How to Cite:
Haq, W. U., Fazal, H., Amer, M., Afaq, F., Afaq, Y., Bari, J., & Banaras, F. (2023). The association between CKD-associated pruritus and quality of life in patients undergoing hemodialysis presenting to nephrology division, Khyber teaching hospital Peshawar. *International Journal of Health Sciences*, *7*(S1), 1616–1623. https://doi.org/10.53730/ijhs.v7nS1.14385

The association between CKD-associated pruritus and quality of life in patients undergoing hemodialysis presenting to nephrology division, Khyber teaching hospital Peshawar

Waqar Ul Haq
Postgraduate Resident Nephrology, Khyber Teaching Hospital, Peshawar, Pakistan

Hamza Fazal
Postgraduate Resident Nephrology, Khyber Teaching Hospital, Peshawar, Pakistan

Mariana Amer
House officer, Nephrology department Khyber Teaching Hospital, Peshawar, Pakistan

Fatima Afaq
House Officer, Nephrology department Khyber Teaching Hospital, Peshawar, Pakistan

Yumna Afaq
4th year MBBS, Khyber Medical College, Peshawar, Pakistan

Jawad Bari
House Officer, Nephrology department Khyber Teaching Hospital, Peshawar, Pakistan

Faizan Banaras
Postgraduate Resident Nephrology, Khyber Teaching Hospital, Peshawar, Pakistan
Corresponding author email address: faizanbanaras958@gmail.com

Abstract---Background and Aim: Chronic kidney disease-associated pruritus (CKD-aP), commonly known as uremic pruritus is a frequent and inconvenient disease for patients undergoing hemodialysis. The purpose of the present investigation was to determine the association of CKD-associated pruritus with quality of life in patients undergoing hemodialysis presented to the nephrology division of Khyber Teaching

Hospital Peshawar. Patients and Methods: This cross-sectional study was conducted on 227 CKD-associated pruritus patients investigated in the Nephrology Division of Khyber Teaching Hospital Peshawar from March 2022 to February 2023. Patients of either gender (>18 years) undergoing hemodialysis were enrolled. Demographic details, dialysis duration, duration of disease, and various comorbidities conditions were recorded based on a pre-designed questionnaire. Results: Out of 227 patients, there were 142 (62.6%) male and 85 (37.4%) female. The overall mean age was 40.82±6.82 years. The incidence of CKD-associated pruritus was 68.7% (n=156). The presence of various comorbidities such as diabetes mellitus, hypertension, hyperlipidemia, and cardiovascular disease was found in 30 (13.2%), 124 (54.6%), 16 (7.0%), and 6 (2.6%) respectively. The overall mean duration of CKD and duration on hemodialysis was 34.4 [12.0–48.0] months and 22.8 [12.0–36.0] months respectively. Conclusion: The incidence of CKD-associated pruritus was 68.7%, and had a detrimental impact on the QOL. A lower QoL was found in patients suffering from moderate or severe pruritus. The QOL score of hemodialysis patients dropped as the degree of their pruritus increased.

Keywords---hemodialysis, CKD-associated pruritus, quality of life (QOL), nephrology.

Introduction

Chronic kidney disease-associated pruritus (CKD-aP) is a common and bothersome disease for hemodialysis individuals. Chronic kidney disease usually has pruritus as a frequent and unpleasant symptom that has a detrimental influence on their quality of life (QOL) [1]. The incidence of CKD-aP has been shown to vary substantially between investigations. It has been stated that it can range between 20% and 90% [2, 3]. The CKD-aP is a prevalent, troublesome, and undertreated symptom in patients undergoing hemodialysis (HD) [4]. The fact that pruritus has no association with phosphate, urea, and other uremic toxins has developed new CKD-aP nomenclature [5]. A previous study reported that poor sleep quality, decreased HRQoL, sadness, and higher mortality are various factors related to the severity of pruritus [6]. As CKD-aP treatments, a variety of strategies have shown various degrees of efficacy [7].

