

# The Effect of Audio Visual on The Decrease of Anxiety in Preschool Children Undergoing Infusion

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Anxiety experienced by preschool children during hospitalisation is an important issue because it can affect the growth and development process. Stress comes from fear, which is then responded to by the adrenal medulla, which can stimulate the sympathetic nerve and produce epinephrine, which causes an increased pulse rate. Most nursing procedures for children usually require invasive measures such as injection or infusion, and this is a substantial stressor that can make children experience anxiety. To overcome fear in children, non-pharmacological techniques are needed, and one of them is Audio Visual distribution. The purpose of this study was to determine the effect of audio-visual distraction using cartoon animated videos on pre-school age anxiety when infusing. This research is pre-experimental research with a sample of 30 children. Child anxiety levels are measured by a checklist of HARS scores and the child's pulse frequency. Data processing was performed using the analysis Wilcoxon Sign Rank Test with the results showing a value of  $p = 0.000$ , which indicated there was a difference in the child's anxiety score after being given audiovisual. This study recommends that child nurses be able to perform audiovisual distraction techniques in overcoming child anxiety during infusion.

**Keywords:** *Children, Audio Visual, Distraction, Anxiety, Infusion Installation.*

## Introduction

Undergoing treatment in hospital (hospitalisation) is an unpleasant experience and threat for everyone, especially for children who are still in the process of growth and development (Szeszak et al., 2016). According to (Sadeghi, Mohammadi, Shamshiri, Bagherzadeh, & Hossinkhani, 2013), children's growth and development are influenced by intrinsic (internal) and environmental



factors. Hospital as a foreign environment for children, with their first experience undergoing treatment in the hospital causing disruption that impedes the child's development. The process of care requires children to stay a certain period in the hospital, either planned or emergency.

During childhood, around 30% of children have at least been hospitalised, while about 5% have been hospitalised several times (Lilik Lestari, Wanda, & Hayati, 2017). If a child is hospitalised, the child will quickly experience a crisis due to stress, and a crisis due to changes in both health status and the environment in daily habits (Lee et al., 2012).

Based on WHO data in 2012, 3% - 10% of paediatric patients treated in the United States were toddler, preschool or school-age children. In Germany, about 3% to 7% are toddler children, preschool children are 5% to 10% of children who are hospitalised (Tschiedel et al., 2019). Pre-schoolers and school-age children are vulnerable to disease, so many children at that age must be hospitalised (Hockenberry & Wilson, 2015).

While data from the prevalence of child mortality in Indonesia that must be treated in hospitals is quite high at around 35 per 100 children, which is indicated by children's space is always full both in government hospitals and private hospitals. It is supported by data on the profile of maternal and child health in 2014 which found that out of 1,780 children experiencing hospitalisation, 36.2% of them experienced severe hospitalisation, 41.6% experienced moderate hospitalisation, and 25.2% had mild impact hospitalisation (Perlindungan & Statistik, 2015).

The Health Profile of South Sumatra Province in 2016 describes about 13,276 cases of children being treated in hospitals in South Sumatra Province in 2015, showing the high incidence of illness in children requiring treatment in hospitals.

The American Heart Association (AHA) in 2010 stated that children are very susceptible to stress related to invasive procedures. Installation of infusion will undoubtedly cause pain in children, and will also cause trauma so that the child will experience anxiety and stress. Sometimes strain is also called fear or nervousness. Some cases of anxiety (5 - 42%), are concerned with physiological processes. This anxiety can be caused by physical illness or abnormality, not by emotional conflict (Kerimoglu, Neuman, Paul, Stefanov, & Twersky, 2013).

Anxiety experienced by pre-schoolers during hospitalisation is a significant problem; if left untreated, it can affect the growth and development process. Nursing care for children usually requires invasive measures such as injection or infusion, and this is a substantial stressor that can make children experience anxiety. Nurses will often explain this procedure to parents and carry out therapeutic communication to the child before performing the process; this condition also



makes the child panic and usually want to fight, or refuse to accept the procedure of infusion or drug injection. This generally will force health workers to coerce children, which results in trauma to the child. Pain, which is a significant stressor for pre-school children, can be treated with non-pharmacological management such as distraction, relaxation, guided imagination, and cutaneous stimulation (H., S.M., H., & S.-J., 2015).

