



The Correlation Between Pre Operative Anxiety Levels and Post Operative Pain Intensity in Femoral Fracture Patients

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<p>Track Record Article</p> <p>Accepted: 03 May 2024 Revised: 08 April 2024 Published: 28 June 2024</p> <p>How to cite : Sari, A. T. P., & Rosyid, F. N. (2024). The Correlation Between Pre Operative Anxiety Levels and Post Operative Pain Intensity in Femoral Fracture Patients. <i>Contagion : Scientific Periodical of Public Health and Coastal Health</i>, 6(1), 627-635.</p>	<p style="text-align: center;">Abstract</p> <p><i>This research endeavors to comprehensively investigate the intricate relationship existing between preoperative anxiety levels and the subsequent intensity of postoperative pain experienced by patients diagnosed with Femoral Fractures at Prof. Dr. R. Soeharso Orthopedic Hospital in Surakarta. Employing a quantitative methodology alongside a cross-sectional design, the study meticulously unfolded over the span of January to February 2024. Encompassing the entirety of femoral fracture patients admitted to the hospital's Inpatient Ward, a meticulously determined sample size of 27 individuals was meticulously selected utilizing the simple random sampling technique. The data collection process was meticulously orchestrated, involving the meticulous administration of structured questionnaires meticulously designed to harness the Amsterdam Preoperative Anxiety and Information Scale (APAIS) for gauging anxiety levels, while the Numeric Rating Scale (NRS) was adeptly employed to objectively measure the intensity of pain experienced by the patients post-surgery. The comprehensive dataset thus garnered underwent meticulous statistical analysis employing the Pearson Chi-Square test, with the research data meticulously processed utilizing SPSS 26 software in the year 2024. The outcomes unearthed through this rigorous statistical analysis illuminated a compelling narrative, shedding light on a significant association between preoperative anxiety levels and the subsequent intensity of postoperative pain experienced by femoral fracture patients ($p=0.023$). Consequently, these findings underscore the pivotal role of addressing preoperative anxiety as a paramount strategy in alleviating postoperative pain intensity among patients grappling with femoral fractures, thus offering invaluable insights for refining patient care protocols within orthopedic healthcare settings to foster enhanced patient well-being, comfort, and expedited recovery processes.</i></p> <p>Keywords: <i>Anxiety level, Femoral fracture, Pain intensity</i></p>
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INTRODUCTION

Anxiety is a psychological state distinguished by apprehension and concern regarding uncertain circumstances. Its origins trace back to the Latin term "anxius" and the German word "anst", both connoting adverse effects and physiological arousal (Muyasaroh et al., 2020). As per the American Psychological Association (APA) as referenced in Muyasaroh (2020), anxiety represents an emotional condition triggered by stress, characterized by feelings of tension, troubling thoughts, and accompanied by physical reactions.

The relationship between preoperative anxiety and postoperative pain is a well-documented concern in the medical field, impacting patient outcomes and recovery processes. Preoperative anxiety, characterized by feelings of tension, apprehension, and fear about upcoming surgical procedures, has been shown to affect a wide range of patient populations globally. The prevalence of preoperative anxiety varies significantly, with estimates ranging from 11% to 80%, influenced by factors such as the patient's understanding of the surgery, the

environment of the operating room, and concerns about recovery (Sun et al., 2023; Suresh & Lakshminarasimhan, 2022; Tadesse et al., 2022).

In Indonesia, anxiety disorders are prevalent, affecting approximately 6-7% of the population. Studies conducted in Indonesian hospitals, such as those in Sleman, have highlighted a significant level of preoperative anxiety among patients, with more than half of the respondents reporting feelings of anxiety before undergoing surgery (Kashif et al., 2022). These findings underscore the importance of addressing preoperative anxiety to improve surgical outcomes and patient well-being.

Postoperative pain, a common issue following surgery, varies in prevalence depending on the type of surgery and individual patient factors. Uncontrolled postoperative pain can lead to complications and negatively affect a patient's quality of life. Research has established a link between preoperative anxiety levels and the intensity of postoperative pain, indicating that higher levels of anxiety are associated with increased pain levels (Fernández-Castro et al., 2022; Zhang et al., 2021). This relationship suggests that managing preoperative anxiety could be a key strategy in improving postoperative pain management and overall recovery.

