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THE SOFT MASSAGE USING VIRGIN COCONUT OIL CAN REDUCE UREMIC PRURITUS IN PATIENTS WITH CHRONIC KIDNEY DESEASE

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ABSTRACT

Patients undergoing hemodialysis experience pruritus characterized by itching that interferes with comfort, causing skin damage and infection. The purpose of this study was to determine the effect of gentle massage using coconut oil to reduce uremic pruritus in patients with chronic renal failure. The study design was a quasi-experimental study with a pre-post-test design with a control group. The sampling technique used purposive sampling, the number of samples was 36 respondents with each group of 18 people. The intervention group was given a gentle massage using coconut oil, while the control group was only given coconut oil. The assessment of pruritus used Data analysis used a Paired T test with a significance level of $\alpha \leq 0.05$. The results showed a decrease in the average degree of uremic pruritus in the intervention group by 3,444 and in the control group by 2,222 with a mean difference of 1.2. The results of the Mann U Whitney test ($p\ 0.000 < \alpha \leq 0.05$ indicate that there is a difference in the average degree of pruritus. It means that there is an effect of soft massage using Virgin Coconut Oil (VCO) on the reduction of uremic pruritus in patients with chronic kidney disease at RSUD Dr. M Yunus Bengkulu. Soft massage using VCO needs to be recommended to reduce itching symptoms due to increased uremia in patients with kidney failure.

Keywords: ***Soft Massage, Virgin Coconut Oil, Uremic Pruritus***

INTRODUCTION

Indonesia Sehat 2025 has a mission to maintain and improve the service health of individuals, families, and communities to have degrees of optimal health. This moment, efforts to achieve the vision and mission of an Indonesia Sehat 2025 still experiences various constraints due to high problems and degenerative disease. One of which is chronic kidney disease (Puspitaningrum *et al* ., 2018) . CKD is a condition characterized by declining kidney function with *a Glomerular Filtration Rate* (GFR) < 60 mL/min/1.73 m², or there is a sign of kidney damage for 3 months or more. If the continued decline in GFR continues until it is not enough from 15 mL/min/1.73 m², then somebody will experience *End Stage Renal Disease (ESRD)*, or the kidney will no longer be able to maintain its function (Webster *et al* ., 2017) .

The Institute for Health Metrics and Evaluation (IHME) reported that in 2017 there were 697.5 million cases of CKD in the world, and it became the reason for the 12th death. The country of Indonesia entered the top 12 countries with the most common cause of CKD in the world (IHME, 2020). Based Health Research data show that the prevalence of CKD in Indonesia is 0.38%, or 713,783 cases, and the prevalence of CKD in Bengkulu Province is 0.43%, or 5175 cases (Ministry of Health of the Republic of Indonesia, 2018). It can be concluded that CKD in Bengkulu province exceeds the national prevalence number.

People with CKD will experience increased in urea and creatinine resulting from failure of kidney function to secrete the remaining substance metabolism in the body (Smeltzer & Bare, 2013). Increased levels of urea in the body can cause disruption in organ functions, such as disturbances in fluid and electrolyte, skin, metabolic-endocrine, neuromuscular, cardiovascular, pulmonary, gastrointestinal, hematological, and immunological functions (Jameson *et al* ., 2015) .

Enhanced levels of urea in CKD sufferers can cause known pruritus with the terms "uremic pruritus," "renal pruritus," or "chronic *kidney disease-associated pruritus" (CKD-AP)*(Djuanda, 2010). Pruritus is a uncomfortable in the skin and causes a desire for scratching. Characteristics of uremic pruritus are the existence of itching that makes worse at night and during the day, dry skin, peeling skin, cracks in the epidermis, and changes in the pigmentation of the skin (Ur Rehman *et al* ., 2021). Generally, uremic pruritus can vary from an itchy, attack on the back, face, and arms (Simonsen *et al* ., 2017) .

According to the *Dialysis Outcomes and Practice Pattern Study* (DOPPS), 42% of patients on hemodialysis experience pruritus. As many as 50-100% of patients with chronic kidney failure have at least one change in the skin, and the prevalence of uremic pruritus is reported as 22%-84% in patients undergoing hemodialysis (Min *et al* ., 2016).

Some other studies report that the incidence of pruritus reached 41.9% - 67% of patients who experience end-stage kidney disease undergoing hemodialysis. Riza's research (2012) reported that pruritus occurred in 70.5% of patients on hemodialysis (Wahyudin *et al* , 2020) . The study by Shawky, Hamid, & Khedr (2021) on 50 CKD patient at Al-Agouza Hospital stated that 25% of CKD patient suffer mild pruritus, 50% moderate pruritus, and 25% severe pruritus. The research by Sembiring, Nasution, & Ariani (2021) on 49 CKD patient at Haji Adam Malik General Hospital, Medan, stated that 25.51% experienced mild pruritus, 58.16% moderate pruritus, and 16.33% severe pruritus.

