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The Effectiveness of Animated Educational Videos in Reducing Anxiety Among Hospitalized Preschool Children

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ABSTRACT

Background: Hospitalization in children causes trauma and even feelings of anxiety. Especially in preschool children, this anxiety often occurs which can result in several undesirable things happening such as less than optimal healing process during hospitalization, and can even cause deep trauma for preschool children. Trauma from the pain that children have suffered makes children afraid to do it again, so nurses must be able to provide a technique to prevent this, for example, animated video distraction can be used as a medium to overcome this. **Objective**: This study aims to determine the effectiveness of animated videos in reducing the level of anxiety in preschool children during hospitalization. **Method**: This study was Quasy Experiment. The total sample were 60 respondents that sellected using using convenience sampling technique. The Spence Children's Anxiety Scale (SCAS) questionnaire was used to measure anxiety. Data analysis was using the Wilcoxon Signed Ranks Test and Mann-Whitney. **Results**: The results of the study showed that animated videos was effective to reducing the level of anxiety in preschool children during hospitalization with a p-value of 0.000. **Conclusion**: Animated videos are effective or influential in reducing the level of anxiety in preschool children during hospitalization.

Keywords: animated videos, anxiety, hospitalization, preschool children.

INTRODUCTION

Hospitalization in children can result in trauma and even feelings of anxiety. Being hospitalized may lead children to experience trauma due to the unfamiliar hospital environment, such as the physical setting, the attitude and attire of healthcare personnel, medical equipment used in patient care, and social interactions with other patients. These factors can contribute to anxiety in pediatric patients (Sunitin, 2023). Children who are hospitalized often undergo procedures such as injections, blood sampling, IV insertion, nasogastric tube (NGT) insertion, and catheter placement, all of which can cause stress and anxiety during their hospital stay. Typically, when undergoing invasive procedures, children tend to react by resisting—hitting, pulling their limbs forcefully, or even biting those around them. Psychologically, they may also become uncooperative, often crying and becoming fussy (Fuadah., 2020).

According to data from the World Health Organization (WHO) in 2021, 45% of preschool-aged children have experienced hospitalization. In Germany, the hospitalization rate ranges from 3% to 7% for toddlers and 5% to 10% for preschool children. A survey conducted by the United Nations Children's Fund (UNICEF) found that 84% of preschool-aged children

experienced hospitalization (Farias et al., 2020). Among the three most populous countries in the world, there are 148,958,000 preschool-aged children, with 57 million of them having been hospitalized. Of these, 75% experienced trauma in the form of anxiety and fear during hospitalization (Saputro et al., 2020). Data from the Indonesian Ministry of Health in 2021 indicates that 52% of preschool-aged children (ages 3 to 6) were hospitalized, compared to 47.62% of school-aged children (ages 7 to 11). In West Java alone, 636,870 children were hospitalized, equivalent to 3.4% of the population, which is higher than the national average of 2.3% Kemenkes RI, 2020). Based on these phenomena, it is evident that a significant number of children are hospitalized and that the anxiety levels among pediatric patients are high. Therefore, a solution is needed to address this issue.

One non-pharmacological solution to minimize anxiety in preschool-aged children undergoing hospitalization is the implementation of atraumatic care using audiovisual distraction techniques. This method helps divert the child's attention from uncomfortable, anxiety-inducing, and frightening stimuli by showing their favorite visual and auditory content, such as moving pictures or animations. The goal is to help children focus on the media being shown so that feelings of discomfort are reduced and positive responses to care are encouraged (Fatmawati et al., 2019). Children can process their emotions, feelings, and memories through audiovisual media. Audiovisual distractions also assist nurses in performing medical procedures more easily by helping children become more cooperative, especially when the media involves content the child enjoys, such as cartoon or animated videos (Ekasaputri & Arniyanti, 2022; Radhita et al., 2022). One distraction technique that can be applied to children is watching animated videos (Wong, 2020 in Ekawati, 2017). During children focus on watching animated videos, a process occurs whereby pain impulses caused by injury are not transmitted to the spinal cord, and the pain signals do not reach the brain. As a result, the child does not perceive the sensation of pain (Brannon et al., 2013 in Ekawati, 2017).

