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SLOW STROKE BACK MASSAGE AND LAVENDER AROMATHERAPY TO IMPROVE SLEEP QUALITY CKD UNDERGOING HEMODIALYSIS

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ABSTRACT
Chronic Kidney Disease (CKD) patients who undergo hemodialysis experience various complaints, one of which is sleep disturbances are the most complained symptoms by CKD patients undergoing hemodialysis. Proper therapy needs to be given to overcome the patient's sleep disorder problem. Aim: This study aims to explore the effect of the combination of Slow Stroke Back Massage (SSBM) and Lavender Aromatherapy on sleep quality in CKD patients undergoing hemodialysis. Methods: The sample in this study was 40 Hemodialysis Patients consisting of 20 intervention groups (treatment) and 20 control groups (standard treatment), sampling was carried out by non-prxobability sampling with purposive sampling technique. The research uses a quasi-experimental method with a pretest and post test conrol group design approach. Respondents will be given a pretest to assess their sleep quality, then respondents are divided into treatment groups given intervention and control groups not given intervention. The treatment group was given the intervention twice a week for four weeks. The next stage is to assess the posttest sleep quality of CKD patients in both the treatment group and the control group. The research data was obtained from guided interviews using the Pittburgh Sleep Quality Index (PSQI) questionnaire. Data analysis uses a comparative test from 2 measurement results in the same group, the data is normally distributed so that the Paired t-test is used.This study will outline the results of interventions carried out in the form of SSBM therapy and lavender aromatherapy with atomization technology in the form of diffusers in patients undergoing hemodialysis. Results: Based on the results of the study, it was found that SSBM therapy was significant in reducing sleep disorders in CKD patients undergoing hemodialysis with p=0.000 (p>0.05) while the control group was obtained p=0.09 (>0.05). Conclusion: SSBM therapy is expected to be applied as one of the interventions that can overcome sleep disorders in CKD patients undergoing hemodialysis.

Keywords: chronic kidney disease; hemodialysis; lavender aromatherapy; sleep quality; slow stroke back massage

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INTRODUCTION

Chronic Kidney Disease (CKD) is a disease of progressive decline in kidney function that cannot be completely cured as usual (irreversible) (Yilmaz et al., 2016). CKD sufferers themselves are estimated to reach 10% to 14% of the general population in the world (Vaidya & Aeddula, 2024). The condition of individuals with CKD requires renal function replacement therapy such as hemodialysis. According research of Wahyuni et al. (2022) those who affect sleep quality in CKD patients are those undergoing hemodialysis aged 45-59. CKD cases globally continue to increase based on the United Stage Renal Data System report Americans et al., (2019), The prevalence of CKD patients as many as 130,400 has increased from the previous year, which was 2.5%. In Asia, the prevalence of CKD is higher than anywhere else in the world. The incidence of CKD is more than 400 million people (Fotaraki et al., 2022).

According report of PERNEFRI (2018), prevalence in Indonesia 2018 there were around 30,000 new cases as many as 132,142 the number of active patients with CKD undergoing

hemodialysis and increasing from year to year, where the number of CKD patients undergoing hemodialysis increased about six times in the last 5 years. Based on data results (Dinas Kesehatan Kota Jambi 2022) The prevalence of CKD disease reached 30,006 people undergoing hemodialysis. CKD patients undergoing hemodialysis complain of symptoms that interfere with their daily activities (Sinurat et al. 2022). According research of Pan et al. (2019) Patients who receive hemodialysis therapy experience symptoms, one of which is a 70% decrease in sleep quality which is caused by kidney and urea treatment. there are around 95% of CKD sufferers experiencing sleep disorders, which has an impact on decreasing the patient's quality of life and also has an impact on the occurrence of sleep quality disorders (Theodorou et al. (2020).

Sleep disorders are the most complained symptoms by people with CKD. Research of Fotaraki et al., (2022) stated that sleep disorders are the most frequent comorbidities in CKD patients. Patients who do not get good sleep quality can have an impact on unwanted health problems such as a decrease in quality of life and even death (Cheng et al., 2022). Normal sleep is the body resting and occurs in a cycle where the nervous system is inactive (Muza, 2018). Sleep is affected by the sensory system, if the body gets less or more sensory stimulation, then sleep disturbances will occur. Sleep disorders can be affected by stressors, circadian rhythm disorders, the environment, and disease (Abbott et al., 2020). Sleep and mood disturbances are common in dialysis patients and are significantly associated with poorer survival, sleep quality is an important factor in determining quality of life in patients undergoing hemodialysis (Ida & Yati, 2021).