Distraction is a technique of switching the focus of attention from pain to another stimulation. The disturbance is thought to reduce the degree of pain, reducing pain perception by stimulating the descending control system, which results in less stimulation of pain transmitted to the brain. The effectiveness of distraction depends on the patient's ability to receive and generate sensory input in addition to pain (Concepción & Guerrero, 2016). According to (Sadeghi et al., 2013), distractions that can be done involve children in a game. Media Audio-visual is an intermediary media that uses materials and absorption through sight and hearing to establish the conditions that can include skills, knowledge, and attitudes. Audiovisual that is favoured by children of pre-school age is a cartoon or moving picture, an absorbing medium for children, especially pre-school children who have a great imagination. Audiovisual can make it easier for children to gain learning based on fun (Basar, Bešli, Keçebaş, Kayapınar, & Turker, 2015; Bonney, 2018; Roul, 2013). Children can also explore feelings, emotions, and memory through audiovisual, which can also assist nurses in carrying out infusion and injection procedures, making it easier for nurses to distract so that children are cooperative in implementing therapeutic procedures (Vetri Buratti et al., 2015).

The distraction technique is an attempt to release endorphins. Endorphins are endogenous opiates that can cause pain transmission to not go to the brain, so pain perception is not felt (James, Ghai, Rao, & Sharma, 2019). It is expected that the experience of pain in children is reduced and reduces the process of anxiety due to infusion procedures.

From the results of a preliminary study conducted on November 28, 2017, at Siti Aisyah District Hospital in Lubuk Linggau City, the number of children entering the ER and being treated in 2016 was 211 children or an average of 17 children per month. From the results of interviews with emergency room nurses regarding the condition of the child when the infusion procedure was performed, when the nurse came the child usually cried, attracting his parents. At the start of the infusion, the child struggled, and after the injection and the nurse came back to give the medicine, the child usually pulled in his parents, cried, and shouted. Three children experienced moderate anxiety, namely two children with a score of 15 and 1 child with a score of 14. From the above explanation, the authors were interested in examining the effect of audiovisual therapy on reducing anxiety levels in children who received infusion procedures.



Based on the description above, seeing the importance of distraction interventions performed by nurses in reducing child anxiety when the infusion is completed, the researchers are interested in researching with the title: "the effect of audiovisual interventions on reducing anxiety levels in preschool children who received infusion procedures."

## Methods

This research is a type of pre-experiment research design with pretest and posttest one group design. The study was conducted in the emergency room and the children's ward of the Siti Aisyah Regional Hospital of Lubuklinggau City, with the reason that use of the room was to meet the adequacy of sample numbers related to infusion. The study was conducted from July to August 2018. The population in this study is the whole of a variable concerning the problem under study. The community in this study were all children treated at Siti Aisyah Regional Hospital in Lubuk Linggau City. The samples in this study were pre-school children who were treated at the Hospital in Lubuk Linggau City, who received infusion / venous puncture infusion procedures in the emergency room and child treatment room. The sampling technique in this study is to use a purposive sampling technique that takes a sample that matches the inclusion criteria within a certain period. Inclusion criteria in this study were pre-school children aged 3-6 years who received treatment at the Hospital; venous puncture (infusion and blood sample) procedures would be performed, children are able to communicate verbally and nonverbally, mothers/families are willing for the child to become a research respondent, mothers/families are able to read, write and communicate verbally and non-verbally. The number of samples is 30 children. Anxiety observations were made before the infusion was performed and after the infusion was placed. The action given is the therapy of watching an animated video which will be infused as a distraction for children.

This research variable consists of independent variables, the dependent variable, and confounding variables. The independent variable of this study was an animated cartoon audiovisual intervention. The dependent variable in this study was the anxiety of pre-school aged children who received infusion procedures, and the confounding variables in this study were gender, age of the child, previous hospitalisation experience, and type of disease.

This study uses: descriptive analysis to analyse existing variables descriptively using frequency distribution tables, namely the characteristics of respondents' data. Bivariate analysis to test the effect of independent variables with the dependent variable in the form of cross-tabulation between the two variables. Using a test statistical with a significance level of 0.05 using the analysis Wilcoxon Sign Rank Testtest. Data Normality Test to determine the normal or not distribution of



data-bound variables and independent variables. Test the normality of the distribution of data in this study using the Shapiro-Wilk technique.

