Indonesian Journal of Global Health Research
Volume 7 Number 5, October 2025
e-ISSN 2715-1972; p-ISSN 2714-9749
http://jurnal.globalhealthsciencegroup.com/index.php/IJGHR

THE EFFECTIVENESS OF AUTOGENIC RELAXATION ON SLEEP QUALITY AND FATIGUE LEVELS IN CANCER PATIENTS UNDERGOING CHEMOTHERAPY

Uni Afriyanti[1*], Muhammad Ra'uf[1], Candra Kusuma Negara[2], Ricky Prawira[2]
[1]Department of Nursing, Universitas Muhammadiyah Banjarmasin, Jln. S. Parman, Islamic Hospital Complex, Ps. Lama, Central Banjarmasin, Banjarmasin, South Kalimantan 70116, Indonesia
[2]Faculty of Medicine and Health Science, Universitas Lambung Mangkurat, Jl. Brigjend H. Hasan Basri, Pangeran, Banjarmasin Utara, Banjarmasin, Kalimantan Selatan 70123, Indonesia
*uni28afka13@gmail.com

ABSTRACT
Fatigue and sleep disturbances are two common symptoms experienced by cancer patients undergoing chemotherapy. These conditions negatively impact quality of life and the effectiveness of treatment. One promising non-pharmacological approach is autogenic relaxation, a relaxation technique that combines self-suggestion, controlled breathing, and focused attention on bodily sensations to achieve physical and mental calmness. This study aims to evaluate the effectiveness of autogenic relaxation in improving sleep quality and reducing fatigue levels in cancer patients undergoing chemotherapy. The study employed a quasi-experimental design with a pretest–posttest and control group. A total of 30 patients were divided into two groups: intervention (n = 15) and control (n = 15). The sampling technique used was purposive sampling. The intervention was conducted for two weeks, twice a day, using an audio guide. Sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI), and fatigue was assessed using the Fatigue Assessment Scale (FAS). The intervention group showed a decrease in mean PSQI scores from 11.2 to 8.1 (p = 0.017) and FAS scores from 34.5 to 28.3 (p = 0.031). Data analysis was performed using the Shapiro–Wilk normality test, followed by the Wilcoxon test for analysis within groups, and the Mann–Whitney test for between groups. The control group did not show any significant changes. These results indicate that autogenic relaxation stimulates a physiological relaxation response that contributes to improved sleep and reduced fatigue. Autogenic relaxation is an effective and applicable non-pharmacological supportive intervention for cancer patients during chemotherapy.

Keywords: autogenic relaxation; cancer; chemotherapy; fatigue; sleep quality

How to cite (in APA style)
Afriyanti, U., Ra'uf, M., Negara, C. K., & Prawira, R. (2025). The Effectiveness of Autogenic Relaxation on Sleep Quality and Fatigue Levels in Cancer Patients Undergoing Chemotherapy. Indonesian Journal of Global Health Research, 7(5), 553-558. https://doi.org/10.37287/ijghr.v7i5.6829.

INTRODUCTION

Cancer is one of the major global health problems that continues to increase both in incidence and mortality. GLOBOCAN 2020 reported approximately 19.3 million new cancer cases worldwide, with a mortality rate reaching 9.9 million deaths (Barclay et al., 2024). In Indonesia, the prevalence of cancer has also shown an upward trend, rising from 1.4% to 1.79% according to the 2023 Riskesdas data, with the highest incidence recorded in the Special Region of Yogyakarta at 4.86 per 1,000 population (Bahaji1 et al., n.d.). In South Kalimantan Province, cancer is the leading cause of death, with breast and cervical cancers being the most common types (Kalselprov, 2023).In addition to the physical burden caused by the disease and its treatment, cancer patients often experience a variety of psychological and physiological problems that significantly affect their quality of life. Two of the most commonly reported complaints among cancer patients are fatigue and sleep disturbances. Fatigue in cancer patients is not merely ordinary tiredness, but rather a persistent condition that does not improve with rest and impacts daily functional activities (Dun et al., 2022). Meanwhile, sleep disturbances include difficulty falling asleep, maintaining sleep, and experiencing unrefreshing sleep (Büttner-Teleagă et al., 2021). These problems are often

exacerbated by side effects of cancer therapies such as chemotherapy and radiotherapy, chronic pain, and anxiety related to the illness (Momayyezi et al., 2021).

