

Original Research

The Effect of the Combination Stimulation Cutaneous and Virgin Coconut Oil on the Sleep Quality and Comfort level in People Undergoing Hemodialysis



Putu Intan Daryaswanti^{1*}, Elyana Asnar², Ilya Krisnana²

¹STIKES Kesdam IX/Udayana, Denpasar, Indonesia

²Universitas Airlangga, Surabaya, Indonesia

Article Info	Abstract
Article history: Received: 30 June 2022 Accepted: 25 July 2022	<p><i>Introduction:</i> Sleep quality can be disruptive in patients with chronic illness, especially in patients with Chronic Renal Failure (CRF). In recent times, CRF was associated with poor sleep quality, about 25-36% of the normal adult population had sleep disorders. However, the prevalence of sleep disturbance in patients with uremia undergoing of hemodialysis occurs about 40-85% higher than the general population. It was reported that the majority of cases of chronic renal failure are people who lack sleep. Sleep disorders are very common in patients with chronic kidney disease. Poor sleep in hemodialysis patients has a negative impact on the physical and mental components of a person's life and leads to a decrease in their performance as well as cognitive and memory dysfunction.</p> <p><i>Methods:</i> A queasy-experiment with pretest-posttest control group design. The sampling method is used simple random sampling, conducted between January-February 2018. A total of 52 patients undergoing hemodialysis divided randomly into two groups. The treatment group was given cutaneous stimulation and VCO for 4 weeks and the control group was not given cutaneous stimulation and VCO.</p> <p><i>Results:</i> Giving cutaneous stimulation and VCO effective in improving sleep quality and comfort level. There were significant results on sleep quality seen from Mann Whitney test with $p < .001$ and comfort level from Mann Whitney test with $p = 0.009$.</p> <p><i>Conclusion:</i> Provision of cutaneous stimulation and VCO can be used as complementary therapy in improving quality of sleep and comfort in patients undergoing hemodialysis.</p>
Keywords: stimulation cutaneous, sleep, renal dialysis, chronic renal failure	

*Corresponding Author:

e-mail: intan.daryaswanti@gmail.com



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INTRODUCTION

Sleep is an important function of life, about a third of our existence and clearly serves an important role in health promotion and performance. Sleep has been described as a behavioral "behavioral state that can change from perceptual release from, and not responsive to the environment". Sleep seems to provide a restorative effect on the brain by allowing recovery of central nervous system (CNS) neurons undergoing one or more reversible changes during wakeful activation [1].

Sleep quality can be disruptive in patients with chronic illness, especially in patients with Chronic Renal Failure (CRF). In recent times, CRF was associated with poor sleep quality, about 25-36% of the normal adult population had sleep disorders. However, the prevalence of sleep disturbance in patients with uremia undergoing of hemodialysis occurs about 40-85% higher than the general population. It was reported that the majority of cases of chronic renal failure are people who lack sleep [2]. Sleep disorders are very common in patients with chronic kidney disease. possible reasons for sleep disorders in hemodialysis patients include plasma toxin concentrations (creatinine and urea), anemia, nocturnal hypoxia and comorbidities. Poor sleep in hemodialysis patients has a negative impact on the physical and mental components of a person's life and leads to a decrease in their performance as well as cognitive and memory dysfunction [2]. Although hemodialysis may improve aspects of quality of life, it does not appear to have a beneficial effect on patient

sleep. As a result, the sleep disorder is a complex phenomenon, which requires a multifaceted approach because it is generally known that sleep quality is an important factor affecting the quality of life and death [3].

The main goal of nursing as a professional discipline is to provide services to patients and is one of the pillars in nursing practice and research is to assess comfort status and provide comfort interventions. Comfort is an important element in improving quality of life and the many interventions provided by professional health professionals, including nurses who focus on promoting comfort. Comfort theory is the basis of the concept of comfort. The theory was developed by Kolcaba, and can be practiced by health care providers in both hospitals and clinics [4]. There are four comfort contexts based on the care provided by the nursing literature that is the physical context concerning the sensation of the body, the psychospiritual context of internal self-awareness, including the self-esteem, identity, sexuality and life of the prime, which involves a very close and higher relationship, socio-cultural contexts concerning interpersonal, family and social / community relationships and the environmental context of the external background, the conditions and their effects on humans. In the perspective of Kolcaba's view, holistic comfort is defined as an immediate experience that becomes a force through the need for relief reduction (patient's complaint/state of a patient finding specific needs), ease and transcendence the problem) [5]. Comfort is one of the factors that can improve the sleep quality of patients.