## **Results**

The study was carried out at the Siti Aisyah Regional Hospital of Lubuklinggau City in the Al-Atfal Children's Care Room. Pre-school age children who meet the inclusion criteria are 30 children. This research was conducted to determine the effect of cartoon animated videos on pre-school age anxiety on whom will be performed infusion procedures in the Children's Care Room.

### **The Characteristics of the Research Sample**

Data collected was analysed and interpreted to see the features of the respondent children who were treated at the Siti Aisyah Regional Hospital Lubuklinggau. Characteristics of children who are treated in hospitals show that the recipe is mostly girls, namely 17 people (56.7%) with an age range of 3-4 years: 13, that is 43.3%, were boys. The history of hospitalisation is that most of the children had never been treated in a hospital before – that was 27 people (90%).

### **Distribution of Child Anxiety**

The respondent's anxiety response can be known at the time before being given distraction with an animated video; children's anxiety mostly is severe anxiety, that is 76.7%. Whereas after the distraction technique is done, most of the child's anxiety drops to 40% – mild anxiety.

The effect of animated video on the anxiety scores of research subjects using statistical tests Paired Sample T-Test, the condition for this test is that all data must be normally distributed. Meanwhile, if the data is not normally distributed, the Wilcoxon Sign Rank Test will be performed. The statistical test used to determine the normality of data distribution uses the Shapiro Wilk test. Data normality test results using the Shapiro Wilk test showed the distribution of data was not normally distributed because the value of  $p < 0.05$  so that the bivariate analysis was performed with the Wilcoxon test.

### **Difference in Test Results of Children's Anxiety Response Before and After Performing Animated Cartoon Video Distraction Techniques**

Difference in child anxiety response tested before and after the video animation cardboard intervention by using the Wilcoxon Signed Ranks Test obtained values that indicate Negative Ranks or the difference in anxiety scores of pre-school age children treated at Siti Aisyah Regional

Hospital Lubuklinggau is 30. Which means that 30 children given an animated cartoon video as a distraction technique have a decreased Anxiety score. While the Mean Rank or average decrease in anxiety scores is 15.50. Supported analysis results of the child's pulse before the intervention and after the intervention, show a decrease in pulse after audiovisual intervention in children. Wilcoxon Test results knew Asymp. Sig (2-tailed) is worth  $0.000 < 0.05$ , it can be concluded that the "Hypothesis is accepted" meaning that there is a difference between anxiety scores pre-test before giving animation videos and anxiety scores post-test after giving animated videos. So, it can be concluded that there is an influence distraction with animated videos on pre-school age anxiety scores after infusion procedures at Siti Aisyah Regional Hospital Lubuklinggau.

## Discussion

### Characteristics of Respondents

The average age of children in this study is not much different from the average age of children in other studies, because in this study the age of children who were respondents in the range is not much different. Related to this also, Trial (2020) in his research using *review* literature, states that some studies found no relationship between age and hospitalisation response, and some studies should find that younger children are more likely to experience anxiety and fear compared to older children.

The sex of the children in this study was mostly female. It is in line with the research conducted by (Tschiedel et al., 2019), who found that in the majority of the children the sex is female. Whereas in the study Concepción & Guerrero (2016), the same number was found between the genders of male and female.

Based on the research of (Vangronsveld, van den Hout, & Vlaeyen, 2007), it is stated that boys tend to be more anxious than girls when hospitalised., Different however from the results of research by (James, Ghai, Rao, & Sharma, 2012), stating that girls are more easily anxious than boys. Meanwhile, (Sadeghi et al., 2013) say that based on some previous research results, it is concluded that gender differences are not proven to lead to differences in behaviour, the focus of attention, and coping strategies of the child.

Previous treatment experience in the majority of respondents in this study was never addressed. The results of this study are similar to the research of (Sari & Sundari, 2019). The review uses a quasi-experimental method to identify the effects of play therapy to reduce separation anxiety in pre-school children who are hospitalised. I found the average experience was a child being treated once before. Other research that discusses the fear of pre-school aged children who are hospitalised



also explains that there is a significant relationship related to the experience in the previous hospitalisation in hospital, and the results obtained with the anxiety level of children who are treated later – this is related to trauma care (Kerimoglu et al., 2013). Thus, atraumatic care must be carried out by child nurses in providing nursing care.

Based on the results of these studies, researchers assume that it will affect children's responses to hospitalisation. Previously treated experience can give an idea to children about what they will experience so that it will affect the child's response – such as painful experiences (invasive procedures) and skills and ability to deal with these stress conditions. Still, researchers also assume that the experience variable of previous care will also be influenced by other variables, like a child's coping ability.