Pruritus, or an itching sensation, that appears becomes a very annoying problem for skin quality, sleep, and daily activity for CKD sufferers (Shaikh *et al* ., 2019) . The research conducted by Rehman, Munib, Ramadas, & Khan (2018) reports that 81.3% of patient who experienced pruritus experienced sleep disorder. Research by Juanda (2017) mentions that pruritus gives a feeling of discomfort, confusion, and a lack of belief in self-patience. This condition can lead to more psychosocial problems. There is little tendency that the patient will experience mental well-being disorder (Oxtavia *et al* ., 2017) . The psychological impact, Yonathan & Darmawan (2021) note that CKD patient with pruritus have increased risk of infections, wounds, calciphylaxis, acquired perforating dermatosis, and nephrogenic systemic fibrosis. More pruritus occure at home are often neglected and not treated appropriately (Rayner *et al* ., 2017) . Research conducted in hemodialysis units across 17 countries, involving 268 healthcare personnel, reveals that 69% of the health professionals neglects the occurrence of pruritus in patients with CKD (Rayner *et al* ., 2017) . Research Aresi *et al.* (2019) mention that neglect is due to poor health considerations. They stated that the negligence was due to poor health considerations, prioritizing physiological treatment to overcome pruritus compared to the problem of itching (comfort) due to pruritus, the absence of patients complaining about pruritus to health workers, the perspective of health workers who consider pruritus not something that should be consulted.

Pharmacological treatment is often used to reduce pruritus in clinical setting. Pharmacological treatment includes antihistamines, gabapentin, pregabalin, and nalfurafine hydroclorine. However, if pharmacological therapy is successful, pruritus symptoms will gradually decrease and disappear. This requires careful evaluation using alternative therapies and non-pharmacological intervention to effectively manage pruritus. Recommended therapies include regular moisturizing of the skin, the use of topical agents, and dietary modifications, which can provide comfort and improve the patient's whole quality of life. A study mentions that 68% of patients treat pruritus with topical antihistamines and corticosteroids, 28% use oral medication, and 18% do not take any action whatsoever (Rayner *et al* ., 2017) .

According to *the Nursing Intervention Classification* (NIC), One of the choices of nursing intervention can be performed on patients with problems of damaged skin integrity given cutaneous stimulation. The type of stimulation such as *massage*, cold and hot stimulation, administration of menthol, and vibration (Bulechek , 2013). Nursing care interventions to manage pruritus include identifying and managing the discomfort caused by itching. Independent nursing care actions can performed by nurse at home include moisturizing damaged skin with essential oils and gentle, non-invasive massage to reduce pain and pruritus (Indonesian National Nurses Association, 2018) .

Giving cutaneous stimulation such as *massage* is a practical and easy intervention done to repair skin integrity and moisture. *Massage* therapy, is a branch of complementary medicine that is recommended as a therapy option. Massage is a non-pharmacological pain management technique that can relax the body and reduce pain or itching, promote comfort, calm nerves, and lower blood pressure. Furthermore, massage can have a therapeutic effect and reduce levels of cortisol, norepinephrine, and epinephrine, which stimulate the sympathetic nervous system (Daryaswanti, 2018) . Massage has many benefits for the body, especially when applied using coconut oil or Virgin Coconut Oil (VCO).(Mohebi *et al* ., 2018) .

VCO is more effective in absorbing various water- and fat-soluble vitamins and minerals, such as magnesium and calcium. Several studies have shown that the MCT/MCFA (medium-chain fatty acids) in coconut oil can break down and digest lipids more thoroughly by enhancing metabolic enzymes (Quamila, 2018). In addition, the use of VCO in topical aplication will react with bacteria on the skin to become free fatty acids as contained in sebum (skin oil), so that can protect skin from dangerous pathogenic microorganisms (Cahyati *et al*. 2015).

A preliminary study conducted by researchers in internal medicine ward of Dr. M. Yunus Hospital in Bengkulu found that most CKD patients experienced pruritus both before and after undergoing hemodialysis. The pruritus scale ranged from moderate to severe, many patients experienced skin damage, lesion, cracked, red, and dryness. So far, treatment in the ward has only been given antihistamines to reduce itching, and sometimes patients have had liquid or powdered surgical ointment applied to the itchy skin area. None of the nurses in the ward have yet to give massage therapy and using coconut oil as an alternative therapy to treat uremic pruritus.

Based on phenomena that have already been described, the researcher needs to know “the influence of *soft massage* using *Virgin Coconut Oil* (VCO) on reducing uremic pruritus in CKD patients after hemodialysis.”