Research has shown that sleep disturbances are associated with increased stress hormone (cortisol) levels, reduced immune function, and disrupted healing processes (Büttner-Teleagă et al., 2021). Chronic fatigue is also linked to lower adherence to therapy, increased hospital readmissions, and an overall decline in quality of life (Dun et al., 2022; Momayyezi et al., 2021). Furthermore, fatigue and sleep disturbances can form a vicious cycle that worsens both conditions: fatigue interferes with restful sleep, while lack of sleep exacerbates fatigue. If not effectively addressed, these conditions can hinder the recovery process and even affect the success of cancer treatment.Various efforts have been made to manage sleep disturbances and fatigue in cancer patients, through both pharmacological and non-pharmacological approaches. The use of sleeping pills, analgesics, or hormone therapy is often the first choice, but these come with the risk of dependence and long-term side effects (Vaziri et al., 2025). Meanwhile, non-pharmacological approaches such as light exercise, psychological counseling, and relaxation techniques have been widely implemented with varying results. However, most of these methods require professional supervision and special facilities, which are not always accessible to all patients (Wang et al., 2024).

In this context, autogenic relaxation emerges as a practical, safe, and self-administered non-pharmacological intervention. Autogenic relaxation is a self-suggestion-based relaxation technique developed by Johannes Schultz, aimed at inducing a state of physiological relaxation through breathing regulation, muscle relaxation, and body sensation awareness (Kohlert et al., 2022). This technique activates the parasympathetic nervous system, which physiologically lowers heart rate, blood pressure, and muscle tension, thereby producing a calming overall effect (Astutik et al., 2022; Kohlert et al., 2022). Autogenic relaxation has been proven effective in reducing chronic pain, improving sleep quality, and alleviating symptoms of depression and anxiety in various patient populations (Ramirez-Garcia et al., 2021).However, despite its widespread use, scientific evidence regarding the effectiveness of autogenic relaxation in cancer patients experiencing fatigue and sleep disturbances, particularly in Indonesia, remains limited. Most previous studies have employed a one-group pretest–posttest design without a control group, or have only evaluated the short-term effects of a single intervention session. Therefore, there is a need for more systematic research using structured intervention protocols with adequate duration and internationally validated instruments. This study aims to evaluate the effectiveness of autogenic relaxation on sleep quality and fatigue levels in cancer patients undergoing chemotherapy at RSUD Banjarmasin.

METHOD

This study employed a quasi-experimental design with a pretest–posttest control group approach. The aim was to evaluate the effectiveness of autogenic relaxation intervention on sleep quality and fatigue levels in cancer patients undergoing chemotherapy. This research was conducted at the Banjarmasin Regional General Hospital (RSUD Banjarmasin) and has passed ethical approval with number 332/BAIN/ET.1/IV/2025. The sampling technique used is purposive sampling. The sample consisted of 30 cancer patients who met the inclusion criteria: aged ≥ 18 years, currently receiving active chemotherapy, experiencing sleep disturbances (PSQI score >5), and suffering from moderate to severe fatigue (FAS score ≥22). Respondents with severe mental disorders, in critical condition, or unable to follow audio instructions were excluded from participation. The 30 respondents were evenly divided into two groups: 15 in the intervention group and 15 in the control group. The intervention group received training and guidance in performing autogenic relaxation, a self-suggestion-based relaxation technique aimed at activating the parasympathetic nervous system. This exercise involved a series of suggestive phrases mentally repeated slowly and repeatedly, such as: "My

hands feel warm," "I feel calm," or "My heartbeat is steady." During the session, patients were instructed to sit or lie down in a comfortable position (semi-Fowler or supine), close their eyes, and focus on bodily sensations while listening to an audio guide. Each session lasted 15–20 minutes and was performed twice daily—at 08:00 AM and 07:00 PM—for two consecutive weeks. The audio guide was delivered in simple Indonesian to ensure comprehensibility and was played in a quiet, minimally disturbed inpatient room. The control group did not receive any additional intervention and continued with standard medical care. Sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI), and fatigue was assessed using the Fatigue Assessment Scale (FAS), both at pretest and posttest. Data analysis began with the Shapiro–Wilk test for normality, followed by the Wilcoxon signed-rank test for within-group analysis and the Mann–Whitney U test for between-group comparison. The level of significance was set at $p < 0.05$.

