

Investigation of pruritus and dermatological quality of life in chronic kidney disease patients

Pruritus, dermatological quality of life, kidney disease

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Abstract

Aim: This study was carried out to investigate pruritus and dermatological quality of life in all chronic kidney disease (CKD) patients who receive or do not receive renal replacement therapy.

Material and Methods: The cross-sectional study was conducted with 104 CKD patients who volunteered to participate in the study. The data were collected using the Patient Information Form, 5-D Itch Scale and Dermatology Life Quality Index (DLQI).

Results: The total score of the 5-D itch scale of patients receiving hemodialysis (HD) treatment was 8.25 ± 3.69 , and the total score of DLQI was 7.25 ± 5.96 . The total score on the 5-D itch scale of the patients who did not receive HD treatment was 7.65 ± 3.89 and the total DLQI score was 3.97 ± 4.75 . When the correlation between 5 D Itch Scale and DLQI was examined, it was found that patients with itching had a lower dermatological quality of life.

Discussion: Dermatological quality of life is low in patients with pruritus. It has been observed that patients who receive and do not receive dialysis treatment generally experience itching and their dermatological quality of life is low. It has been determined that the dermatological quality of life is better in those receiving hemodialysis treatment. Evaluation is the first step in the prevention and management of pruritus, which is a common symptom in CKD patients. Nurses are required to routinely examine the itching and its causative factors and to take the necessary precautions as they play a primary role.

Keywords

Chronic Kidney Disease, Hemodialysis, Pruritus, Quality of Life

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Introduction

Having a serious negative impact on people's quality of life, end-stage renal disease (ESRD) is a chronic disorder with a rising incidence and high morbidity and mortality rates in the world [1]. Impairment of kidney function causes uraemia, leading to different problems in many organs and systems [2]. Pruritus is a very common complication in patients with chronic kidney disease (CKD) and in hemodialysis patients with ESRD [3]. Pruritus, which is the most common skin symptom in ESRD, is commonly referred to as "uremic pruritus" [4].

The main reason for the occurrence of dermatological symptoms in CKD has been found to be associated with the inability of the kidneys to remove toxic substances from the body, the solutions used in haemodialysis treatment, medications used by patients, and an impaired immune system [5]. It is known that dry skin, allergic reactions, hypersensitivity, and increased blood levels of histamine, parathormone, calcium, and phosphorus are associated with the aggravation of pruritus [6]. As a subjective symptom, the severity of pruritus varies from patient to patient and usually occurs during or after haemodialysis. While pruritus is very difficult to tolerate, resistant to treatment, and impairs sleep in some patients, in others, it can be localized and temporary [7]. Several studies in the literature report that the prevalence of pruritus ranges from 18% to 70% [7,8]. In a study, it has been reported that 5-49% of patients with CKD and 50-90% of hemodialysis patients experience severe pruritus [9].

Physical and psychological effects of pruritus, which is a common and disturbing symptom, are generally neglected. Dermatological symptoms affect a person's physical health, social life, psychological state, and daily life activities [3]. Although symptoms usually decrease over time, symptom resolution can sometimes take time, and persistent itching can negatively affect the quality of life of patients [10]. As a subjective feeling, pruritus alone is not considered a dangerous condition for the patient; however, it results in physiological changes causing bleeding and the development of skin lesions [11]. The presence of skin lesions, especially in the exposed parts of the body such as hands and face, causes negative psychosociological effects such as embarrassment, distancing from society, and low self-perception [12]. Symptom control in CKD patients requires a multidisciplinary approach. Important responsibility falls especially on nurses for the alleviation and resolution of symptoms [13]. The first step in the prevention and management of pruritus, which is a common symptom in CKD patients, is evaluation. Since nurses take part as the primary caregivers, they should examine factors causing pruritus and take necessary precautions.

This study was planned to examine pruritus and dermatological quality of life in all CKD patients who receive or do not receive renal replacement therapy.

Material and Methods

Design

This study was design as a descriptive correlational and cross-sectional study.

Sampling Size

The research was carried out at the Application and Research Hospital of the Cumhuriyet University. The study population

consisted of 104 patients who met the criteria of the study and accepted to participate in the study. The inclusion criteria were: (1) 18 years of age or older, (2) treatment for more than one year, (3) people who have difficulties in seeing, hearing and communicating and (4) willing to participate.