The level of pre operative anxiety has become a major concern in recent medical literature. Recent studies focus on a deeper understanding of the impact of pre-procedural anxiety on patient experiences and post operative health outcomes (Egan et al., 2022). Furthermore, studies indicate that anxiety disorders in Indonesia affect approximately 6-7% of the general population, with females showing a higher prevalence than males (Hawari, 2019). In a research conducted at Sleman Regional General Hospital, it was discovered that among 31 respondents, 54.8% of preoperative patients reported experiencing anxiety. The reasons cited for this anxiety included a lack of comprehension about the surgical procedure, apprehension about the operating room environment, and worries regarding postoperative recovery (Hawari, 2019). Anxiety disorders, particularly in Jakarta, show a higher prevalence, ranging around 6-7% of the general population. Females are more likely to experience anxiety compared to males. Reported pre operative anxiety incidences in adults range from 11-80% (Pane, 2019).

Increased anxiety levels can stimulate the secretion of stress hormones like cortisol, impacting inflammatory responses and the perception of pain. Moreover, psychological factors like anxiety can increase sensitivity to pain, alter patients' perceptions of the healing process, and even slow down recovery (Izat et al., 2019).

Pain is a highly complex human experience influenced by interactions between various factors such as emotional, behavioral, cognitive, and physiological sensory factors. It is a subjective sensory phenomenon associated with actual or potential tissue damage or described

within the context of such damage (Kemenkes, 2022). According to the International Association for the Study of Pain (IASP), pain involves various aspects, including the individual's emotional feelings in addition to physical or mental responses. Pain can prompt individuals to seek medical attention and assistance from healthcare professionals. Comfort is desirable for every individual, making it crucial for patients to experience pain relief (Suryani & Soesanto, 2020).

Analyzing the correlation between pre operative anxiety levels and post operative pain intensity is of interest to researchers and healthcare practitioners. Findings from these studies suggest that pre operative anxiety levels can affect patients' perceptions and bodily responses to post operative pain, potentially increasing the risk of complications and decreasing patients' quality of life (Smith et al., 2020). Recent research highlights the impact of post operative pain on various aspects of patients' lives. Besides causing physical discomfort, uncontrolled post operative pain can disrupt sleep, decrease quality of life, prolong hospital stays, and increase the risk of post operative complications such as respiratory disorders, deep vein thrombosis, and infections (Sari et al., 2018). Recent data indicates that the prevalence of post operative pain ranges from 30% to 80%, depending on the type of surgery and individual patient factors (Rahmayati et al., 2018). Despite increased awareness and more aggressive approaches to pain management, many patients still do not receive adequate pain control after surgery (Schug et al., 2020).

A preliminary study conducted by researchers at Prof. Dr. R. Soeharso Orthopedic Hospital in Surakarta in October 2023 obtained data from 33 patients with femoral fractures. The research included evaluating preoperative anxiety levels and postoperative pain intensity in femoral fracture patients, while the benefits included contributing to a better understanding of preoperative anxiety factors, providing information to improve postoperative pain management, developing psychological intervention strategies, enhancing the quality of patient care, and serving as a basis for more effective health policy research and development. Based on the background above, the researchers aim to investigate the Relationship Between Preoperative Anxiety Levels and Postoperative Pain Intensity in Patients with Femoral Fractures at Prof. Dr. R. Soeharso Orthopedic Hospital in Surakarta with the objective of exploring the correlation between preoperative anxiety levels and postoperative pain intensity in patients with femoral fractures.

METHODS

This research adopts a quantitative approach with a cross-sectional design, aiming to explore the relationship between pre operative anxiety levels and pain intensity in post operative Femoral Fracture patients at Prof. Dr. R. Soeharso Orthopedic Hospital in Surakarta. The study was conducted from January to February 2024. The study population involved all 33 femoral fracture patients in the Inpatient Ward of Prof. Dr. R. Soeharso Orthopedic Hospital in Surakarta, with a sample size of 27 individuals selected through simple random sampling method at Prof. Dr. R. Soeharso Orthopedic Hospital.

