

Research Article

The Effectiveness of Different Types of Massages on Sleep Quality in Hemodialysis Patients: A Literature Study

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Abstract.

Hemodialysis can cause disturbance in sleep. Sleep disorders cause immune system disorders and decreased sleep quality. Low sleep quality leads to poor quality of life resulting in premature death and negative impacts on the individual's immune response which can lead to the development of cardiovascular diseases, which is the leading cause of death in patients with kidney disease. This study aimed to identify and describe the effectiveness of different types of massages in improving the sleep quality of hemodialysis patients. This was a literature study. We examined a journal that focused on massage therapy in patients undergoing hemodialysis. The observed variable was the sleep quality of hemodialysis patients. Data were analyzed using the qualitative descriptive analysis method. The results showed that hand massage therapy, foot massage therapy and back massage therapy were effective in improving the sleep quality of hemodialysis patients. However, massage therapy in the form of acupressure is less effective in improving sleep quality. Based on the results, aromatherapy massage therapy on the feet was the most effective. The most influential type of massage was massage using aromatherapy. Massages of the hands, feet, and back also affected the sleep of hemodialysis patients but only slightly affects the quality of sleep.

Keywords: massage, hemodialysis, acupressure, aromatherapy

1. Introduction

The rest of the body's metabolism as well as excess fluid can accumulate in the body when the kidneys are impaired or damaged. As a result of this fertilization can eventually occur ankle swelling, vomiting, weakness, shortness of breath, also lack of sleep. Kidney organs can stop working if not treated properly. It can be fatal if the kidneys stop working. Kidney disease is a medical condition that can cause irreversible loss of kidney function so that permanent kidney replacement therapy, such as dialysis or kidney transplantation, is urgently needed. Kidney disease is a medical condition that can cause

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irreversible loss of kidney function so that permanent kidney replacement therapy, such as dialysis or kidney transplantation, is urgently needed (1).

The estimated global prevalence of chronic kidney disease is 13.4% (11.7-15.1%), and patients with end-stage renal disease requiring renal replacement therapy are estimated to be between 4.902 and 7.083 million, respectively (2). The incidence of hemodialysis and peritoneal dialysis each year increases by 6-7% and 8%, respectively. It is estimated that the number of patients undergoing renal replacement therapy will reach 1.571–3.014 million in Asia by 2030 (3).

Hemodialysis is one of the treatment in patients with CKD in order to survive. However, hemodialysis has side effects on the physical and psychological state of patients with CKD (Ministry of Health, 2018). Hemodialysis has a sleep-inducing effect for patients, namely restriction of mobility, production of interleukin-1, increased body temperature, as well as osmotic imbalance in the brain that can cause decreased consciousness. It also brings disadvantages such as sleep apnea syndrome, restless legs syndrome, sleep disturbances, and excessive anxiety during the day. Sleep disturbances can cause 'day-night reversal', i.e. insomnia at night & daytime drowsiness, headaches, depression, also decreased functional capacity (5). Sleep disturbances cause a decrease in sleep quality, while a decrease in sleep quality can cause irritability, confusion, daytime sleepiness, fatigue, anxiety, lack of alertness and lack of concentration (6).

Various studies have reported sleep disturbances in hemodialysis patients, such as in the study of CKD patients who underwent hemodialysis at Tarakan Hospital Jakarta, 14 respondents (35%) had good sleep quality but 26 respondents (65%) had poor sleep quality (7). Low quality of sleep in patients can lead to poor quality of life to lead to premature death, in addition it also has a bad impact on the immune response to result in the development of cardiovascular disease which is the main cause of death in patients with kidney disease.

