Indonesian Journal of Global Health Research
Volume 6 Number S6, December 2024
e-ISSN 2715-1972; p-ISSN 2714-9749
http://jurnal.globalhealthsciencegroup.com/index.php/IJGHR

THE EFFECTIVENESS OF RELAXATION THERAPY ON SYMPTOMS AND QUALITY OF LIFE IN HEMODIALYSIS PATIENTS: A LITERATURE REVIEW

Rabiatul Addawiah*, Yulia, Sri Yona
Faculty of Nursing, Universitas Indonesia, Jl. Prof. DR. Sudjono D. Pusponegoro, Pondok Cina, Beji, Depok, Jawa Barat 16424, Indonesia
*rabiatuladd02@gmail.com

ABSTRACT
Hemodialysis (HD) is the main therapy for patients with end-stage renal disease (ESRD) in Indonesia, but the patients' quality of life is lower than other methods due to the physical and psychological effects of HD. One of the therapies that can be used to reduce the effects of HD is relaxation therapy. Objective: This review aims to analyse the effectiveness of relaxation therapy in managing physical and psychological symptoms to improve the quality of life of HD patients. Method: A literature review using databases such as Pubmed, Science Direct, Scopus, Sage Journal and Proquest to search for relevant articles within the period 2020-2024. Results: A review of twelve articles shows that relaxation therapy is effective for pain, fatigue, stress, depression, anxiety, sleep quality and patient quality of life. Conclusions: Relaxation therapy can be integrated into routine care and is feasible for nurses to provide because of its simplicity so that patients can do it themselves at home. Nurses also need to conduct further research into other non-pharmacological therapies that are widely effective for patients with ESRD.

Keywords: hemodialysis; relaxation therapy; quality of life

How to cite (in APA style)
Addawiah, R., Yulia, Y., & Yona, S. (2024). The Effectiveness of Relaxation Therapy on Symptoms and Quality of Life in Hemodialysis Patients: A Literature Review. Indonesian Journal of Global Health Research, 6(S6), 1455-1464. https://doi.org/10.37287/ijghr.v6iS6.4448.

INTRODUCTION

End-stage renal disease (ESRD) is a condition in which kidney function declines to the point where symptoms may occur or when the glomerular filtration rate (GFR) drops to less than 15 mL/min. At this point, renal replacement therapy (RRT) is required to sustain life (Harding et al, 2023). In Indonesia, hemodialysis is the main choice of RRT for ESRD patients compared to peritoneal dialysis (PD) and kidney transplantation (Indonesian Renal Registry, 2018). One of the advantages of hemodialysis is faster fluid removal and more effective waste removal (Harding et al., 2023).Hemodialysis is the process of moving fluids and molecules across a semi-permeable membrane into the dialysis solution (dialysate) and into contact with the patient's blood to correct fluid and electrolyte imbalances and remove waste products in kidney failure (Harding et al., 2023). Hemodialysis is performed after consideration of the patient's condition and also based on assessment of signs and symptoms of renal failure (pruritus, acid-base or electrolyte abnormalities, serositis), dysregulation of blood volume or pressure, and progressive deterioration of nutritional status despite dietary intervention or decreased renal function (Murdeshwar & Anjum, 2022). Kidney Disease Improving Global Outcomes (KDIGO) recommends that dialysis should be initiated when one or more of the following are present: symptoms or signs attributable to renal failure (serositis, acid-base or electrolyte abnormalities, pruritus), inability to control volume status or blood pressure, progressive deterioration in nutritional status that cannot be addressed by dietary intervention, or cognitive impairment (Johnson et al., 2015).

At the end of December 2018, there were 132,142 active patients undergoing hemodialysis in Indonesia, with the number of new patients increasing from the previous year. As many as 22% of patients dropped out (not receiving hemodialysis for more than three months) (Indonesian Renal Registry, 2018). The results showed that barriers to hemodialysis adherence included financial, access to transport, treatment-related complications and distance. Treatment-related complications, consisting of fatigue, headache and pain at the catheter insertion site, were the main barriers identified to hemodialysis adherence (Mukakarangwa et al., 2020).Approximately 30.7% of twice-weekly hemodialysis sessions were associated with one or more intradialytic complications such as hypotension, nausea and vomiting, hypertension, muscle cramps and headache (Raja & Seyoum, 2020). Pain is a common complaint in HD patients. The most common sites of pain are the head, back, bones, chest, upper and lower extremities, and the most common site of pain is the AV fistula. (dos Santos et al, 2021; Kosmadakis et al, 2022). Another common and debilitating symptom is fatigue (physical and emotional exhaustion that does not respond to rest), with a prevalence of approximately 60-97% in long-term hemodialysis patients. This fatigue may occur after a hemodialysis session and may last from a few minutes to several hours or may be continuous (Gobbi et al, 2021).