When the patient is comfortable, calm conditions can make the patient relax so that the patient easily fall asleep. One of the interventions provide comfort and improve the sleep quality of patients by providing cutaneous stimulation in the form of massage with stroking technique combined with the provision of Virgin coconut oil. Cutaneous stimulation is a stimulation of the skin and underlying tissue that aims to reduce unwanted signs and symptoms such as pain, muscle spasms, inflammation, nausea and so on [6]. Cutaneous stimulation is given in the form of massage with stroking technique, is the provision of massage from proximal to distal along the tissue at depth and speed corresponding to the effects required, but the direction of giving this massage may vary to provide greater comfort. VCO is chosen because it is a pure coconut oil that has high antioxidant compared to other oils. In addition to being easy to make and obtain, VCO can provide comfort in patients with GSK who have dry skin with itchy complaints that are usually called pruritus. According to research Evangelista (2014) [7] VCO can also moisturize the skin and lower the pruritus score without the administration of antihistamine drugs. The resolution of pruritus can be explained by the concomitant improvement in barrier function in the skin. Skin barrier disorders alter the epidermal innervation and increase the density of the nerves in the skin.

This study aimed to determine the effectiveness of combination stimulation cutaneous and virgin coconut oil on the sleep quality and comfort level in people undergoing hemodialysis.

METHODS

Study Design and samples

This research uses an experimental type of queasy research with pre-post control group design. The study was conducted for 4 weeks from January 22 to February 21, 2018 in the Hemodialysis Room Regional of Hospital Public Buleleng, Singaraja Bali. Calculation of sample size using Lemeshow formula [8], where the level of significant 5% = 1.96, power the test 80% = 0.84 and got 24 subjects in each group. Considering the probable loss in the sample, the number of subjects in each group was increased to 26. The sample size is 52 people divided into two groups, intervention group and control group, every 26 people. The population in this study patient who is undergoing hemodialysis. The sampling technique used is random sampling with inclusion criteria, (a) the patient runs regular hemodialysis twice a week, and (b) sleep disorder with PSQI score > 5. Exclusion criteria were as follows: (a) patients with hemodialysis cito, (b) patients with loss of consciousness, (c) patients with hemodialysis traveling, (d) patients with HBsAg (+), and (e) patients with injury or secondary infection of the skin. During a post-test in the intervention group (Monday morning) there was one person absent hemodialysis because the patient died two days before hemodialysis and post-test in the control group (Tuesday afternoon) there was one person absent hemodialysis because the patient died the day before hemodialysis.

Ethical consideration

This study was approved by the Ethical Commision of Health Research at Nursing

Faculty of X University number 609-KEPK on 4th January 2018. Written consent was obtained from all centers. The aim of the study was explained to the participants, and informed consent forms the participants were collected.

Measurement/Instruments

The sleep quality instrument comes from the Pittsburg Sleep Quality Index (PSQI) [9]. This instrument consists of sleep duration, sleep disturbance, daily dysfunction, sleep efficiency, sleep complaints and the use of sleeping pills. Consisting of 9 question items, the statement was judged from 0 (no difficulty) to 3 (severe difficulty) and total score on 7 components resulted in PSQI score. The total PSQI score ranges from 0 to 21, whereas a PSQI score of ≥ 5 indicates poor sleep quality, while good sleep quality is indicated in the total PSQI score <5 . PSQI has been used in recent studies [2,3,10–13].

The convenience questionnaire sheet came from Kathy Kolcaba's web line of comforters used by researchers at California State University San Marcos. The questionnaire sheets are used to measure the holistic change in patient comfort levels using Shortened General Comfort Questionnaire (GCQ). There are 28 statement points about feelings of comfort felt associated with the four domains of comfort. With 4 scales very comfortable and 1 very uncomfortable, arranged with a Likert scale consisting of four answers with rating scale 4 = SA (Strongly Agree), 3 = A (Agree), 2 = LA (Less Agree), 1 = D (Disagree). The questionnaire has received permission from Kathy Kolcaba obtained by

email replies. The validity test of this instrument shows excellent consistency (alpha Cronbach 0.90), good total correlation items and the coefficient of determination is 0.94 on a multidimensional scale.