Instruments

Data were collected between January and April 2020 after ethical approval. Research data were collected by the forms described below.

Patient Information Form: Demographic information and data on disease/treatment processes were collected with a questionnaire consisting of 11 questions prepared using the literature.

5-D Itch Scale: In 2010, the 5-D itch scale has been developed by Elman S, et al in English [14]. The 5-D itch scale consists of 8 items in 5 domains as follows: duration, degree, direction, disability, and distribution. The domains of duration, degree, and direction contain 1 item, whereas there are 4 items for determining the disability. The items of 4 domains are assessed by a 5-point Likert scale. The distribution domain includes 16 potential itch areas, including 15 body parts and 1 area with clothing or bandages contact. The total score from the scale ranges from a minimum of 5 (no itching) to a maximum of 25 (itching is of the highest severity). Duration, severity and prognosis and restriction items of the scale were scored from 1 point to 5 points [14]. Turkish validity reliability was done by Ersoy and Akyar [15]. In our study, the Cronbach's alpha value was found to be 0.94.

Dermatology Life Quality Index (DLQI): In 1994, the DLQI questionnaire was developed by Finlay, et al for assessing HRQoL of general dermatological diseases [16]. Öztürkcan et al. [2006] got the formal permission to validate and use the Turkish version of the DLQI questionnaire [17]. There are 10 questions according to 6 domains: symptoms and feeling, daily activities, leisure, work and school, personal relationships, and treatment. The range of total score is from 0 to 30. High scores indicate a high level of dermatological involvement [16,17]. In our study, the Cronbach's alpha value was found to be 0.91.

Data Analysis

Data obtained as a result of the research were evaluated using numbers, percentages, mean, standard deviation, T-test, Mann-Whitney U test and One-Way ANOVA test with the SPSS 22.0 version program. The chi-square test was used to compare the two groups, and the ANOVA test was used to determine the difference between the two groups. Correlation was performed to determine the relationship between the scales, and to determine the level of relationship between 5-D itch scale and some features of patients analyzed using linear regression.

Ethical Approval and Consent to Participate

The study was conducted in accordance with the Declaration of Helsinki. Prior to the study, necessary permissions were obtained from the Ethics Committee of NonInterventional Clinical Investigations Ethics Committee (Decision date: 15.01.2020. number: 2020-01/13). Informed consent was obtained from patients.

Results

Information on the sociodemographic characteristics of the

Table 1. Characteristics of patients, diseases and itch symptom

Features	HD treatment users n (%)	HD treatment non-users n (%)	Difference Between Groups	
			Test value	p
Gender				
Male	35 (52.2)	24 (64.9)	1.548	0.301
Female	32 (47.8)	13 (35.1)		
Age				
18-45	11 (16.4)	3 (8.1)	3.508	0.477
46-65	28 (41.8)	13 (35.1)		
65 old and over	28 (41.8)	21 (56.7)		
Educational degree				
Illiterate	17 (25.4)	12 (32.4)	15.758	0.008
Primary school	30 (44.8)	9 (24.3)		
Secondary school	5 (7.5)	8 (21.6)		
High school	11 (16.4)	3 (8.1)		
College and high school	4 (6)	5 (13.5)		
Occupation				
Housewife	25 (37.3)	13 (35.1)	26.277	0.001
Retired	16 (23.9)	13 (35.1)		
Worker	2 (3)	3 (8.1)		
Official	1 (1.5)	8 (21.6)		
Self-employment	23 (34.4)	-		
CKD Stage				
Stage 3	-	12 (32.4)	-	-
Stage 4	-	25 (67.6)		
Stage 5	67 (100)	-		
Use of antipruritic medication				
Antihistamine medication	11 (16.4)	1 (2.7)	1.566	0.211
Topical hydrocortisone	3 (4.6)	9 (24.3)		
No medication	53 (79.1)	27 (73)		
Other Methods Used For Itching				
Taking shower	18 (26.9)	6 (16.2)	9.507	0.050
Pouring cologne	17 (25.4)	1 (2.7)		
Applying moisturizing cream	7 (10.4)	3 (8.1)		
No methods used	25 (37.3)	27 (73)		

Table 2. Differences between patients' 5-D itch scale and dermatological quality of life index scores