The results showed that the hemodialysis patient's well-being is affected by physical and psycho-emotional conditions. Reduced quality of life in hemodialysis patients is mainly due to depressive symptoms, disease complications such as recurrent infections, headaches, pain and anaemia, fatigue after dialysis sessions and poor adherence to medication. Lower quality of life in HD patients can also result from pain caused by AV fistula puncture and dependence on the HD machine, which limit their life activities and also negatively affects their psychosocial well-being (Zhang et al., 2020). Depression, anxiety and stress can also have a negative impact on the treatment of patients undergoing hemodialysis (Senmar et al., 2020). This psychological impact can be caused by physical symptoms that interfere with the patient's daily activities, affecting role changes and the need to adapt to their condition, such as inability to work, changes in family and social roles (Hayfa et al., 2023). The patient's physical and psychological conditions will affect their quality of life and have a negative impact on their well-being. The ability of nurses to assess quality of life and reduce factors that exacerbate hemodialysis-related symptoms helps patients to achieve a positive attitude towards life and health (Irawati et al., 2023).

The way to improve patients' quality of life is to reduce patient's physical and psychological problems. One technique that can be used and has been shown to be effective is relaxation therapy. Relaxation techniques are therapeutic exercises designed to help individuals reduce physical and psychological tension and anxiety, and can be used in a variety of settings as a complementary therapy to manage stress, anxiety, depression and pain (Norelli et al, 2023). There are some of complementary or non-pharmacological therapies that can produce relaxation effects, such as progressive relaxation, biofeedback relaxation, breathing exercises, massage therapy, and meditation (Shurtleff & Murray, 2021). The many uses and benefits of relaxation therapy prompted researchers to conduct a literature review to determine the effectiveness of relaxation therapy in managing physical and psychological symptoms and improving quality of life in patients undergoing hemodialysis.

METHOD

The authors searched for articles in internet databases using Pubmed, Science Direct, Scopus, Sage Journal and Proquest. Articles were searched using the keywords 'relaxation therapy' OR 'progressive muscle relaxation' OR 'breathing exercises' OR 'music therapy' OR 'Benson's

relaxation' AND 'quality of life' AND 'hemodialysis patients' and 'relaxation therapy for quality of life in hemodialysis patients'. Inclusion criteria for the articles reviewed were articles related to the use of relaxation therapy in hemodialysis patients, articles published within the last 5 years (2020-2024), articles written in English, original research articles with a randomised controlled trial or quasi-experimental design, full-text articles and free access. The process of searching for articles in this review is shown in Figure 1.