Data collection and procedure

This study was conducted between January 2018 and February 2018. During the research process, 52 patients were included in the study, each of 26 patients in the intervention and control group who had met inclusion and exclusion criteria. introducing themselves, requesting permission to participate in research, explaining the benefits, objectives and procedures of the research and ethical rights of the respondent and requesting approval by filling informed consent. Thereafter, pre-test, preliminary assessment of sleep quality and comfort in both groups. pre-test assessments were performed in the first week of the first session of hemodialysis and performed in the room hemodialysis.

Implementation of cutaneous stimulation intervention and VCO is done after pre-test. Before the patient does hemodialysis and at home before bed at night. At home, this intervention is also done twice a day, the morning after the patient's bath and the night before bed. Patients in the intervention group were given combination treatment of stimulation and VCO with technique stroking massage ie giving the massage with proximal to distal direction with emphasis adjusted to patient comfort for 30 minutes by giving VCO as much as 5ml twice daily for 4 weeks. Giving cutaneous stimulation is given to dry skin areas such as

arms and legs. In the control group was not given cutaneous stimulation and VCO, but was administered after the final measurement of the patient was given a cutaneous stimulation guide and a VCO bottle. Final assessment after cutaneous stimulation intervention and VCO for four weeks. The final assessment measures and the quality of sleep and comfort performed during the fifth week of the first session of hemodialysis and performed in the hemodialysis waiting room.

Data analysis

The statistical analyses were performed with SPSS. Descriptive statistics, such as number, percentage, mean and standard deviation, were used to present the descriptive characteristics of the people in the intervention and control groups. The Chi-square test was used to compare the categorical data. The Shapiro-Wilk test was used to evaluate the normal distribution of quantitative variables. The homogeneity test of the general characteristics of the intervention group, control group and two groups on the pre-intervention dependent variables were analyzed by t-test. Hypothesis testing of the two groups was analyzed by Mann Whitney test, the effect of each group was analyzed by Paired t-test and Wilcoxon test. For all analyses, $p < .05$ was accepted as the level of significance.

RESULTS

Based on table 1 shows the characteristics of respondent by age, most respondents have age 30-45 years as many as 20 respondents (38.5%). Characteristics of the male sex are

more than the female that is 36 respondents (69.2%). Characteristics of education, the highest number of respondents is 22 high school education respondents (42.3%). Characteristic of the work, most of the respondents did not work that there were 10 respondents (19.2%). Characteristics of the duration of respondents undergoing hemodialysis, most respondents who gave undergoing hemodialysis less than five years as many as 39 respondents (75%). Based on homogeneity test, it was found that the characteristic of age, education and occupation showed homogeneous ($p > .05$).

Homogeneity Test between the Two Groups on the Pre-intervention

Table 2 shows the homogeneity values for each group prior to the intervention (pre-test) in the treatment group and the control group. Homogeneity values that exist before the intervention (pre-test) that is comfort level and sleep quality where $p > .05$.

Table 3 shows the highest mean sleep interruption in the treatment group before the intervention was in sleep latency with value (2.27 ± 0.53), while in the control group was in sleep duration, with a value (2.27 ± 0.66). Results after intervention in the control group decreased mean sleep latency (1.73 ± 0.53) and in the control group there was also a slight decrease in mean sleep duration (2.15 ± 0.61). When viewed the value of significance on the aspect of sleep quality, there are significant differences in sleep subjective quality, sleep duration, sleep latency and sleep efficiency in the treatment group where the $p < .05$. While in the control group of the

seven aspects did not show a significant difference where the $p > .05$. the mean value in the intervention group decreasing where the pre-test value (12.19 ± 1.93) and post-test value (8.96 ± 1.80). This decrease in mean value means an increase in sleep quality after four weeks of intervention. Paired t-test results in the treatment group showed significant results where $p < .001$, and Wilcoxon Test results in control group also showed significant value.

Table 4 shows most of the increase in mean values in treatment groups after intervention. The highest mean value was in the socio-cultural comfort aspect (88.33 ± 2.30), followed by physical aspect (68.57 ± 16.93), psychospiritual aspect (60.50 ± 17.94) and environmental aspect (57.17 ± 22.27).

