

THE RELATIONSHIP BETWEEN ANXIETY AND PAIN IN INFUSION PROCEDURES: IMPLICATIONS FOR CHILDREN'S HOSPITAL CARE

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ABSTRACT

Insertion of an IV is a medical procedure that is often performed on children in hospitals. This procedure often causes anxiety and pain which can affect the child's comfort and healing process. Objective: This study aims to analyze the relationship between anxiety levels and the intensity of pain felt by children when installing an IV. Methods: The research method used is quantitative with a cross-sectional approach. The sampling technique uses purposive sampling by paying attention to inclusion and exclusion criteria. The total number of respondents in this study was 60 people. Data was collected through an anxiety questionnaire using the facial image scale (FIS) and a pain scale using the Wong Baker Face questionnaire. These two questionnaires were filled out by the child before and after the infusion procedure. Results: The results of data analysis showed that there was a significant positive correlation between the level of anxiety and the intensity of pain felt by children ($r=0.49$, $p<0.05$). Conclusions: The results of this study show that the higher the child's anxiety before the infusion procedure, the higher the pain intensity felt. This research suggests the importance of psychological intervention to reduce anxiety in children before the infusion procedure in order to reduce pain and increase the child's comfort during hospital treatment.

Keywords: anxiety; children; pain

INTRODUCTION

Children who are vulnerable to various diseases often require intensive medical care in hospitals to treat their health conditions. This pose usually generates significant anxiety and fear in them. They frequently have limited understanding of the medical procedures they must undergo and respond strongly emotionally to unfamiliar environments and procedures that may be painful. These medical experiences can be a source of great stress for children, impacting their overall emotional and psychological well-being both in the present and being traumatizing in the future. The negative impact on children undergoing hospitalization can disrupt the child's development process, especially in terms of independence and identity, where children often lose control and autonomy (Luljguraj and Maneval, 2023). In addition, children undergoing hospitalization may exhibit negative behaviours such as new fears, refusal to sleep, waking up at night, withdrawal, and shyness. This behaviour can last from a few minutes to several days, impacting the child's future development and causing significant stress, affecting their emotional and psychological well-being.

Hospitalization, with all the uncertainty and changes that come with it, can significantly increase a child's anxiety levels (Sawyer et al., 2023). Children must face unfamiliar environments, medical procedures that may be frightening, and separation from the routines and support they usually receive at home. This condition can cause significant stress for children, impacting their overall emotional and psychological well-being. Considerable anxiety is often caused by separation from parents, unfamiliar surroundings, and uncertainty about upcoming medical procedures. Children

also frequently feel anxious when facing invasive procedures such as infusion for several psychological and physical reasons (Segers et al., 2023). This process not only accompanies pain that makes them afraid and uncomfortable but is also accompanied by uncertainty due to a lack of understanding about the goals and medical process they have to undergo. Infusion procedures, although considered routine by medical personnel, often cause frightening and painful experiences for children (Sharp et al., 2023).

The physical pain felt during this procedure is often associated with high anxiety and negatively impacts their emotional and psychological well-being (Megasari and Wulandari, 2024). Children who have an IV installed tend to respond emotionally. Scary or painful experiences during IV insertion can leave psychological trauma in children, affecting their perception of future medical care. Psychological trauma, such as pain, can result in excessive anxiety every time the child has to undergo a similar medical procedure, even at subsequent visits to the hospital. Children may develop a deep fear of needles or other medical procedures, which can affect their cooperation with healthcare providers and the quality of care they receive. Emotionally, they may show symptoms such as excessive anxiety, tension, or even withdrawal when faced with situations that resemble previous traumatic experiences (Sørensen et al., 2021).

Understanding anxiety and pain in children in the context of medical procedures is a critical element in quality pediatric health care. Children often experience fear and anxiety when they have to face medical procedures, for example, installing an IV (Litwin et al., 2021). The impact on children's well-being can be significantly affected. Various studies have shown that pain and anxiety are related. The pain felt by children can increase their anxiety levels, and conversely, high anxiety can worsen the perception of pain. Children who experience excessive pain and anxiety during medical procedures may develop a fear of medical treatment, hindering their cooperation in subsequent medical procedures and lowering the overall quality of health care. If anxiety and pain are not managed well, children may experience trauma that can impact their future mental health and even affect their outlook on healthcare. Therefore, medical personnel needs to have a holistic approach, paying attention to the physical aspects and the child's emotional needs during treatment (Hastings, 2019). The goal is to improve the quality of care by minimizing trauma during hospitalization.