### **Anxiety Score Before being given an Intervention**

The results of the study showed that children who were hospitalised on average had moderate to severe anxiety. Hospitalisation meant some psychological changes could be the cause of children being hospitalised (Yoo, Kim, Hur, & Kim, 2011). Admission in paediatric patients can cause anxiety and stress at all age levels. The cause of this anxiety is influenced by many factors, both factors from staff (nurses, doctors, and other health workers), new environment, and families who accompany them during treatment. Families often feel anxious about the development of their children, medication, regulations, and conditions in the hospital, as well as maintenance costs. Although the impact does not take place on children, psychologically the child will feel the behaviour changes from parents who accompanied them during treatment. The child will be more stressed, and this will affect the healing process, which decreases the immune response. It has been proven that patients who experience mental turmoil will be susceptible to disease because, under stress, the immune system is compromised. Therapeutic paediatric patients and caring nurses' attitudes will speed up the healing process (Taddio, Ilersich, Ipp, Kikuta, & Shah, 2009).

Hospitalisation can also be interpreted as a process due to an emergency reason or planning to require the child to stay in the hospital while undergoing therapy and treatment until returning home. During the process, not only children but parents also experience strange habits and unfamiliar environments – parents who lack emotional support will show anxiety. Anxiety in the parents will increase the child's stress. Thus, nursing care is not only focussed on child therapy, but also their parents.

Anxiety about wounds to the body and aches or pains usually occur in children. The concept of body image, especially the notion of body protection, has very little development in pre-school age children (Concepción & Guerrero, 2016). When examining the ears, mouth, or taking



temperature in the anus will make a child very worried. The child's response to non-painful actions is the same as the response to harrowing actions. The child will respond to pain by crunching his face, crying, closing his teeth, biting his lip, opening his eyes wide, or taking aggressive actions such as beating, kicking, hitting, or running out.

Anxiety in children is very influential in the healing process, which can cause a decreased immune response. Based on the concept of psychoneuroimmunology, the hypothalamic-pituitary-adrenal process, it was said that psychological anxiety would affect the hypothalamus. The hypothalamus will affect the pituitary so that the pituitary will express ACTH (Adrenal Cortico Tropic Hormone), which can ultimately affect the adrenal glands that produce cortisol. If the anxiety experienced by the patient is very severe, the adrenal glands will produce cortisol in large quantities so that it can suppress the immune system (Taddio et al., 2009). This suppression of the immune system will result in obstacles to the healing process. It causes a longer treatment time requiring more treatment costs, and with the destruction of the immune system will accelerate the occurrence of complications during treatment. Parents are required to pay more attention to their children, especially pre-school age children for the welfare of their children.

Children who are hospitalised experience an anxiety response both when the procedure will be performed as well as due to hospital environmental factors themselves (Ramanathan & Kaplan, 1996; Rothstein, 1957). The results of this study show that after an animated video is given when the child is undergoing the procedure of fitting the infusion, the anxiety response decreases from severe anxiety decrease to moderate stress and from moderate anxiety to mild anxiety then to calm anxiety: that which initially contained three or two symptoms fell to two or one symptoms. It shows a very significant decrease in anxiety.

The distraction or diversion influences the child receiving infusion. Another thing is that video is considered a game for children, as explained in (Lilik Lestari et al., 2017), which shows that games can reduce anxiety. According to Stuart and Sundeen (1998), a moderate level of stress allows one to focus on one important thing and put aside other things and on mild anxiety related to ordinary tensions in daily life that cause a person to remain alert. The cared-for child initially focussed on his illness and a foreign environment, but after the intervention, the child began to get used to his environment and wants to play with peers. Understanding of his current condition becomes more comfortable to master.

A nurse providing nursing services must be able to facilitate the family in various forms of health services in the way of providing direct nursing actions, as well as health education for children. Also, nurses must pay attention to the social, cultural, and economic life of the family that can



determine the pattern of children's lives. These factors strongly determine the development of children in life (Suza, n.d.)(James et al., 2012).

