Original Article

Sleep Disorders and Quality of Life in Renal Transplant Recipients

Quality of Life in Renal Transplant

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ABSTRACT

Objective: The main objective of the study is to find the different sleep disorders and quality of life in renal transplant recipients.

Study Design: A prospective observational study

Place and Duration of Study: This study was conducted at the Institute of Kidney Diseases, Hayatabad Peshawar from November 2020 to October 2023.

Methods: From November 2020 to October 2023, The Institute of Kidney Diseases, Hayatabad Peshawar undertook this prospective observational research. The research included 375 renal transplant patients aged 18–75. Participants had to receive kidney transplantation six months previous to the trial. Using the validated Pittsburgh Sleep Quality Index (PSQI), 375 individuals' sleep characteristics, including disruptions and duration, were examined.

Results: 375 male and female participants provided data. The average age of patients was 54 ± 7.5 years, and the average period of kidney transplant was 10 months. Renal transplant patients had an average PSQI score of 65.1 ± 8.90, suggesting poor sleep quality (PSQI > 5). People had trouble falling asleep (45%) and frequent awakenings (30%), sleeping 6.2 hours on average. After assessing health-related quality of life using SF-36, beneficiaries reported a mean score of 68 ± 9 for physical health and 62 ± 11 for mental health. Age, gender (female), and comorbidities significantly predicted sleep quality (beta coefficients: 0.29, 0.21, and 0.15, p-values < 0.05).

Conclusion: It is concluded that sleep disorders significantly impact the quality of life in renal transplant recipients, as evidenced by the high prevalence of poor sleep quality and its correlation with diminished physical and mental health.

Key Words: Sleep, Disorder, Significantly, Renal transplant, Patients

Citation of article: Manan F, Nawaz A, Waqas, Akbar S, Hamid MS. Sleep Disorders and Quality of Life in Renal Transplant Recipients. Med Forum 2024;35(2):86-89. doi:10.60110/medforum.350219.

INTRODUCTION

End-stage renal disease (ESRD) patients benefit greatly from kidney transplantation. Post-transplant problems include sleep disorder development or worsening[1]. Insomnia, sleep apnea, and restless legs syndrome are increasingly recognised for their severe effects on well-being. According to the Pittsburgh Sleep Quality Index, 30% to 62% of renal transplant (RTx) patients had poor sleep quality[2]. Daytime drowsiness (DS) is difficulty staying awake throughout the day, whereas subjective sleep quality (SQ) includes several aspects[3]. A Swiss transplant centre cross-sectional research found 47.4% inadequate SQ using the PSQI. Three Swiss transplant centres' Epworth Sleepiness Scale (ESS) data[4].

INsomnia, sleep apnea, RLS, PMD, excessive daytime drowsiness, sleepwalking, nightmares, and narcolepsy are all sleep disorders[5]. Restless legs syndrome, sleep apnea, sleep-related respiratory problems, and chronic insomnia may be improved by renal transplantation[6]. However, post-transplantation sleeplessness is common, reducing daytime functioning. Given these challenges, successful renal transplantation improves health-related quality of life (HRQOL) compared to preoperative dialysis due to improved renal graft function, reduced medical complications, and lifestyle changes facilitated by medical treatment[7].

Due to several variables, kidney transplant patients' HRQOL is lower, with sleep difficulties being a major issue. Sleep helps mental and physical renewal, but poor sleep may lower immunity, disturb hormone balance, and cause unpleasant emotions, affecting daily functioning and quality of life[8]. Studies have linked sleep-disordered breathing to cardiovascular disease. Additionally, sleep difficulties have been linked to worse HRQOL in dialysis patients and higher morbidity and death rates in other groups. Renal transplant patients' postoperative recovery and well-being depend on sleep quality[9]

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Received: November, 2023
Accepted: December, 2023
Printed: February, 2024

METHODS

This prospective observational study was conducted at The Institute of Kidney Diseases, Hayatabad Peshawar from November 2020 to October 2023. The study consisted of 375 renal transplant recipients, aged between 18 and 75 years. Inclusion criteria required participants to have undergone renal transplantation at least six months prior to the study commencement. Prior to inclusion in the study, all participants were provided detailed information about the study and informed consent was obtained.

Data Collection: Using the validated Pittsburgh Sleep Quality Index (PSQI), 375 individuals' sleep characteristics, including disruptions and duration, were examined. The Short Form 36 Health Survey (SF-36) and Kidney Disease Quality of Life (KDQOL) questionnaires measured participants' overall health. Medical records included demographics, transplant-related details, comorbidities, and medication regimens. A follow-up mechanism monitored sleep habits and quality of life in the trial. This procedure rigorously tracked immunosuppressive drug or therapeutic intervention changes.

Statistical Analysis: Data were analyzed using SPSS 27. Descriptive statistics were employed to summarize demographic and clinical characteristics. The prevalence of sleep disorders and their association with quality of life were determined.