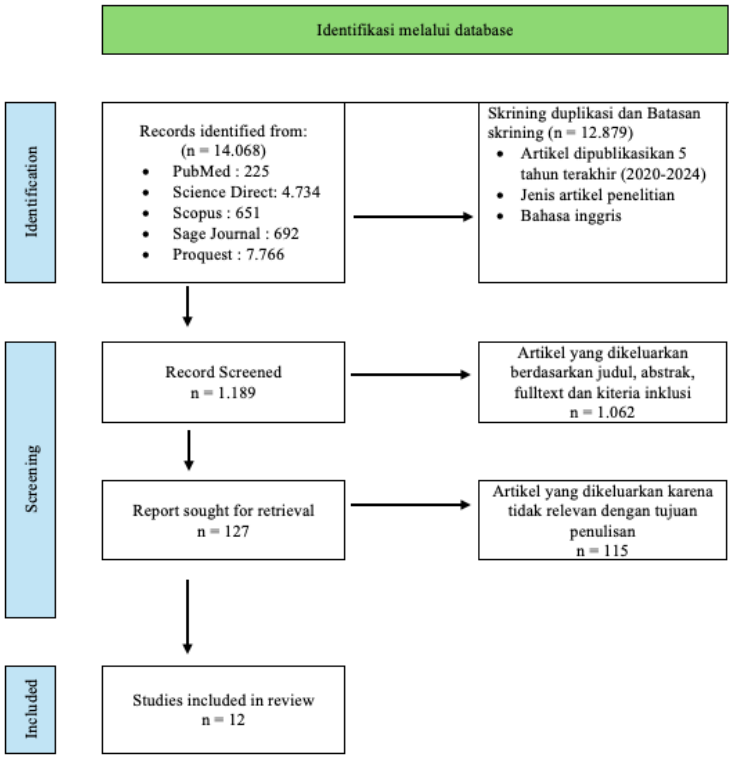

Figure 1.
PRISMA flow diagram

RESULT

The results of the article review showed that there were twelve articles that met the inclusion criteria (see Table 1). Nine articles used a randomised controlled trial (RCT) research design, while the other three articles used a quasi-experimental research design. The research locations of the articles included in this review were Indonesia, Iran, Jordan, Spain, Turkey and Taiwan. The studies involved 821 patients undergoing hemodialysis in dialysis units. Based on the characteristics of the respondents, the average age of the patients included in all articles ranged from 39.22 to 75.81 years, and the most common gender was male (65.16%). The average duration of dialysis in these studies ranged from 2.20 years to 9.89 years, but three articles did not report this. There were several types of relaxation therapy used in this study, namely progressive muscle relaxation (PMR) (n=3), Benson's relaxation technique (BRT) (n=3), music therapy (n=2), religious relaxation therapy (n=1), breathing-based leg exercises (n=1) and massage (n=3). Nine articles used a comparison or control group as recipients of standard or routine care and no intervention. Two articles compared interventions with two comparison groups and one article compared alternative interventions such as relaxation education. All articles included in this review were reviewed using the JBI tool. All the articles met most of the criteria. However, some of them did not explain in detail how the blinding process was carried out in the study. Studies with more than 50% 'yes' responses were considered of sufficient quality to be included in this review. Overall, all included articles were of adequate quality, with a response rate between 62% and 89%. All

articles adequately described the methods, sample selection process, interventions, data collection and analysis.

Table 1.
Data Extraction

Author, Year	Objective	Sample	Design	Result
Imani et al. (2021)	Evaluating the effect of instrumental music on anxiety and depression among hemodialysis patients	50 patients	Single-blind, randomized controlled clinical trial	Intervention: Instrumental music from Mozart, 20 minutes, 3x a week for 3 weeks Results: the mean scores of depression and anxiety decreased after the intervention and were statistically significant (P = 0.001)
Ghozhdi et al. (2022)	Evaluating the effect of progressive muscle relaxation technique on fatigue, pain and quality of life in dialysis patients	60 patients	Randomized controlled clinical trial study	Intervention: PMR 2x a day, 20 minutes, for 12 weeks Results: relaxation techniques could significantly reduce the mean scores of fatigue, pain and improve the quality of life and its dimensions in dialysis patients ($p < 0.001$).
Far et al. (2020)	Evaluating the effects of benson relaxation technique on activities of daily living in hemodialysis patients	65 patients	Single-blind, randomized, parallel-group, controlled trial study	Intervention: BRT 2x a day, 20 minutes, for 4 weeks Results: higher level of independence were about 25% greater in the intervention group (OR: 1.24; 95% CI: 1.07, 1.44; P = 0.001). These findings suggest that BRT can effectively improve the ADLs of HD patients.
Soliva et al. (2022)	Verify the effect of live classic music during hemodialysis on the quality of life of patients with chronic kidney disease	90 patients	Prospective randomized intervention study, with cluster randomization	Intervention: live classic music for 30/40 minutes in 2/3 sessions a week. Results: the intervention group had improved quality of life compared to baseline measurements.
Puspitosari et al. (2022)	Evaluating the effect of progressive relaxation to reducing the hemodialysis patient stress level	58 patients	Quasy-experimental with pre-test dan post-test, with control group design	Intervention: audio-visual PMR training 2x a week for 3 weeks Results: PMR exercises could reduce the experience of stress levels in HD patients (P value $0.003 < \alpha$ 0.05).
Purwanti et al. (2020)	Evaluating the effect of religious relaxation therapy on improving sleep quality of patients chronic kidney failure	60 patients	Quasy experiment with pre-post test control group design	Intervention: Religious therapy before bed in 14 days Results: there was a considerable difference in sleep quality after the therapy with a value of $\rho = 0.000$.
Rosdiana & Cahyati (2021)	Evaluating the effect of progressive muscle relaxation combined with lavender aromatherapy on insomnia of hemodialysis patients	50 patients	Quasi-experimental design with a pretest-posttest approach with a control group	Intervention: PMR + 2-3 drop of lavender aromatherapy 30 minutes before bed for 3 weeks. Results: There was a decrease in insomnia scores after the intervention and it was significantly lower than the control group ($P<0.05$)
Huang et al. (2021)	Evaluating the effect of breathing-based leg exercises during	86 patients	Randomized controlled trial	Intervention: breathing-based leg, 15 minutes, 3x a week for 12 weeks. Results: the intervention group had