The incidence of CKD-aP in CKD individuals varies from 18% to 97% [8, 9]. CKD-related metabolic changes such as hyperparathyroidism, uremic sensory neuropathy, hypophosphatemia, transdermal mast cell proliferation, Xerosis, hypercalcemia, and increased amounts of histamine have all been associated with CKD-aP intensification [10]. Chronic pruritus dramatically reduces the CKD patients QOL by negatively impacting their physical, psychological, social, and functional well-being [11]. All of this contributes to daytime weariness, depressed symptoms, and sleeplessness [12, 13]. According to a previous research, pruritus is connected with a greater risk of mortality in CKD patients [14]. The prolonged treatment of CKD-aP causes lack of control and personal autonomy that adversely

impact the QOL [15]. Treating CKD-associated pruritus is difficult since it is frequently resistant to oral antihistamines and centrally acting medicines like Gabapentin. As a result, it is critical to have a knowledge of the variables related with severity of CKD-associated pruritus. Therefore, the present study was carried out to determine association of CKD-aP with QOL in patients undergoing hemodialysis presented to the nephrology division of Khyber Teaching Hospital Peshawar.

Methodology

This cross-sectional study was conducted on 227 CKD-associated pruritus patients investigated in the Nephrology Division of Khyber Teaching Hospital Peshawar from March 2022 to February 2023. Patients of either gender (>18 years) undergoing hemodialysis were enrolled. Demographic details, dialysis duration, duration of disease, and various comorbidities conditions were recorded based on a pre-designed questionnaire. A prior study indicated that 18% of people with CKD have pruritus [9]. The needed sample size was 227 (with a 95% level of confidence). Patients were contacted while receiving hemodialysis. The study's purpose was conveyed to them. Patients who agreed to participate completed a written informed consent form. The medical history and demographic details included ESKD etiologies, anti-pruritic therapy, gender, and age. All patients in the trial had their laboratory factors impacting pruritus tested, including hemoglobin, albumin, calcium, phosphorus, and parathyroid hormone levels. SPSS version 27 was used for data analysis. The Pearson chi-square test was used to analyze associations between categorical variables, and the Mann-Whitney U test was used to assess associations between continuous variables. Multivariate linear analysis was performed on the variables by taking P-value 0.05 as a significant level and 95% confidence interval.

Results

Of the total 227 patients, there were 142 (62.6%) were male and 85 (37.4%) were female. The overall mean age was 40.82±6.82 years. The incidence of CKD-associated pruritus was 68.7% (n=156). The presence of various comorbidities such as diabetes mellitus, hypertension, hyperlipidemia, and cardiovascular disease was found in 30 (13.2%), 124 (54.6%), 16 (7.0%), and 6 (2.6%) respectively. The overall mean duration of CKD and duration on hemodialysis was 34.4 [12.0–48.0] months and 22.8 [12.0–36.0] months respectively. Table-I represent the demographic details of all the patients. The incidence of various comorbidities are illustrate in Figure-1. The incidence of mild, moderate, and severe pruritus was 34.6% (n=54), 56.4% (n=88), and 9% (n=14) respectively as depicted in Figure-2. A significant association of CKD-aP with various parameters such as patient's age, duration of CKD, QOL, and HR-QOL were seen on multivariate regression analysis as shown in Table-II.

Table I
Demographic details of patients

Parameters	Value
Age (years)	40.82±6.82

Gender N (%) Male Female	 142 (62.6) 85 (37.4)
Mean duration of CKD (months)	34.4 [12.0–48.0]
Mean duration of hemodialysis (months)	22.8 [12.0–36.0]