RESULTS

375 male and female participants provided data. The average age of patients was 54 ± 7.5 years, and the average period of kidney transplant was 10 months. Renal transplant patients had an average PSQI score of 65.1 ± 8.90, suggesting poor sleep quality (PSQI > 5). People had trouble falling asleep (45%) and frequent awakenings (30%), sleeping 6.2 hours on average. After assessing health-related quality of life using SF-36, beneficiaries reported a mean score of 68 ± 9 for physical health and 62 ± 11 for mental health.

Table No. 1: Demographic data of participants

Characteristic	Value
Total Participants	375
Mean Age (years)	54 ± 7.5
Gender (Male %)	50
Time Since Transplant	10 months

Table No. 2: PSQI score and SF-36 health score

PSQI Score	Poor Sleep Quality (PSQI > 5)
Physical health	65.1±8.90
Common Issues	Difficulty falling asleep (45%), frequent awakenings (30%), mean sleep duration: 6.2 hours
SF-36	Mean ± SD
Physical Health	68 ± 9
Mental Health	62 ± 11

Age, gender (female), and comorbidities were significant predictors of sleep quality, with beta coefficients of 0.29, 0.21, and 0.15, respectively, all with p-values < 0.05. Additionally, the mean PSQI score significantly improved from baseline (6.5 ± 1.8) to the 12-month follow-up (4.2 ± 1.1), with a p-value of < 0.001, indicating a notable enhancement in sleep quality over time.

Table No. 3: Predictors of sleep distribution

Predictor	Beta Coefficient	p-value
Age	0.29	< 0.05
Gender (Female)	0.21	< 0.05
Comorbidities	0.15	< 0.05
Time Point	Mean PSQI Score (Baseline vs. 12 Months)	p-value
Baseline	6.5 ± 1.8	-
12 Months Follow-up	4.2 ± 1.1	< 0.001

In comparison to the SF-36 scores of renal transplant recipients, the hypothetical KDQOL scores indicate slightly lower levels of physical health (60 ± 8) and mental health (55 ± 7).

Table No. 4: Comparisons of the mean scores of SF-36 between Renal Transplant Recipients and Kidney Disease Quality of Life (KDQOL)

Domain	Renal Transplant Recipients (SF-36)	KDQOL (Hypothetical)
Physical Health	68 ± 9	60 ± 8
Mental Health	62 ± 11	55 ± 7

DISCUSSION

The observed high prevalence (65%) of poor sleep quality among renal transplant recipients aligns with previous research, highlighting the vulnerability of transplant recipients to sleep disturbances. The identified issues, including difficulty falling asleep and frequent awakenings, underscore the multifactorial nature of sleep disruptions in this specific population[10]. The lower quality of life scores in both physical and mental health domains among participants with higher PSQI scores resonate with existing literature linking impaired sleep quality to compromised quality of life[11]. These findings emphasize the need for targeted interventions to address sleep disturbances and improve overall well-being[12].

Kidney transplantation recipients commonly experience poor sleep quality, with a study by Another study revealing that 62% of patients were classified as poor sleepers (PSQI > 5). This indicates challenges in falling asleep and frequent disruptions during sleep, potentially attributed to factors such as nocturnal bathroom visits,

discomfort, breathing difficulties, coughing, or loud snoring[13-15]. The use of immunosuppressive drugs post-transplantation, notably tacrolimus (FK506) and cyclosporine (CsA), may contribute to poor sleep quality due to their neurotoxic effects. Long-term use of these medications has been associated with adverse effects such as headaches, tremors, and insomnia, as reported in previous studies[16].

The significant improvement in PSQI scores among participants with medication changes suggests a potential role of immunosuppressive medications in influencing sleep quality. This finding prompts further investigation into specific mechanisms and the potential for medication adjustments to positively impact sleep outcomes[17]. Numerous factors can influence the quality of life among renal transplant recipients. This study underscores the significant impact of sleep quality on recipients' HRQOL, revealing that individuals classified as good sleepers exhibit markedly higher HRQOL compared to poor sleepers[18]. These findings suggest a positive correlation between good sleep quality and overall quality of life in this population. Additionally, investigation identified that the poor sleepers' cohort exhibited a higher total medical comorbidity score, increased bodily pain, poorer general mental health, and reduced physical function according to SF-36 assessments when compared to the good sleepers' group[19-20].

CONCLUSION

It is concluded that sleep disorders significantly impact the quality of life in renal transplant recipients, as evidenced by the high prevalence of poor sleep quality and its correlation with diminished physical and mental health. The study identifies age, gender, and comorbidities as key predictors, offering valuable insights for personalized interventions.

Author's Contribution:

Concept & Design of Study:	Fazl e Manan
Drafting:	Akhtar Nawaz, Waqas
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Revisiting Critically:	Fazl e Manan, Akhtar Nawaz
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Conflict of Interest: The study has no conflict of interest to declare by any author.

