



THE EFFECT OF SEFT *VIRTUAL REALITY* THERAPY ON ANXIETY AND SLEEP QUALITY OF PREOPERATIVE PATIENTS

Saharullah¹, Muhammad Ardianto Rodin¹, Asnuddin¹, Rusli Taher², Abdul Thalib³

¹Nursing Department, Faculty of Nursing and Midwifery, Institut Teknologi Kesehatan dan Sains Muhammadiyah Sidrap, Jl. Syarif Al-Qadri No.11, Rijang Pitu, Maritengngae, Sidenreng Rappang, Sulawesi Selatan 91611, Indonesia

²Nursing Department, Universitas Graha Edukasi, Jl. Perintis Kemerdekaan, Kapasa, Tamalanrea, Makassar, Sulawesi Selatan 90245, Indonesia

³Nursing Department, Sekolah Tinggi Ilmu Kesehatan Pasapua Ambon, Jl. Suli Raya, Waiyari, Maluku Tengah, Maluku 98471, Indonesia

*saharullahullah366@gmail.com

ABSTRACT

Surgical procedures often cause anxiety that has an impact on the impaired sleep quality of preoperative patients. Untreated anxiety can hinder the surgical process and even potentially cancel surgery. Objective: To analyze the effect of Virtual Reality Spiritual Emotional Freedom Technique (VR-SEFT) therapy on the level of anxiety and sleep quality of preoperative patients at the UPT of Lamaddukelleng Hospital, Wajo Regency. The research design used a quasi-experiment with a pre and post test control group design approach. The sample totaled 60 respondents, divided into an intervention group (n=30) and a control group (n=30) through purposive sampling techniques. The intervention group received VR-SEFT therapy twice a day for three days, with a duration of 15 minutes per session, while the control group received standard preoperative treatment. Research instruments include the Hamilton Rating Scale for Anxiety (HARS-A) to measure anxiety (validity coefficients 0.529–0.727; Cronbach's $\alpha = 0.756$) and the Pittsburgh Sleep Quality Index (PSQI) to assess sleep quality (Cronbach's $\alpha = 0.64$ –0.83). Data analysis was carried out using univariate and bivariate tests with a significance level of 95% ($\alpha=0.05$). Results: There was a significant reduction in anxiety and improved sleep quality in the intervention group compared to the control ($p<0.001$). The average HARS score decreased from 35.67 to 12.83 (control: 37.20 to 23.67), while PSQI from 49.67 to 14.33 (control: 50.77 to 25.27). Effect size showed a very large influence on anxiety ($d=4.22$) and sleep quality ($d=3.19$). VR-SEFT is effective in lowering anxiety and improving the sleep quality of preoperative patients, and has the potential to be integrated into perioperative nursing practice. This finding is expected to be an innovation in health services, especially in supporting the achievement of the Sustainable Development Goals (SDGs) point 3, namely improving mental health and patient welfare.

Keywords: anxiety; preoperative patients; quality of sleep; SEFT; virtual reality

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INTRODUCTION

Surgery is one of the medical procedures that often causes psychological disorders, especially anxiety in pre-operative patients. Anxiety arises due to uncertainty about the outcome of surgery, fear of anesthesia, risk of disability, and even death. This condition can affect body functions, one of which is the quality of the patient's sleep. Several studies have shown that pre-operative anxiety is significantly associated with impaired sleep quality, pain, as well as increased postoperative analgesic needs (Gu et al., 2023).

Based on the incidence of preoperative anxiety disorders in the United States, it reaches 28% or more and it is estimated that 20% of the world's population experiences anxiety before undergoing surgery. In Indonesia, the incidence of preoperative anxiety disorders is around 80% of the impact of preoperative anxiety can be in the form of changes in vital signs, restlessness, difficulty sleeping, asking the same thing over and over again, and even frequent urination (Nisa et al., 2019). Basic Health Research shows that around 14.4 million or as much as 6.4% of the population experiences mental emotional disorders which are manifested by the manifestation of symptoms of anxiety and

depression. According to a study on anxiety levels in preoperative patients, it was found that the anxiety experienced by patients who were going to perform surgery from 30 patients, 3 patients experienced severe anxiety levels, 16 patients experienced moderate anxiety levels, and 11 patients experienced mild anxiety levels (Rismawan, 2019).