There are 2 types of therapy to treat sleep disorders, namely pharmacological and non-pharmacological therapy. Pharmacological therapy such as sedative-hypnotics, antihistamines, antidepressants, antipsychotics and anticonvulsants (8). While in non-pharmacological treatment there are several choices of treatment techniques, including massage therapy or massage (9). Using massage therapy is an ancient traditional technique that can be done independently. The treatment is a safe, effective way of healing, and has no side effects if carried out according to the procedure (10). Massage therapy can provide a relaxed state, reduce stress, and increase the brain's ability to think calmly and creatively. Massage can also increase sleep duration, sleep quality and improve the ability to concentrate (11).

The purpose of this study was to identify and describe the effectiveness of different types of massage to improve sleep quality of hemodialysis patients. There are many studies on complementary, pharmacotherapy and non-pharmacotherapeutic therapies that aim to improve sleep quality in hemodialysis patients, but there is no literature study on the types of massage to improve sleep quality in hemodialysis patients. From the data that has been presented, the researcher is interested in conducting a study with the title "Literature Study: Identification of the Effectiveness of Types of Massage on Sleep Quality in Hemodialysis Patients" using a literature study. This literature study is expected to be used as a reference for literacy regarding the types of massage that are effective on sleep quality in hemodialysis patients.

2. Methods

The research design in this study used the literature study method. The literature study research method is carried out by collecting data from various literatures such as journals or books to compare the results from one journal to another (12).

2.1. Eligibility criteria and search terms

The inclusion criteria in this study are: international journals published in the last 5 years (2017-2021), journals that can be accessed full text, journals with the topic of massage therapy on the quality of sleep of hemodialysis patients and journal research articles with Randomized Controlled Trial (RCT) and Quasy Experimental designs. The literature sources sought are international journals adjusted to the inclusion criteria through academic databases such as PubMed, Science Direct, Researchgate and Proquest. The search terms used in this study are "*((Massage) AND Sleep Quality) AND Hemodialysis*".

2.2. Search result

The search in this study used the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) guidelines. Initial results in a search of the database yielded a total of 618 journals. And the results were narrowed and resulted in 8 journals to be analyzed which are shown in Table 1 PRISMA.

2.3. Data extraction

Extract data at this stage by filling in the data extraction table. The results of the data extraction are listed in Table 2 Data Extraction Table 2 Data Extraction

TABLE 1: PRISMA

Author, date, country	Research question/aim	Study settings	Design	Type of therapy	Location of therapy	Key themes
Arslan & Akça (2020) (13), Turkey	To examine whether giving lavender aromatherapy massage to the hands with the effleurage technique can improve the sleep quality of hemodialysis patients	Hemodialysis Center	Randomized controlled trial.	Aromatherapy massage	Hand	The results show that aromatherapy hand massage can improve the sleep quality of patients undergoing hemodialysis so that it can reduce the use of sleeping pills.
Azimpour et al., (2019) (14), Iran	To investigate whether giving hacking massage therapy or vibration therapy on the feet can improve the sleep quality of hemodialysis patients	Hospital	Randomized cross-over clinical trial.	Hacking massage / vibration massage	Foot	PSQI scores in both groups decreased significantly. In the vibration group, the PSQI score decreased more. The results show hacking massage and vibration therapy can improve sleep quality in hemodialysis patients
Malekshahi et al., (2017) (15), Iran	To examine whether giving stroke massage therapy to the feet can improve the quality of sleep of hemodialysis patients	hemodialysis unit	Randomized experimental clinical trial	Massage stroke therapy	Foot	In the stroke massage group, PSQI scores decreased significantly. Stroke massage therapy on the feet and can improve the quality of sleep of patients in the hemodialysis unit.
Farrokhian et al., (2017) (16), Iran	To investigate whether giving regular rhythm massage therapy to the feet can improve the sleep quality of hemodialysis patients	Hospital	Randomized Control Trial	Regular rhythm reflexology massage	Foot	Regular rhythm reflexology massage therapy on the feet and can improve the quality of sleep of hemodialysis patients.
Ghavami et al., (2019) (17), Iran	To examine whether giving warm stone massage therapy on the back can improve the quality of sleep of hemodialysis patients	hemodialysis unit	Randomized controlled trial with a pre-post-test	Warm stone massage therapy	Back	The application of massage therapy with warm stones in hemodialysis patients can contribute to improving their sleep quality.
Tsai et al., (2021) (18), Taiwan	To investigate whether the administration of acupressure therapy can improve the quality of sleep of hemodialysis patients	Hospital	Cluster-randomized crossover pilot trial	Giving acupressure therapy	Acupressure points on feet	There was no significant effect on PSQI scores. A significant treatment effect was only seen in the severity of RLS.
Oshvandi et al., (2021) (19), Iran	To investigate whether giving foot massage with lavender or sweet orange essential oil can improve the sleep quality of hemodialysis patients	Hospital	Three group single-blind randomized controlled trial	Aromatherapy massage	Foot	Giving aromatherapy foot massage with lavender and sweet orange oil can be recommended to improve sleep quality in hemodialysis patients.
Mohammadpour et al., (2021) (20), Iran	To investigate whether giving massage with lavender aromatherapy oil or citrus aurantium can improve sleep quality of hemodialysis patients	Hemodialysis ward	Parallel randomized clinical trial study	Aromatherapy massage	Foot	Both aromatherapy massages have a good effect on the quality of sleep of hemodialysis patients.