Scales	HD Treatment Users Mean ± SD (n:67)	HD Treatment non- users Mean ± SD (n:37)	Total Mean ± SD (N:104)	Statistical Analysis	
				t	p
5-D Itch Scale	8.25 ± 3.69	7.65 ± 3.89	8.03 ± 3.75	0.771	0.442
Dermatology Life Quality Index (DLQI)	7.25 ± 5.96	3.97 ± 4.75	6.08 ± 5.67	2.922	0.004
DLQI Scores	n (%)	n (%)		χ ²	p
No influence	9 (13.4)	12 (32.4)		5.700	0.233
Mild	22 (32.8)	17 (45.9)			
Moderate	18 (26.9)	2 (5.4)			
High	18 (26.9)	6 (16.2)			
Very high	1 (1.5)	-			

DLQI: Dermatology Life Quality Index; SD: Standard Deviation; χ²: Chi-square**Table 3.** Correlation between scale averages and clinical parameters

	5-D Itch Scale	Dermatology Life Quality Index	Phosphorus (mg/dL)	Albumin (mg/dL)	Total Protein (mg/dL)	BUN (mg/dL)
5-D Itch Scale	r	.781*	.197*	.277**	.230*	.171
	p	1	.045	.004	.019	.082
Dermatology Life Quality Index	r	.781*	.224*	.337*	.202*	.065

patients is given in Table 1. Among the study sample, 52.2% of CKD patients receiving hemodialysis treatment were male, 41.8% were 65 years of age and older, 44.8% were primary school graduates, and 37.3% were housewives. Of the patients who did not receive hemodialysis treatment, 64.9% were men, 35.1% were between the ages of 46-65, 32.4% were illiterate, and 35.1% were housewives and retirees. A statistically significant difference was found between the education and occupation of the patients who received and did not receive hemodialysis treatment ($p < 0.05$). There was no difference between the two groups in terms of other characteristics ($p > 0.05$).

Table 1 shows the findings related to kidney disease and pruritus symptom of the patients. According to the table, 67.6% of the patients who did not receive dialysis treatment were Stage 4. 79.1% of patients receiving hemodialysis treatment and 73% of patients not receiving hemodialysis treatment did not use any medication for itching. Among the participants, 37.3% of patients received hemodialysis treatment and 73% of patients did not receive any treatment other than medication for itching (Table 1).

Comparison of scale scores and total values of the patients are given in Table 2. The total score on the 5-D itch scale of patients receiving HD treatment was 8.25 ± 3.69 , and the DLQI total score was 7.25 ± 5.96 . The total score on the 5-D itch scale of the patients who did not receive HD treatment was 7.65 ± 3.89 and the total DLQI score was 3.97 ± 4.75 . In terms of dermatological quality of life, the average score on the scale in patients receiving HD treatment was found to be statistically significantly higher. According to the data, the mean 5-D Itch scale was found to be 8.03 ± 3.75 , and the dermatological quality of life scale was 6.08 ± 5.67 . While the severity of dermatological quality of life in patients was high and moderate in 26.9% of those who received hemodialysis treatment, it was found to be mild to severe in 45.9% of those who did not receive hemodialysis treatment. There was no difference between the two groups in terms of DLQI scores. It is seen that the dermatological quality of life of those who do not receive hemodialysis treatment is more intensely affected. According to Table 3, a statistically significant positive correlation was found between 5-D itch scale and DLQI. As itching increases, the rate of adversely affecting the dermatological quality of life increases. When the relationship between the blood values and the scale averages of the patients were examined, a statistically significant relationship was found between the phosphorus, albumin and total protein values and the scale averages. As the value of phosphorus, albumin and total protein increases, itching severity increases and dermatological quality of life decreases.

Discussion

One of the important dermatological symptoms that accompany CKD is pruritus. Pruritus can develop at any stage of the disease in the majority of patients with uremia [18]. Besides the already higher incidence of pruritus in people with ESRD compared to the general population, dialysis treatment further increases this high incidence [18]. According to the results of two comprehensive international epidemiological studies,

DOPSS (Dialysis Outcomes and Practice Patterns Study)-I and DOPPS II, the prevalence of uraemic pruritus in CKD patients is reported as 40.6% [19].