Anxiety is a reaction to a situation that is very stressful for a person's life (Narmawan et al., 2020). Anxiety often arises in patients who are about to undergo surgery. This anxiety not only bothers the patient, but also makes surgical procedures more difficult for medical personnel (de Santisteban et al., 2018). Anxiety is a reaction to a situation that is very stressful in a person's life, an enthusiastic reaction to an evaluation that describes a state of stress, tension, fear, and anxiety combined with different life circumstances (Cahya et al., 2023). High levels of anxiety can cause patients to become restless and disrupt the coordination between the patient and the medical personnel during the surgery, thus affecting the expected outcome.

Research in Indonesia also supports these findings, such as at Dr. Moewardi Hospital which reported a strong correlation ($r = 0.712$; $p = 0.000$) between anxiety and poor sleep quality in excision biopsy patients (Safdinan & Sulisetyawati, 2021) and at Imelda Workers Indonesia Hospital in Medan which found a very strong correlation ($r = 0.907$; $p = 0.000$) in pre-operative TURP patients (Siburian, 2021). International studies also confirm that fear of surgery has a negative correlation with sleep quality and has an impact on the quality of post-operative recovery (Çimen & Sürme, 2025). If not treated promptly, pre-operative anxiety can interfere with the surgical process, causing post-operative complications, and in some cases even potentially leading to surgical cancellation (Ni et al., 2023)

During the pre-operative phase, sleep is a very important need because when an individual is in treatment, the body experiences several disorders, English et al., (2018) revealed that sleep has an important role for health. Efforts to overcome this high problem by developing a combination of *Spiritual Power* and *Energy Psychology* into *Virtual Reality Spiritual Emotional Freedom Technique* (VR-SEFT) therapy. Innovation technology for the implementation of health service standards with the use of this technology in preoperative patients who experience anxiety. Thus, the success rate of this therapy is to decrease anxiety and improve sleep quality. *Virtual Reality* (VR) is a technology that allows users to interact with an environment simulated by a computer, an actual environment that can be imitated or really an environment that only exists in the imagination. SEFT is a complementary therapy that can be used to reduce psychological disturbances such as anxiety and sleep quality. *Spiritual Power* has five main principles, namely sincerity, confidence, gratitude, patience and solemnity. Chemical imbalances and energy disturbances in the human body can lead to emotional disturbances, including depression. SEFT's intervention in the body's energy system can change the chemical conditions in the brain (neurotransmitters) which can further change a person's emotional state.

METHOD

This study uses a quasi-experimental design with pre and post test control group design. A sample of 60 preoperative patients was selected purposively and divided into intervention (30 respondents) and control (30 respondents) groups. The inclusion criteria are patients aged 20–55 years, willing to be respondents, and have a planned surgery schedule, while exclusions include pediatric patients, the elderly, cito surgery, vision impairment, and medical contraindications. The instruments used were the Hamilton Rating Scale for Anxiety (HARS-A) to measure anxiety and the Pittsburgh Sleep Quality Index (PSQI) to assess sleep quality. The Indonesian version of the HARS-A has been shown to be valid and reliable, with Pearson product moment validity coefficients ranging from 0.529 to 0.727 ($r\text{-count} > r\text{-table } 0.198$) and Cronbach's alpha reliability of 0.756 (> 0.6) (Ramdan, 2019). Meanwhile, a systematic review of 37 studies confirmed that the PSQI has adequate to good internal consistency, with Cronbach's alpha coefficients ranging from 0.64 to 0.83 (Zhang et al., 2020).

The intervention group received VR-SEFT therapy for three days, twice a day, for 15 minutes each per session, while the control group received only standard preoperative treatment. After the intervention, both groups underwent post-test measurements. The data collection tool uses questionnaire sheets and VR-SEFT pre and post test applications. Data were analyzed univariately to describe respondent characteristics and study variables, and bivariate to test differences between groups with parametric or non-parametric tests according to the data distribution, at a significance level of 95% ($\alpha = 0.05$). This research has received ethical approval from the Research Ethics Committee of STIKES Nani Hasanuddin with approval letter number: No. 228/STIKES-NH/KEPK/VI/2025. All respondents were given an explanation of the objectives, benefits, and procedures of the research, and expressed consent through informed consent. The researcher guarantees the confidentiality of the respondents' personal data and ensures that participation is voluntary without coercion.

RESULT

This study involved 60 respondents divided into 30 intervention group respondents and 30 control group respondents. The average PSQI (sleep quality) and HARS (anxiety) scores before the intervention were relatively similar in both groups. After being given the Virtual Reality SEFT therapy intervention, the intervention group showed a greater decrease in PSQI and HARS scores than the control group.

