), as invasive procedures tend to increase anxiety; and length of hospital stay, where longer stays (>3 days) are associated with higher anxiety due to prolonged separation from family. These variables were chosen based on their relevance in pediatric anxiety research.

Data Analysis

Data were analyzed using descriptive statistics, including frequency, percentage, mean, and standard deviation, to summarize demographic and clinical characteristics. To examine the association between anxiety levels and the independent variables, both Chi-square tests and Pearson's correlation analysis were employed, depending on the data type. All statistical analyses were performed using appropriate software, and a p-value of less than 0.05 was considered statistically significant.

Data were analyzed using descriptive statistics, including frequencies, percentages, means, and standard deviations, to summarize participants' demographic and clinical characteristics. To explore the relationship between anxiety levels and independent variables, regression analysis was employed. This approach allowed for the identification of predictors and the estimation of the strength and direction of associations. All statistical analyses were conducted using appropriate statistical software, and a p-value of less than 0.05 was considered indicative of statistical significance.

Ethical Considerations

The study titled "*Determinants of Anxiety in Hospitalized Preschool Children*" received ethical clearance from the Health Research Ethics Committee of the Faculty of Medicine, Universitas Sriwijaya (Reference No. 027-2024), following a comprehensive review conducted between March 18 and April 8, 2024. All research procedures adhered strictly to the ethical principles outlined in the Declaration of Helsinki and institutional regulations. Written informed consent was obtained from the legal guardians of all participating children, affirming voluntary participation, confidentiality, and the participants' right to withdraw at any stage. Throughout the intervention, the research team maintained a strong commitment to upholding the rights, dignity, and emotional well-being of the children, ensuring that all activities were delivered with sensitivity and care within the hospital environment.

RESULTS

This study aimed to investigate the determinants of anxiety among hospitalized preschool children aged 3 to 6 years. Data were collected through caregiver-completed questionnaires and behavioral observations of anxiety-related indicators. The following section presents the research findings, beginning with the univariate analysis that describes the sociodemographic characteristics of the participants and the general profile of anxiety levels. This was followed by a bivariate analysis to examine the relationship between anxiety levels and several potential determinants, including age, gender, parental presence, length of hospital stay, prior hospitalization experience, and type of medical procedure. Significant associations were found for all variables, suggesting that each factor may independently influence anxiety in hospitalized preschool children and therefore merits further evaluation through multivariate regression.

Univariate Analysis

Table 1. Sociodemographic Characteristics of Participants (n = 124)

Variable	Category	n	%
Age	3–4 years	69	55.6%
	5–6 years	55	44.4%
Gender	Male	64	51.6%
	Female	60	48.4%
Parental Presence	Present	87	70.2%
	Absent	37	29.8%
Previous Hospitalization	Yes	53	42.7%
	No	71	57.3%
Type of Procedure	Invasive	50	40.3%
	Non-invasive	74	59.7%
Length of Hospital Stay	≤3 days	59	47.6%
	>3 days	65	52.4%

Table 2. Anxiety Levels Among Hospitalized Preschool Children

Level of Anxiety	n	%
Mild	28	22.6%
Moderate	64	51.6%
Severe	32	25.8%

Bivariate Analysis

To identify which factors significantly influenced anxiety levels in the children, Chi-square tests and Pearson correlation analysis were performed. The results are presented below.

Table 3. Determinants of Anxiety in Hospitalized Preschool Children (n = 124)

Variable	Category	Adjusted Odds Ratio (AOR)	95% Confidence Interval (CI)	p-value
Age	3–4 years	Reference		
	5–6 years	0.35	0.18–0.70	0.003 *
Gender	Male	Reference		
	Female	1.89	1.00–3.56	0.048 *
Parental Presence	Present	Reference		
	Absent	3.21	1.50–6.87	0.002 *

Previous Hospitalization	Yes	Reference		
	No	2.67	1.36	0.004*
			– 5.25	
Type of Procedure	Non-invasive	Reference		
	Invasive	4.10	2.05	<0.001*
			– 8.20	
Length of Stay	≤3 days	Reference		
	>3 days	2.01	1.10	0.023*
			– 3.68	

*Statistically significant at $p < 0.05$

Table 1 outlines the sociodemographic characteristics of the 124 hospitalized preschool children included in the study. The majority of participants were aged 3–4 years (55.6%), slightly more than those aged 5–6 years (44.4%), indicating that younger children who generally have less developed emotional regulation and coping abilities comprised a larger portion of the sample. The gender distribution was nearly equal, with males accounting for 51.6% and females 48.4%, ensuring balanced representation for gender-related analysis. Notably, 70.2% of the children were accompanied by a parent or caregiver during hospitalization, a factor widely recognized for its protective role in reducing pediatric anxiety. Regarding hospitalization experience, 57.3% were first-time inpatients, while 42.7% had previous hospital experience, which may influence anxiety differently based on familiarity with the hospital environment. The majority (59.7%) of children underwent non-invasive procedures, while 40.3% experienced invasive ones, which are typically associated with heightened stress and discomfort. Additionally, 52.4% of the children were hospitalized for more than three days, suggesting a potential risk for increased anxiety due to prolonged exposure to the clinical setting. These demographic and clinical characteristics provide critical context for understanding

the factors that may contribute to anxiety in hospitalized preschool children.

Table 2 shows that the majority of hospitalized preschool children experienced moderate anxiety (51.6%), making it the most prevalent response during hospitalization. Severe anxiety was observed in 25.8% of the participants, reflecting a significant level of emotional distress, while only 22.6% exhibited mild anxiety, suggesting better emotional coping in a smaller subset. These findings underscore the need for routine psychological support in pediatric care, as most children faced moderate to high anxiety during their hospital stay.

