

# The effect of zikr therapy on family caregivers anxiety during femur fracture surgery

Dewi Nur Khasanah<sup>1</sup>, Dimas Ria Angga Pribadi<sup>2</sup>, Kenwi Hasta Dewi<sup>3</sup>

<sup>1,2</sup>Nursing, Faculty of Health Science, Universitas Muhammadiyah Surakarta, Surakarta, Indonesia

<sup>3</sup>Rumah Sakit Ortopedi Dr. Soeharso Surakarta, Surakarta, Indonesia

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## ABSTRACT

Fracture surgery is a significant stressor that may trigger anxiety, not only in patients but also in family members waiting during the procedure. Effective anxiety management can be supported through non-pharmacological interventions. The purpose of this study is to investigate the effect that zikr spiritual treatment has on the anxiety levels of the families of patients who are undergoing surgery to repair a fractured femur. A quasi-experimental strategy, specifically a group pre-test and post-test design that contrasts the intervention group with the control group, is used in this quantitative study design. There were a total of forty-two participants in this study. Of these forty-two participants, twenty-one were assigned to the intervention group, while the other twenty-one were assigned to the control group. The State-Trait Anxiety Inventory-Y (STAI-Y) scale was utilized to assess the degree of anxiety in the intervention and control groups both before to and during the intervention. In the intervention group, zikr therapy was administered for a duration of 10 minutes. The Wilcoxon test results indicated a p-value of 0.000 ( $p < 0.05$ ) in the intervention group and a p-value of 0.083 ( $p > 0.05$ ) in the control group. The Mann-Whitney test produced a p-value of 0.000 ( $p < 0.05$ ), which provided evidence that zikr treatment had a substantial impact on the intervention group and that there was a significant difference in anxiety levels between the control group and the intervention group. Zikr therapy has been shown to be effective in reducing anxiety. These findings indicate that zikr therapy may serve as a valuable non-pharmacological approach to managing anxiety. Further studies are recommended to explore its long-term effects and broader applicability in different clinical contexts.

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### Corresponding Author:

Dimas Ria Angga Pribadi,  
Keperawatan, Fakultas Ilmu Kesehatan,  
Universitas Muhammadiyah Surakarta,  
Jl. A. Yani, Mendungan, Pabelan, Kec. Kartasura, Kabupaten Sukoharjo, Jawa Tengah, 57162, Indonesia  
Email: [dra632@ums.ac.id](mailto:dra632@ums.ac.id)

## INTRODUCTION

Fractures, or what is referred to as broken bones, are usually caused by trauma. According to Permatasari and Sari (2020), a fracture is defined as a break or interruption of the continuity of

bone. The World Health Organization (WHO) reported in 2020 that the number of new instances of fractures was on the rise, with around 13 million cases registered and a prevalence rate of 2.7 percent. Out of all the countries in Southeast Asia, Indonesia has the largest number of fractures, with 1.3 million fractures occurring each year among its population of 238 million people. (Anwar Saleh et al., 2023). Based on data recorded at the Rumah Sakit Ortopedi Dr. Soeharso Surakarta from 2023 to 2024, femur fractures ranked first among other types of fractures. There were 660 cases of femur fractures, consisting of 601 cases of closed femur fractures and 59 cases of open femur fractures. Fractures can cause many problems if not addressed immediately, such as nerve trauma, vascular trauma, complications in bones, and can lead to bone embolism. Additionally, issues that may arise include interfering pain and bleeding (Nurhayati, 2022). Fractures can be managed through two approaches, namely conservative and operative or surgical (Suwahyu et al., 2021). The conservative approach is carried out by applying a cast and traction. Meanwhile, the operative/surgical approach to fractures can be done through ORIF, external fixation, and bone grafting (Suwahyu et.al, 2021). Therefore, patients with fractures require surgical intervention (Suwahyu et.al, 2021).

