

Pruritus and long-term hemodialysis among patients with chronic renal failure

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ABSTRACT

Patients with hypertension and diabetes are at risk of developing chronic kidney failure. A common occurrence in patients with chronic kidney disease is pruritus. Pruritus can affect all parts of the body, which can have an emotional impact on the patient, affect the quality of sleep and mood of the patient, and cause discomfort. The study's goal was to determine whether there was a long-term link between hemodialysis and the onset of pruritus among patients with chronic renal failure who were receiving hemodialysis. Quantitative research with the cross-sectional method A total of 45 patients are in the RSI Sultan Agung Semarang Hemodialisa Unit, Central Java, Indonesia. The instrument in this study was the 5D pruritus scale. Data analysis was done using SPSS version 24. The Spearman rank test was conducted to test the relationship between two variables of the study, namely the duration of hemodialysis and the occurrence of pruritus. The study was conducted in April–June 2022, along with the ethical test. The results of the study obtained a p value of $0.004 \leq 0.05$, which means there is a relationship between long-term hemodialysis and the occurrence of pruritus in patients with chronic kidney failure. In conducting treatment, it is important to pay attention to basic needs and comfort, as well as implement pruritus management.

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1. INTRODUCTION

The prevalence of chronic kidney failure is rising and is now recognized as a significant global health issue. According to data from the Global Burden of Disease, renal failure was ranked as the 18th leading cause of death in 2017. According to medical records at the Sultan Agung Semarang Hospital, the number of patients with chronic kidney failure continued to increase in 2017: by 1,887 people; in 2018: by 2,185 people; and in 2022: by 2,473 people. The number of patients undergoing hemodialysis in Central Java was 2,580. In addition to being one of the leading causes of death, kidney failure will be the fifth-highest cause of death globally by 2040. Among high-income countries, chronic kidney failure is one of the top 10 causes of death in Singapore, Greece, and Israel [1].

Unhealthy lifestyles such as consuming supplement drinks are thought to be a trigger for an increase in the incidence of chronic kidney failure. The effect of chronic kidney failure is anemia [2], [3]. Patients with hypertension and diabetes are at risk of developing chronic kidney failure without having to be diagnosed with early kidney disease. This model uses regularly available physical and laboratory examination data and can predict the risk of short-term kidney failure with high accuracy [4]. According to research conducted by Yembarwar [5], hypertension precedes the development of chronic kidney failure [5].

According to research by Albanqi [6], chronic kidney failure is a condition that affects and has been associated with many other chronic conditions, such as hypertension and diabetes.

The occurrence of chronic kidney failure is characterized by a decrease in kidney function in regulating metabolism; the other function of the kidney is to remove fluid present in the body. If the kidney function does not work optimally, the fluid discharge will not be at its maximum, resulting in an accumulation of fluid in the body and the need for permanent renal replacement therapy. Kidney therapy, with the action of hemodialysis, is one of them. The impact of hemodialysis is anemia [7], pruritus [8], according to research conducted by Ariyani [9]. A chronic illness like chronic kidney failure might affect a patient's quality of life. The existence of complaints of pruritus is one element that may contribute to such alterations. The effect of pruritus on patients with kidney failure can cause discomfort, sleep disorders, and a decreased quality of life for patients.

Based on the preliminary study conducted on June 21, 2022, in the Hemodialisa Room of Islamic Hospital Sultan Agung Semarang, the average patient undergoes hemodialysis twice a week, and the duration of the hemodialysis action is 4-5 hours. The results of an interview with eight patients with chronic kidney failure who underwent average hemodialysis therapy for more than six months showed that all had pruritus complaints and all had increased levels of urea above 50 mg/dl. Patients experience itching on the back, feet, hands, and the whole body. They feel itching as redness until red spots or itching scars appear. This condition will greatly disrupt the comfort and daily activities of the patient, and long-term hemodialysis becomes one of the factors contributing to the emergence of pruritus problems. There were two patients who had been on therapy for less than six months who said they did not feel any itching on the body while undergoing hemodialysis therapy, but patients said they were very bored and stressed when having to undergo hemodialysis therapy throughout their lives. The patient thinks that his life is no longer useful and unproductive because his activity becomes disrupted, and he must face the fact that his illness is incurable. While one patient said they felt tired and their need for sleep was disrupted due to itching at the time of hemodialysis, the researchers were interested in conducting long-standing studies related to hemodialyze and the occurrence of pruritus in patients with chronic kidney failure. The aim of the study was to find out the long-term relationship between hemodialyze and pruritis in patients who underwent chronic renal failure. The study included the connection between pruritus and hemodialysis in people with chronic kidney failure as well as the function of healthcare organizations in enhancing the wellbeing of people with chronic renal failure who are receiving hemodialysis.