Sleep disorders cause nervous tension, irregular heartbeat and increase pain sensitivity and also according to research people with CKD who undergo hemodialysis therapy experience poor sleep disorders as many as 83.8% experience sleep apnea and insomnia. So that to overcome the problem of sleep disorders, good complementary actions are needed so that it can improve the quality of patient sleep (Hsu et al., 2019; Ida & Yati, 2021). Efforts that can be made to overcome the problem of poor sleep quality can use SSBM complementary therapy because it is a relaxation technique and is one part of holistic self-care that is useful for overcoming complaints such as fatigue and sleep disorders. SSBM stimulates the superficial nerves in the skin to stimulate the production of the hormone serotonin to reduce sleep disturbances (Ng & Parakh, 2021). This relaxation technique can also be combined with lavender aromatherapy. The main ingredients of lavender flowers are linalyl acetate and linalool (C10H18O) while linalool is the main active chemical content that creates relaxation. Physiologically, the therapeutic content of lavender scent will correct imbalances in the body system. The odor produced from aromatherapy stimulates the nucleus rafe to secrete serotonin which leads to sleep (Solehati & Kosasih, 2018). Lavender aromatherapy has a positive effect on the complaints felt by patients such as lowering the level of fatigue and sleep quality in hemodialysis patients (Varaei et al., 2021). Moreover,according research of MenekLİ & ÇevİK, (2021), Lavender aromatherapy can also improve the sleep quality of patients undergoing hemodialysis.

The need to treat sleep quality disorders because sleep quality disorders will have an impact on the decline in quality of life related to the patient's survival and require appropriate treatment according to the influencing factors. Thus, researchers feel the importance of conducting research and the need for additional interventions to maximize the provision of interventions to overcome sleep disorders in patients, especially those who are on hemodialysis. The researcher will export whether there is an effect of SSBM and lavender therapy aroma to improve the sleep quality of CKD patients undergoing hemodialysis therapy.

METHOD

The study design is a quasi-experimental research with a pre-test and post test control approach in the design group. The researcher will see the effectiveness of the combination of SSBM Therapy and Lavender Aromatherapy on the sleep quality of CKD patients undergoing hemodialysis. This research has referred to the Helsinki Declaration for research conducted on humans, meets ethical standards, and has passed the ethical test of the Ethics Committee of Jambi Health Polytechnic with number LB.02.06/2/1353/204. All respondents were informed about the purpose of the study, procedures, and the rights of respondents.

The population in this study is all CKD patients undergoing hemodialysis therapy in the Jambi City area. The sample in this study of 40 hemodialysis patients consisted of 20 intervention groups (treatment) and 20 control groups (standard treatment), sampling was carried out by *non-prxobability sampling* with *purposive sampling technique*. The inclusion criteria from the sample were, Age 45-60 years, *Pittsburgh Sleep Quality Index* (PSQI) Score $\geq$ 5, fully conscious and able to hear and communicate well. The exclusion criteria are as follows: Sudden changes in condition become unstable during the intervention and taking sleeping pills regularly before bedtime. Researchers looked at the effectiveness of the combination of SSBM therapy and Lavender Aromatherapy on the sleep quality of CKD patients undergoing hemodialysis. The steps that will be carried out in this study are as follows:

1. Preparation stage
   Researchers and research members take care of research permits by entering research permits and obtaining research permits and requesting permission from the Head of Installation and Head of the Hemodialysis Room explaining the objectives, benefits and procedures of the research
2. Screening
   The researcher was assisted by research members to screen CKD patients who underwent hemodialysis and then assessed sleep quality using a PSQI questionnaire. The sample selection process is through *a purposive sampling* technique that is adjusted to the research inclusion criteria.
3. *Pre Test*
   Furthermore, at the *pre-test stage*, the researcher and research members determined the respondents who were the control group and the intervention group by dividing them into 2 groups, namely 20 people in the intervention group and 20 people in the control group. Respondents were given an explanation of the research objectives and benefits of the research and filled out *the inform consent*. After filling out *the informed consent* and all samples understood the explanation, the researcher was then assessed for sleep quality with a PSQI questionnaire to be filled out by the respondents and guided by the researcher. Questionnaire filling was carried out before starting the intervention and in this assessment it was seen from the ability to sleep for the last 3 days before being given a combination of SSBM therapy and Lavender Aromatherapy.
4. Implementation Stage
   The implementation of the combination therapy of SSBM and Lavender Aromatherapy was carried out in the intervention group with the guidance of researchers, research members and assistance from enumerators. The research was carried out in the hemodialysis room at 08.00 WIB for the morning hemodialysis schedule and the respondents at home were not given treatment. SSBM therapy and lavender aromatherapy were carried out 2 times a week for 4 consecutive weeks in the intervention group and in the control group no intervention was given. SSBM therapy with intervention for 3-10 minutes and lavender aromatherapy is also given. The technique in carrying out lavender

therapy interventions is that researchers and research members mix lavender essential oil aromatherapy with a dose of 20 ml of water added 2 drops of lavender essential oil which is put into an aromatherapy diffuser.