The World Health Organization (WHO) states that the overall number of surgical cases has increased every year worldwide, with more than 4 million patients undergoing surgery, and it is estimated that 50% to 75% experience anxiety during the preoperative period. Patients first become anxious when they become aware that they need to undergo surgical treatments, and this anxiety reaches its highest point when they are admitted to the hospital. This doesn't just happen to patients; their relatives are affected as well. At times, the apprehension that families feel can be just as intense as the worry experienced by patients who are about to undergo surgery. When a patient is in the operating room, Trim and Sanford point out that worry and anxiety might develop among the patient's family members. This can result in psychological and physical reactions. The waiting period is the most nerve-wracking moment for families, as they await information regarding the patient's health while the patient is in the operating room undergoing surgery. Concerns about the possibility of losing their loved one and undesirable results from surgery might induce worry for the family during the procedure (Bagheri et al., 2022).

One psychological aspect of the family that a nurse needs to pay attention to is anxiety. According to Stuart and Sundeen (2016), anxiety is an emotional symptom that arises without being based on a specific object and is triggered by unknown factors, occurring during new experiences. Anxiety is an early psychological symptom experienced by families before they reach the stage of depression and stress (Johson et al., 2019). Levels of anxiety range from mild, moderate, severe, to panic (Priyanto & Riyanti, 2021). If not addressed, anxiety can lead to negative impacts such as sleep disturbances, headaches, heart palpitations, and withdrawal from the environment (Lianasari et al., 2021). There are various reasons that can cause anxiety among the patient's family, including ignorance about the disease or condition experienced by their family member, as well as ignorance about the procedures given to their sick family member (Kristiano et al., 2022). Anxiety prevents the family from fulfilling their role effectively (Bagheri et al., 2022).

Anxiety management can be carried out using various methods, both pharmacological and non-pharmacological (Widyastuti et al., 2019). In facing the fears and anxieties of families of patients during surgery, spiritual belief plays a very important role, with the improvement of health service quality, especially in providing nursing care in the spiritual aspect, being an effort to reduce anxiety levels. One of the non-pharmacological interventions with a spiritual belief approach provided is the administration of zikr therapy. According to Faruq (2014, as cited in Kristiano et al., 2022) Zikr is a form of intervention that nurses might utilize in order to address the basic human needs of their patients. After practicing zikr on a regular basis, an individual will have a greater sense of closeness to Allah SWT, protected by Him, and as a result, they will experience an increase in their self-confidence, strength, sense of security, tranquility, and happiness. Biopsychologically, zikr will make a person feel calm, thereby suppressing the activity

of the sympathetic nervous system and activating the parasympathetic nervous system (Aisyatin Kamila, 2022). This is in accordance with the research by (Teguh Adi Wibowo et al., 2024) which states that the repeated mention of the name of Allah (zikr) will make a person feel calm and help individuals form a perception other than anxiety, namely the belief that any stressor can be faced well with the help of Allah. The phrases of zikr themselves contain positive meanings, Therefore, when a person who is experiencing anxiety focuses on the zikr words, the bad ideas they are experiencing will be replaced with happy thoughts.

The Encyclopedia of Indonesia defines zikr as remembering Allah SWT by internalizing His presence, holiness, praiseworthiness, and greatness, which can be expressed through recitations such as Tahlil, Tasbih, Tahmid, and Takbir. Empirical studies have shown that zikr therapy serves as an effective intervention to reduce anxiety, particularly in the elderly. As a form of Islamic worship, zikr provides both physical benefits such as restoring neural function and preventing illness and psychological benefits, including the purification of the soul from negative traits (Aisyatin Kamila, 2022). Anxiety is a physiological response characterized by the activation of the sympathetic nervous system and an increase in the stress hormone cortisol through the hypothalamic-pituitary-adrenal (HPA) axis. Excessive activation of this system can heighten amygdala activity the brain's fear center and impair emotional regulation in the prefrontal cortex (Ariño-Braña et al., 2025). Zikr, performed through rhythmic and mindful repetition of sacred phrases, functions similarly to meditation by activating the parasympathetic nervous system, suppressing hyperactivation of the HPA axis, and enhancing the release of calming neurotransmitters such as gamma-aminobutyric acid (GABA). This activation leads to a decrease in heart rate and cortisol levels, inducing relaxation and consequently reducing anxiety among family members of patients awaiting surgery (Aggarwal, 2020).