RESULT

Respondent Characteristics

Table 1.
Respondent Characteristics (n=30)

Characteristics	Category	Intervention Group (n=15)	Control Group (n=15)	Total (n=30)
Gender	Male	4 (26.7%)	5 (33.3%)	9 (30%)
	Female	11 (73.3%)	10 (66.7%)	21 (70%)
Age (years)	30-39	2 (13.3%)	1 (6.7%)	3 (10%)
	40-49	4 (26.7%)	5 (33.3%)	9 (30%)
	50-59	6 (40%)	5 (33.3%)	11 (36.7%)
	≥60	3 (20%)	4 (26.7%)	7 (23.3%)
Type of Cancer	Breast Cancer	5 (33.3%)	6 (40%)	11 (36.7%)
	Cervical Cancer	3 (20%)	2 (13.3%)	5 (16.7%)
	Lung Cancer	2 (13.3%)	2 (13.3%)	4 (13.3%)
	Colorectal Cancer	2 (13.3%)	1 (6.7%)	3 (10%)
	Ovarian Cancer	1 (6.7%)	2 (13.3%)	3 (10%)
	Others	2 (13.3%)	2 (13.3%)	4 (13.3%)

Based on table 1, the majority of respondents in both groups were female (70%), with the most common age range being 50–59 years (36.7%), and an average age of approximately 53 years. The distribution of age and gender was relatively balanced between the intervention and control groups, thereby minimizing potential outcome bias. The most prevalent type of cancer was breast cancer (36.7%), followed by cervical cancer (16.7%), lung cancer (13.3%), colorectal cancer (10%), ovarian cancer (10%), and other types (13.3%). This diversity in characteristics reflects the general cancer patient population and indicates that both groups had comparable baselines prior to the intervention

Comparison of Sleep Quality and Fatigue Levels Between Intervention and Control Groups

Table 2.
Comparison of Sleep Quality and Fatigue Levels Between Intervention and Control Groups

Variable	Time	Intervention Group (n=15)	Control Group (n=15)	p-value*
PSQI	Pretest	11.2	10.9	0.681
(Sleep Quality)	Posttest	8.1	10.6	0.017
FAS	Pretest	34.5	33.8	0.693
(Fatigue Level)	Posttest	28.3	33.1	0.031

*Statistical test: Mann–Whitney test (due to non-normal data distribution). p-values

<0.05 were considered statistically significant.

According to Table 2, the intervention group experienced a decrease in PSQI scores by 3.1 points and FAS scores by 6.2 points, which were statistically significant compared to the control group ($p < 0.05$). This indicates that autogenic relaxation had a positive impact on both sleep quality and fatigue levels.

DISCUSSION

The findings of this study indicate that a two-week autogenic relaxation intervention significantly improved sleep quality and reduced fatigue levels in cancer patients undergoing chemotherapy. Both measured variables—the PSQI score for sleep quality and the FAS score for fatigue—showed statistically significant reductions in the intervention group compared to the control group. These results align with previous studies demonstrating that self-suggestion-based relaxation techniques can reduce sympathetic nervous system activity, enhance physiological calmness, and gradually restore sleep function and energy levels in patients with chronic illnesses(Kohlert et al., 2022).Physiologically, autogenic relaxation works by activating the parasympathetic nervous system through structured, repetitive suggestive statements such as "my arms feel heavy" or "my breathing is calm." This technique stimulates the release of relaxation hormones like serotonin and melatonin, lowers cortisol (the stress hormone), and stabilizes heart rate and blood pressure (Novita & Wahyuningsih, 2024). This mechanism explains the observed improvement in sleep quality in the intervention group. The PSQI score, initially in the "poor" category (mean 11.2), decreased to 8.1 post-intervention, indicating improvements in various sleep aspects, including sleep latency, duration, efficiency, and nighttime disturbances. Although the final score did not reach the clinical threshold for good sleep quality (PSQI < 5), the improvement was statistically significant ($p = 0.017$), suggesting that this intervention provided tangible benefits in a short period.