MATERIALS AND METHODS

Types of research is a quantitative study with a quasi-experimental approach using a *pre-test–post-test design with a control group.* Study held in April-May 2022. Samples in this study are part of the CKD patients undergoing hemodialysis and experiencing uremic pruritus in the hemodialysis room of Dr. M. Yunus at Bengkulu Regional Hospital. Technique of sampling use of the purposive sampling technique which means the technique is taken based on criteria that have been determined by the researcher. Number of sample size of 36 people, with samples of each group totaling 18 people. The samples taken met the inclusion and exclusion criteria, including those undergoing hemodialysis, experiencing pruritus, and having no skin lesions or wounds. The massage technique was applied gently to the itchy areas (especially the hands, feet, and back). Massage was performed for 20 minutes three times a week, and VCO was administered three times daily at home. The degree of pruritus was measured using the 5D itch scale at pre and post intervention. Data analysis to measure the effect of the intervention on pruritus in group used the Wilcoxon test and between Mann U Whitney with a 95% confidence level. This research has been reviewed and declared ethically appropriate by the ethics commission of the Bengkulu Ministry of Health Polytechnic of Health.

RESULTS AND DISCUSSION

Table 1 Characteristics of Respondents and Equality

Variables	Group		*p-value*
	Intervention	Control	
Age (year)			
Mean	51.83	53.22	
Min	40	40	
Max	70	66	0.427*
SD	9,895	8,048	
Gender			
Men	11(61.1%)	12 (66.7%)	1,000**
Female	7 (38.9%)	6 (33.3%)	

Variables	Group		*p-value*
	Intervention	Control	
Duration of HD (year)			
Mean	6.33	5.78	
Min	3	4	0.531*
Max	10	9	
SD	2,326	1,517	
HD Frequency (week)			
Mean	2.00	2.00	
Min	2	2	1,000*
Max	2	2	
SD	0.000	0.000	
Long-term CKD (year)			
Mean	6.56	6.22	
Min	3	5	0.769*
Max	10	9	
SD	2,148	1,166	
Ureum Level			
Mean	116.33	110.50	
Min	78	88	0.326*
Max	150	147	
SD	19,005	17,906	
Creatinine Levels			
Mean	10,68	8,67	
Min	3.3	5.2	0.064*
Max	17.4	13.0	
SD	3.8374	2,4007	

**sign Mann U Whitney-Test, ** Chi square Test, 95%*

Based on table 1, it was found that the average age of respondents was the age of entering old age (53 years), more men (64%), the average length of HD was 6 years, the average frequency of HD was twice a week, the average length of CKD was 6 years, the average urea creatinine in the intervention group was the same, namely 116 gr/dL and the control group 111 gr/dL, and the creatinine level was different, in the intervention group 10.7 gr/dL and the control group 8.7 gr/dL. The results of the equality test obtained p-values for all variables above 0.05, which means there was no significant variation between the two groups (equivalent) before the study was conducted.

Table 2 The Different of Reducing Pruritus within group

Group	Mean Pre-Post	Mean Difference ± SD	Low-Upper	p-value
Intervention (SM + VCO)	15.11– 11.67	3,444± 1,294	2,801– 4,088	0.000*
Control Group *(VCO)*	16.00–13.78	2,222± 1,309	1,571- 2,873	0.000*

The results of the study showed that the average value of uremic pruritus in the intervention group before the study was carried out was 11.51 and decreased to 11.67 and in the control group from 16.00 decreasing to 13.78. The table show from each group that the results of the statystical test using wilcoxon test show a p-value in the group interventions and control groups, namely 0.000 (p-value < α 0.05), which means there is a significant difference in the average decrease in uremic pruritus score before and after the intervention. When comparing the second group based on statistical test results, the *Mann U Whitney sample t-test* shows *a p-value of* 0.020 (p-value < α 0.05), which means there is a significant difference between the average pruritus scores between group given *a soft massage* using VCO and the group that was only given

VCO. The different mean is 2.111. Soft massage using VCO more effective
reduce uremic pruritus compared VCO only in CKD patient. This study show results that intervention with *soft massage* using VCO can be more effective in lowering the evidenced pruritus score from the results, with an average decline in the higher pruritus score compared to only giving VCO, with a difference of 1.22. This is due to the combination; giving *a soft massage* using VCO will add a more positive and strong effect

Results of the analysis of the degree of pruritus in the group intervention before giving intervention is moderate pruritus, namely 94.4%, and after giving *soft massage* using VCO is still moderate pruritus, but can be lower namely 88.9%. The degree of pruritus in the group control before given intervention is moderate pruritus, 88.9%, and after being given partial VCO is moderate pruritus, which is still to 88.9%. So, the obtained difference average score of pruritus degree before and after the given treatment in the intervention group is 3.444, and the difference average score before and after the given treatment in the control group is 2.222. Statistical test results show that effect *soft massage* using VCO for uremic pruritus obtained *a p-value of* 0.000 < from *a p-value* of 0.05. Then there is a difference in average scores of the degree of pruritus after the given treatment between the both groups. There is the effect of soft massage using VCO on reducing uremic pruritus in patients with CKD at Dr. M Yunus Bengkulu Regional Hospital. Both interventions can reduce uremic pruritus but using soft massage using VCO more effective to reduce uremic pruritus with mean difference is 2.11.