Table 1.
Changes in Sleep Quality Score (PSQI) and Anxiety (HARS) of Preoperative Patients in the Control and Intervention Group after SEFT Virtual Reality Therapy

Variabel	Group	Mean ± SD (Pre)	Mean ± SD (Post)	Z	p-value
Sleep Quality (PSQI)	Control	50,77 ± 6,81	25,27 ± 4,05	-4,784	<0,001
	Intervention	49,67 ± 7,04	14,33 ± 2,68	-4,786	<0,001
Anxiety (HARS)	Control	37,20 ± 3,23	23,67 ± 2,77	-4,790	<0,001
	Intervention	35,67 ± 3,30	12,83 ± 2,79	-4,796	<0,001

*Wilcoxon Signed Rank Test

In the intervention group, the average PSQI score before therapy was 49.67 ± 7.04 , and decreased to 14.33 ± 2.68 after being given Virtual Reality SEFT therapy. Similarly, the mean HARS score before therapy was 35.67 ± 3.30 , and decreased to 12.83 ± 2.79 after the intervention. These results showed an improvement in sleep quality and a significant reduction in anxiety levels after therapy. Meanwhile, in the control group, the average PSQI score before treatment was 50.77 ± 6.81 , and decreased to 25.27 ± 4.05 after observation without special intervention. The average HARS score also decreased, from 37.20 ± 3.23 before treatment to 23.67 ± 2.77 after observation. In general, the results of the descriptive analysis showed that both groups experienced a decrease in PSQI and HARS scores, but the intervention group showed a greater decrease than the control group. This indicates that SEFT Virtual Reality therapy is more effective in lowering anxiety and improving the sleep quality of pre-operative patients.

Table 2.
Comparison of Preoperative Patients' Anxiety and Sleep Quality Scores between Intervention and Control Groups after SEFT Virtual Reality Therapy

Variabel	Mean Rank Intervention	Mean Rank Control	Z	p-value	
Sleep Quality	Pre	28,23	32,77	-1,011	0,312
	Post	16,27	44,73	-6,332	<0,001
Anxiety	Pre	25,62	35,38	-2,186	0,029
	Post	15,50	45,50	-6,676	<0,001

*Mann-Whitney U Test

The results of the Mann-Whitney U Test showed that before the intervention there was no difference in sleep quality between the intervention and control groups ($p=0.312$), while in the anxiety variable there was a significant difference ($p=0.029$). After being given Virtual Reality-SEFT therapy, the sleep quality of patients in the intervention group improved significantly compared to the control group ($p<0.001$). Similarly, patients' anxiety levels in the intervention

group decreased significantly compared to the control group ($p < 0.001$). Overall, these findings indicate that VR-SEFT therapy has a positive effect on improving sleep quality and reducing anxiety in preoperative patients, so it can be recommended as a nonpharmacological intervention in perioperative nursing practice.

Table 3.
Effect Size (Cohen's d) Changes in Sleep Quality Score (PSQI) and Anxiety Level (HARS) in Group and Intergroup in Preoperative Patients in the Operating Room

Variabel	Δ Mean Intervention	Δ Mean Control	Cohen's d In Intervention	Cohen's d In Control	Cohen's d Intergroup
PSQI	35,34	25,50	6,63 (very large)	4,55 (very large)	3,19 (very large)
HARS	22,84	13,53	7,47 (very large)	4,50 (very large)	4,22 (very large)

The results of the *effect size* analysis showed that there was a significant decrease in sleep quality (PSQI) and anxiety (HARS) scores in both the control and intervention groups. In sleep quality, the intervention group experienced a greater decline in score with Δ mean = 35.34 compared to the control group Δ mean = 25.50. Cohen's d value in the intervention group was 6.63 (very large) and in the control group 4.55 (very large). A comparison between groups at the post-test yielded Cohen's d = 3.19 (very large), which confirms that SEFT's Virtual Reality therapy was more effective in improving the sleep quality of preoperative patients. In anxiety, the intervention group also showed a higher reduction in score with Δ mean = 22.84 compared to the control Δ mean = 13.53. Cohen's d value in the intervention group was 7.47 (very large) and in the control group 4.50 (very large). The comparison between the groups yielded Cohen's d = 4.22 (very large). These results prove that SEFT Virtual Reality therapy has a strong influence in lowering anxiety levels of preoperative patients compared to without intervention.