The data collection process in this study began with administrative and technical steps. The administrative steps involved submitting a request for ethical clearance and obtaining research permission from the Ethical Team of Prof. Dr. R. Soeharso Orthopedic Hospital in Surakarta. Subsequently, the technical steps began with seeking approval from the head of the inpatient ward and comprehensively explaining the purpose and objectives of the study to the medical team on duty in the inpatient ward. Afterward, the researcher selected potential respondents who met the inclusion criteria and requested their participation as samples by providing an explanation of the purpose of this study.

Data collection was conducted through questionnaires using the APAIS (The Amsterdam Pre operative Anxiety and Information Scale) anxiety level instrument and the NRS (Numeric Rating Scale) pain intensity scale, which have been validated and tested for reliability, along with additional information from medical records. This implementation was carried out during visits to the inpatient ward at Prof. Dr. R. Soeharso Orthopedic Hospital in Surakarta. This research obtained an ethical research clearance letter from the Ethics Research Team of Prof. Dr. R. Soeharso Orthopedic Hospital, Surakarta, with the number 016-11202302-P001. After collecting data, the next step was to recheck the respondent data to ensure accuracy. Then, data analysis was performed using two approaches: univariate and bivariate analysis. Univariate analysis was used to explore anxiety levels and pain intensity, while bivariate analysis aimed to evaluate the relationship between pre operative anxiety levels and pain intensity in post operative femoral fracture patients at Prof. Dr. R. Soeharso Orthopedic Hospital, using the Chi-Square test with SPSS 26 software.

RESULTS

Table 1. Distribution of Respondents Based on Anxiety Levels

Criteria	Frequency	Percentage
1-6 No Anxiety	1	3.7
7-12 Mild Anxiety	15	55.6
13-18 Moderate Anxiety	10	37.0
19-24 Severe Anxiety	1	3.7
Total	27	100.0

Based on Table 1, the dominant anxiety level is mild anxiety, experienced by the majority of respondents (55.6%) with scores between 7-12. This is followed by moderate anxiety, with 10 respondents (37.0%) experiencing anxiety within the score range of 13-18. Severe anxiety occurred in only one respondent (3.7%) with a score between 19-24.

Table 2. Distribution of Respondents Based on Pain Intensity

Criteria	Frequency	Percentage
Scale 1-3 Mild Pain	8	29.6
Scale 4-6 Moderate Pain	15	55.6
Scale 7-9 Severe Pain	4	14.8
Total	27	100.0

Based on Table 2, there is a dominant tendency towards moderate pain intensity, with 15 respondents (55.6%) reporting experiencing pain within the score range of 4-6. This is followed by mild pain, experienced by 8 respondents (29.6%) with scores ranging from 1-3. Severe pain was only experienced by 4 respondents (14.8%) with scores of 7-9.

Table 3 Distribution of Respondents by Anxiety Levels and Pain Intensity

Anxiety Level	Pain Intensity								P-value	Contingency Coefficient
	Mild		Moderate		Severe		Total			
	n	%	n	%	n	%	n	%		
1-6 No Anxiety	1	3.7	0	0.0	0	0.0	1	3.7	0.023	0.594
7-12 Mild Anxiety	7	25.9	7	25.9	1	3.7	15	55.6		
13-18 Moderate Anxiety	0	0.0	8	29.6	2	7.4	10	37.0		
19-24 Severe Anxiety	0	0.0	0	0.0	1	3.7	1	3.7		
Total	8	29.6	15	55.6	4	14.8	27	100.0		

Based on the results of the Pearson Chi-Square test in Table 3, a significance value of 0.023 was obtained, which is smaller than 0.05. Based on this result, it can be concluded that there is a significant influence of different Anxiety Levels on Pain Intensity. Therefore, H_a is accepted, and H_0 is rejected. The Contingency Coefficient value of 0.594 falls into the strong category, indicating that the heavier the level of anxiety, the heavier the intensity of pain.