The effectiveness of zikr therapy among patients families in Indonesia is supported by the country's cultural background and high level of religiosity. As a nation with a muslim majority population, zikr has long been an integral part of daily life and religious practice. Therefore, this intervention is more easily accepted and implemented. In addition to serving as a relaxation technique, zikr also functions as a spiritual practice that fosters inner peace and emotional stability (Siti Khotijah et al., 2024). This research is very important for families waiting for patients during surgery, as anxiety can interfere with their knowledge of information and their capacity to deliver the best possible postoperative treatment for patients. The work of (Nasiri et al., 2017), indicates that The researchers intend to carry out a study investigating the impact of zikr treatment on the anxiety levels of relatives of patients undergoing fracture surgery at RS Ortopedi Dr. Soeharso Surakarta, according to the description provided above..

## RESEARCH METHOD

The research was conducted using a quantitative approach with a quasi-experimental model, specifically incorporating a pre-test and post-test control group design. The study population consisted of family members waiting for patients undergoing femur fracture surgery. Based on hospital records at Rumah Sakit Ortopedi Dr. Soeharso Surakarta from 2023 to 2024, 660 femur fracture cases were recorded. Using the Slovin formula, a total sample of 42 participants was obtained, with 21 assigned to the intervention group and another 21 assigned to the control group. Participants were selected according to pre-established inclusion and exclusion criteria by means of a purposive sampling method. The requirements for inclusion were: being Muslim, aged 20-60 years, experiencing anxiety, being a family member of patients waiting for femur fracture surgery, and able to communicate effectively. Exclusion criteria were: emergency cases, inability to communicate in Indonesian, and a history of mental disorders.

The study was conducted at Rumah Sakit Ortopedi Dr. Soeharso Surakarta from August to September 2025. Data were collected using the State-Trait Anxiety Inventory (STAI) Form-Y, with only the State Anxiety Inventory (SAI) applied, as it is more suitable for situational conditions such

as families waiting for surgery. The SAI consists of 20 items rated on a 4-point Likert scale. Previous studies reported a content validity index (CVI) of 0.92. In the research, the reliability test yielded a Cronbach's alpha of 0.860 (Siregar et al., 2022). Both groups completed a pre-test, after which the intervention group received zikr therapy for 10 minutes, while the control group received no intervention. Post-tests were then administered to both groups. Statistical analyses included univariate and bivariate tests (normality test, Wilcoxon test, and Mann-Whitney test).

This research has obtained ethical approval from the Tim Komite Etik Penelitian Rumah Sakit Ortopedi Dr. Soeharso Surakarta with ethical approval number PP.01.03/D.XXV.2.21/5422/2025. All participants, those who were in the intervention group as well as those who were in the control group received an information sheet that explained the research protocol and signed a consent form prior to the study's commencement. Anonymity and confidentiality were strictly maintained, and participants were informed of their right to withdraw at any time without consequences.

## RESULTS AND DISCUSSIONS

### Distribution of Respondents in the intervention group and control group

**Table 1.** Respondent characteristic by age, gender and highest level of education

Charateristic	Intervention group			Control group		
	n	%	Mean±SD	n	%	Mean±SD
Age			35,71 ±7,70			41,67 ±9,98
1. 20 - 30 years old	7	33,3		5	23,8	
2. 31 - 40 years old	9	42,9		3	14,3	
3. 41 - 50 years old	5	23,8		7	33,3	
4. 51- 60 years old	-			6	28,6	
Gender			1,62 ±0,49			1,67 ±0,48
1. Male	8	38,1		7	33,3	
2. Female	13	61,9		14	66,7	
Highest Level of Education			2,43±0,92			2,33 ±0,97
1. Elementary school	4	19,0		5	23,8	
2. Junior High School	6	28,6		6	28,6	
3. Senior High School/ Vocational High School	9	42,9		8	38,1	
4. Bachelor's Degree	2	9,5		2	9,5	