2. METHOD

This cross-sectional study involved 45 respondents. They are patients with chronic kidney failure who underwent hemodialysis at RSI (Islamic hospital) Sultan Agung Semarang, Central Java, Indonesia. The criteria for inclusion of respondents are chronic kidney failure patients who undergo hemodialysis therapy and are willing to be respondents. The research employed 5D itch scale instruments. The 5-DitchScale (5-D-IS) is an instrument for evaluating the itching sensation of several components of the affected body areas, such as the intensity of itching, the direction and course of the pruritus throughout the day, the incapacity caused by the itch, and whether the symptoms have changed in the last few weeks. The components evaluated are summarized in five 5D-IS domains: degree (degree), duration (duration), direction (direction), disability (disability), and distribution (distribution) to assess the severity of the itching sensation [10].

The research was carried out between April and June of 2022. SPSS version 24 is used for data analysis. The association between two variables in the study, independent variables (long hemodialysis) and dependent variables (pruritus), was tested using a Spearman rank test. The variables studied are the respondents' characteristics (age, gender, education, employment, and length of hemodialysis) as well as the occurrence of pruritus (duration, degree, and direction). These characteristics are displayed as a frequency distribution. If the p value is greater than 0.05, H_0 is approved and H_a is refused, indicating that there is no association between time spent on hemodialysis and vice versa. There is a relationship between the time spent on hemodialysis and the occurrence of pruritus in patients with chronic renal failure who get hemodialysis if the p-value is 0.05, i.e., if H_0 is refused and H_a is received. This research is approved by ethical committee of RSI Sultan Agung Semarang with the ethical clearance No. 112/KEPK-RSISA/IX/2022.

3. RESULTS AND DISCUSSION

3.1. The characteristics of respondents

Table 1 displays the characteristics of the respondents based on the study's findings, including gender, age, education, employment, chronic illness, long-term hemodialysis, and the pruritus category. Table 1 shows that the majority of respondents were 25 male respondents (55.6%), mostly aged 31-49 years with 28 respondents (62.2%), most recently graduated from high school with 19 respondents (42.2%) and

mostly employed as entrepreneurs with 22 (48.9%), most long suffered from chronic kidney failure over a period of >24 months with 29 respondents (6.4%).

Based on the results of research conducted by Kumar [11], who identified the relationship between male sex and pruritus in chronic kidney disease, an international study on pruritus in hemodialysis patients showed men were 1.1 times more likely to experience pruritus. Unlike the study conducted by Hu [8], it is said that there were no significant differences in age found between patients with pruritus and patients without itching, though they were significant. According to research conducted by Vardanjani [12], the most common causes of idiopathic kidney failure are diabetes and hypertension. In the Vardanjani study [12], there was a significant relationship between work status and chronic kidney failure in hemodialysis patients. The researchers say that patients with kidney failure treated with hemodialysis are unable to work in daily office positions due to fatigue, too much contact with disease, and bloodwashing processes, and usually switch to freelance work and eventually become unemployed. According to Hu's research [8], most patients with chronic kidney failure and uremia have itching, and the development of pruritus is related to the progression of the disease rather than age or gender. The most common cutaneous manifestation in people with chronic renal failure is xeroderma.

Table 1. Description of the characteristics of respondents based on gender, age, education, employment, long illness, long hemodialysis, and the pruritus category

Characteristics of response	Frequency	Percentage
Sex		
Female	20	44.4
Men	25	55.6
Age		
20-30 year	5	11.1
31-49 year	28	62.2
50-60 year	12	26.7
Educational background		
Elementary school	7	15.6
Junior high school	7	15.6
Senior high school	19	42.2
Associate degree	12	26.6
Occupation		
Housewife	11	24.4
Private employee	12	26.7
Entrepreneur	22	48.9
Length of illness		
6-12 months	0	0.0
13-24 months	16	35.6
>24 months	29	64.4
Long hemodialysis		
6-12 months	4	8.9
13-24 months	23	51.1
>24 months	18	40.0
Pruritus category		
Mild category (<11)	0	0.0
Moderate category (12-15)	12	26.7
The severe category (>15)	33	73.3
Total	45	100.0

3.2. Relationship between duration of hemodialysis and pruritus

Table 2 shows the link between lengthy hemodialysis and the occurrence of pruritus in patients with chronic renal failure. This table reveals that the majority of respondents who underwent hemodialysis between 13 and 24 months were 23 (51.1%) and experienced severe pruritus as 12 (26.7%), with the majority of respondents experiencing serious pruritus (>15) as 33 (73.3%). There is an association between the duration of hemodialysis and the occurrence of pruritus in patients with chronic renal failure at RSI Sultan Agung Semarang with a p-value of $0.004 \leq 0.05$.