3. Results and Discussion

In the demographic data, all the populations in the selected journals were patients who underwent hemodialysis with the majority of the population gender was male. According to Ipo et. al., (2016) (21), there are more men than women can be caused by several things, because men have a lifestyle and a poor quality of life that can affect health such as smoking, drinking coffee, alcohol, and drinking supplements that can trigger disease. systemic disease that can cause a decrease in kidney function and affect the quality of life. The majority of the journals in this study came from Iran, all studies used the Pittsburgh Sleep Quality Index as a measurement instrument to retrieve sleep quality data. According to Sukmawati & Putra (2019) (22), PSQI questionnaire has been used to measure sleep quality in various demographic groups in various countries. Based on research by Setyowati & Chung (2021)(23) PSQI is able to quickly assess sleep quality for healthcare providers and demonstrates that the questionnaire has high validity and reliability and can be relied upon to screen for sleep quality.

After analyzing the 8 selected journals, there are various massage techniques that are effective in improving the sleep quality of patients undergoing hemodialysis, namely:

TABLE 2: The effectiveness of this type of massage.

Study	Type of massage	Average PSQI score reduction	Effectiveness
<i>Massageusing aromatherapy</i>			
Arslan & Akça (2020) (13)	Aromatherapy massage of lavender mixed with almond	5.77	Effective
Oshvandi et al., (2021)(19)	Massage with lavender or sweet orange essential oil	14.15	Effective
Mohammadpourhodki et al., (2021) (20)	Giving massage with lavender aromatherapy oil or citrus aurantium	2.48	Effective
<i>Massageusing pressure technique</i>			
Azimpour et al., (2019) (14)	Hacking massage / vibration massage	1.33	Effective
Malekshahi et al., (2017) (15)	Massage stroke therapy	3.07	Effective
Farrokhian et al., (2017) (16)	Regular rhythm reflexology massage	5.00	Effective
Ghavami et al., (2019) (17)	Warm stone massage therapy	1.16	Effective
Tsai et al., (2021) (18)	Giving acupressure therapy	0.18	Not effective

3.1. Massage Using Aromatherapy

In this type of massage using aromatherapy using the effleurage technique which is used in the area of the hands and feet. For an effective type of aromatherapy, you can use lavender aromatherapy oil, sweet orange or you can use citrus aurantium. Of the several types of aromatherapy oils studied, lavender oil is the most influential in improving the quality of sleep in hemodialysis patients. Lavender is used for therapeutic purposes as it has antidepressant, sedative and immune stimulator effects as well as promoting healing and improving sleep and improving mental well-being (13).