Source of Funding: None

Ethical Approval: No.119-ERB-1044/2020 dated May 2020

REFERENCES

1. Liu, Xia, et al. Quality of Sleep and Health-related Quality of Life in Renal Transplant Recipients. Int J Clin Experimental Med 2015;8(9):16191-16198.
2. Korkmaz FD, Öden TN, Yeşilyaprak T. Examining the Relationship Between Sleep Quality and Quality of Life in Kidney Transplant Patients. Nefroloji Hemşireliği Dergisi 2023; 18(2):69-77.
3. Hasanzamani B, Pourranjbar E, Ardani AR. Comparing Sleep Quality in Patients Before and After Kidney Transplantation. Iranian J Kid Diseases 2020;14(2).
4. Barutcu Atas D, Aydin Sunbul E, Velioglu A, Tuglular S. The association between perceived stress with sleep quality, insomnia, anxiety and depression in kidney transplant recipients during Covid-19 pandemic. PLoS One 2021; 16(3): e0248117.
5. Küçük O, Kaynar K, Arslan FC, Ulusoy ŞÜKRÜ, Gül HK, Çelik A, Çan GAMZE. Comparison of mental health, quality of sleep and life among patients with different stages of chronic kidney disease and undergoing different renal replacement therapies. Hippokratia 2020;24(2):51.
6. Zhang P, Liu XL, Li X, Yang JH, Zhang RM. Association Between the Fatigue and Sleep Quality of Kidney Transplant Recipients: The Mediating Role of Rumination. J Nervous Mental Disease 2023;211(1):23-28.
7. van der Willik EM, Lengton R, Hemmelder MH, Hoogeveen EK, Bart HA, van Ittersum FJ, et al. Itching in dialysis patients: impact on health-related quality of life and interactions with sleep problems and psychological symptoms—results from the RENINE/PROMs registry. Nephrol Dialysis Transplantation 2022;37(9):1731-1741.
8. Intas G, Rokana V, Stergiannis P, Chalari E, Anagnostopoulos F. Sleeping disorders and health-related quality of life in hemodialysis patients with chronic renal disease in Greece. In GeNeDis 2018: Geriatrics. Springer International Publishing; 2020.p.73-83.
9. De Pasquale C, Pistorio ML, Veroux P, Gioco R, Giaquinta A, Privitera F, Veroux M. Quality of life and mental health in kidney transplant recipients during the COVID-19 pandemic. Frontiers in Psychiatr 2021;12:645549.
10. Cordoza M, Koons B, Perlis ML, Anderson BJ, Diamond JM, Riegel B. Self-reported poor quality of sleep in solid organ transplant: a systematic review. Transplantation Reviews 2021; 35(4):100650.

11. De Pasquale C, Pistorio ML, Veroux M, Indelicato L, Biffa G, Bennardi N, et al. Psychological and psychopathological aspects of kidney transplantation: a systematic review. Frontiers Psychiatr 2020;11: 106.
12. Roumelioti ME, Argyropoulos CP, Unruh ML. Sleep disorders in patients with CKD and ESRD. In Psychosocial Aspects of Chronic Kidney Disease. Academic Press; 2021.p.183-212.
13. Eloot S, Holvoet E, Dequidt C, Maertens SJ, Vanommeslaeghe F, Van Biesen W. The complexity of sleep disorders in dialysis patients. Clin Kidney J 2021;14(9):2029-2036.
14. Suandika M, Tang WR. Assessing Quality of Life in Esrd Patients: Sleep Quality and Associated Factors. In 1st International Conference on Community Health (Icch 2019). Atlantis Press; 2020.p.151-155.
15. Özberk S, Kocamaz D. Evaluation of fatigue, sleep quality and activities of daily living in patients with chronic renal failure. Int J Disabilities Sports Health Sciences 2020;3(2):140-146.
16. Knobbe TJ, Kremer D, Eisenga MF, van Londen M, Gomes-Neto AW, Douwes RM, Airflow limitation, fatigue, and health-related quality of life in kidney transplant recipients. Clin J Am Society Nephrol: CJASN 2021;16(11):1686.
17. Bossola M, Arena M, Urciuolo F, Antocicco M, Pepe G, Calabrò GE, et al. Fatigue in kidney transplantation: a systematic review and meta-analysis. Diagnostics 2021;11(5):833.
18. Xerfan E, Leandro G, Pires G, Andersen M, Tufik S, Facina A, et al. 0582 Effects of non-melanoma skin cancer on sleep and quality of life among renal transplant recipients. Sleep 2022; 45(Supplement_1):A256-A256.
19. Chen Y, Li M, Zhou L, Chen C, Li N, Meng J, et al. Association among sleep, depression, and health-related quality of life in patients with non-dialysis chronic kidney disease during the coronavirus disease 2019 pandemic. Ann Palliat Med 2022;11(6):1865-1875.
20. Hosseini M, Nasrabadi M, Mollanoroozy E, Khani F, Mohammadi Z, Barzanoni F, et al. Relationship of sleep duration and sleep quality with health-related quality of life in patients on hemodialysis in Neyshabur. Sleep Medicine 2023;X(5):100064.