The demographic features of the respondents in each of the two groups are presented in Table 1. The treatment group's participants had an average age of 35.71 years and a standard deviation of 7.7 years. The control group's participants, on the other hand, had an average age of 41.67 years and a standard deviation of 9.98 years. The treatment group included a majority of respondents who were between the ages of thirty-one and forty years old (n = 9; 42.9%), whereas the control group had a majority of respondents who were between the ages of forty-one and fifty years old (n = 7; 33.3%). Furthermore, in the treatment group, there were seven persons (33.3%) who were between the ages of 20 and 30 years old. In comparison, there were five individuals (23.8%) in the control group who were in the same age range. The treatment group did not include any respondents who were between the ages of fifty-one and sixty years (0 percent), while the control group included six respondents who were in that age range (28.6 percent). With regard to gender, the treatment group was composed of 13 respondents (61.9%) who were female, whereas the control group was composed of 14 respondents (66.7%) who were female. In the treatment group, male participants made up 8 persons (38.1 percent) of the total, whereas in the control group, they included 7 individuals (33.3 percent). The number of male participants was lower than the number of female participants. The predominant proportion of the respondents in both categories had finished senior high school or technical education, with nine respondents having completed.

**Distribution of Anxiety Characteristics in the Intervention Group and Control Group**

**Table 2.** Distribution of anxiety levels

Anxiety Level Category	Intervention group				Control group			
	Pre-test		Post-test		Pre-test		Post-test	
	n	%	n	%	n	%	n	%
1. Mild	7	33,3	21	100	7	33,3	7	33,3
2. Moderate	6	28,6	-	-	8	38,1	8	38,1
3. Severe	8	38,1	-	-	6	28,6	6	28,6

Table 2 presents the distribution of anxiety levels among respondents in both the intervention and control groups. In the intervention group, pretest results indicated that most respondents were in the severe anxiety category (n = 8; 38.1%), followed by the mild anxiety category (n = 7; 33.3%) and the moderate anxiety category (n = 6; 28.6%). Following the intervention in the form of zikr therapy, posttest results demonstrated a marked improvement, with all respondents (n = 21; 100%) classified in the mild anxiety category. This indicates a significant reduction in anxiety levels after the intervention. In contrast, the control group showed no notable changes between pretest and posttest. At the pretest, the predominant proportion of respondents reported moderate anxiety (n = 8; 38.1%), followed by mild anxiety (n = 7; 33.3%) and severe anxiety (n = 6; 28.6%). Posttest findings remained identical, with respondents continuing to be distributed across the same categories with no significant reduction observed.

**Test of Normality**

**Table 3.** Normality test results

Group	Shapiro-Wilk		
	Statistic	df	Sig.
Result Pre-test A(Intervention)	.905	21	.044
Post-test A (Intervention)	.939	21	.206
Pre-test B (Control)	.931	21	.147
Post-test B (Control)	.933	21	.159

The outcomes of the studys of the Shapiro-Wilk test, which was utilized for the normality test due to the sample size of fewer than 50 participants, are presented in Table 3. A significant value of 0.044, which is less than 0.05, was found in the intervention group's pretest. indicating that the data were not normally distributed. In contrast, the posttest results in the same group showed a significance value of 0.206 (> 0.05), suggesting normal distribution. For the control group, both the pretest and posttest produced significance values of 0.147 and 0.159, respectively, both exceeding 0.05, indicating that these data sets were normally distributed. Based on these findings, because one data set (the pretest of the intervention group) Because the data did not follow a normal distribution, non-parametric statistical methods were applied. The Wilcoxon Signed Rank Test was used to analyze intra-group differences between pretest and posttest scores, while the Mann-Whitney U Test was employed to evaluate inter-group differences between the intervention and control groups.

**Wilcoxon Signed Ranks Test**

**Table 4.** Wilcoxon signed ranks test results

Test Statistic	Intervention group	Control group
Z	-4.017	-1.732
Asymp.Sig. (2-tailed)	.000	.083

The outcomes of the study Wilcoxon Signed Ranks Test are displayed in Table 4. A Z score of  $-4.017$  with  $p = 0.000$  ( $p < 0.05$ ) was produced by the test that was performed on the intervention group (zikr therapy), suggesting that the levels of anxiety within the family were significantly different between the pretest and the posttest. The Wilcoxon Signed Ranks Test was applied to the control group, and The outcomes of the studys revealed a Z value of  $-1.732$  with  $p = 0.083$  ( $p > 0.05$ ). This indicates that there was no significant difference in family anxiety levels between the pretest and posttest.