A study by Retnani et al. (2019a) found a significant positive effect on children's anxiety levels when animated video intervention was applied before surgery, with a reduction in anxiety by 7.20 points and a p-value of 0.000, indicating a significant difference in anxiety levels before and after the intervention (Novitasari et al., 2021). Another study by Damayanti et al (2022), showed that in the experimental group that received the intervention, 50% of the respondents did not experience anxiety. In contrast, in the control group that did not receive the intervention, 50% of respondents experienced high levels of anxiety. Based on these findings, it can be concluded that audiovisual distraction therapy in the form of animated or cartoon videos has a significant effect in reducing anxiety levels in hospitalized preschool-aged children.

METHODS

Study Design

This study was quasi-experimental design, with two-group pretest-posttest. This research was conducted in the pediatric ward of Al Ihsan Regional Public Hospital (RSUD Al Ihsan), Bandung, Indonesia in January 2025.

Population and Sample

The study population comprised preschool-aged children undergoing treatment in pediatric ward. The sample was selected using a convenience sampling technique. Sample size determination was carried out using the G*Power 3.1.9.4 (Faul et al., 2009) software with a t-test to assess differences between two independent groups. Assuming an effect size of 0.8, a significance level of 0.05, and a power of 0.8, based on the calculation the minimum sample of was 52 respondents. The inclusion criteria was a children aged 3-6 years, undergoing treatment for more than 2 days, having minimun mild anxiety levels and being allowed by parents to be

respondents. The exclusion criteria was children who had serious condition being very weak and undergoing intensive care.

Instruments

Two instruments were used in this study: a respondent characteristic questionnaire and an anxiety level questionnaire. The respondent characteristics questionnaire collected demographic data such as gender, age, and previous hospitalization experience. To measure the children's anxiety levels, the Spence Children's Anxiety Scale (SCAS) was employed. This scale consists of 19 items designed to assess anxiety from both somatic and psychological aspects. The results are classified into four categories: mild anxiety (scores 14–20), moderate (21–27), severe (28–41), and very severe or panic (≥42). SCAS is a standardized tool widely used in research and has proven to be both valid and reliable. In a study by (Orgilés et al., 2019), the SCAS demonstrated a calculated validity coefficient (r) of 0.87 and a Cronbach's alpha reliability coefficient of 0.76, indicating that the instrument is consistent and appropriate for measuring anxiety in children.

Intervention Procedure

This intervention begins with assessing the child's level of anxiety using SCAS. Once baseline anxiety is measured, children aged 3 to 6 are introduced to short, animated educational videos These videos are carefully selected to be developmentally appropriate, culturally sensitive, and engaging, with durations ranging between three to seven minutes. The intervention is delivered either at the child's bedside using tablets or parents' handphone. Videos are shown once or twice daily, particularly before potentially anxiety-inducing procedures such as injections, or blood draws. Parental involvement is encouraged throughout the process to support emotional safety and understanding. Following the intervention, anxiety levels are reassessed to evaluate its effectiveness.

Data Analysis

Data were analyzed quantitatively using univariate and bivariate analyses with SPSS version 26 (Field, 2024). Univariate analysis was used to describe the respondents' characteristics, such as age, gender, hospitalization experience, and anxiety levels before and after the intervention. Age data were analyzed using mean, median, standard deviation, and minimum–maximum. The Wilcoxon Signed Ranks Test was used to assess differences in anxiety levels before and after the intervention within the same group. Meanwhile, the Mann-Whitney test was employed to evaluate the effectiveness of the intervention between the intervention and control groups.

