THE INFLUENCE OF PEPPERMINT AROMATHERAPY ON REDUCING UREMIC PRURITUS IN PATIENTS WITH CHRONIC KIDNEY DISEASE UNDERGOING HEMODIALYSIS

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Abstract

Uremic Pruritus is one of patients' complaint about chronic renal failure which is an uncomfortable and itchy sensation with multi-factorial causes. Peppermint complementary therapy is essential oil with the main component of menthol (50-60%) which provides a cold sensation to the skin. This study uses a quasi-experimental design with a time series one group approach to pretest-posttest design. The instrument used in this study was demographic data and 5-D itch scale questionnaires. This research was conducted at the Haji Adam Malik Central General Hospital in Medan with a total sample of 49 people. The intervention was carried out by administering topical peppermint essential oil. Based on the results of the 5-D itch questionnaire after being given uremic pruritic scale intervention decreased to a mild degree of 51.0% and the results of the paired test statistical test obtained p value = 0,000 <p = 0.05 so that there was an effect of giving aromatherapy: peppermint in reducing uremic pruritus. Peppermint aromatherapy is safe to use and easy to obtain so that it can be used as a skin care that can improve coping strategies for patients who experience uremic pruritus.

Keywords:Aromatherapy, Uremic Pruritus, Chronic Kidney Failure, Hemodialysis

ABSTRAK

Uremik pruritus merupakan salah satu keluhan yang sering terjadi pada pasien gagal ginjal kronik yang merupakan sensasi tidak nyaman atau rasa gatal dengan penyebab yang multifaktor.Terapi komplementer peppermint merupakan minyak essensial dengan komponen utama menthol (50-60%) yang memberikan sensasi dingin pada kulit.Penelitian ini menggunakan design quasi eksperiment dengan pendekatan time series one group pretest-posttest design. Instrumen yang digunakan dalam penelitian ini adalah data demografi dan kuesioner 5-D itch scale. Penelitian ini dilakukan di Rumah Sakit Umum Pusat Haji Adam Malik Medan dengan jumlah sampel 49 orang. Intervensi yang dilakukan adalah dengan pemberian minyak essensial peppermint melalui topikal. Berdasarkan hasil kuesioner 5-D itch scale setelah diberikan intervensi skala uremik pruritus menurun menjadi derajat ringan sebanyak 51,0% dan hasil uji statistik paired test diperoleh p value = 0,000 < p= 0,05 sehingga ada pengaruh pemberian aromaterapi: peppermint dalam menurunkan uremik pruritus. Aromaterapi peppermint aman digunakan dan mudah didapatkan sehingga dapat digunakan sebagai perawatan kulit yang dapat meningkatkan strategi koping untuk pasien yang mengalami uremik pruritus.

Kata kunci: Aromaterapi, Uremik Pruritus, Gagal Ginjal Kronik, Hemodialis

BACKGROUND

Kidney failure occurs when the kidneys cannot remove metabolic waste from the body or carry out its regulatory functions, one of the types of kidney failure that is chronic kidney failure which is the occurrence of kidney function damage that occurs for years, is progressive and irreversible without regard to the cause (Smeltzer & Bare, 2010).

Complaints that can occur in patients with chronic kidney failure one of which is Uremic Pruritus (UP) which is an uncomfortable sensation or itching that can reduce the quality of life of patients undergoing hemodialysis therapy and found more than 40% of patients undergoing hemodialysis therapy experience uremic pruritus (Nakhee, 2015).

Uremic Pruritus (UP) has a multifactorial cause. The intensity and spatial distribution by pruritus occur very significantly over time, and patients with varying degrees and are influenced by the duration of kidney disorders (Abdelghfar et al, 2017) and severe uremic pruritus can increase mortality in patients undergoing hemodialysis therapy (Combs et al, 2015).

Many metabolic factors that have been implicates in the pathogenesis of itching for example hypercalcemia, hyperphosphatemia, secondary hyperparathyroidism and hypermagnesemia. To clarify the risk factors for the severe development of uremic pruritus, researchers looked at the relationship between clinical and laboratory data as well as the severe development of uremic pruritus in a large number of patients undergoing chronic hemodialysis. This study also investigated a significant prognostic of uremic pruritus for survival (Narita, 2006)

A longitudinal study found that UP was generally small in patients who were about to start hemodialysis than in patients who had been on dialysis for more than 3 months and who had moderate to severe pruritus on a scale of 42% in hemodialysis patients. National Chronic Kidney Disease Fact Sheet (2017) states that in the United States in 2014 as many as 118,000 people underwent chronic kidney failure treatment both transplantation and dialysis therapy and 662,000 people who underwent hemodialysis therapy, whereas in Indonesia according to Riskesdas (2017) since the year of 2017 2007 an increase in the number of patients undergoing hemodialysis therapy with a prevalence of 2016 in Indonesia was 52,835 for patients who were actively undergoing therapy and the number of new patients suffering as many as 25,446 people. From the medical records of Haji Adam Malik General Hospital Medan, there were 275 patients undergoing hemodialysis therapy in 2016 and 293 people in 2017.