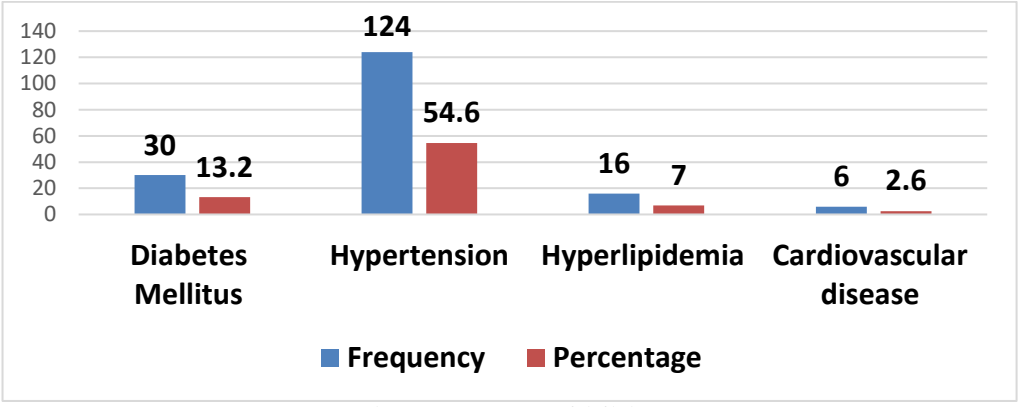

Figure 1. Comorbidities

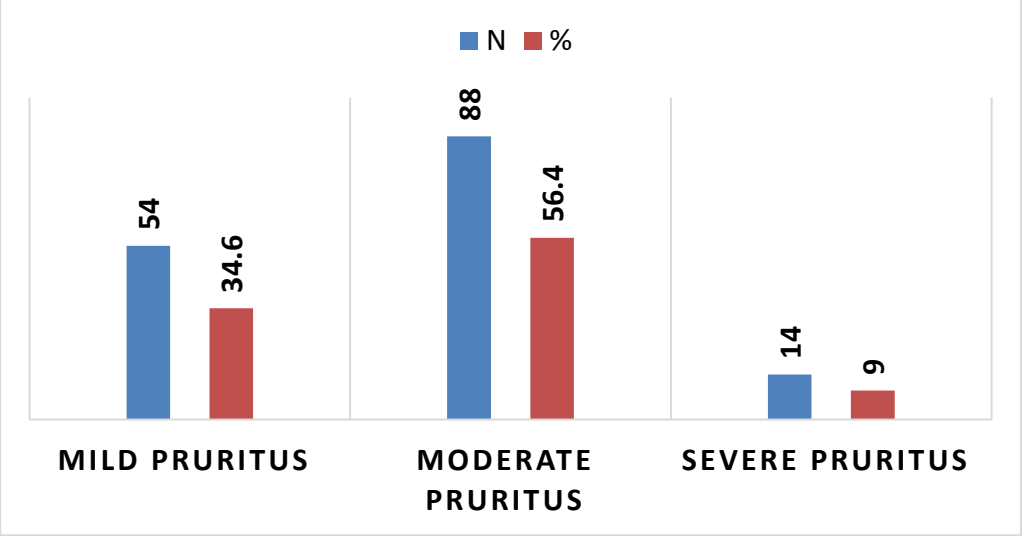

Figure 2. Severity of pruritus (N=156)

Table II
Multivariate regression analysis of CKD-aP with various parameters

Parameters	Multivariate analysis	P-value
Patient's age (years)	(b=0.029; 95% CI=0.001-0.061)	0.036
CKD duration (months)	(b= 0.012; 95% CI=0.022 -0.002)	0.012
*QOL	(b= 0.896; 95% CI=1.450)	0.452
Health related QoL	51.00 [42.00-58.00].	0.003

*QOL: Quality of Life

Discussion

The present study mainly focused on the CKD-aP association with QOL in patients undergoing hemodialysis and found that the incidence of CKD-aP was 68.7% and had adverse effects on QOL. A lower QoL was found in patients suffering from moderate or severe pruritus. The QOL score of hemodialysis patients dropped as the degree of their pruritus increased. CKD-associated pruritus is a bothersome and common symptom among advanced CKD patients. According to studies, the incidence varies widely between countries and even between cities within the same country. Pathogenesis is associated with a multitude of risk factors, many of which are unknown. The recurrence and persistence of pruritus is usually bilaterally symmetrical and had significant impact on limbs, trunk with no skin lesion's initiation, and become worsen at night. CKD-aP has a major influence on the patient's QOL, negatively impacting their social life and sleep quality [16-19].

About 56.4% of the 532 HD patients recruited from nine institutions reported moderate pruritus, and the impact of pruritus on sleep, HRQoL, hospitalization, and mortality was investigated [20]. In the pilot research, the incidence of moderate and severe pruritus was 50% and 14% respectively [21]. The pruritus was more severe in male patients than females. These findings resemble the previous research results [22]. Patients underwent ultrafiltration of their choosing while talking with dialysis professionals outside of the conventional protocol, resulting in poor dialysis. The dialysis equipment was limited in our research, and inadequate dialysis was caused by pressure from too many patients. Similar studies by Adhikari et al revealed the same problem of growing patient numbers and insufficient hemodialysis equipment [23]. The dialysis's increased frequency and duration improve the QOL of individuals, which reduces their odds of death [24].