### Mann-Whitney U Test

**Tabel 5.** Mann-whitney u test results

Test Statistics <sup>a</sup>	
	Post-test
Mann-Whitney U	28.500
Z	-4.838
Asymp. Sig. (2-tailed)	.000

The outcomes of the studys of the Mann-Whitney U Test on posttest data comparing the intervention group (zikr treatment) with the control group are shown in Table 5. A Z score of  $-4.838$  with  $p = 0.000$  ( $p < 0.05$ ) was produced by the test, suggesting that following the intervention, the two groups differed significantly in levels of family anxiety.

### Discussion

The predominant age of responders in the intervention group was 31–40 years (9 respondents; 42.9%), while in the control group most were aged 41–50 years (7 respondents; 33.3%). Younger individuals tend to be more prone to anxiety disorders compared to older individuals, as the latter generally demonstrate greater maturity in cognitive processes and employ more effective coping mechanisms (Abdurahman Anwar et al., 2024). According to Hurlock, as cited in Rani Nuraini (2023), increasing age is associated with greater maturity, competence, and reliability, which stem from accumulated experience and spiritual development. This maturity enables older individuals to regulate emotions more effectively and enhances public trust in them.

Age influences one's experiences, knowledge, understanding, and responses to events, which in turn shape attitudes and perspectives. Older individuals are generally better able to accept circumstances and resolve problems they encounter, resulting in lower levels of anxiety compared to younger individuals (Mulia et al., 2021). Despite the age differences between the intervention and control groups, the dzikir intervention administered to the intervention group whose participants were, on average, younger produced significant changes and effectively reduced anxiety levels. The greater part of the participants who were in the intervention group were women, totaling 13 (61.9%), while 8 (38.1%) were male. Similarly, in the control group, 14 respondents (66.7%) were female and 7 (33.3%) were male. Thus, the predominant proportion of respondents in both groups were female. This finding is consistent with the statement of Rani Nuraini (2023), who noted that gender can significantly influence anxiety levels, with females being more vulnerable to anxiety than males. Adult males are generally considered to have stronger mental resilience when faced with threatening situations, as they tend to adopt a more rational approach that allows them to remain calm and make measured decisions. Conversely, women are more likely to rely on emotional responses, which may lead to heightened feelings of panic, rapid decision-making, and a greater focus on fears and potential negative outcomes (Rani Nuraini et al., 2023).

The predominant proportion of respondents in the intervention group had a high school/vocational school education (9 respondents; 42.9%), as did those in the control group (8 respondents; 38.1%). Education can influence a person, including their lifestyle, especially their motivation to participate in building health. Individuals with higher levels of education are better

able to assimilate information, which results in an increase in their knowledge. On the other hand, if someone does not receive an education, their ability to adopt an attitude that embraces the values that must be instilled will be negatively impacted (Suyani, 2020). The higher the education, the broader the knowledge possessed and the better the level of understanding of a concept, accompanied by sharp thinking and analysis, which in turn provides a good perception of the object being observed. It is easier to recognize pressures that originate from within oneself as well as those that come from outside sources when one has attained a sufficient level of education, so that one does not easily experience anxiety (Lestyawati Ningrum et al., 2024). Sumboko (2024) also highlighted the fact that the more education a person has had, the easier it is for them to accept new information. On the other hand, a lack of knowledge can impede the development of attitudes and the acceptance of new values, making it more difficult for individuals to adjust to different situations.

In terms of anxiety levels, before zikr therapy, the predominant proportion of the individuals who responded in the intervention group were classified as experiencing severe anxiety. (8 respondents; 38.1%). After the intervention, post-test results showed a reduction in anxiety, with all respondents in the intervention group categorized as having mild anxiety (21 respondents; 100%). In the control group, pre-test results were dominated by moderate anxiety (8 respondents; 38.1%), and post-test results showed no change, with moderate anxiety still prevailing (8 respondents; 38.1%). These findings indicate that zikr therapy significantly reduced anxiety levels among respondents.

According to research undertaken by Mujiadi (2022), reading zikr fully and repeating the names of Allah, praising, giving thanks, proclaiming that there is no God but Allah, and glorifying Him have a significant psychological impact on the individuals who practice it. This study is in agreement with these findings. Individuals are able to develop perceptions other than fear via the practice of zikr; in particular, they are able to cultivate the idea that they are capable of resolving any issues with ease with the help of Allah SWT. An individual who is accustomed to zikr will feel as though they are protected by Allah SWT and that they are close to Him. This feeling will instill in them a sense of self-assurance, fortitude, and protection, as well as a sense of happiness, tranquility, and safety (Noor, 2019).