3.2. Massage Using Pressure

In this type of massage using pressure techniques, you can use several similar techniques in the foot area including hacking massage, vibration massage, stroke massage, massage with a regular slow rhythm or you can use hot stones on the back. However, the massage technique using acupressure in research by Tsai et al., (2021) (18) not effective in improving the quality of sleep of patients undergoing hemodialysis. However, in research by Ilyas et al., (2021) (24) had the opposite result, the result was that acupressure was able to improve the sleep quality of End Stage Renal Disease (ESRD) patients undergoing HD. On research Tsai et al., (2021)(18) explained the possibility of not being effective because interventional technical differences may affect the results and also insufficient duration for acupressure

4. Conclusion

The type of massage that most improve the quality of sleep of hemodialysis patients is massage with lavender or sweet orange essential oil which can reduce the PSQI score by 14.15. While massage using acupressure, techniques is not effective in improving sleep quality. Based on this literature study, it can be concluded that the most influential type of massage is massage using aromatherapy. Massage in the areas of the hands, feet, back also affects the sleep of hemodialysis patients but only slightly affects the quality of sleep.

This literature study research can be used as evidence based practice in improving the quality of nursing services in improving the sleep quality of hemodialysis patients. This literature study can also strengthen theoretical support for the development and development of nursing science related to the effectiveness of types of massage on

sleep quality in hemodialysis patients so that it can be used as material in nursing science learning. And can be used as a reference for nursing interventions to improve the sleep quality of hemodialysis patients. Researchers found several research limitations experienced during compiling this literature study, for example limited access to the full text papers.

References

- [1] Nurbadriyah WD. *Asuhan Keperawatan Penyakit Ginjal Kronis Dengan Pendekatan 3S*. Batu: Literasi Nusantara.; 2021.
- [2] Lv JC, Zhang LX. Prevalence and Disease Burden of Chronic Kidney Disease. *Adv Exp Med Biol*. 2019;1165:3–15.
- [3] Li PK, Kwong VW. Current Challenges and Opportunities in PD. *Semin Nephrol*. 2017 Jan;37(1):2–9.
- [4] Kemenkes. *Cegah Dan Kendalikan Penyakit Ginjal Dengan Cerdik*. NurseLine Journal. 2018.
- [5] Mirghaed MT, Sepehrian R, Rakhshan A, Gorji H. Sleep quality in Iranian hemodialysis patients: A systematic review and meta-analysis. *Iran J Nurs Midwifery Res*. 2019 Nov;24(6):403–9.
- [6] Varisella S, Nurmaguphita D. *The Effect Of Relaxation Therapy Massage On The Insomnia Score Of Chronic Renal Failure Patients Undergoing Hemodialysis At Pku Muhammadiyah Ihospital Of Yogyakarta*. Univ 'Aisyiyah Yogyakarta. 2016.
- [7] Pius ES, Herlina S. Faktor-Faktor Yang Berhubungan Dengan Kualitas Tidur Pada Pasien Gagal Ginjal Kronik Yang Menjalani Hemodialisis Di Rumah Sakit Tarakan Jakarta. *J Keperawatan Widya Gantari Indones*. 2019;3(1). <https://doi.org/10.52020/jkwgi.v3i1.1081>.
- [8] Nissa C, Wada FH, Astuti P, Batubara ST, Prima A. Studi Literatur: Pengaruh Pijat Refleksi Kaki. *Jurnal Ilm Keperawatan Imelda*. 2021;7(1):8–13.
- [9] Agung FY, Aprina A, Astuti T. Effectiveness of foot massage on sleep quality among post-surgical patients in Dr. H Abdul Moeloek Hospital, Lampung-Indonesia. *Malahayati Int J Nurs Heal Sci*. 2021;3(2):94–102.
- [10] Raudatul Jannah. *Gangguan kesehatan mata*. Kesehatan Mata. Jakarta: Guepedia; 2012.
- [11] Olpin M, Hesson M. *Stress Management for Life: A Research-Based Experiential Approach*. Boston: Cengage Learning; 2020.