Some treatment management in patients with uremic pruritus includes pharmacological therapy, psychology and complementary therapy (Abdelghfar, 2017). There are various kinds of essential oils that are used in several studies that have a positive impact on the reduction of pruritus, such as lavender essential oil, tea tree, sunflower oil, peppermint, jojoba oil and various other essential oils.

Peppermint (Mentha piperita) is one of the aromatherapy oils derived from the mint family, this plant contains essential oils which have a major component of menthol (50-60%) which can provide a cold sensation on the skin, menthol can reduce the itching caused by histamine. The mechanism of the effect of menthol

which can cure itching is not yet clearly known, researchers only show that menthol can inhibit itching by activating A-delta fibers and K-opioid receptors (Abdelghfar, 2017).

According to the research of Amjadi et al. (2011) that peppermint also has a positive effect which can reduce pruritus in pregnant women by showing significant results and the study of Abdelgafar et al. (2017) also showed significant results that there was an effect of peppermint for decreasing uremic pruritus but with the incorporation of other essential oils which was applied to patients with chronic kidney failure undergoing hemodialysis therapy.

Seeing the impact that can be caused by uremic pruritus, researchers are interested in conducting research on the effect of peppermint aromatherapy in reducing uremic pruritus in patients with chronic renal failure undergoing hemodialysis.

METHOD

The research design is quantitative with Quasi-experimental design using the approach of a time series design one-group pretest-posttest design. The population in this study were all patients with chronic renal failure in Haji Adam Malik General Hospital Medan amounted to 727 people conducted in April-May and the sample in this study amounted to 49 respondents who had been counted using power analysis with sampling using non-probability sampling with consecutive techniques sampling.

This study has received ethical approval from the Health Research Ethics Commission of the Faculty of Nursing, University of North Sumatra (Registration No 1668 / III / SP / 2019). The interventions in this study using Cv products. Subur Kimia Jaya Bandung with 100% peppermint essential oil content without a mixture of other substances as evidenced by the Refractive Index statement with the results of 1,460 with specification values 1.45-1,465 in each 10 ml container with a total of 10 black bottle containers by giving one to two drops on the area to be applied and itching were measured before the intervention and the second week after the last intervention using a 5-D Itch Scale questionnaire consisting of 5 dimensions of questions that have been validated and reliably with a CVI value of 0.90 and the results of the reliability coefficient with Cronbach's alpha 0.97 so that the instrument is feasible to use and statistical analysis with dependent t test to determine the effect between variables before and after the intervention.

RESULTS

Characteristics of respondents in this study are the majority of the age of early elderly (46-55 years) and late elderly (56-65 years) respectively with a percentage of 26.5%, male sex (61.2%), based on the length of experience of majority pruritus above 6 weeks with a percentage of 100% and the length of time undergoing hemodialysis the majority is more than 1 year (39%), the majority of high school education is last (n =, 49%), the majority is not working (n =, 73.5% and the majority of concomitant diseases are hypertension (n =, 73.5%) Characteristics of respondents can be seen from the table below

Table 1. Frequency distribution and percentage of respondent characteristics

Characteristics	Frequency	Percentage (%)
Gender		
Male	30	61.2
Female	19	38.8
Age		
17-25 years old	3	6.1
26-35 years old	7	14.3
36-45 years old	9	18.4
46-55 years old	13	26.5
56-65 years old	13	26.5
Pruritus Duration		
>6 weeks	49	100
< 6 weeks	0	0
Hemodialysis Duration	1	2
3 months	0	0
6 months	9	18.4
1 month	39	79.6
>1 month		
Occupation		
Unemployed	36	73.5
Enterpreneur	7	14.3
Farmer	1	2.0
Civil Servants	5	10.2
Last Education		
Elementary School	9	18.4
Middle School	7	14.3
High School	24	49.0
College	9	18.4
History of Other Diseases		
Hypertension	36	73.5
DM	9	18.4
DM+Gouty Arthritis	1	2
Gout Artritis	2	4.1
DM+Hipertensi	1	2

Table 2. Analysis before giving Aromatherapy: Peppermint in Chronic Kidney Failure Patients Underwent Hemodialysis Therapy (n = 49)

Score	Degree of Pruritus	*f*	%
0-5	None	0	0
6-14	Low	12	24.5
15-24	Medium	29	59.2
25-35	High	8	16.3
	Total	49	100

Based on the above table that before intervention the majority of respondents experienced uremic pruritus on a moderate scale (n = 29, 59.2%).

