The effect of virtual reality spiritual emotional freedom technique (Vr-seft) therapy on anxiety and cortisol in drug patients in Makassar class I state detention center

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Abstract Drug abuse is a global problem that is increasing every year. Various previous studies have described the magnitude of psychological disorders and the impact of drug use as quite serious. Nonpharmacological measures such as spiritual direction are stated to reduce anxiety and depression in drug treatment patients significantly. *Virtual Reality Spiritual Emotional Freedom Technique* (VR-SEFT) is designed based on SEFT theory applied to interactive visualization of virtual environments. This study aims to determine the effect of VR-SEFT therapy on anxiety and cortisol hormone levels in drug patients at Makassar Class I State Prison. This research employs a quasi-experimental methodology utilizing a control group design with both pre-test and post-test assessments. The analysis was carried out on 66 respondents who were divided into 2 groups, 33 intervention group respondents and 33 control groups in Makassar Class I State Detention Center selected using *consecutive sampling*. The intervention group given VR-SEFT was carried out for eight weeks with 24 meetings. Each intervention was 15-20 minutes, while the control group was assigned standard rehabilitation care. HRS-A measured fatigue in both groups, and the ELISA method measured cortisol hormone levels. The median values of anxiety and cortisol in both groups before SEFT therapy showed a tending score, but after treatment, it was known that the intervention group given VR-SEFT therapy experienced a significant decrease in anxiety scores (mean rank = *32.73) and cortisol (mean rank = 32.73) (p < 0.05) compared to anxiety scores (mean rank = 48.11) and cortisol (mean rank = 34.27) in the* control group. There is an effect of VR-SEFT on anxiety and cortisol hormone levels in drug patients at Makassar Class I State Detention Center.

Keywords: virtual reality, spiritual emotional freedom technique, anxiety, cortisol, drug patient

1. Introduction

Drug abuse cases have increased since 2017 to 5.0 million in 2020, with a recurrence rate of 65.17% (BNN, 2022). This figure shows the magnitude of the potential for relapse in drug users. Anxiety disorders have a concerning impact on substance abuse. Individuals who are dependent on substances experience mood disorders at a rate that is 4.7 times higher than that of the general population (Ross et al., 2016) Basic Health Research (RISKESDAS) 2018 states untreated anxiety disorders impact health, quality of life, and social relationships (Kemenkes RI, 2018).

The World Health Organization (2019) states that stress is a reaction or body response to psychosocial (mental pressure or life burden). When anxiety occurs, the hormone cortisol is secreted by *the hypothalamus pituitary adrenal* (HPA) (WHO, 2019). High levels of the hormone cortisol in the body cause decreased immune function and immune dysregulation (Schmidt et al., 2016; Thong et al., 2020) as well as having an impact on worsening depression (Burke et al., 2005; Fiksdal et al., 2019; Nandam et al., 2019). Several other studies have shown that stress and depression conditions can reduce BDNF levels (Zhang et al., 2016; Phillips, 2017; Koo et al., 2019; Meng et al., 2020)

In addition to pharmacological therapy, there are nonpharmacological actions that can be taken by nurses in handling drug-positive patients. This therapy is considered to cause fewer side effects than the use of drugs (Garrett et al., 2020). Among individuals with patients testing positive for drugs, the most frequently employed complementary methods and products include vitamin/mineral supplements, prayer therapy, intercessory practices, chiropractic/osteopathic adjustments, and herbal remedies (Anderson, 2012). In addition, spiritual direction has also been found to significantly reduce anxiety and depression in patients (Grossoehme et al., 2020). Nonpharmacological approaches available for patients with drug-related issues encompass a wide range of interventions. These include communication and coordination methods, which can be delivered through written materials, media channels, or healthcare providers. Additionally, complementary and alternative therapies can be employed, such as acupuncture, art therapy, and interventions involving caregivers or support partners. Other options comprise expressive writing, hypnosis or hypnotherapy, meditation, progressive muscle relaxation, guided imagery, reflexology, reiki, relaxation therapy, and visual imagery interventions. Structured rehabilitation services, virtual reality, vitamin/mineral supplements, prayer therapy, intercessory prayer, chiropractic/osteopathic manipulation, herbal remedies, and yoga are also among the nonpharmacological interventions available for these individuals (Smith et al., 2012).

SEFT is a method that integrates the body's energy system, often referred to as energy medicine, with spiritual healing. This approach involves the application of gentle tapping, known as tapping, at specific points on the body (Zainuddin, 2009). SEFT has been widely used as a companion therapy to reduce anxiety (Hadju et al., 2021; Lindner et al., 2021; Sargut et al., 2022).