Physiologically, spiritual therapy through zikr or remembering Allah causes the brain to work. When the brain receives external stimuli, it produces chemicals that provide a feeling of comfort, namely endorphins. Once the brain has manufactured these chemicals, they are soaked up into the body, which responds by offering feedback in the form of tranquility that soothes the body. When the body is physically relaxed, the psychological state also experiences a sense of calm, thereby reducing anxiety (Kristiano et al., 2022). In line with previous studies Kurniawati dan Sari (2024), It has been demonstrated that zikr decreases cortisol levels via increasing relaxation and reducing the activity of the hypothalamic-pituitary-adrenal (HPA) axis. A sense of tranquility is induced during zikr meditation as a result of rhythmic recitation and controlled breathing. This state of tranquility then results in a decrease in cortisol production. When cortisol levels decrease, the physiological stress response of the body is weakened, which results in a decrease in the sensations of stress and anxiety (Harahap et al., 2021).

These results indicate that by performing zikr, all types of concerns that have the potential to bring about anxiety can be alleviated since practicing zikr brings a person closer to Allah SWT, which in turn makes them feel more at ease. This is in conformity with the Word of Allah SWT, as stated in Surah Ar-Ra'du verse 28, which translates to, "Those who believe and whose hearts find peace in the remembrance of Allah, know that it is in the remembrance of Allah that hearts find peace" (Fitri Amalia et al., 2024). These findings are consistent with research conducted by Teguh Adi Wibowo (2024) which states that religious practices such as zikr can create personal tranquility and provide confidence and peace to families.

The average score in the intervention group before receiving zikr therapy indicated a moderate level of anxiety, while after the intervention, the group experienced a reduction to a mild level of anxiety. After the adoption of zikr treatment, the Wilcoxon and Mann-Whitney tests both yielded data that revealed a significant difference in anxiety levels, with a p-value of 0.000. On the other hand, the control group did not display a significant difference in anxiety levels, with a p-value of 0.083. It is possible to draw the conclusion that zikr treatment has an influence on the reduction of anxiety levels in the family members of patients who are waiting for surgery to repair a fractured femur. Based on these findings, the researcher argues that zikr therapy, performed for 10 minutes repeatedly by reciting tasbih, tahmid, and takbir each 33 times, is effective in lowering the anxiety levels of family members of patients waiting for femur fracture surgery at RS Ortopedi Dr. Soeharso Surakarta.

## CONCLUSION

The outcomes of the study of this study provide evidence that zikr therapy is an efficacious treatment for anxiety. The Wilcoxon test analysis revealed a p-value of 0.000 ( $p < 0.05$ ) in the intervention group. On the other hand, the control group produced a p-value of 0.083 ( $p > 0.05$ ). Moreover, the Mann-Whitney U test resulted in a p-value of 0.000 ( $p < 0.05$ ), which suggests that the control group and the intervention group were significantly different from each other. These findings suggest that reciting zikr can effectively lower cortisol levels by enhancing relaxation and reducing activation of the hypothalamic-pituitary-adrenal (HPA) axis. The practice of zikr meditation, which consists of rhythmic recitation and controlled breathing, might generate a sense of calmness that may result in a reduction in cortisol production. The physiological stress response is reduced as cortisol levels decrease, which results in a decrease in emotions of stress and worry. The practical implications of this study indicate that dhikr therapy can serve as a complementary nursing intervention to help reduce anxiety levels among families of muslim patients. However, the implementation of this intervention should adhere to the principle of pluralism by respecting differences in religious beliefs. For families of patients with other faiths, similar interventions may be provided through prayer according to their respective beliefs, breathing relaxation techniques, or other appropriate spiritual approaches. This study was limited to families of patients awaiting femur fracture surgery. Future research could explore this intervention in diverse settings and populations, and evaluate the effectiveness of dzikir therapy compared to other non-pharmacological interventions. For the nursing profession, these findings highlight zikr therapy as a potential innovative approach to reduce anxiety levels among family caregivers.

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