Table 3. Analysis after Peppermint Aromatherapy is given to Chronic Kidney Failure Patients Underwent Hemodialysis Therapy

Score	Pruritus Degree	*f*	%
0-5	None	0	0
6-14	Low	25	51.0
15-24	Medium	24	49.0
25-35	High	0	0
	Total	49	100

Based on the above table that after being given peppermint aromatherapy intervention the majority of respondents experienced a decrease in the uremic pruritus scale which is within the limits of a mild scale (n = 25, 51.0%).

Results of the effects of aromatherapy interventions: peppermint in reducing uremic pruritus in patients with chronic renal failure undergoing hemodialysis therapy (N = 49)

	Uremic Pruritus Degree Score	Mean ± SD	T	*P value*
Intervention	Before	19,16 ± 5,031	16,282	0,000
	After	14,73 ± 3,861		

Based on the table above by using the t dependent test (paired t test) to get a p value of 0.000 then Ha is accepted that there is an effect of peppermint aromatherapy in reducing uremic pruritus in patients with chronic renal failure undergoing hemodialysis therapy.

DISCUSSION

Prior to the intervention in this study, the result was that the degree or scale of uremic pruritus experienced by the majority of respondents was a moderate degree (15-24) with hemodialysis frequency carried out twice a week because by providing adequate and controlled hemodialysis measures could reduce uremic blood and uremic pruritus can be further reduced, so it was found that respondents who regularly do hemodialysis can help alleviate the incidence of uremic pruritus (Marthur et al, 2010).

Germain's statement (2017) that more than 40% of patients with chronic kidney failure (end-stage kidney failure) who undergo hemodialysis experience uremic pruritus starting from moderate to severe degrees.

Hemodialysis that has been carried out for a longer period of time even up to years can increase the incidence of uremic pruritus (Germain, 2017; Lin et al, 2012), in accordance with the results of the study found that the majority of respondents who experience uremic pruritus are respondents who have years of undergoing hemodialysis (more than one year). But this study is not in line with the results of research conducted by Tarp (2017) more patients experience uremic pruritus in the first 3 months after hemodialysis and even reach 6 months in a row up to 12 months.

According to Narita et al (2006), the causes of uremic pruritus are not yet clearly known but several trigger factors that are various (multifactorial). In the statement of Kimata et al (2014) the latest theory found that uremic pruritus is associated with a decrease in the immune system, in this study the age of the elderly (46-55 years) and the late elderly (56-65 years) constitutes the majority of the uremic pruritus, this can be attributed to the age of the elderly who experience a decrease in body function, one of which is a decrease in endurance so that the elderly are more prone to uremic pruritus, other studies that have the same results as this study are statements made by Begger & Steinhoff (2011) which state that age Elderly has a relationship with the development or severity of uremic pruritus in chronic renal failure respondents, but does not have the same results as a study conducted by Szepietowski et al (2002) which states that age does not affect the occurrence of uremic pruritus.

In several studies it was found that gender factors also influence the occurrence of uremic pruritus. In this study, respondents with more male sex experienced uremic pruritus compared to women where gender was associated with the pathogenesis of uremic pruritus (Berger & Steinhoff, 2011; Lin et. Et al. al. 2011; Combs et al. 2015; Aval et al. 2018).

Some other factors that can aggravate the occurrence of uremic

pruritus are patients who have comorbidities such as hypertension and diabetes mellitus, this was stated by Kimata et al (2014). In this study the majority of respondents experienced comorbidities in hypertension and diabetes mellitus. This can occur where the concomitant disease itself or the drugs consumed can trigger uremic pruritus bleeding (Mettang et al., 2013; Nakamoto et al, .2019) even though in the statement of Narita et al. (2006) that concomitant diseases such as diabetes and hypertension are not independent factors that can aggravate the occurrence of uremic pruritus

The impact of uremic pruritus on the majority of respondents experiencing sleep disturbance was measured through a 5-D Itch scale questionnaire consisting of five question domains along with the location of the itch felt by the respondent in the statement made by the respondent making it difficult to sleep and sometimes waking up at night as much as 46.9%. Mathur's statement (2010); Combs et al. (2015) that patients who experience uremic pruritus will experience sleep disorders.

Research conducted by Kimbali et al. (2016) states that in general uremic pruritus can interfere with sleep so that it inhibits or interferes with work activities due to lack of sleep needs. In this study the majority of respondents did not work with a percentage of 51.3%. This study is in line with the research of Lin et al. (2011) that uremic pruritus can affect social relations activities and work productivity. Another statement in the study of Simonsen et al. (2017) states that respondents who experience uremic pruritus interfere with social activities and quality of life so that it can trigger increased mortality.