In this investigation, CKD-aP association with patient's age was found significant which is consistent with the results of earlier investigations according to which pruritus severity was significantly associated with patient's age [25, 26]. In contrast, few studies reported no significant association between CKD-aP and patient's age [27, 28]. Furthermore, the present study reported a significant association of CKD-aP with CKD duration. In contrast, another study reported no significant association of CKD-aP with serum calcium, diabetes, hyperphosphatemia, and hypertension [29, 30]. Takahashi et al. [31] reported that individual QOL in terms of symptoms, social life, and mood declined by the pruritus.

Conclusion

The incidence of CKD-associated pruritus was 68.7%, and had a detrimental impact on the QOL. A lower QoL was found in patients suffering from moderate or severe pruritus. The QOL score of hemodialysis patients dropped as the degree of their pruritus increased.

References

1. Rehman IU, Chan KG, Munib S, Lee LH, Khan TM. The association between CKD-associated pruritus and quality of life in patients undergoing hemodialysis in Pakistan: A STROBE complaint cross-sectional study. Medicine. 2019 Sep;98(36).
2. Ain QU, Asghar MS, Saleem M, Majeed S, Rameez R, Shaukat S. Incidence of Chronic Kidney Disease Related Pruritus and its Relation with Sleep Quality among Patients on Hemodialysis in Pakistan. Pakistan Journal of Medical & Health Sciences. 2022 Apr 12;16(02):1165-.
3. Daraghmeh M, Badran M, Janajreh A, Hassan M, Taha AA, Koni AA, Zyoud SE. Prevalence of pruritus associated with hemodialysis and its association with sleep quality among hemodialysis patients: a multicenter study. BMC nephrology. 2022 Dec;23(1):1-8.
4. Rastogi A, Fishbane S, Lerma E. Difelikefalin for the treatment of moderate-to-severe pruritus associated with chronic kidney disease on hemodialysis. Expert Review of Clinical Pharmacology. 2023 May 4;16(5):387-400.
5. Haq MU, Khan RA, Munib S, Shahid M, Fahad S. Uremic Pruritus In End-Stage Renal Disease Patients Receiving Three Times Weekly Hemodialysis a Multi-Center Study. Pakistan Journal of Medical & Health Sciences. 2023 Mar 10;17(01):637-.
6. Song J, Xian D, Yang L, Xiong X, Lai R, Zhong J. Pruritus: Progress toward Pathogenesis and Treatment. Biomed Res Int. 2018;2018:9625936.
7. Weisshaar E, Szepietowski JC, Dalgard FJ, Garcovich S, Gieler U, Gimenez-Arnau AM, Lambert J, Leslie T, Mettang T, Misery L, et al. European S2k Guideline on Chronic Pruritus. Acta Derm Venereol. 2019;99(5):469–506.
8. Rehman IU, Lai PSM, Lim SK, Lee LH, Khan TM. Sleep disturbance among Malaysian patients with end-stage renal disease with pruritus. BMC Nephrol. 2019;20(1):102.
9. Rehman IU, Chohan TA, Bukhsh A, Khan TM. Impact of Pruritus on Sleep Quality of Hemodialysis Patients: A Systematic Review and Meta-Analysis. Medicina (Kaunas). 2019;55(10):699.
10. Silverberg JI, Lai JS, Vakharia PP, Patel K, Singam V, Chopra R, Sacotte R, Patel N, Rastogi S, Kantor R, et al. Measurement properties of the Patient-Reported Outcomes Measurement Information System Itch Questionnaire item banks in adults with atopic dermatitis. J Am Acad Dermatol. 2020;82(5):1174–80.
11. Medarov BI, Victorson DE, Judson MA. Patient-reported outcome measures for sleep disorders and related problems: clinical and research applications. Chest. 2013;143(6):1809–18.
12. Samoudi AF, Marzouq MK, Samara AM, Zyoud SH, Al-Jabi SW. The impact of pain on the quality of life of patients with end-stage renal disease undergoing hemodialysis: a multicenter cross-sectional study from Palestine. Health Qual Life Outcomes. 2021;19(1):39.
13. Voskamp PWM, van Diepen M, Evans M, Caskey FJ, Torino C, Postorino M, Szymczak M, Klinger M, Wallquist C, van de Luijtgaarden MWM, et al. The impact of symptoms on health-related quality of life in elderly pre-dialysis patients: effect and importance in the EQUAL study. Nephrol Dial Transplant. 2019;34(10):1707–15.