DISCUSSION

The results of this study showed that Virtual Reality Spiritual Emotional Freedom Technique (VR-SEFT) therapy significantly lowered anxiety levels and improved the sleep quality of preoperative patients compared to the control group. A greater decrease in HARS and PSQI scores in the intervention group, as well as a very large effect size value, reinforced the effectiveness of this therapy. The findings are in line with various previous studies. SEFT, which is a development of Emotional Freedom Techniques (EFT), has been shown to reduce anxiety and improve sleep quality in a variety of populations. For example, a study in Riau in cancer patients showed a significant improvement in sleep quality after SEFT therapy, where the PSQI score decreased from 12.33 to 8.93 ($p < 0.007$) (Lisarni et al., 2022). Similar results were also found in the elderly in Aceh, where the sleep quality of the intervention group improved significantly ($p = 0.000$), while the control group did not experience significant changes (Sinaga et al., 2022). Another study in older adults with HIV found that EFT was able to lower anxiety (HADS-A score) and improve sleep quality (Qi et al., 2024).

Preoperative patients often experience anxiety due to fear of pain, complications, and surgical outcomes. This condition has an impact on increasing vital signs (heart rate, blood pressure, cortisol levels) and lowering sleep quality before surgery. Poor sleep will worsen physical condition, increase pain sensitivity, and slow down postoperative recovery (Safdinan & Sulisetyawati, 2021). The Spiritual Emotional Freedom Technique (SEFT) is an energy-based psychological intervention combined with spiritual aspects, namely prayer, gratitude, and positive affirmations. This technique is done by tapping certain points on the body (meridian tapping) while saying acceptance and prayer sentences, so that it can reduce emotional tension, improve autonomic regulation, and increase calmness and self-acceptance. A number of studies in Indonesia show that SEFT is effective in reducing anxiety in patients with hypertension, heart disease, and patients undergoing hemodialysis (Dewi et al., 2024; Irman & Wijayanti, 2022).

This mechanism is believed to reduce the activation of the limbic system and the hypothalamic–pituitary–adrenal axis (HPA axis), resulting in a decrease in cortisol levels as the main stress hormone. Decreased cortisol is directly related to reduced anxiety symptoms and improved sleep quality (Bach et al., 2019; Stapleton et al., 2020). In addition to physiological effects, SEFT involves spiritual aspects in the form of affirmations and short prayers that strengthen spiritual coping, thereby fostering a better sense of calm, resignation, and self-control (Young, 2023).

SEFT therapy has been shown to improve the quality of sleep in postoperative patients with significant results, as well as reduce anxiety in preoperative patients, for example in heart surgery. SEFT helps reduce anxiety which in turn also contributes to improving the quality of sleep of patients. The study used a quasi-experimental method with sufficient sample size and valid statistical analysis showed a decrease in anxiety and an improvement in sleep quality after SEFT therapy was administered (Prabowo, 2019; Diligent, 2018).

Meanwhile, the use of Virtual Reality (VR) as a non-pharmacological intervention is also effective in reducing preoperative anxiety. Several studies from hospitals in Indonesia showed that giving VR can significantly reduce the anxiety levels of preoperative patients, especially those who received spinal anesthesia, compared to the control group that did not receive VR intervention. This reduction in anxiety indirectly has the potential to improve the quality of patients' sleep (Islamiyah, 2024).

Virtual Reality (VR) is an immersive distraction technology that can stimulate the patient's visual and auditory systems so that they shift focus from fear, pain, and negative pre-operative thoughts. The physiological mechanisms of VR are related to the activation of the limbic system, specifically the amygdala and hippocampus, which play a role in the regulation of emotions. Exposure to a soothing virtual environment has been shown to reduce amygdala hyperactivity, increase parasympathetic activity, and reduce sympathetic responses in the form of decreased heart rate, blood pressure, and respiration (Cie'slik, 2025; Jerath et al., 2025). In addition, VR contributes to the increase in relaxation neurotransmitters such as serotonin and GABA which play an important role in facilitating sleep onset and improving sleep quality (Sharma & Dhaka, 2025).