METHOD

This research method uses a descriptive correlational research design with a cross-sectional approach. This design was chosen to identify the relationship between anxiety variables and pain during infusion procedures in children. The population of this study is children aged 4-10 years who will undergo infusion installation at the Moewardi Regional General Hospital. Based on the Lemeshow 2 proportion test formula, a sample of 60 respondents was obtained. This research was conducted in July 2024. The sampling technique used purposive sampling, taking into account inclusion and exclusion criteria. Inclusion criteria: 1) children aged 4-10 years, 2) will undergo an infusion procedure, 3) do not experience decreased consciousness, and 4) parents or guardians provide written permission to participate in the research. Exclusion criteria: 1) children with severe communication disorders, 2) having medical conditions that interfere with pain perception, 3) taking pain relievers. Researchers recruited potential respondents based on predetermined inclusion and exclusion criteria. The aims and methodology of this research were communicated to all potential respondents and their parents or guardians to ensure transparency. Prospective

respondents, through their parents or guardians, are free to refuse to become respondents. Consent to become a respondent is carried out by parents/guardians. After parents/guardians agree to participate, they are asked to sign a consent form.

Research Instrument

The research instrument used an observation sheet of respondent characteristics, anxiety and pain. The observation sheet of respondents' characteristics aims to determine the characteristics of respondents, such as age and gender. The observation sheet on anxiety and pain seeks to record the results of anxiety and pain assessments in respondents. Researchers used the Wong & Baker instrument to assess the patient's pain scale. The total score on this instrument is 0-10. The higher the score, the more severe the pain intensity. The reliability test results conducted by (Kamki, Kalaskar and Balasubramanian, 2022) showed that the Wong-Baker FACES has good internal consistency with a Cronbach's alpha coefficient above 0.80, which indicates that all items in this scale consistently measure the same concept, namely pain intensity. Patient anxiety was measured using the facial image scale (FIS) instrument. Measurement of anxiety using a 1-5 scoring system. A score of 1 indicates a delighted facial expression, while a higher score indicates an unhappy one. The validity test of anxiety using FIS has been conducted by (Buchanan, Real and Gardner, 2018), Validation of a Facial Image Scale to assess child dental anxiety obtained data that from 50 children tested, on average, the children experienced anxiety in image number 3. The results of this study concluded that the use of anxiety instruments in children with FIS was stated to be quite valid.

RESULT AND DISCUSSION

In this study, data analysis was conducted using descriptive and inferential statistics with the help of SPSS software. Descriptive analysis was used to determine the frequency distribution and percentage of anxiety and pain. At the same time, the Pearson correlation test was used to analyze the relationship between anxiety and patient pain. The characteristics of respondents in this study are defined by the study's inclusion criteria and include a diverse range of genders. Table 1 explains these characteristics.

Table 1.
Respondent characteristics (n= 60)

| | f | % |
|--------|----|------|
| Umur | | |
| 4 | 13 | 21.7 |
| 5 | 7 | 11.7 |
| 6 | 12 | 20 |
| 7 | 8 | 13.3 |
| 8 | 8 | 13.3 |
| 9 | 6 | 10 |
| 10 | 6 | 10 |
| Gender | | |
| Man | 29 | 48.3 |
| Women | 31 | 51.7 |

Table 1 shows that most respondents were 4 years old, namely 13 (21.7%) people, with the most female gender, 31 (51.75%) people. Focusing on the indicators of this research variable, namely anxiety and pain regarding the IV procedure in children, can be seen in Table 2 below.

Tabel 2.
Average of anxiety and pain score (n=60)

| | mean | Min-max |
|---------------|------|---------|
| Anxiety score | 4 | 0-5 |
| Pain score | 8 | 1-8 |

Table 2 shows that the average respondent anxiety score is 4. It means that the average respondent shows an unhappy facial expression. The maximum anxiety score of 5 supports this. Table 2 also shows the average respondent pain score of 8, which means that the respondent feels very painful. The maximum value of 8 supports this. In both variables that have been carried out, this study obtained results regarding the relationship between related variables.

Tabel 3.
Correlation of anxiety and pain score in children during infusion procedures

| | value | df | Asymp.sig |
|---------|-------|----|-----------|
| Pearson | 0.49 | 1 | .000 |

Table 3 shows that a significant value of .000 was obtained, which indicates that there is a significant relationship between anxiety and pain in children during the infusion procedure. The Pearson correlation value is 0.49, which means a positive correlation with moderate correlation strength.