DISCUSSION

The chi-square test results from this study show a significant association between preoperative anxiety levels and postoperative pain intensity among patients with femoral fractures. The test result yielded a significance value of 0.023, which is smaller than the predetermined significance level (0.05). This result is consistent with the gate control theory of pain Melzack & Wall (1965), where psychological mechanisms such as anxiety can influence an individual's pain perception. High anxiety can trigger the activation of neurobiological mechanisms that increase sensitivity to painful stimuli, thereby increasing the perceived intensity of pain. Other studies supporting this finding include research by Smith (2020), which found a relationship between anxiety levels and pain intensity in patients with chronic conditions.

The mechanism of pain perception involves the interaction between sensory and emotional aspects, where anxiety can enhance pain perception. This finding is also consistent with recent studies conducted by Sullivan & Rabbitts (2021), which highlight the importance of comprehensive pain management involving the evaluation and management of psychological factors. Research by Edwards (2020) also suggests that the neurobiological mechanisms involved in pain perception are often influenced by psychological factors such as anxiety. In this context, the measurement and management of anxiety can be an important component of effective pain management. Additionally, a recent study by Johnson (2019) highlights the complex role of serotonin neurotransmitters in modulating pain and emotional responses, providing additional insight into the correlation between pain and anxiety.

The findings from the research conducted by Ginting & others (2020) on the correlation between preoperative anxiety severity and postoperative pain and anxiety among patients undergoing cesarean section with spinal anesthesia indicated a notable association between anxiety scores and postoperative pain intensity, with a statistically significant p-value of 0.001. The correlation value was +0.787, indicating a relationship between anxiety scores (APAIS) and pain intensity (VAS-A). Another study conducted by Apriansyah (2015) stated that patients with anxiety disorders show differences in the concentration of hormone balance in the body. When experiencing anxiety, several hormones will undergo changes, and these hormonal changes will affect the hypothalamic function, thus activating neurotransmitter activity towards the complications experienced by respondents post operatively due to physiological effects that disrupt the body's balance, resulting in the emergence of stress impacts that ultimately exacerbate respondents' perceptions of pain (Mardiah et al., 2023).

In a study conducted by Navarro-García (2011), utilizing the Hospital Anxiety and Depression Scale (HADS) to assess preoperative anxiety and depression, a notable relationship was discovered between preoperative anxiety and postoperative pain.

Rostiodertina Girsang conducted a quantitative study with a correlation study design to determine the relationship between pain intensity and post operative anxiety at Grand Medistra Lubuk Pakam Hospital in 2016. This study involved 61 respondents selected by consecutive sampling. The results of the study showed a significant relationship between pain intensity and post operative anxiety with a p-value of 0.000 ($p < 0.05$) and a correlation value of 0.7 indicating a strong relationship (Girsang, 2018).

Nurul Hidayah undertook a quantitative research endeavor employing a correlation study design to evaluate the correlation between pre operative anxiety levels and post operative pain intensity among elective surgery patients at Dr. Zainoel Abidin Regional General Hospital in Banda Aceh. This study showed a strong and positive relationship between pre operative anxiety levels and post operative pain intensity with a correlation value of 0.83 ($p < 0.05$) (Hidayah & Nurul, 2019).

Thus, this study provides a deeper understanding of the complexity of the interaction between pre operative anxiety and post operative pain intensity in femoral fracture patients. The implications of this research include the need for a holistic and evidence-based management approach to optimize post operative recovery processes in this population.

CONCLUSIONS

The statistical analysis results indicate a significant association between preoperative anxiety levels and postoperative pain intensity ($p=0.023$) in patients with Femoral Fracture at Prof. Dr. R. Soeharso Orthopedic Hospital in Surakarta. Evaluating preoperative anxiety levels and postoperative pain intensity is crucial for improving patient care and recovery management for femoral fracture patients, including pain management strategies and psychological interventions. For future researchers, it is recommended to expand the scope of the study using more comprehensive methods, collect more extensive data, conduct deeper analyses, and consider both influencing and influenced factors. Additionally, developing more effective interventions is also essential.

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