	hemodialysis to improve quality of life			significantly higher quality of life (P=0.01), especially at Week 12 (P=0.04).
Mohammadpourhodki et al. (2021)	Evaluating the effect of aromatherapy massage with lavender and citrus aurantium essential oil on quality of life of patients on chronic hemodialysis	105 patients	Three-arm parallel group randomized clinical trial	Intervention: aromatherapy massage with lavender and citrus aurantium essential oil. Results: There was a significant difference between the mean quality of life scores of the Lavender essential oil group (P<0.001) and the Citrus Aurantium essential oil group (P=0.0003).
Efe Arslan & Kılıç Akça (2020)	Evaluating the effect of aromatherapy hand massage on distress and sleep quality in hemodialysis patients	44 patients	Randomized controlled study	Intervention: aromatherapy hand massage with lavender oil, 10 minutes for 4 weeks. Results: The mean individual PSQI score in the intervention group decreased significantly more than the control group, $p < 0.001$.
Abu Maloh et al. (2022)	Evaluating the effectiveness of benson's relaxation technique on pain and perceived stress among patients undergoing hemodialysis	36 patients	A double-blind, cluster-randomized active control clinical trial	Intervention: BRT 10 minutes 2x a day, for 8 weeks. Results: The decrease in PSS-10 and PRI scores over 1 month was statistically significant ($p < 0.001$).
Habibzadeh et al. (2020)	Evaluating the effects of foot massage on severity of fatigue and quality of life in hemodialysis patients	120 patients	Randomized clinical trial with four parallel groups	Intervention: foot massage 20 minutes, 3x a week for 2 months. In 3 group: used almond oil, chamomile oil and no oil. Results: The mean FSS score after the application of foot massage using chamomile oil, almond oil, and no oil in all intervention groups was significantly lower than the control group, and each intervention group experienced a significantly greater decrease in FSS than the control group (P≤0.001).

DISCUSSION

Relaxation therapy has been widely used to treat various physical and psychological problems in hemodialysis patients. Six types of relaxation therapy were included in this review, namely Progressive Muscle Relaxation (PMR), Benson's Relaxation Technique (BRT), music therapy, religious therapy, breathing-based leg exercises and massage. These trials have helped us to better understand the effectiveness of relaxation therapies in reducing symptoms such as pain, fatigue, insomnia, depression, anxiety and stress. It has also been statistically proven to improve sleep, activities of daily living (ADL) and quality of life (QoL).Pain and fatigue are physical complaints commonly experienced by patients undergoing HD. The prevalence of generalised pain in HD patients ranges from 36% to 92%, while the prevalence of fatigue is 84%. Both are often poorly managed and affect daily activities, mood, relationships with others, sleep and work, ultimately affecting the patient's overall QoL (Dikmen & Aslan, 2020; Santos et al, 2021). In this review, therapies such as PMR, BRT and massage were statistically shown to significantly reduce pain and fatigue scores and improve patients' QoL scores (Abu Maloh et al, 2022; Ghozhdi et al, 2022; Habibzadeh et al, 2020; Mohammadpourhodki et al, 2021).

The effects of hemodialysis, in addition to the physical effects, can also affect the patient's psychology, such as stress, sleep disturbance, psychological disorders (depression, anxiety), and poor QoL (Li et al., 2022). Music therapy, massage, religious therapy and breathing-based leg exercises have been statistically proven to address patients' psychological problems, including improving their sleep and QoL (Efe Arslan & Kılıç Akça, 2020; Huang et al., 2021; Imani et al., 2021; Purwanti et al., 2020; Soliva et al., 2022).PMR therapy is one of the therapies widely used in this review. PMR therapy actively involves the process of contracting muscles to create tension and gradually releasing it, which has been statistically proven to produce both psychological and physiological relaxation (Toussaint et al, 2021). Previous research shows that PMR can reduce the average pain score by 2 points in hemodialysis patients after two to four weeks of intervention (Hasbi et al., 2020). In addition to physical symptoms, PMR performed 2-4 times per week for 3-12 weeks can also help reduce patients' stress and insomnia scores (Puspitosari et al., 2022; Rosdiana & Cahyati, 2021).