5. *Post Test*
   The post test in this study was carried out after the patient participated in the study for 4 weeks.
6. Final Stage
   At this stage, the researcher examined the results of filling out the questionnaire of the respondents, hoping that the intervention could have a significant influence on improving sleep quality in CKD patients undergoing hemodialysis. Furthermore, the data was analyzed using a comparative test from 2 measurement results in the same group, if the normal data was used the *Paired t-test.*

The instrument in this study is *the Pittburgh Sleep Quality Index* (PSQI) to assess the sleep quality of hemodialysis patients. The interventions provided are SSBM and aromatherapy with atomization technology in the form of diffusers. Before starting the intervention, the researcher explained the research objectives and procedures to the participants, obtained their consent, and asked for 20-30 minutes to complete the questionnaire. The questionnaire includes items that collect characteristic data and are carried out pre-test, intervention and post test using the PSQI questionnaire. The data were analyzed using SPSS 22.0 (IBM Corporation, USA). Categorical variables are reported as frequencies and percentages, while continuous variables are reported as means and standard deviations. The significant relationship between T0, T1, and T2, specifically the effect of the SSBM And lavender aromatherapy intervention on reducing sleep quality will be analyzed using the paired t-test.

RESULT

Table 1
Frequency distribution of Characteristics of respondents

	Intervention group		Control group	
	F	%	f	%
Age				
45-52 years	8	40	8	40
53-60 years	12	60	12	60
Sex				
Women	11	55	13	65
Man	9	54	7	35
Education				
high	12	60	11	55
low	4	20	4	20
keep	4	20	5	25

Based on table 1, it was found that the characteristics of the respondents in the most intervention groups were women 11 (55%) and in the age category of 53-60 years as many as 12 respondents (60%), the highest level of education category in the higher education category was 12 (60%). In the control group, the most respondents were 13 (65%) women with the age of 53-60 years old, 12 (60%) and in the higher education category 11 (55%).

Tabel 2
Average level of sleep disturbances in patients with CKD who underwent hemodialysis after being given aroma therapy and stroke back massage

	Before		after	
	Mean	SD	Mean	SD
Intervention group	16,40	1,095	8,10	1,447
Control group	16,15	1,137	15,40	1,273

Table 2, it was found that the average sleep quality of the intervention group before the intervention was carried out was 16.40 with a standard deviation of 1.095. After the intervention, the average decrease in the patient's sleep quality was 8.10 with a standard deviation of 1.447. Meanwhile, in the intervention group, the average before the intervention was 16.15 with a standard deviation of 1.137 after the intervention was given, there was no significant decrease, but the average after the intervention was 15.40 with a standard deviation of 1.273.

Table 3
The Effect Of SSBM And Lavender Aromatherapy To Improve Sleep Quality CKD Undergoing Hemodialysis

Pretest- Post test	N	Mean	Std Deviasi	Sig. (2- tailed)
Intervention group	20	8,300	1,455	0.000
Control group	20	0.750	1,888	0.092

Table 3, it can be seen that sleep disorders in patients with CKD who undergo hemodialysis before and after receiving therapy obtained a value *of p* = 0.000 with a significance level of 0.05. Meanwhile, in the intervention group, *p* = 0.092 or > 0.05 was obtained. Thus, it was concluded that the provision of SSBM therapy and lavender aromatherapy was significant for sleep quality disorders in CKD patients undergoing hemodialysis.

DISCUSSION

Based on the results of the study, it was found that the majority of patients were women in the age category of 53-60 years. In line with oluseyi Ademola's (2023) research, the prevalence of CKD patients is between 40 and 60 years old. CKD patients undergoing hemodialysis are reported to be higher in women than men. The majority of the age category is over 46 years old, this is supported by the results of CKD surveillance that after the age of 40, kidney function begins to decline, which is around 1% per year. In addition to natural aging of the kidneys, there are many conditions that damage the kidneys faster, namely diabetes, hypertension and heart disease According to research, as many as 60.1% of CKD patients who undergo hemodialysis experience sleep quality disorders (Center Control and Prevention Disease, 2019; Wade et al . (2022).