Today, there are many health interventions combined with technology. Among these options, virtual reality (VR) stands out. VR is a technological advancement that enables individuals to engage with a computer-generated simulation of an environment, whether replicating a real-world setting or existing purely in the realm of imagination (Wirga et al., 2014). *VR* has been widely combined with nonpharmacological techniques to improve patient comfort (Pizzoli et al., 2019; Shetty et al., 2019; Lahti et al., 2020) or become an attractive health education medium in various populations (Ng et al., 2018; Kyaw et al., 2019; Mäkinen et al., 2020; Luo et al., 2021). VR-SEFT combines SEFT concepts visualized in an interactive virtual environment so that users experience a lifelike experience. The use of VR as an educational medium for SEFT has never been done before and is the latest method in this study. Therefore, the study sought to see how VR-SEFT therapy was able to affect anxiety and cortisol in drug patients.

2. Materials and Methods

The methodology employs a quasi-experimental design utilizing a pre-test and post-test control group approach. The sample is obtained through a consecutive sampling technique. Researchers conduct *screening* based on inclusion and exclusion criteria. Furthermore, the respondents filled out a research instrument containing the characteristics of respondents and filled out anxiety questionnaires and blood sampling as a *pre-test.* The researchers grouped respondents into intervention and control groups, each containing 33 respondents (total of 66 respondents). Inclusion Criteria: Drug Resident ≤ 1 month of treatment, Patients aged 18-45 years, Patients experiencing anxiety, Willing to be respondents. While Exclusion Criteria: Patients / families who refuse to sign informed consent, Patients who have speech disorders.

The VR-SEFT Intervention Protocol consists of 2 stages, the preparation phase which lasts for 12 minutes consists of self-introduction to respondents, filling out inform consent, filling out anxiety questionnaire and basic introduction to VR-SEFT therapeutic intervention & making a time contract for the implementation of the activity. The next stage is the implementation stage which lasts for 15 minutes consisting of the intention to heal, set a relaxed position, pray for healing, Start the SEFT procedure: *the set up, the tun in, and the tapping,* deep breathing techniques and say hamdalah (Alhamdulillahi rabbil alamin)

The intervention group received VR-SEFT therapy thrice a week for eight weeks (24 meetings). The duration of each intervention is 15-25 minutes. Each VR-SEFT session is completed, and researchers fill out an observation sheet stating that the patient has done VR-SEFT therapy. At the 24th meeting, researchers re-measured anxiety and cortisol hormones in each intervention group patient as post-test values*.* The control group received treatment according to rehabilitation standards. In week 8, respondents were asked to complete a *post-test* questionnaire sheet. Next, researchers gave one VR-SEFT therapy to the control group.

The Hamilton Rating Scale measures anxiety variables *for Anxiety* (HRS-A), which has been valid and reliable, and cortisol hormone checking. The enzyme-linked immunosorbent assay (ELISA) method measured cortisol hormone through venous blood respondents. The respondents' blood samples were put into a sealed glass container and taken to the HUM-RC UNHAS laboratory using a unique bag.

The research has also fulfilled the administrative procedures applicable in the Makassar Class I State Detention Center (RUTAN) unit, and based on the principles (Polit & Beck, 2010), namely *respect for human dignity*, respect for privacy and confidentially (confidentiality, respect for justice inclusiveness*),* balancing harm and benefits (balanced between advantages and disadvantages). Statistical test analysis uses non-parametric because the data is not normally distributed (*Shapiro-Wilk* normality test $p < 0.05$), so the difference test in this study uses the *Wilcoxon signed-rank test* and *Mann-Whitney test.*

3. Results

3.1. Characteristics of Respondents

In this study, the total number of respondents in both groups was 66 drug patients, with the characteristics of each group shown in Table 1. Table 1 shows that the average age of respondents in the intervention group (VR-SEFT) is 27 years, with an age range of 19-54 years, while respondents in the control group have an average age of 29 years (range 18-45 years). The table above shows that age, education, and occupation characteristics tend to be the same or homogeneous, but not in sex characteristics. In the intervention group, the percentage of female respondents was 21.2%, and in the control group, only 3%.

3.2. Differences in Anxiety Scores and Cortisol Levels (Before and After Treatment) in Both Groups

Table 2 shows that both groups showed significant differences in scores between anxiety levels and cortisol levels before and after treatment in the form of SEFT therapy with *p* values <0.05. However, the intervention group (VR-SEFT) was found to have a better score of reduced anxiety levels and cortisol levels than the control group (SEFT *therapy standard* booklet).