Ethical Approval

This study received approval from the Health Research Ethics Committee (KEPK) of STIKep PPNI West Java, with approval number No. III/007/KEPK-SLE/STIKEP/PPNI/JABAR/2025, issued on January, 13 2025. All procedures in this study complied with applicable ethical guidelines and received authorization from the Al Ihsan Regional Public Hospital in Bandung as the research site.

RESULT

Table 1. Demographic Characteristics of the Respondents (n = 60)

Characteristic	*Mean* (±SD) Min – Max	**F (%)**
Age	4.42 (±1.239) 3 – 6	
Gender		
Male		40 (66.7%)
Female		20 (33.3%)
Previous Hospitalization		
Yes		38 (63.3%)
No		22 (36.7%)

Based on Table 1, the average age of respondents was 4.42 years, with an age range of 3 to 6 years. In terms of gender, the majority of respondents were male (66.7%). Regarding previous hospitalization experience, most respondents had been previously hospitalized (63.3%).

Table 2. Respondent Characteristics Based on Chi-Square Test

Variable	**Intervention Group (n=30)**		**Control Group (n=30)**		***P-value***
	F	**(%)**	**F**	**(%)**	
Age					
3 years	11	36,7 %	9	30 %	0.91
4 years	6	20 %	7	23,3 %	
5 years	1	3,3 %	8	26,7 %	
6 years	12	40 %	6	20 %	
Gender					
Male	21	70 %	19	63,3 %	0.804
Female	9	30 %	11	36,7 %	
Previous Hospitalization					
Yes	21	70 %	17	56,7 %	0.936
No	9	30 %	13	43,3 %	

Based on Table 2, a Chi-Square test was conducted on the respondents' characteristics. For the age variable, the test resulted in a p-value of 0.91; for gender, the p-value was 0.804; and for previous hospitalization experience, the p-value was 0.936. Based on these results, there were no significant differences in the demographic characteristics of the respondents.

Table 3. Anxiety Levels Pre and Post test in Intervention Group (n = 30)

Anxiety	Intervention Group	
	Pre-test	***Post-test***
	F (%)	**F (%)**
Mild	0 (0%)	25 (83.3%)
Moderate	18 (60%)	5 (16.7%)
Severe	8 (13.3%)	0 (0%)
Panic	4 (6.7%)	0 (0%)

Based on Table 3 showed that pre test score indicated more than half of the respondent having moderate anxiety (60%), and after intervention majority responden in mild category of anxiety (83.3%).

Table 4. Anxiety Levels Pre and Post test of the Responden in Control Group (n = 30)

Anxiety	Control Group	
	Pre-test	***Post-test***
	F (%)	**F (%)**
Mild	12 (40%)	10 (33.3%)
Moderate	10 (33.3%)	12 (40%)
Severe	1 (3.3%)	3 (10%)
Panic	7 (23.3%)	5 (16.7)

Based on Table 4 showed that pre test score in control group indicated 40% of the respondent having mild anxiety and 33.3% had moderate anxiety. The post test showed that 40% of the respondent having moderate anxiety and 33.3 % had mild anxiety.

Table 5. Results of Wilcoxon Signed Ranks Test Analysis

Group	N	Positive Ranks	Ties	Negative Ranks	Sig (2-tailed)
Intervention	30	0	0	30	0.000
Control	30	2	26	2	1.000

*Sig = Significance Value < 0.05

Based on Table 5. the analysis shows that all 30 respondents in the intervention group experienced a decrease in anxiety scores after the intervention, while the results in the control group remained unchanged. This test yielded a significant p-value of 0.000 ($p < 0.05$) in the intervention group, indicating that the alternative hypothesis is accepted.

Table 6. Mann-Whitney U Test Results (n = 30)

Group	Mean Rank	*P-Value*
Intervention	22.33	0.000
Control	38.67	

Based on Table 7, the Mann-Whitney U test yielded a p-value < 0.05, specifically 0.000. This indicates that there is a significant effect of animated video intervention on reducing anxiety levels in preschool-aged children during hospitalization.