14. Parvan K, Lakdizaji S, Roshangar F, Mostofi M. Quality of sleep and its relationship to quality of life in hemodialysis patients. J Caring Sci. 2013;2(4):295–304.
15. Satti MZ, Arshad D, Javed H, Shahroz A, Tahir Z, Ahmed MMH, Kareem A. Uremic Pruritus: Prevalence and Impact on Quality of Life and Depressive Symptoms in Hemodialysis Patients. Cureus. 2019;11(7):e5178–e5178.
16. Edalat-Nejad M, Qlich-Khani M. Quality of life and sleep in hemodialysis patients. Saudi J Kidney Dis Transpl. 2013;24(3):514–8.
17. Omari AM, Omari LS, Dagash HH, Sweileh WM, Natour N, Zyoud SH. Assessment of nutritional status in the maintenance of haemodialysis patients: a cross-sectional study from Palestine. BMC Nephrol. 2019;20(1):92.
18. Medarov BI, Victorson DE, Judson MA. Patient-reported outcome measures for sleep disorders and related problems: clinical and research applications. Chest. 2013;143(6):1809–18.
19. Wang R, Tang C, Chen X, Zhu C, Feng W, Li P, Lu C. Poor sleep and reduced quality of life were associated with symptom distress in patients receiving maintenance hemodialysis. Health Qual Life Outcomes. 2016;14(1):125.
20. Boivin MJ, Barlow-Mosha L, Chernoff MC, et al. Neuropsychological performance in African children with HIV enrolled in a multisite antiretroviral clinical trial. Aids 2018;32:189–204.
21. Khatib ST HM, Hasan SA, Khazneh E, Zyoud SH. Quality of life in hemodialysis diabetic patients: a multicenter cross-sectional study from Palestine. BMC Nephrol. 2018;19:49.
22. Khan TM, Al-Haider I, Syed Sulaiman SA, Hassali MA. Linguistic validation of the 5D itching scale to Arabic in patients with end-stage kidney disease. J Ren Care. 2013;39(4):222–7.
23. Adhikari L, Kayastha R, Bhatta K. Prevalence of uremic pruritus in chronic kidney patients undergoing maintenance hemodialysis at Kathmandu Medical College Teaching Hospital. J Kathmandu Med Coll 2016;5:124–7.
24. Shirazian S, Aina O, Park Y, et al. Chronic kidney disease-associated pruritus: impact on quality of life and current management challenges. Int J Nephrol Renovasc Dis 2017;10:11–26.
25. Simonsen E, Komenda P, Lerner B et al. Treatment of uremic pruritus: a systematic review. Am J Kidney Dis 2017; 70: 638–655.
26. Foroutan N, Etminan A, Nikvarz N et al. Comparison of pregabalin with doxepin in the management of uremic pruritus: a randomized single blind clinical trial. Hemodial Int 2017; 21: 63–71
27. Gobo-Oliveira M, Pigari VG, Ogata MS et al. Gabapentin versus dexchlorpheniramine as treatment for uremic pruritus: a randomised controlled trial. Eur J Dermatol 2018; 28: 488–495
28. Karadag E, Kilic SP, Karatay G et al. Effect of baby oil on pruritus, sleep quality, and quality of life in hemodialysis patients: pretest-post-test model with control groups. Jpn J Nurs Sci 2014; 11: 180–189
29. Mathur VS, Kumar J, Crawford PW et al. A multicenter, randomized, double-blind, placebo-controlled trial of nalbuphine ER tablets for uremic pruritus. Am J Nephrol 2017;46: 450–458.
30. Ibrahim MK, Elshahid AR, El Baz TZ et al. Impact of uremic pruritus on quality of life among end stage renal disease patients on dialysis. J Clin Diagn Res 2016; 10:WC01–WC05.

31. Takahashi N, Yoshizawa T, Kumagai J, Kawanishi H, Tsuchiya S, Moriishi M, Masaki T. Effectiveness of a treatment algorithm for hemodialysis-associated pruritus in terms of changes in medications. Ren Replace Ther. 2021;7(1):1–2.