3.3. The Effect of VR-SEFT Therapy on Fatigue and Cortisol in Drug Patients at Makassar Class I State Prison

This study showed the effect of SEFT therapy on anxiety and cortisol in drug patients. The following table shows the differences in anxiety and cortisol levels between the two groups. Based on Table 3, it can be seen that there was a significant difference in anxiety levels and cortisol levels between the intervention group and the control group, with a *p-value* of <0.05. In addition, *the mean rank* of anxiety and cortisol levels in the intervention group (anxiety level = 18.89; cortisol level = 18.00) showed lower scores than the control group (anxiety level = 48.11; cortisol level = 49.00). This suggests VR-SEFT therapy more effectively lowers anxiety and cortisol levels in drug casein.

Table 1 Characteristics of respondents of the intervention group and control group.

Respondent Characteristics	Respondents				*p*
	Intervention (n=33)		Control (n=33)		
	N	%	N	%	
Age	27,36 (19-54)		29,33 (18-45)		0,307
Gender					
Man	26	78,8	32	97	0,024
Woman	7	21,2	1	3	
Education level					
Primary school	4	12,1	8	24,2	0,067
Junior high school	4	12,1	7	21,2	
High School	24	72,7	18	54,5	
Bachelor	1	3,0	-	-	
Work					
Doesn't work	8	24,2	7	21,2	0,347
Daily/construction workers	4	12,1	7	21,2	
Self-employed	7	21,2	6	18,2	
Private sector employee	5	15,2	6	18,2	
Driver	2	6,1	3	9,1	
IRT	2	6,1	2	6,1	
Parking officers	4	12,1	1	3	
IRT	1	3,0	1	3	

Source: Saharullah (2023).

Table 2 Differences in anxiety levels and cortisol levels in the intervention group and the control group.

Group	Variable	Median (Minimum-Maximum)	*p*
Intervention	Previous Anxiety Level	51,00 (16-107)	<0,001*
	Anxiety Level After	16,00 (7-36)	
	Previous Cortisol Levels	26,68 (13,61-32,68)	<0,001*
	Cortisol Levels After	9,33 (2,45-18,97)	
Control	Previous Anxiety Level	51,00 (15-97)	<0,001*
	Anxiety Level After	44,00 (19-89)	
	Previous Cortisol Levels	27,06 (3,88-32,04)	<0,001*
	Cortisol Levels After	20,18 (11,59-28,09)	

Source: Saharullah (2023). *Wilcoxon Test.*

Table 3 Analysis of differences in anxiety levels and cortisol levels between the intervention and control groups.

Variable	Median (Minimum-Maximum)	Mean Rank	p
Anxiety Level			
Intervention Group	16,00 (7-36)	18,89	<0,001*
Control Group	44,00 (19-89)	48,11	
Cortisol Levels			
Intervention Group	9,33 (2,45-18,97)	18,00	<0,001*
Control Group	20,18 (11,59-28,09)	49,00	

Source: Saharullah (2023). *Mann-Whitney test.*

4. Discussion

Males were the most addicts in the study's findings compared to females and were mostly those with low levels of education, whereas highly educated were only a handful of people. Income is not a strong boost in using drugs, as evidenced in this study, most respondents earn regional minimum wage, but the motivation in using drugs is solely for work reasons to stay fit for activities (Table 1).

This study showed that VR-SEFT significantly reduced anxiety levels in the intervention group. SEFT, combined with *virtual reality,* provides a safe and distraction-free therapeutic environment from the outside environment. Optimizes SEFT delivery to obtain the desired output. This study's results align with previous studies, which also found SEFT to be a significant therapy in lowering anxiety. VR features a virtual environment that can stimulate the visual cortex in the brain, limiting the user's attention to pain stimuli thereby reducing the perception of anxiety (Lindner et al., 2021; Sargut et al., 2022).

Anxiety is a person's subjective feeling, a vague feeling of discomfort or worry accompanied by an autonomic response or fear caused by anticipation of danger (Herdman & Kamitsuru, 2018). Subjective feelings may change frequently with exposure to a person's situation. McMahon and Boeldt (2022) state that entering a safe and peaceful VR environment can help clients alleviate their fears and tensions. The conducive VR environment allows participants to SEFT more efficiently and without environmental distractions. This process may explain VR-SEFT's great potential as one of the anxiety management therapies through distraction and comfort provision (McMahon & Boeldt, 2022).