- [12] Manzilati A. *Metodologi Penelitian Kuantitatif: paradigma, metode dan aplikasi*. Malang: Universitas Brawijaya Press (UB Press); 2017. pp. 3–4.
- [13] Arslan D, Akça N. The effect of aromatherapy hand massage on distress and sleep quality in hemodialysis patients: A randomized controlled trial. *Complement Ther Clin Pract*. Maret. 2020;39:101136.
- [14] Azimpour S, Hosseini HS, Eftekhari A, Kazemi M. The effects of vibration and massage on severity of symptoms of restless leg syndrome and sleep quality in hemodialysis patients; A randomized cross-over clinical trial. *J Renal Inj Prev*. 2019;8(2):106–11.
- [15] Malekshahi F, Aryamanesh F, Fallahi S. The effects of massage therapy on sleep quality of patients with end-stage renal disease undergoing hemodialysis. *Sleep Hypn*. 2017;20(2):91–5.
- [16] Farrokhian R, Soleimani MA, Sheikhi MR, Alipour M. Effect of Foot Reflexology Massage on Sleep Quality in Hemodialysis Patients: A Randomized Control Trial. *Sci J Hamedan Nurs Midwifery Fac*. Januari. 2017;24(4):213–20.
- [17] Ghavami H, Shamsi SA, Abdollahpoor B, Radfar M, Khalkhali HR. Impact of hot stone massage therapy on sleep quality in patients on maintenance hemodialysis: A randomized controlled trial. *J Res Med Sci*. 2019 Aug;24(1):71.
- [18] Tsai LH, Chen CM, Lin LM, Tsai CC, Han Y, See LC. Acupressure reduces the severity of restless legs syndrome in hemodialysis patients: A cluster-randomized crossover pilot study. *Biomed J*. 2021.
- [19] Oshvandi K, Mirzajani Letomi F, Soltanian AR, Shamsizadeh M, Letomi FM, Soltanian AR, et al. The effects of foot massage on hemodialysis patients' sleep quality and restless leg syndrome: a comparison of lavender and sweet orange essential oil topical application. *J Complement Integr Med*. 2021 Apr;18(4):843–50.
- [20] Mohammadpourhodki R, Sadeghnezhad H, Ebrahimi H, Basirinezhad MH, Maleki M, Bossola M. 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. *J Pain Symptom Manage*. 2021 Mar;61(3):456–463.e1.
- [21] Ipo A, Aryani T, Suri M. Hubungan Jenis Kelamin Dan Frekuensi Hemodialisa Dengan Kualitas Hidup Pasien Gagal Ginjal Kronik Yang Menjalani Hemodialisa Di Rumah Sakit Umum Daerah Raden Mattaher Jambi. *J Akad Baiturrahim*. 2016;5(2):46–55.
- [22] Sukmawati NMH, Putra IGSW. Reliabilitas Kusioner Pittsburgh Sleep Quality Index (Psqi) Versi Bahasa Indonesia Dalam Mengukur. *J Lngkungan dan Pembang*. 2019;3(2):30–8.

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- [23] Setyowati A, Chung MH. Validity and reliability of the Indonesian version of the Pittsburgh Sleep Quality Index in adolescents. *Int J Nurs Pract.* 2021 Oct;27(5):e12856.
- [24] Ilyas H, Efendi S, Wahyuni A, Tinggi S, Kesehatan Makassar I. Peningkatan Efek Akupresur Dalam Meningkatkan Kualitas Tidur Pasien ESRD (End Stage Renal Disease) Di Ruang Hemodialisa RS. Pelamonia Makassar. *J Ilm Kesehat Pencerah.* 2021;10(1):14–20.