Based on results study (Fajriati & Asri, 2018), explained that after giving VCO to their skin, the partly respondent said he felt itchy reduced in the skin. The client who originally looked dry skin was already seen as rather moist, and the intensity of itching felt reduced. This shows that giving VCO is able to reduce itch and maintain skin humidity. Meanwhile, result of study (Khorsand *et al* ., 2019), providing *soft massage* using VCO can reduce the score degree of pruritus, because *massage* using oil is more effective for reducing the degree of pruritus. It can be made into an alternative as well as recommended as a complementary treatment for patients with uremic pruritus (Khorsand *et al* ., 2019) .

Massage has a number of effects on the skin. Constantly massaging the skin removes dead skin cells, unclogging sweat glands, hair follicles, and sebaceous glands, allowing them to function better. Massage interventions performed with appropriate pressure and muscle fibers can enhance the natural healing process in tissues. Gentle, light massage techniques using effleurage, stroking, and petrissage can stimulate skin receptors, increasing local blood and lymph flow, causing arteriolar dilation, and relaxing muscles, thus reducing cortisol, epinephrine, and norepinephrine levels. Furthermore, the fatty acids (lauric acid and lauric-oleic acid) in VCO, which bind to sweat, coat the skin's surface with water retained in the stratum corneum, reducing evaporation, increasing skin moisture, and reducing itching.

Research conducted by Sukarja (2016) on the effects of cutaneous stimulation and VCO on skin moisture in the feet of diabetics showed a significant increase in skin moisture before and after the intervention. Massage can also have a therapeutic effect and can reduce levels of cortisol, norepinephrine, and epinephrine, which stimulate the sympathetic nervous system. This study in-line with research conducted by (Fajriati & Asri, 2018), the results of the study showed that there is effect giving VCO therapy on reducing uremic pruritus with *a p-value* = 0.000. Research results can be recommend using VCO into a therapy alternative for clients with chronic kidney failure undergoing hemodialysis who especially experience pruritus.

The results of research by Noor, Aziz, Sarmidi, & Aziz (2013) showed that the group given VCO-SLPs lotion with a duration of 2 times a day for 28 days could improve the patient's skin moisture by 24.8% compared to the group given a blank lotion with an increase in skin moisture of only 12.7%. This is because lotion with VCO-Solid Lipid Particles (SLPs) has the advantage of having higher moisture retention so it is better able to maintain skin moisture for longer, in addition to the occlusion factor. Occlusion means that the particles form a protective layer on the surface of the skin that functions to lock in the skin's natural moisture and prevent water evaporation from the skin to the outside environment. Smaller particles, namely 0.608 μm, show better performance with a longer moisturizing effect on the skin. The smaller particle size allows the particles to be retained in the stratum corneum layer. The function of moisturizers is to prevent water loss from the skin and maintain moisture in the stratum corneum of the skin by around 20-35% or more. VCO can also increase skin hydration and increase skin elasticity. There was a 2.60% increase in skin elasticity from day 0 to day 28 compared to using a regular moisturizer, which increased by 0.76% after 28 days. This is possible due to high skin hydration and low trans-epidermal water loss. Research (Melastuti, Erna & Setyaningrum, 2016) also found a significant difference in changes in pruritus after administering VCO compared to the use of non-VCO lotion with a p-value of 0.000. This is due to the presence of substances in VCO, namely medium-

chain fatty acids, which are easily absorbed and oxidized by the body, thus preventing the accumulation of toxins in the body.

However, this study still has limitations or weaknesses, namely the very small sample size, making the results not fully generalizable to the general CKD population. Furthermore, the soft massage was administered for a short duration (one week), so the results for pruritus reduction were less than optimal, possibly occurring with longer follow-up. Furthermore, the researchers did not conduct a multivariate analysis to examine other factors influencing pruritus reduction.

CONCLUSION

Based on the results of the study, there is a difference in the average decrease in the difference in degrees of reducing uremic pruritus between group. Soft massage using VCO more effective on reducing uremic pruritus in CKD patients compared giving VCO only. Massage for uremic pruritus should use VCO, as it contains substances that can maintain skin moisture for a long time. Soft massage should be the preferred nursing therapy for uremic pruritus. Research with a large sample size and longer therapy duration is needed to achieve optimal therapeutic effects.

CONFLICT OF INTEREST (if any)

No conflict interest

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