Alimonaki et al., (2025) show that most VR interventions are effective in reducing anxiety, but the variety of research designs, types of VR, and measurement methods make the evidence still heterogeneous. In addition, Saleh (2025) also mentioned that the combination of VR-SEFT and family support was able to improve spiritual well-being, coping mechanisms, and BDNF levels, as well as reduce anxiety, although studies were conducted in non-surgical populations. Aardoom et al., (2022) evaluated an educational Virtual Reality (VR) application called Pre-View in patients who were about to undergo cardiac catheterization. The results showed that this intervention was well tolerated by patients, improving understanding of the procedure, and strengthening psychological readiness before the procedure. Although the long-term outcomes have not been studied, these findings indicate that VR has the potential to be an effective educational medium as well as a means to reduce anxiety due to pre-operative uncertainty.

The combination of SEFT with Virtual Reality technology in this study presents additional advantages. VR is able to create an immersive experience that can distract patients from negative thoughts ahead of surgery. VR presents an immersive experience in the form of visualization of a calming environment (beach, mountains, or spiritual space) that has been proven to be effective in reducing anxiety and increasing relaxation, especially in preoperative and oncology patients (Alimonaki et al., 2025; Li et al., 2025). With this integration, patients undergo SEFT tapping while in a conducive VR setting, so that attention is more distracted from fear or pain, and spiritual affirmations can be more profound. In addition, the combination of VR and SEFT results in a strong synergy, where VR provides external distractions by creating an immersive relaxation environment, while SEFT stimulates internal regulation through neuroendocrine and spiritual modulation. The integration of the two stabilizes the autonomic nervous system, increases parasympathetic

dominance, lowers cortisol, as well as stimulates the release of relaxation neurotransmitters. The end result is a reduction in pre-operative anxiety while improving the quality of patients' sleep (Ahn et al., 2025; De Zambotti et al., 2020).

Preliminary research related to VR-SEFT in the field of nursing showed a significant decrease in anxiety levels and increased patient comfort compared to the control group (Bakkarang et al., 2024; Saharullah et al., 2024). Although the evidence is still limited and mostly quasi-experimental studies, the results support that VR-SEFT has the potential to be an inexpensive, safe, and easily applicable nonpharmacological intervention in nursing practice. The effectiveness of VR-SEFT has also been tested in other contexts, such as research at the Makassar Class I Detention Center on drug rehabilitation patients. The results showed a significant decrease in anxiety and cortisol levels after 24 sessions of VR-SEFT, compared to the control group that did not experience significant changes (Bakkarang et al., 2024). These findings reinforce the evidence that combining spiritual techniques with immersive technology has a real physiological and psychological impact.

Research by Baytar & Bollucuo (2023) also proves that the use of VR in septorhinoplasty patients has succeeded in significantly reducing preoperative anxiety, even affecting the patient's hemodynamic stability. This is reinforced by a meta-analysis in pediatric patients that showed 7 out of 8 VR interventions successfully reduced preoperative anxiety (Benchimol-Elkaim et al., 2024). In practice, this intervention is carried out by preparing patients using VR headsets that display relaxation content, then the facilitator guides the patient through the SEFT session, starting from measuring anxiety levels with the Subjective Units of Distress Scale (SUDS), tapping at meridian points, saying spiritual affirmations, to closing with prayer and evaluation. Session durations are generally 15–20 minutes as recommended by EFT and VR-relaxation protocols (El-Gabalawy et al., 2024; Saharullah et al., 2024).

The expected effects are a decrease in anxiety scores, a decrease in vital signs such as pulse rate and blood pressure, and an increase in patient comfort (Dewi et al., 2024; Ferrer Costa et al., 2025; Li et al., 2025). Thus, this study is consistent with empirical evidence that preoperative anxiety is closely related to poor sleep quality (Safdinan & Sulisetyawati, 2021; Siburian, 2021) VR-SEFT intervention is able to break the cycle by reducing anxiety so that the quality of sleep of preoperative patients increases. From a nursing perspective, the implementation of VR-SEFT is in line with a holistic care approach that pays attention to the physical, psychological, and spiritual aspects of patients. These interventions can also be a safe, inexpensive, and effective non-pharmacological alternative to support patient preparation ahead of surgery.

CONCLUSION

This study proves that Virtual Reality Spiritual Emotional Freedom Technique (VR-SEFT) therapy is effective in reducing anxiety levels and improving the quality of sleep of Pre-operative patients at Lamaddukkelleng Hospital. The intervention group showed a much greater reduction in HARS (anxiety) and PSQI (sleep quality) scores than the control group, with a very large effect size value. These results confirm that VR-SEFT can be a safe, low-cost, and easy-to-apply alternative to nonpharmacological interventions in nursing practice, while supporting a holistic care approach that includes the physical, psychological, and spiritual aspects of patients prior to surgery.

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