SEFT involves stimulating energy at the energy point of the body while reciting prayers and surrendering to God, focusing on positive thoughts and experiences, diverting negative thoughts, increasing relaxation, and eliminating adverse physical and mental disorders (Zainuddin, 2009; Firmansyah et al., 2021). In this study, the SEFT procedure displayed in VR differs from conventional media use. Instructions will appear on the VR screen, and responders follow The Set Up, Tun In, and Tapping instructions. The use of VR facilitates a more immersive and passionate SEFT. Self-approach to God will scientifically provide a calming effect, promote relaxation, and eliminate adverse physical and mental disorders, stimulating the release of endorphins in the brain that positively impact mood and memory. According to McMahon and Boeldt (2022), VR can be used at various *anxiety therapy stages, including in this study's respondents,* who mainly experienced severe anxiety in the *pre-test* session. This data shows that attention to nursing measures is needed to reduce anxiety in drug-positive patients—drug patients who undergo rehabilitation experience physical and psychological problems (Hadju et al., 2021).

The study's results on cortisol hormone levels showed a significant decrease between before and after SEFT therapy (Table 2). In addition, the test results of differences between the two groups also showed a significant difference. The intervention group given SEFT therapy using VR technology was more likely to reduce anxiety and cortisol levels than the control group given the usual rehabilitation therapy standard (Table 3). This study aligns with Hadju et al. (2021), who found significant differences in cortisol hormone levels between the intervention and control groups after the SEFT intervention. Previous research observed cortisol levels in respondents given a *trier social stress test*, finding that the peak of cortisol increase occurred 10 minutes later (Maeda et al., 2022). According to Dziurkowska and Wesolowski (2021), cortisol increases during stressful situations. The VR-SEFT procedure in this study was carried out for 15-25 minutes each meeting. The duration of this intervention exceeded the estimated peak time cortisol increased (35).

Persistently high cortisol levels can lead to toxic psychological effects, changes in the central nervous system, and worsening depression (Church et al., 2012; Dziurkowska & Wesolowski, 2021). Collaborative and independent nursing actions should be carried out continuously to anticipate spikes in cortisol levels and the occurrence of recurring anxiety. According to Jones and Gwenin (2021), factors that affect cortisol secretion include activation of stress responses, history of substance abuse, antisocial behavior and genetic risk of addiction disorders, lack of social support, stress, regular exercise, healthy lifestyle, social support, minimization of stressful situations.

The intervention group received SEFT therapy implemented through Virtual Reality (VR) technology in this research. VR technology facilitates users in navigating and interacting with computer-generated 3D multimedia environments in real-time, enabling them to acquire practical knowledge through immersive experiences (Kyaw, Saxena, Posadzki, Vseteckova,

Nikolaou, George, Divakar, Masiello, Kononowicz, Zary, & Tudor Car, 2019). VR is effective as an aid in therapeutic activities for various medical conditions (Liu et al., 2022).

VR technology has been extensively applied in treating and treating various mental health conditions, including phobias, post-traumatic stress disorder (PTSD), eating disorders, psychosis, autism spectrum disorders, and substance-related addictions. Its versatility makes it a valuable tool in addressing these conditions (Emmelkamp & Meyerbröker, 2021). According to Boeldt et al. (2019), using VR-based technology can improve access and effectiveness of exposure therapy, improve treatment for patients with anxiety disorders, and potentially help assess and standardize therapist training. Another study also reported that VR may be a tool that can be considered in therapy to simulate the environment in patients with anxiety disorders (Donnelly et al., 2021).

There are several things to consider in the use of VR technology, namely the development of relevant VR content to create the right therapeutic experience for patients or drug users and ensure that the VR experience is safe and comfortable for users by avoiding potential side effects as well as the duration of use. According to Mitrousia and Giotakos (2016) and Park and Lee (2020), although VR offers several advantages to anxiety therapy, VR can also provide side effects such as tired eyes, nausea, dizziness, and headaches. This side effect can be prevented by setting the recommended duration of VR use, which is 30 minutes to one hour (Szpak et al., 2020). The study's results confirmed the potential for SEFT therapy using VR technology (VR-SEFT). It should also be understood that VR-SEFT is a nonpharmacological therapy without ruling out pharmacological treatment. Doctors and nurses must ensure these two therapies go hand in hand in patients with severe anxiety levels.

5. Conclusions

VR-SEFT therapy affects fatigue and cortisol in Makassar Class I State Prison drug patients. The use of VR technology in conducting SEFT therapy is known to be more effective in reducing anxiety levels and cortisol hormone levels in drug patients at the Makassar Class I State Detention Center. Therefore, the use of VR-SEFT in drug patients can be one of the therapeutic recommendations to overcome anxiety during the adaptation period in narcotics prison. The use of VR-SEFT can also be developed with health education about the dangers of drugs in patients in narcotics prisons.

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Ethical considerations

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Conflict of Interest

There are no conflicts of interest.

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