Another widely used relaxation therapy is BRT, which is a therapeutic method consisting of deep muscle relaxation, focused breathing, and the selection of soothing words to induce a state of relaxation (Nazari et al., 2023). Overall, BRT is effective on pain, stress, depression, sleep quality, ADL and QoL (Abu Maloh et al, 2022; Far et al, 2020; Nazari et al, 2023). Patients who complete this BRT program have a 25% chance of becoming independent (Far et al., 2020). Research by Abu Maloh et al (2022) showed that the effective time to achieve significant results with BRT therapy is one month.Massage is a simple method that involves palpation of soft tissues and muscles to produce physical and mental relaxation effects (Ramai & Lobo, 2021). These findings are consistent with previous research showing that different types of massage, such as foot massage, foot and back reflexology, hand massage, aromatherapy massage and others, are effective in reducing fatigue in hemodialysis patients (Nurinto et al., 2024).

Music therapy is a therapy that uses music as a therapeutic intervention to produce a relaxing effect (Kamioka et al., 2014). The results showed that music therapy had an effect on pain, anxiety, heart rate and blood pressure in hemodialysis patients (Wu et al., 2021). Music therapy is an effective alternative distraction mechanism by increasing positive emotions and decreasing negative emotions, thus helping to target emotion regulation for mood regulation. Therefore, music therapy has been shown to have effects on pain, anxiety and depression symptoms (Chu et al., 2021). Results showed that the use of recorded or live instrumental music was effective in reducing mean depression and anxiety scores and improving patients' QoL on all scales except employment status, social support and satisfaction (Imani et al., 2021; Soliva et al., 2022). Religious or spiritual therapy is a type of therapy that focuses on improving the psychological well-being of patients by using religious or spiritual sources related to faith and body-mind-spirit therapy (Bouwhuis-Van Keulen et al., 2024). This religious therapy has been shown to be effective in improving patients' sleep quality when done regularly before bed for 14 days (Purwanti et al., 2020). Other studies have shown that religious therapy can also be used to improve spiritual well-being, self-esteem and self-efficacy in HD patients (Darvishi et al., 2020). HD patients should be valued as biopsychosocial beings, as emotional aspects are determinants of successful treatment and improved QoL (Soliva et al., 2022).

The QoL of HD patients shows low scores on various dimensions, indicating that the well-being of patients undergoing HD is impaired due to physical, psycho-emotional conditions and difficulties in maintaining employment and social support. This state of low QoL scores

is associated with depressive symptoms, complications such as recurrent infections, pain, anaemia, fatigue after dialysis sessions and low adherence to drug therapy (Pretto et al., 2020). Other studies have shown that there is a wide variation in the dimensions of QoL in hemodialysis patients, so family and healthcare team members should pay attention to the factors that affect patients' QoL in order to provide care and support programmes for patients to help them manage the disease and improve their QoL (Namdar et al., 2022).

CONCLUSION

This review found some evidence to support the use of various relaxation therapies to manage physical and psychological symptoms and improve QoL in hemodialysis patients. Relaxation therapies such as PMR, BRT, music therapy, breathing exercises and massage have been shown to be effective in reducing fatigue, pain, stress and depression while improving sleep quality and QoL. In addition, these relaxation therapies can be integrated into routine care and are suitable to be delivered or taught by nurses during HD sessions, as they are simple and can be performed by patients themselves at home. This review also showed that non-pharmacological interventions led to significant symptom improvement in HD patients and helped to improve patients' QoL Future research should pay particular attention to the most sensitive and specific types of non-pharmacological interventions, taking into account the physical condition and preferences of patients, as well as determining the optimal timing of interventions. Patients undergoing peritoneal dialysis may also experience physical and psychological symptoms and quality of life issues, so there is a need to explore additional effective non-pharmacological interventions for a wider population of ESRD patients. This review included only some types of relaxation therapy, so the effects of other types of non-pharmacological therapies remain to be investigated.