This study aimed to examine pruritus and dermatological quality of life in all CKD patients receive or do not receive renal replacement therapy. In our study, the total score on the 5-D itch scale in patients receiving HD treatment was 8.25 ± 3.69 and in those who did not receive HD treatment it was 7.65 ± 3.89 . According to these results, it is seen that the pruritus symptom of the patients receiving hemodialysis treatment is more severe and the dermatological quality of life is worse. In the study conducted by Ersoy and Akyar (2019), the mean 5-D itch scale score in hemodialysis patients was found to be 13.97 ± 4.11 [20]. Similar to our findings, another study on hemodialysis patients found the mean itch scale score as 10.9 ± 4.8 [21].

Pruritus of ESRD has a negative impact on people's performance in several areas of life, disrupting activities, leisure time, school/work life, personal relationships, and treatment [22]. In the present study, the mean score of the dermatological quality of life scale of the patients receiving HD treatment was found to be 7.25 ± 5.96 and for those not receiving hemodialysis treatment the mean score of DLQI was 3.97 ± 4.75 . When the impact on the quality of life was examined using the dermatology life quality index scores, 26.9% of the patients who received hemodialysis treatment were highly affected, 45.9% of the patients who did not receive hemodialysis treatment were moderately affected. The studies by Adejumo, Madubuko, Olorok, & Ainaet al., (2019) reported that dermatological quality of life of CKD patients was affected at similar rates, too [12]. Similar to our study, another study conducted on hemodialysis patients found the DLQI scale mean score to be 10.40 ± 6.46 [23]. In our study, these levels of impairment observed in the DLQI scores suggest that pruritus negatively affects functioning in many areas. It is thought that the dermatological quality of life and itching symptoms of the patients receiving hemodialysis treatment are more affected by the products used during the hemodialysis process and the accumulation of waste products in the body due to the complete deterioration of kidney functions. Uraemic pruritus begins 3-6 months after starting hemodialysis. Studies in the literature report that a positive correlation exists between hemodialysis duration and pruritus and that rates of pruritus tend to increase in patients receiving hemodialysis treatment for more than three months [24].

Similar to pruritus in dermatological patients, chronic itch in CKD patients negatively affects the psychosocial and physical condition of patients [22]. Pruritus has been proven to negatively affect performance in daily activities, the use of leisure time, school/work life, and personal relationships, as well as having a negative impact on patient participation in treatment [25]. Similar to other studies, a positive correlation has been found between the 5-D itch scale and the dermatological quality of life [3,24]. Pruritus in CKD patients increases the experienced severity of other symptoms and affects self-esteem negatively. Also, it affects physical performance and activities of daily life [12]. Chronic pruritus causes the individual to feel ugly because of the inflicted wounds on the skin, lesions inflicted in areas of the body that cannot be hidden under clothing, and the frustration

of patients caused by the loss of freedom in choosing clothes due to fear of exposing their lesions [24]. Pruritus can disrupt regular sleep and social performance of people and result in depression in advanced stages. Previous studies have reported that increased pruritus severity adversely affects not only the dermatological quality of life but the physical and mental quality of life as well [3,22]. For these reasons, early recognition of pruritus that affects all aspects of life gains importance to provide necessary treatment and care.

Conclusion

In conclusion, it was determined that CKD patients in the sample experienced pruritus and their dermatological quality of life was negatively affected. It was concluded that the severity of itching was higher in patients receiving hemodialysis treatment and the dermatological quality of life was affected more negatively than in the other patient group. It has been proven that the severity of pruritus and the dermatological quality of life of patients affect each other. It has been concluded that patients receiving hemodialysis treatment have a lower dermatological quality of life. Since itching is a common symptom negatively affecting the physical, psychological, and social performance of the person, CKD should be followed up regularly and necessary precautions should be taken. For the alleviation of pruritus, healthcare professionals should carry out regular follow-ups, provide training programs about diet regimens for the correction of clinical parameters, and implement interventions for improving compliance with treatment processes. Pruritus as a complication should be addressed not only for its physiological effects but also for all of its aspects for early diagnosis and treatment. Management of pruritus as a symptom will not only increase the quality of life of patients but also reduce the number of medications used, improve clinical findings, and consequently allow for achieving cost-effectiveness.

The small sample size and the single centre in our study will limit the generalizability of the results.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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Conflict of interest

The authors declare no conflicts of interest.

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