Increasing the difference in value from the four aspects of comfort also lies in the aspect of sociocultural comfort. The significance value of the four aspects of comfort in the treatment group and the control group, the above results show that the pre-test test is not significant, where $p > 0,05$. The mean post-test in the treatment group (69.77 ± 3.10) is greater than the mean post-test in the control group (67.12 ± 3.32). The mean increase in the treatment group indicates the presence increased comfort after being given intervention. Paired t-test in the treatment group showed significant value ($p < .001$), which means that there was a difference of value in treatment group before and after the intervention.

Table 1

Demographic characteristics of respondents on intervention and control group (n=52)

Characteristic	Intervention		Control		p value
	n	%	n	%	
Age (yrs)					
30-45	14	53.8	6	23.1	.102
46-55	6	23.1	11	42.3	
56-65	6	23.1	9	34.6	
Mean Age	47.73±7.68		50.85±7.58		
Gender					
Male	14	53.8	22	84.6	.016
Female	12	46.2	4	15.4	
Education					
Not schooling	1	3.8	-	-	.392
Primary	6	23.1	5	19.2	
Secondary	5	19.2	5	19.2	
High School	11	42.3	11	42.3	
Collage	3	11.5	5	19.2	
Occupation					
Not Working	10	38.4	5	19.2	.120
Working	16	61.6	21	80.8	
Hemodialysis Duration					
0 - 5 yrs	16	61.5	23	88.5	.023
6-10 yrs	8	30.8	3	11.5	
>10 yrs	2	7.7	-	-	
Mean hemodialysis duration	4.76±3.13		2.40±1.76		

Table 2

Homogeneity test between the two groups on the pre-intervention

Variables	Groups		<i>p-value</i>
	Intervention (n=26)	Control (n=26)	
	Mean ± SD	Mean ± SD	
Comfort	68.15 ± 3.46	66.65 ± 3.34	.118
Sleep quality	12.19 ± 1.93	12.85 ± 2.01	.239

Table 3

The distribution of sleep quality (pretest and posttest) (n=52)

Group	Aspects	n	Pre-test	Post-test	<i>p-value</i>
			Mean ± SD	Mean ± SD	
Intervention	Global PSQI	26	12.19 ± 1.93	8.96 ± 1.80	-
	Sleep Subjective Quality		2.12 ± 0.32	1.92 ± 0.27	.025
	Sleep Latency		2.27 ± 0.53	1.73 ± 0.53	< .001
	Sleep Duration		1.92 ± 0.79	1.31 ± 0.54	.001
	Sleep Efficiency		2.08 ± 0.84	1.62 ± 0.63	.001
	Sleep Disturbance		1.81 ± 0.69	1.81 ± 0.69	>.999
	Sleep Medicine		0.00 ± 0.00	0.00 ± 0.00	-
	Daytime Dysfunction		2.00 ± 0.63	2.00 ± 0.63	>.999
Paired t-test			<i>p</i> < .001		<
Control	Global PSQI	26	12.85 ± 2.01	12.38 ± 1.85	.001
	Sleep Subjective Quality		2.12 ± 0.32	2.08 ± 0.27	.317
	Sleep Latency		2.08 ± 0.27	2.04 ± 0.34	.317
	Sleep Duration		2.27 ± 0.66	2.15 ± 0.61	.083
	Sleep Efficiency		2.12 ± 0.86	2.27 ± 0.60	.157
	Sleep Disturbance		2.15 ± 0.54	2.04 ± 0.52	.180
	Sleep Medicine		0.15 ± 0.54	0.12 ± 0.43	.317
	Daytime Dysfunction		1.92 ± 0.62	1.69 ± 0.54	.034
Paired t-test			.018		

Table 4

The distribution of aspects of comfort level (pre-test and post-test) (n=52)