DISCUSSION

This study shows that there is a significant relationship between anxiety and pain in children during the infusion procedure. It can be seen based on the results of the research table, which shows that the majority of research respondents were 4 years old, as many as 13 (21.7%) people with the most gender 31 (51.75%) people with an average anxiety response score of 4 out of a maximum value of 5 and a pain score of 8 out of a maximum value of 8, where 4 indicates an unhappy face. In contrast, 8 suggests a feeling of great pain. Further analysis of the relationship between anxiety and pain found that there was a significant relationship between anxiety and pain in children during the infusion procedure, with a substantial value of 0.000. In addition, the Pearson correlation value of 0.49 showed a positive correlation with moderate correlation strength. The discussion in this study explains that children often feel anxious when facing invasive procedures such as infusions. This process not only accompanies the pain that makes them afraid and uncomfortable but also creates uncertainty due to a lack of understanding of the goals and medical processes that they must undergo. Significant anxiety can increase the perception of pain, while perceived pain can worsen anxiety, creating a cycle that is difficult to overcome without appropriate intervention.

High anxiety can increase the perception of pain in children, and the pain felt can worsen anxiety (Oommen and Shetty, 2024). Therefore, the importance of effective communication in depth in reducing children's anxiety during medical procedures. Children who receive education about medical procedures show lower levels of anxiety. In addition, a collaborative approach between healthcare providers and parents can help create a more supportive environment for children, reducing stress and pain felt during medical procedures (Balice-Bourgeois *et al.*, 2020). Other studies have explained that anxiety affects the perception and response to pain through the activation of the autonomic nervous system, which increases pain sensitivity (C-Avalos *et al.*, 2021). Physically, the experience of painful IV insertion can also affect their tolerance to pain in

the future. Children who experience intense pain experiences during medical procedures tend to be more sensitive to pain later in life. It can affect how they respond to medical care, including their compliance with procedures that may be needed for recovery or further treatment. IV insertion contributes to increased physiological imbalance, discomfort and pain (Welyczko, 2020). During the IV insertion process, children and parents face various challenges that affect them physically and emotionally. Children often experience significant anxiety related to these procedures, primarily due to fear of needles and the potential pain they may experience. The unfamiliar hospital environment and lack of understanding of the medical procedures to be performed can also cause high levels of emotional stress in children. Physical sensations such as pain or discomfort when a needle is inserted into a vein can be a real challenge for children, which can exacerbate their anxiety (Gahlawat, Kodi and Deol, 2021). These challenges are also felt by parents, who often feel anxious and worried about their child undergoing a painful or threatening medical procedure. Lack of understanding of the purpose and procedure of IV insertion also increases uncertainty in children and parents, creating a tense atmosphere that requires precise and caring communication from medical staff. Good care and appropriate support can help reduce these negative impacts. Responses to stressors vary depending on the severity of the illness, the type of medical procedure and treatment performed, previous experiences, the child's developmental level based on age, family support, and the child's coping abilities (Brown *et al.*, 2018). Research shows that anxiety is the most common emotional disturbance in hospitalized children, with levels and manifestations varying by age.

In this condition, several external factors, such as the unfamiliar hospital environment and lack of understanding of medical procedures, are also influenced. As with studies that have been conducted, uncertainty and an unfamiliar environment can cause high emotional stress in children during medical procedures. Uncertainty about what will happen and an unfamiliar hospital environment can increase anxiety and stress in children. Another factor that influences this is the use of non-pharmacological interventions. This is closely related to the child's readiness to undergo each medical stage, especially the installation of an IV through distraction techniques and local anaesthesia to reduce physical pain and anxiety (Cordray, Patel and Prickett, 2022). Discussion of excessive pain and anxiety during medical procedures can cause psychological trauma and affect children's perceptions of future medical care. This finding is in line with research showing that significant pain experiences can trigger psychological responses such as worry and fear of subsequent medical procedures. The trauma obtained is also the result of uncertainty about medical procedures and the hospital environment, which can cause high emotional stress until it accumulates into trauma in children. In addition, from the perspective based on biopsychosocial aetiology, fear related to IV installation appears as significant needle-related stress and avoidance behaviour. Therefore, the importance of the involvement of parents and medical personnel in providing easy-to-understand explanations and creating a more supportive and child-friendly environment can help reduce stress and anxiety levels in children, and medical staff can improve children's medical experiences (Glick *et al.*, 2020). In addition, the use of effective communication and appropriate pain management techniques significantly reduce pain and anxiety in children during medical procedures. In further conditions, the monitoring and management process before, during, and after the action is important to prevent prolonged trauma.

CONCLUSION

Understanding the relationship between anxiety and pain in children during medical procedures is essential to improve the quality of health care and their emotional and psychological well-being. This study confirms that appropriate interventions, good communication, and support from parents and medical staff can help reduce the negative impact of painful and frightening medical experiences. The association with other studies strengthens these findings, suggesting that a holistic and integrated approach is essential in the management of pain and anxiety in children during medical care. Further research is needed on specific techniques and the application of holistic and complementary therapies that can be used to help reduce anxiety and pain levels in children during IV insertion.

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