Uremic pruritus felt by respondents in the study with duration of itching in the last 2 weeks the majority felt itching <6 hours / day as much as 49% and other values such as the highest duration 18-23 hours / day felt by respondents as much as 4.1% with intensity the majority of itching in the moderate category, the development of itching during the last two weeks by the majority of respondents felt the level of uremic pruritus (itching) is getting worse with a percentage value of 44.9% this is attributed to the uremic pruritus fluctuating, over time even though the pruritus is felt is stable but will arise episodically because uremic pruritus occurs throughout the bloodstream or is systemic due to urea buildup where this occurs because the kidneys are unable to filter, clean the blood of foreign substances that enter the body through daily consumption of food and drinks and unable to be excreted maximally. This is in line with what was stated by Combs et al (2015); Berger & Stainhoff (2011) that uremic pruritus is felt by the respondent almost every day intermittently or sometimes it is on and off.

The location of itching varies but the most commonly experienced by respondents in this study is in the area or the back with the results obtained as much as 77.6% but the area of the buttocks and abdomen is also a frequent area. The dorsal area is the most common area because the dorsal area is the most extensive and often stressed and has the same results as the statement of Berger & Steinhoff (2011); Simonsen et al (2017).

After interventions in this study, the pruritus scale experienced by respondents was a mild scale (6-14), in the statement Abdelgafaret al (2017) that by providing complementary

interventions such as essential oils, especially containing menthol, can alleviate uremic pruritus felt by respondents, Another study presented by Elsaie et al (2014) peppermint essential oil can reduce pruritus not only in patients with chronic kidney failure but can also be used in patients with diabetes mellitus and liver disorders with administration for two weeks. In Amjadi's research (2011), it is also stated that pruritus in pregnant women can also decrease by giving peppermint essential oil by inhalation.

Uremic pruritus felt by respondents had decreased but the duration of itching felt the majority took place in less than 6 hours even though some respondents experienced a decrease in the duration of time and the development of itching and did not interfere with sleep (61.2%), nevertheless the location of itching still remains dominant in the respondent's back, abdomen and extremities, because uremic pruritus can occur in one-third of the respondent's body area even though intervention has been given and will occur episodically to a mild degree if the effects of peppermint essential oil have begun to disappear or diminish.

Several complementary intervention studies that have been carried out to reduce the degree of pruritus due to kidney failure, diabetes and liver disease have given good results, various essential oils such as lavender, baby oil that have positive effects and peppermint essential oils that have had a positive impact on patients with uremic pruritus in respondents experiencing chronic kidney failure, this is in line with research conducted by Abdelgafar et al (2017) and Elsaie et al (2014).

Based on the results of this study, there is an effect of peppermint aromatherapy interventions in reducing uremic pruritus in patients with chronic renal failure undergoing hemodialysis therapy through the skin or topical administration.

Orchard & Vuuren (2017) states that essential oils or essential oils are one of the most popular natural products, with one of the main applications being skin administration. Combs et al (2015) state that one of the therapies used as a treatment for reducing uremic pruritus is through topical treatment because it can also improve skin hydration, where one of the factors that cause uremic pruritus is due to dry skin conditions.

Peppermint essential oil has an influence in reducing the scale of uremic pruritus. This is associated with peppermint content that has menthol which can provide a cold effect or cold sensation on the skin that can work as an antihistamine.

The nursing theory used in this research is Kolcaba’s comfort theory where the role of nurses in providing patient comfort both physically, psychologically, spiritually and socially life where the comforting context can be seen through physical, psycho-spiritual, environmental and social values from the 3 ideas put forward by Kolcaba namely relief (relief), ease (tranquility), transcendence (helping patients in trouble) (Aligood, 2014). This is in line with the results of research that aromatherapy peppermint can reduce pruritus scale and provide comfort by using a scale 5 questionnaire measurement tool. -D Itch scale consisting of 5 categories of questions namely duration (duration of pruritus felt), degree (intensity of itching), direction (development of itchiness getting better or worse), disability (impact of itching on sleep, social activities, homework and

work), distribution (spread of itching in parts of the body).

CONCLUSION

Peppermint's complementary therapy has a positive effect on patients with chronic renal failure who experience uremic pruritus. Peppermint aromatherapy is a therapy that is applied through topical, safe and can reduce the severity of pruritus.

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PERNYATAAN PENERJEMAHAN

Saya yang bertanda tangan di bawah ini, menyatakan bahwa saya mampu berbahasa **Inggris** dan **Indonesia**, dan saya telah menerjemahkan dokumen dari sumber bahasa **Indonesia** ke dalam bahasa **Inggris** sesuai dengan kemampuan saya.

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Tanda Tangan :
Tanggal : 11 Desember 2019

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