The life of a child is also very much determined by the existence of a form of support from the family, and this can be seen if the family support is excellent. The growth and development of the child are relatively stable. Still, if the child's family support is not exceptional, then the child will experience obstacles in him that can psychologically disturb them. (Alimul, 2005). Childcare at the hospital is an experience filled with anxiety, both for children and parents. The hospital environment itself is a cause of concern in children. In children who are hospitalised, challenges will have to be faced such as overcoming a separation, adjusting to an unfamiliar environment, adjusting with many people to take care of them, and often having to relate and interact with sick children and the experience following therapy that hurts (Pate et al., 2006).

### **The Effect of Animation Video on Anxiety Responses in Pre-School Children Receiving Infusion Installation Procedure**

The needle, according to research, is one of the problems faced by nurses in providing therapy to patients. In a study conducted by Orenius et al. (2018), who examined the fear of injection and needles in children and adolescents in terms of psychological, behavioural, and contextual factors, reported that children aged 4-6 years said 63% of children had significant needle fear. Therefore, an appropriate intervention is needed to reduce anxiety, with diversion therapy and psychological intervention techniques.

In some literature, it is explained that dealing with children's fear of needles is focussed on the management of fear and anxiety about needles and pain. Stress can be significant as a predictor of pain reports and pain tolerance in children and adolescents. There are specific interventions that can be performed on invasive procedures that are using topical analgesics to reduce pain so that it can minimise the trauma of children during invasive procedures (Tsao et al., 2008).

The results showed that children who were given video experienced a distracting effect. Distraction techniques need to be applied to children because children are individuals who receive nursing care with the principle of atraumatic responsibility. Therefore, to overcome the anxiety response in children, it is an essential for nurses in providing maximum nursing care to submit videos to minimise stress from the infusion.

The implementation of guided imagery audiovisual interventions on infusion in children is a unique challenge for nurses who are responsible for providing nursing care in a child's room. The action given is to pay attention to other aspects that might impact the trauma. Intravenous therapy



is an invasive medical therapy using effective methods to supply fluids, electrolytes, nutrients, and drugs through the blood vessels (intravascular) (Perry & Potter, 2005). The general reason patients get infusion therapy is to stabilise venous flow and prevent the occurrence of injury. The main principles of infusion in children are effective, efficient, safe, taking into account the child's emotions according to the stage of development. The action of injection performed on children is an emergency procedure because it can cause anxiety and fear in children (Hockenberry & Wilson, 2015).

Audiovisual intervention is one of the techniques of distraction and guided imagery to distract children and reduce anxiety. Guided imagery is a relaxation method for imagining places and events associated with a pleasant sense of relaxation. This delusion allows clients to enter a state or experience of relaxation (Girgin, 2019). Guided imagery has elements that are generally the same as relaxation, that is, they both bring the client toward relaxation, but guided imagery emphasises that the client imagines things that are comfortable and soothing and cannot focus on many things at one time. Therefore the client must embrace a potent and pleasing imagination (Hartling et al., 2013).

## **Conclusion**

Based on the results of this research study, children who will undergo infusion procedures in hospitals experience anxiety responses before given audiovisual intervention and experience a decrease in anxiety while being given audiovisual interventions. There is the effect of audiovisual interventions on levels in pre-school children during the procedure for infusion in a childcare room with Dr. Sobirin at Lubuklinggau, and this is because the child experiences a distraction or diversion towards the video screenings made.

**Table 1. Frequency Distribution of Characteristics of Pre-School Age Children at Siti Aisyah Regional Hospital Lubuklinggau**

Variable	Frequency(n)	Percentage%
<b>Gender</b>		
Female	17	56.7
Male	13	43.3
<b>Age</b>		
3 Year	9	30.0
4 Year	7	23.3
5 Year	5	16.7
6 Year	9	30.0
<b>History of hospital</b>		
Care, ever treated	3	10.0
never	27	90.0

**Table 2. Distribution of Respondent Frequencies based on Pre Test and Post Test Anxiety Response in Children's Care Room, Siti Aisyah Lubuklinggau Hospital**

Anxiety Response	Pre Test		Post Test	
	n	%	N	%
Mild Anxiety	2	6.7	12	40.0
Anxiety Medium	5	16.7	18	60.0
Weight Anxiety	23	76.7	0	0.0
Total	30	100.0	30	100.0

**Table 3. Animation Distraction Video Techniques on Anxiety Response in Pre-School Age Children in Siti Aisyah Lubuklinggau Hospital**

Variable	<i>p-value</i>
HARS Score Posttest Pretest	0.000
Frequency Pulse Posttest Pretest	0.000



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