REFERENCES

Abu Maloh, H. I. A., Soh, K. L., Chong, S. C., Ismail, S. I. F., Soh, K. G., Abu Maloh, D. I., Al Yateem, N., & AbuRuz, M. E. (2022). The Effectiveness of Benson's Relaxation Technique on Pain and Perceived Stress Among Patients Undergoing Hemodialysis: A Double-Blind, Cluster-Randomized, Active Control Clinical Trial. Clinical Nursing Research, 32(2), 288–297. https://doi.org/10.1177/10547738221112759

Bouwhuis-Van Keulen, A. J., Koelen, J., Eurelings-Bontekoe, L., Hoekstra-Oomen, C., & Glas, G. (2024). The evaluation of religious and spirituality-based therapy compared to standard treatment in mental health care: A multi-level meta-analysis of randomized controlled trials. Psychotherapy Research, 34(3), 339–352. https://doi.org/10.1080/10503307.2023.2241626

Chu, S. W. F., Yeam, C. T., Low, L. L., Tay, W. Y., Foo, W. Y. M., & Seng, J. J. B. (2021). The role of mind-body interventions in pre-dialysis chronic kidney disease and dialysis patients – A systematic review of literature. Complementary Therapies in Medicine, 57, 102652. https://doi.org/https://doi.org/10.1016/j.ctim.2020.102652

Darvishi, A., Otaghi, M., & Mami, S. (2020). The Effectiveness of Spiritual Therapy on Spiritual Well-Being, Self-Esteem and Self-Efficacy in Patients on Hemodialysis. Journal of Religion and Health, 59(1), 277–288. https://doi.org/10.1007/s10943-018-00750-1

Dikmen, R. D., & Aslan, H. (2020). Clinical Nephrology and Renal Care The Effects of the Symptoms Experienced by Patients Undergoing Hemodialysis Treatment on their Comfort Levels. https://doi.org/10.23937/2572-3286/1510060

dos Santos, P. R., Mendonça, C. R., Hernandes, J. C., Borges, C. C., Barbosa, M. A.,

Romeiro, A. M. de S., Alves, P. M., Dias, N. T., & Porto, C. C. (2021). Pain in Patients With Chronic Kidney Disease Undergoing Hemodialysis: A Systematic Review. Pain Management Nursing, 22(5), 605–615. https://doi.org/https://doi.org/10.1016/j.pmn.2021.05.009

Efe Arslan, D., & Kılıç Akça, N. (2020). The effect of aromatherapy hand massage on distress and sleep quality in hemodialysis patients: A randomized controlled trial. Complementary Therapies in Clinical Practice, 39, 101136. https://doi.org/https://doi.org/10.1016/j.ctcp.2020.101136

Far, N. H., Salari, M., Rakhshani, M. H., Borzoee, F., & Sahebkar, M. (2020). The effects of Benson relaxation technique on activities of daily living in hemodialysis patients; A single-blind, randomized, parallel-group, controlled trial study. Complementary Therapies in Clinical Practice, 39, 101133. https://doi.org/https://doi.org/10.1016/j.ctcp.2020.101133

Ghozhdi, M. K., Ghaljeh, M., & Khazaei, N. (2022). The Effect of Progressive Muscle Relaxation Technique on Fatigue, Pain and Quality of Life in Dialysis Patients: A Clinical Trial Study. Evidence Based Care Journal, 12(4), 7–16. https://doi.org/10.22038/EBCJ.2022.65275.2708

Gobbi, L., Baruzzo, E., Iodice, L., Comunian, G., Martinello, F., Marigo, M., Carretta, G., Rossi, B., & Calò, L. A. (2021). Fatigue in hemodialysis patients: A single-center cross-sectional study. Clinical Nephrology, 96(5), 281. https://www.proquest.com/scholarly-journals/fatigue-hemodialysis-patients-single-center-cross/docview/2610519738/se-2?accountid=17242

Habibzadeh, H., Wosoi Dalavan, O., Alilu, L., Wardle, J., Khalkhali, H., & Nozad, A. (2020). Effects of Foot Massage on Severity of Fatigue and Quality of Life in Hemodialysis Patients: A Randomized Controlled Trial. International Journal of Community Based Nursing & Midwifery, 8(2), 92–102. https://doi.org/10.30476/ijcbnm.2020.81662.0

Harding, M., Kwong, J., Hagler, D., & Reinisch, C. (2023). Lewis's Medical-Surgical Nursing: Assessment and Management of Clinical Problems (12th ed.). Elsevier.