Statistical analysis revealed that the groups had mean differences before and after the intervention. The intervention group experienced significant mean changes compared to the control group. Sleep disorders are a health problem that is often complained of in patients undergoing hemodialysis. Poor sleep quality is common in CKD patients especially in advanced stages (Ng & Parakh , 2021). Significant factors associated with poor sleep quality are quality of life, anemia and anxiety symptoms. These factors must be adequately managed to improve the overall outcome of CKD patients. (Adejumo et al., 2023). Sleep disorders can increase the risk of accidents, falls, chronic fatigue, impaired function, and individual feelings, thoughts, and motivations, thereby gradually reducing the individual's quality of life in patients. The causes of sleep disorders can be attributed to biological, social, and physiological factors, all of which are found in hemodialysis patients (Anonymous & Çevİk, 2021; Oshvandi et al ., 2021).

Various therapies are being developed to overcome the problem of sleep quality disorders in CKD patients undergoing hemodialysis, one of which is by using complementary therapies, namely SSBM therapy and lavender aromatherapy which have been proven to have a significant effect on the sleep quality of CKD patients undergoing hemodialysis. Lavender aromatherapy can increase alpha brain waves (8-13 Hz) associated with decreased stress and theta waves (4-8Hz), thereby improving sleep quality. Coping with stress and improving sleep quality is an important component of hypertension control (Bautista et al., 2019; Birhanu et al., 2021; Gou et al., 2023). Similar to SSBM therapy, significant results were obtained in

improving sleep quality in CKD patients undergoing hemodialysis. According to research, Sudijanto & Anonymous, (2022),SSBM with a combination of lavender aromatherapy and SSBM has been proven effective in overcoming sleep disorders in CKD patients undergoing hemodialysis.

The results of Tugba's research (2021) also show that lavender aromatherapy is effective in overcoming problems that are often complained about by CKD patients, as evidenced after the intervention obtained effective results in reducing pruritus, anxiety and improving sleep quality. In addition, lavender romatherapy can affect the autonomic and parasympathetic nervous systems, which regulate bodily functions such as blood pressure and heart rate that can relax the body (Ranjan & Gulati, 2023).Based on the results of the analysis, it was also shown that there was a difference with the control group, which was not significant in overcoming sleep disorders in CKD patients undergoing hemodialysis $p<0.05$. The analysis of respondent components stated that sleep quality disturbances were reduced compared to before in the intervention group. This research is in line with previous research, namely lavender aromatherapy has been shown to improve the quality of sleep of patients (Ahmady et al., 2019). In addition, the study stated that there was an improvement in sleep quality in patients undergoing hemodialysis. The use of lavender aromatherapy for one week, the patient's sleep quality can be (Setyaningrum et al., (2022). According to research Nasrul Sani & Silvy Irdianty, (2020), SSBM with lavender aromatherapy combination causes a relaxing effect that can increase body comfort.

Another study also mentioned that comparing the control group with the intervention group with the results of the lavender aromatherapy intervention group became an effective intervention to improve sleep quality. Lavender aroma therapy not only addresses sleep quality disorders but also addresses fatigue in patients undergoing hemodialysis. Pharmacological and non-pharmacological therapies are used by nurses to treat complications from hemodialysis, lavender aromatherapy complementary therapy, i.e. simple, safe and cost-effective therapy, can be applied so that nursing care is improved in its intervention (Samancioglu &Baglama, 2019; Ng & Parakh , 2021).Combination therapy of SSBM and lavender aromatherapy can provide patients with a more thorough and enjoyable relaxation experience, lowering blood pressure and providing additional benefits in relieving stress and improving overall well-being. Several previous studies have shown that consistent application of massage therapy and aromatherapy can effectively reduce the presence of cortisol, a hormone associated with stress. In addition, this combination has been shown to increase relaxation response activity, induce muscle relaxation, and enhance the sedation effect and feelings of euphoria and can improve sleep quality (Mehrabian et al., 2022; Rafii et al., 2020).

CONCLUSION

This study shows that the administration of SSBM therapy and aromatherapy with atomization technology in the form of diffusers is effective in overcoming sleep disorders in patients undergoing hemodialysis. These findings can be used as an alternative intervention for CKD patients undergoing hemodialysis with sleep disorders. Further research with a more rigorous design is guaranteed to confirm these results and explore this research

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