The positive impact on sleep quality is particularly crucial, as cancer patients often experience insomnia or secondary sleep disturbances due to pain, chemotherapy side effects, anxiety, or hormonal changes. (Büttner-Teleagă et al., 2021) found that over 60% of cancer patients suffer from sleep disorders during active treatment, which directly correlates with reduced quality of life and increased depression risk. Thus, the success of autogenic relaxation in improving sleep highlights its potential as a non-pharmacological supportive intervention to complement primary medical therapy. Additionally, this study found that fatigue scores (FAS) in the intervention group significantly decreased from 34.5 to 28.3 ($p = 0.031$), reflecting a shift from severe fatigue to the lower range of moderate fatigue. In contrast, the control group showed no meaningful changes. These findings are consistent with Wang et al.'s (2024) meta-analysis, which concluded that relaxation interventions like autogenic training and progressive muscle relaxation significantly reduce fatigue in cancer patients, especially when practiced regularly and systematically. Cancer-related fatigue stems not only from chemotherapy but also from accumulated psychological stress, sleep disturbances, and metabolic decline. Relaxation techniques mitigate fatigue perception by enhancing cognitive control over bodily sensations and reducing chronic muscle tension. The significant reduction in FAS scores may also be linked to the psychological effects of this technique. Many patients reported feeling more "connected" to their bodies during practice and experienced greater calmness and stress management post-session. This is important because subjective fatigue perception is often influenced by emotional states such as anxiety, illness-related uncertainty, and helplessness (Lu et al., 2022). By increasing body awareness and mental tranquility, autogenic relaxation helps patients break the stress-fatigue cycle common during cancer treatment.

Notably, the intervention achieved effectiveness within a relatively short period (two weeks) with twice-daily practice, demonstrating that consistency and regularity yield significant results despite the brief duration. (Kazemi et al., 2023) also found that two weeks of routine autogenic training reduced anxiety and improved physiological function in chronic illness patients. Thus, this practice is worth considering as part of short-term intervention programs in healthcare settings, particularly during hospitalization or active chemotherapy. However, several limitations should be noted. First, despite significant improvement, the post-intervention PSQI mean score remained above the clinical threshold for good sleep, suggesting that a two-week intervention may not fully resolve sleep disturbances. Longer durations or combined approaches (e.g., sleep education or pain management) may be necessary. Second, individual responses varied—some patients showed greater improvement, possibly due to higher motivation, strong social support, or spiritual backgrounds conducive to suggestive techniques. These factors should be considered in real-world implementation to tailor interventions to individual needs.

Clinically, autogenic relaxation offers several advantages: it is easy to learn, requires no special equipment, can be self-administered, and has no side effects. This makes it suitable for hospital and community settings, either as an individual daily practice or a group education session. Nurses, as frontline healthcare providers, play a strategic role in introducing, training, and monitoring this technique. Their involvement can enhance patient adherence and strengthen therapeutic relationships that support recovery. Furthermore, this intervention aligns with holistic nursing principles, addressing not only physical but also psychological and spiritual aspects (de Diego-Cordero et al., 2022). By engaging patients actively in their healing process, it fosters empowerment and develops internal coping skills essential for navigating complex cancer treatment. Considering these findings, this study provides a strong foundation for integrating autogenic relaxation into supportive cancer care. Although limitations such as small sample size and short duration exist, the results offer promising preliminary evidence for further research, including larger-scale randomized controlled trials (RCTs).

CONCLUSION

This study demonstrates that autogenic relaxation effectively improves sleep quality and reduces fatigue in chemotherapy-treated cancer patients. A two-week routine intervention yielded significant positive effects compared to standard care alone. The technique is safe, easy to implement, and holds potential for integration into supportive nursing practice, particularly in oncology. This research lays the groundwork for developing holistic, patient-centered non-pharmacological interventions to enhance quality of life during cancer treatment.

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