Hasbi, H. Al, Chayati, N., & Makiyah, S. N. N. (2020). Progressive muscle relaxation to reduces chronic pain in hemodialysis patient. MEDISAINS, 17(3), 62. https://doi.org/10.30595/medisains.v17i3.5823

Hayfa, A., Al-ghamdi, R., Zainah, M., Amjad, A., Raghdaa, B., Ruba, A., & Ohood, F. (2023). Exploring the Needs of Patients Undergoing Hemodialysis: A Qualitative Study. Cureus, 15(12). https://doi.org/https://doi.org/10.7759/cureus.50076

Huang, H.-Y., Hung, K.-S., Yeh, M.-L., Chou, H.-L., Yeh, A. Lou, & Liao, T.-Y. (2021). Breathing-based leg exercises during hemodialysis improve quality of life: A randomized controlled trial. Clinical Rehabilitation, 35(8), 1175–1184. https://doi.org/10.1177/02692155211000738

Imani, M., Jalali, A., Salari, N., & Abbasi, P. (2021). Effect of instrumental music on anxiety and depression among hemodialysis patients: A randomized controlled trial. Journal of Education and Health Promotion, 10(1). https://doi.org/10.4103/jehp.jehp_1472_20

Indonesian Renal Registry. (2018). Report Of Indonesian Renal Registry 2018. https://www.indonesianrenalregistry.org/data/IRR%202018.pdf

Irawati, D., Nugraha Agung, R., Natashia, D., Narawangsa, A., Heny Purwati, N., & Handayani, R. (2023). PERUBAHAN FISIK DAN PSIKOSOSIAL

MEMPENGARUHI KUALITAS HIDUP PASIEN HEMODIALISIS. Jurnal Ilmiah Keperawatan , 9(1), 96–104.

Johnson, R. J., Feehally, J., & Floege, J. (2015). Comprehensive Clinical Nephrology (5th ed.). Elsevier Saunders.

Kamioka, H., Tsutani, K., Yamada, M., Park, H., Okuizumi, H., Tsuruoka, K., Honda, T., Okada, S., Park, S.-J., Kitayuguchi, J., Abe, T., Handa, S., Oshio, T., & Mutoh, Y. (2014). Effectiveness of music therapy: a summary of systematic reviews based on randomized controlled trials of music interventions. Patient Preference and Adherence, 8(null), 727–754. https://doi.org/10.2147/PPA.S61340

Kosmadakis, G., Amara, B., Costel, G., & Lescure, C. (2022). Pain associated with arteriovenous fistula cannulation: Still a problem. Néphrologie & Thérapeutique, 18(1), 59–62. https://doi.org/https://doi.org/10.1016/j.nephro.2021.05.002

Li, Q., Wang, Y., Hong, F., Zhong, Y., & Liu, P. (2022). Survey and analysis of the current situation of humanistic care ability of first-year nursing students after COVID-19. Psychosomatic Medicine Research, 4(2), 10. https://doi.org/10.53388/202210

Mohammadpourhodki, R., Sadeghnezhad, H., Ebrahimi, H., Basirinezhad, M. H., Maleki, M., & Bossola, M. (2021). The Effect of Aromatherapy Massage With Lavender and Citrus Aurantium Essential Oil on Quality of Life of Patients on Chronic Hemodialysis: A Parallel Randomized Clinical Trial Study. Journal of Pain and Symptom Management, 61(3), 456-463.e1. https://doi.org/https://doi.org/10.1016/j.jpainsymman.2020.08.032

Mukakarangwa, M. C., Chironda, G., Nkurunziza, A., Ngendahayo, F., & Bhengu, B. (2020). Motivators and barriers of adherence to hemodialysis among patients with end stage renal disease (ESRD) in Rwanda: A qualitative study. International Journal of Africa Nursing Sciences, 13, 100221. https://doi.org/https://doi.org/10.1016/j.ijans.2020.100221

Namdar, A., Beigizadeh, S., & Najafipour, S. (2022). Health- related quality of life in dialysis patients. Pars Journal of Medical Sciences, 10(4), 19–27. https://doi.org/10.29252/jmj.10.4.19

Nazari, A. M., Zare-Kaseb, A., Arbabi, Z., Gholampour, M. H., Emami Zeydi, A., & Ghazanfari, M. J. (2023). The effect of Benson relaxation technique on cancer patients: a systematic review. Supportive Care in Cancer, 31(12), 681. https://doi.org/10.1007/s00520-023-08142-2

Norelli, S. K., Long, A., & Krepps, J. M. (2023). Relaxation Techniques. StatPearls Publishing.