DISCUSSION

The average age of respondents was 4.42 years, with an age range between 3 and 6 years, indicating that most of the patients were 4 years old. According to Wong (2006) dalam (Retnani et al., 2019) age has a significant impact on a person's emotional development. As children grow older, their ability to regulate emotions also improves. This finding aligns with the general preschool age range, a period of rapid cognitive, motor, and psychosocial development, enabling children to express anxiety in various ways. In addition to age, gender also affects stress and anxiety levels in children. Preschool-aged boys undergoing hospitalization tend to have lower anxiety levels than girls. In this study, boys were the dominant gender, with 40 respondents (66.7%). According to Stubbe (2008) dalam (Fatmawati et al., 2019) boys experience lower anxiety during hospitalization compared to girls. According to Tsai (2007) in (Fatmawati et al., 2019) a child's previous hospitalization experience can influence their anxiety level. Children with prior hospital experiences tend to have lower anxiety than those without such experience. In this study, most respondents (38 or 63.3%) had previous hospitalization experience, while 22 respondents (36.7%) had not.

This study showed that the anxiety levels of respondents in the intervention group changed significantly before and after the animated video intervention. Prior to the intervention (pre-test), 18 respondents (60%) experienced moderate anxiety, 8 (13.3%) experienced severe anxiety, and 4 (6.7%) were in the panic category during hospitalization. However, after the intervention (post-test), a significant decrease in anxiety was observed. The number of respondents in the moderate anxiety category decreased to 5 (16.7%), while 25 respondents (83.3%) were in the mild anxiety category. These findings are consistent with a study by Aisah et al. (2021), in which 10 respondents (50%) showed mild anxiety after the intervention. This study also revealed a significant difference in anxiety levels following the use of animated videos in preschool children during hospitalization, with a p-value of 0.000. The analysis using the Wilcoxon Signed Ranks Test for the intervention group showed a significant difference in anxiety levels before and after the intervention, with a p-value of 0.000 ($p < 0.05$). Meanwhile, the control group, which did not receive the animated video intervention, showed a p-value of 1.000 ($p > 0.05$), indicating no significant change. These results are supported by Retnani et al. (2019) who found that animated video therapy significantly reduces anxiety levels in preschool children during hospitalization, with a p-value of 0.000.

In addition to the differences observed, this study demonstrated a significant effect of animated video therapy in reducing anxiety levels in preschool children during hospitalization. This aligns with the Gate Control Theory proposed by Melzack and Wall, and is reinforced by Sepiya, (2023), who explain that audiovisual distraction techniques help reduce anxiety by suppressing pain stimuli and blocking anxious impulses to the brain through adequate or excessive sensory input. Pleasant sensory stimulation triggers the release of endorphins and reduces anxiety in patients (Aryatama et al., 2021). This finding is further supported by Listari et al.(2022), who also reported that animated videos significantly reduce anxiety levels in preschool-aged children, with a p-value of 0.000 ($p < 0.05$).

CONCLUSION

Based on the research findings, it can be concluded that the hypothesis testing results reject the null hypothesis (Ho) and accept the alternative hypothesis (Ha). This means that animated videos have a significant effect in reducing anxiety levels in preschool-aged children

during hospitalization. There is also a significant difference in anxiety levels between children who received animated video therapy and those who did not, with the intervention group showing greater reduction in anxiety. This study is expected to provide several practical benefits. For healthcare institutions, the results may serve as a valuable consideration in adopting non-pharmacological therapies such as animated video distraction techniques within pediatric nursing practices to improve the overall quality of patient care. Lastly, for future researchers, this study can serve as a foundation for further investigations involving larger and more diverse populations, helping to strengthen the evidence base for the effectiveness of audiovisual interventions in clinical settings.

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