Skin pruritus is one of the most common clinical complaints in patients with late-stage kidney disease and uremia, according to Hu's studies [8], [13]. The majority of uremia patients have skin problems. The prevalence and severity of pruritus increase as renal failure progresses [14]. Uremia is greatly reduced after hemodialysis treatment. Pruritus can arise in any part of the body and last for varying amounts of time, creating skin sores. According to Ariyani's [9] study, the most often reported body areas of pruritus were the back of 33 individuals (87%), the lower arms of 26 people (68%), the butterflies, and the thighs of 19 people (38%).

According to Hu's research [8], [15], the emotional impact of the patient's pruritus picture covering their entire body has an affect on their sleep and mood [16]. According to a study by Ersoy [17], the daily duration of itching ranged from 6 to 12 hours in 40.3% of patients, while 1.1% complained of itching all day long [18]. Itching can cause delayed sleep and occasionally cause patients to wake up at night [19], [20]. According to Kumar's research [11], blood urea had good diagnostic values for predicting uremic-related pruritus in older people. In patients on chronic dialysis, having a man in the room, having high blood pressure, and having more serum albumin and blood sugar are all independent predictors of pruritus. Nursing guidelines have been shown to improve patient understanding and reduce the degree of pruritus in older patients [21].

According to Dyhre's study's findings [22], pruritus is highly prevalent, and the condition known as "chronic pain" is the most severe. There are a number of potential reasons for chronic itching, including cancer, diuretics, skin rashes, xerosis, pruritus, and potential brain disorders. Generally speaking, itching affects many body regions, lasts for a long time every day, and is worse in the afternoon and evening, as well as in the fall and winter. The quality of life is negatively impacted by pruritus. Itching can be relieved by taking cold baths, applying cold compresses, and applying lotions.

Table 2. The relationship between long hemodialysis and pruritus

Long hemodialysis	Moderate category		The severe category		p-value
	Frequency	Percentage	Frequency	Percentage	
6 to 12 months	1	2.2	3	6.6	0.004
13 to 24 months	11	24.4	12	26.8	
>24 months	0	0.0	18	40.0	
Total	12	26.6	33	73.4	

Notes: * means p-value ≤ 0.005

According to Perwiraningtyas [23], the majority of responders experienced a 40–64% decline in kidney function. A decline in renal function produces urea accumulation in the body, resulting in urea syndrome and the need for hemodialysis therapy. According to the study's findings, there is a long-term association between hemodialysis therapy and pruritus in individuals with chronic renal failure. Shayanpour [24] discovered a significant improvement in pruritus symptoms (as measured by conventional questionnaires) in chronic kidney failure patients who took omega-3 supplements against omega-6, omega-9, and placebo supplements. Despite the numerous limitations of the trials, it should be highlighted that even a minor reduction in itching symptoms may be clinically significant.

According to the findings of Sembiring's studies [25], nursing interventions that can be delivered to patients with pruritus have a good effect on patients with chronic renal disease who have uremic pruritus. Peppermint aromatherapy is a safe treatment that can lower the severity of pruritus. The study's implications are that complementary atopic therapy with peppermint essential oils, in addition to pharmacological treatment (antipruritis), can reduce the scale of uremic pruritus; that hand acupressure is an effective nursing intervention to improve sleep quality and decrease pruritus in hemodialysis patients [26]–[28]; and that giving lotions [29] such as olive oil and baby oil is a simple, safe, and inexpensive intervention [30]–[32]. The majority of patients who have kidney failure and receive hemodialysis experience worry; therefore, it's crucial to have family support, meet socioeconomic needs, and be aware of any accompanying conditions that can be of concern to patients receiving hemodialysis therapy for chronic renal failure [33].

4. CONCLUSION

There is a long-standing association between hemodialysis and the occurrence of pruritus in patients with chronic kidney failure. The study's findings can be used to fuel future scientific research, namely on the long-term association between hemodialysis and the development of pruritus in patients with chronic renal failure. Implications from the research, the increasing incidence of chronic kidney failure disease, and hemodialysis visits indicate that the entire community can obtain health promotion from health institutions or health professionals in an effort to prevent the occurrence of chronic kidney disease. It is necessary to pay attention to the fundamental needs and comfort of patients with chronic kidney failure when performing treatment on patients with kidney failure, and it is expected in the hemodialysis room to adopt pruritus control as part of nursing childcare protocols. The implications of research can be beneficial in improving quality of life, improving health levels, and how to perform treatment in chronic kidney failure patients undergoing hemodialysis. Further research can be done on how to prevent the occurrence of kidney failure and skin care in patients who suffer from itching.

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