Nurinto, H., Waluyo, A., & Yona, S. (2024). The Effectiveness of Massage in Reducing Fatigue in Hemodialysis Patients: A Systematic Review. NurseLine Journal, 9(1). https://doi.org/10.19184/nlj.v9i1.46611

Pretto, C. R., Winkelmann, E. R., Hildebrandt, L. M., Barbosa, D. A., Colet, C. de F., & Stumm, E. M. F. (2020). Quality of life of chronic kidney patients on hemodialysis and related factors. Revista Latino-Americana de Enfermagem, 28.

Purwanti, R., Yusuf, A., Nihayati, H. E., Qomariah, S. N., & Bakar, A. (2020). The Effect of Religious Relaxation Therapy on Improving Sleep Quality of Patients Chronic Kidney Failure: A Pilot Study in Surabaya. Bangladesh Journal of Medical Science, 19(1), 48–52. https://doi.org/https://doi.org/10.3329/bjms.v19i1.43872

Puspitosari, W. A., Rohman, H. H., & Dewi, A. (2022). Reducing the hemodialysis patient

stress level through progressive relaxation. Bangladesh Journal of Medical Science, 21(3), 540–546. https://doi.org/https://doi.org/10.3329/bjms.v21i3.59566

Raja, S. M., & Seyoum, Y. (2020). Intradialytic complications among patients on twice-weekly maintenance hemodialysis: an experience from a hemodialysis center in Eritrea. BMC Nephrology, 21(1), 163. https://doi.org/10.1186/s12882-020-01806-9

Ramai, P., & Lobo, D. (2021). Supportive Therapy for Fatigue in Hemodialysis Patients. International Journal of Health Sciences and Research, 11(7), 367–373. https://doi.org/10.52403/ijhsr.20210750

Rosdiana, I., & Cahyati, Y. (2021). The effect of the progressive muscle relaxation combined withs lavender aromatherapy on insomnia of hemodialysis patients. Enfermería Nefrológica, 24(1), 39–46. https://doi.org/https://doi.org/10.37551/s2254-28842021004

Santos, P. R. dos, Mendonça, C. R., Hernandes, J. C., Borges, C. C., Barbosa, M. A., Romeiro, A. M. de S., Alves, P. M., Dias, N. T., & Porto, C. C. (2021). Pain in Patients With Chronic Kidney Disease Undergoing Hemodialysis: A Systematic Review. Pain Management Nursing, 22(5), 605–615. https://doi.org/https://doi.org/10.1016/j.pmn.2021.05.009

Senmar, M., Razaghpoor, A., Mousavi, A. S., Zarrinkolah, F., Esmaeili, F., & Rafiei, H. (2020). Psychological Symptoms in Patients on Dialysis and Their Relationship with Spiritual Well-Being. Florence Nightingale J Nurs, 28(3), 243–249. https://doi.org/10.5152/FNJN.2020.19061

Shurtleff, D., & Murray, P. (2021). Relaxation Techniques: What You Need To Know. National Center for Complementary and Integrative Health. https://www.nccih.nih.gov/health/relaxation-techniques-what-you-need-to-know

Soliva, M. S., Salvador, I. R., Testal, A. G., López, C. C., Ramón, R. O., Coca, J. V., & Maset, R. G. (2022). Intervention study to verify the effect of live classic music during hemodialysis on the quality of life of patients with chronic kidney disease. Nefrología (English Edition), 42(5), 559–567. https://doi.org/https://doi.org/10.1016/j.nefroe.2021.07.010

Toussaint, L., Nguyen, Q. A., Roettger, C., Dixon, K., Offenbächer, M., Kohls, N., Hirsch, J., & Sirois, F. (2021). Effectiveness of Progressive Muscle Relaxation, Deep Breathing, and Guided Imagery in Promoting Psychological and Physiological States of Relaxation. Evidence-Based Complementary and Alternative Medicine, 2021. https://doi.org/10.1155/2021/5924040

Wu, X. L., Bi, J., Yao, S. D., Wang, L. L., & Jiang, Z. Y. (2021). Effect of music intervention during hemodialysis: a comprehensive meta-analysis. European Review for Medical and Pharmacological Sciences, 25, 3822–3834.

Zhang, L., Guo, Y., & Ming, H. (2020). Effects of Hemodialysis, Peritoneal Dialysis, and Renal Transplantation on the Quality of Life of Patients with End-Stage Renal Disease. Revista Da Associacao Media Brasileira, 66(9). https://doi.org/10.1590/1806-9282.66.9.1229