Table 3. The regression analysis demonstrated that several factors significantly influenced anxiety levels among hospitalized preschool children. Older children (aged 5–6 years) were less likely to experience high levels of anxiety compared to younger children (aged 3–4 years), suggesting greater developmental readiness to cope with hospitalization. Female children were more prone to higher anxiety levels than males, potentially reflecting gender-related differences in emotional expression. The absence of parental presence was a strong predictor of elevated anxiety, underscoring the critical role of parental support during hospitalization. Additionally, children without previous hospitalization experience exhibited higher anxiety, indicating that unfamiliarity with the hospital environment may intensify stress. Invasive procedures were strongly associated with increased anxiety, likely due to perceptions of pain and threat. Lastly, hospital stays longer than three days significantly increased the likelihood of anxiety, possibly due to prolonged exposure to a stressful environment. These findings highlight the importance of supportive, child-centered care strategies aimed at reducing procedural distress, maintaining family presence, and providing psychological

preparation particularly for younger and first-time hospitalized children.

DISCUSSION

This study comprehensively examined the determinants of anxiety among hospitalized preschool children aged 3 to 6 years, offering valuable insights into how specific sociodemographic and clinical variables interact to influence emotional well-being in pediatric patients. The findings underscore the multifaceted nature of hospital-related anxiety in early childhood and provide empirical support for developing targeted, developmentally appropriate interventions.

The univariate analysis indicated that the majority of participants were children aged 3–4 years (55.6%), slightly exceeding the proportion of those aged 5–6 years (44.4%). This age distribution is particularly relevant in light of developmental psychology theories, especially Piaget's cognitive developmental model. Children in the preoperational stage (ages 2–7) tend to exhibit egocentric thinking and have limited capacity for abstract reasoning, making them more susceptible to misinterpreting medical environments as threatening. These cognitive limitations, coupled with immature emotional regulation systems, render younger preschoolers particularly vulnerable to heightened anxiety during hospitalization.

In terms of anxiety levels, most children experienced moderate anxiety (51.6%), followed by severe anxiety (25.8%) and mild anxiety (22.6%). This distribution reflects the inherently distressing nature of hospitalization for young children and aligns with prior research by Abazari et al. (2025) and Fenikowski & Tomaszek (2022), who observed that preschool-aged children frequently display elevated anxiety due to limited coping strategies, fear of separation, and unfamiliar surroundings. These findings reinforce the importance of

early identification and intervention to manage anxiety in hospitalized children.

Multivariate regression analysis identified six significant predictors of anxiety: age, gender, parental presence, prior hospitalization experience, type of medical procedure, and length of hospital stay. Age was a significant protective factor. Children aged 5–6 years had significantly lower odds of experiencing high anxiety compared to those aged 3–4 years (AOR = 0.35; $p = 0.003$), consistent with developmental research indicating that older preschoolers have more mature emotional and cognitive capacities, which enhance their ability to cope with stressful experiences. Gender also emerged as a significant factor, with female children demonstrating nearly double the odds of elevated anxiety relative to male children (AOR = 1.89; $p = 0.048$). This finding may reflect gender differences in emotional expression and socialization patterns, as well as a higher general prevalence of anxiety symptoms among females, even in early childhood (Hartling et al., 2023; Martin, 2021). The presence of parents or primary caregivers was shown to be a critical protective factor. Children hospitalized without parental accompaniment were more than three times as likely to experience high anxiety (AOR = 3.21; $p = 0.002$). This aligns with Bowlby's attachment theory and empirical evidence that underscores the stabilizing emotional effect of parental presence in stressful environments (Ginting et al., 2024; Suraya, Citra et al., 2024). Lack of prior hospitalization experience was another significant predictor (AOR = 2.67; $p = 0.004$), indicating that first-time hospitalizations are more anxiety-provoking due to the novelty and unpredictability of the medical environment. Previous exposure may reduce fear by enhancing familiarity and predictability. The type of medical procedure was the strongest predictor of anxiety. Children undergoing invasive procedures were over four times more

likely to experience high anxiety compared to those undergoing non-invasive interventions (AOR = 4.10; $p < 0.001$). This finding highlights the intense psychological burden that invasive procedures impose on young children, often associated with pain, fear, and limited comprehension of medical necessity. This result is consistent with Perangin-angin (2023) and Méndez, (2022), who established a strong correlation between procedural pain and anxiety in pediatric populations.

Finally, longer hospital stays were significantly associated with increased anxiety (AOR = 2.01; $p = 0.023$). Extended stays may involve repeated exposures to medical interventions, disruption of normal routines, and increased separation from home and familiar caregivers all of which may cumulatively contribute to emotional fatigue and distress (Hafshejani, 2023; Kim, 2022; Holthaus, 2020).

In conclusion, while multiple factors contribute to anxiety in hospitalized preschool children, the type of medical procedure emerged as the most dominant determinant. This emphasizes the critical need to minimize procedural trauma and to implement child-friendly, non-pharmacological pain and anxiety management strategies such as distraction, play therapy, and preparatory education especially when invasive interventions are unavoidable. Collectively, these findings support a comprehensive, developmentally informed, and family-centered approach to pediatric hospital care. Nursing interventions should be tailored to the child's developmental level, incorporate family involvement, and proactively address procedural anxiety to enhance the overall well-being and hospital experience of preschool-aged patients.

CONCLUSION

This study highlights that anxiety among hospitalized preschool children is influenced by a combination of developmental, experiential, and

procedural factors. Among these, undergoing invasive medical procedures was identified as the most dominant predictor of anxiety. These findings underscore the importance of implementing developmentally appropriate, family-centered interventions to minimize anxiety and improve the emotional well-being of young patients during hospitalization.

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