Group	Aspects	n	Pre-test	Post-test	<i>p-value</i>
			Mean ± SD	Mean ± SD	
Intervention	Global	26	68.15 ± 3.46	69.77 ± 3.10	
	Physics		64.57 ± 19.96	68.57 ± 1.93	.196
	Psychospiritual		59.33 ± 18.37	60.50 ± 17.94	.142
	Sociocultural		84.33 ± 7.37	88.33 ± 2.30	.180
	Environment		55.83 ± 21.50	57.17 ± 22.27	.363
<i>p-value</i>			<i>p</i> < .001		
Control	Global	26	66.65 ± 3.34	67.12 ± 3.32	.009
	Physics		67.43 ± 18.62	68.00 ± 17.22	.457
	Psychospiritual		61.17 ± 18.54	61.58 ± 16.81	.490
	Sociocultural		81.00 ± 13.00	79.33 ± 11.71	.300
	Environment		47.33 ± 12.27	48.67 ± 10.89	.191
<i>p-value</i>			.076		

DISCUSSION

The results showed that there was an effect of the combination of cutaneous stimulation and VCO on comfort in patients with CRF. Based on the mean values of pre-test and post-test, the treatment group experienced a significant increase in comfort value after being given intervention from the control group. The high comfort aspect has an increased sociocultural aspect, where the patient feels comfortable interpersonally, the patient's relationship with the nurse/doctor, the patient's relationship with the other patient sharing the health information. The results are in line with an opinion [4] which states that sociocultural convenience is related to family habits, interpersonal relationships in sharing information about health, financial support and religious beliefs respectively. Meanwhile, according to the results of the study [14], there are three important points on the socio-cultural comfort aspects of information, hemodialysis space staff (nurses and doctors), and fellow patients undergoing hemodialysis.

Respondents in the treatment group when meeting with other patients who also undergo hemodialysis always share information about the condition of self and inform what is consumed to overcome health problems. Comfort is the main goal of nursing services, through convenience, the healing process can be achieved. Nurses have a goal to achieve patient comfort and a view of the achievement of comfort is an important factor that nurses have. Cutaneous stimulation of the massage type with stroking technique is the provision of massage from proximal to distal along the tissue at depth and speed

corresponding to the desired effect, but the direction of giving this massage may vary to provide greater comfort [15]. In the provision of massage on dry skin, so as not to cause friction then given the VCO lubricant, so when given a comforting massage felt more.

Comfort is a concept that has a strong relationship in nursing. Comfort is defined as a state experienced by the receiver that can be defined as a immediate experience that becomes a force through the need for relief reduction (patient's complaint / state of a patient who finds his specific needs), ease (pleasure and calm), and transcendence where an individual reaches above the problem). When associated with the condition of patients with CRF undergoing hemodialysis, relief (a dry-related skin disorder that triggers itching, and sleeps disturbance), ease state (pharmacological treatment and intervention related to dry skin complaints and sleep disturbances) and transcendence will this complaint continue?). There are four comfort contexts based on the given care that is the physical context (concerning the sensation of the body), psychospiritual (involving internal self-awareness), sociocultural (related to interpersonal, family / social / community relations) and environment (concerning the external background, condition and influence) human).

The results showed that there was an effect of cutaneous stimulation and VCO on sleep quality. The intervention group showed an increase in the value of sleep quality compared to the control group. In the intervention group there was a decrease in mean value more than the decrease in the

mean of the control group. This decrease in mean values means that there is an increase in sleep quality in patients with CRF undergoing hemodialysis.

Based on the test results showed significant values in both groups, although both groups showed significant value, the post-test results of both groups remained on the value of poor sleep quality. The difference in post-test results from both groups is certainly due to the intervention of cutaneous stimulation and VCO, although it has not achieved a good sleep quality score. Giving cutaneous stimulation and VCO can help reduce sleep problems both in terms of sleep latency, sleep duration and sleep efficiency. In line with the results of this study Muz & Tasci [16] which mentions that actions such as massage, yoga, reflexology and acupressure are effective for reducing fatigue and sleep problems. The results of the study [11] also mentioned the post-test mean in groups receiving massage and reflexology can decrease fatigue and improve the sleep quality of CRF patients undergoing hemodialysis. Similarly, the results of the study [2] explain that relaxation techniques such as massage can improve the quality of sleep and its components such as the expression of subjective sleep quality, sleep disturbances, of sleep medication and daytime dysfunction in patients undergoing hemodialysis.

CONCLUSION

Cutaneous stimulation combination intervention and VCO can be used as a non-pharmacologic complement therapy given

routinely to improve sleep quality and comfort level in patients undergoing hemodialysis.

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