



Sleep Quality and Its Correlates in Renal Transplant Patients

H. Kachuee, J. Ameli, S. Taheri, S. Assari, F. Riahipour, H. Khedmat, and A.R. Saadat

ABSTRACT

Background. The aim of this study was to evaluate correlated morbidity measures with poor sleep quality among kidney transplanted patients.

Methods. In a cross-sectional study of 125 Iranian kidney transplant patients in 2006, we employed self-administered questionnaires to evaluate the quality of sleep (PSQI), quality of life (SF-36), anxiety and depression, sexual activity, marital relationship, and medical comorbidity. Patients with PSQI score of >5 were considered to be “poor sleepers.” Students *t*-test was used to compare the morbidity measures between the two groups: “poor sleeper” versus “good sleepers.”

Results. Seventy-eight (62%) patients were poor sleepers. This group showed a higher total medical comorbidity score ($P = .009$), more bodily pain, poorer general mental health, and less physical function on SF-36 ($P = .02$), less sexual function, and more severe anxiety ($P = .02$). There was no significant difference between poor sleepers and good sleepers in the mean of other subscores of the SF-36, marital status, and depressive symptoms.

Conclusions. A poor quality of sleep is common after kidney transplantation. This problem is associated with higher medical comorbidity and poorer emotional state. Therefore, more attention should be paid to evaluation of sleep quality in this patient population.

SEVERAL STUDIES have demonstrated that sleep disturbances can lead to serious problems of mental and physical health among patients with end-stage renal disease (ESRD), both on dialysis and on conservative treatment.^{1,2} For this reason, sleep complaints and their etiology in ESRD patients, have received a great deal of attention over the past decade.³

However, despite increasing kidney transplantation activities, the quality of sleep in these patients has been rarely investigated. In fact, the first related study was published in 2005.¹ In this study, we sought to evaluate the prevalence of poor sleep among renal allograft recipients using a validated sleep quality questionnaire and examine its relationship to other measures of morbidity, such as health-related quality of life (HRQOL), anxiety, depression, marital status, and sexual relationship.

MATERIALS AND METHODS

This cross-sectional study of 125 kidney transplant recipients attending an outpatient nephrology clinic in 2006 required the following inclusion criteria: age ≥ 18 years, current stable graft function, and competence to give informed consent. Patients with

an elevated serum creatinine level or any concomitant acute disease did not enter the study. We extracted the demographic data and the history of previous transplantation or dialysis from clinic records. All patients completed a series of self-administered questionnaires for assessment of sleep quality and morbidity measures.

Sleep quality over the month before the study was determined using the Pittsburgh Sleep Quality Index (PSQI; 7 items; total score, 0 to 21; higher score indicating worse sleep quality).⁴ Patients were then divided into two groups based on the PSQI score: group I (poor sleeper, PSQI score > 5) and group II (good sleepers, PSQI score < 5).⁴

Morbidity measures were as follows: HRQoL (Short Form-36; 36 items; total score, 0 to 100; higher score indicating better quality

From the Nephrology/Urology Research Center (NURC) Baqiyatallah Medical Sciences University (H.K., J.A., A.R.S.) and the Clinical Research Unit, Baqiyatallah Medical Sciences University (S.T., F.R.), Tehran, Iran.

Totally funded by Baqiyatallah Sciences Medical University.

Address reprint requests to Hosain Kachuee, Baqiyatallah University of Medical Sciences, Vanak Square, Mollasadra Ave., P.O. Box: 14155-6437, 19945-587 Tehran, 1435915371 Iran. E-mail: h_kachuee@hotmail.com

Table 1. Characteristics of Good Sleepers Compared With Poor Sleepers Among the 125 Study Subjects

Variable	Good Sleepers (n = 48)	Poor Sleepers (n = 77)	P
Total point of comorbidity (0–42)	3.50 ± 4.08	5.60 ± 4.36	.008
Marital status total point (0–69) (98 [78.4%] were married)	53.12 ± 9.69	52.81 ± 10.23	.880
Patient sexual relationship total score (0–36)	13.41 ± 4.29	15.18 ± 5.01	.038
Quality of life			
Quality of life total score (0–100)	55.24 ± 9.69	53.30 ± 10.29	.296
Bodily pain (0–100)	26.51 ± 25.48	39.47 ± 29.15	.013
Physical function (0–100)	73.86 ± 26.02	70.93 ± 26.53	.020
General mental health (0–100)	47.27 ± 8.90	43.57 ± 8.19	.020
Social function (0–100)	52.08 ± 15.54	48.70 ± 19.72	.285
Role limitation (0–100)	65.88 ± 26.70	58.36 ± 25.84	.123
Vitality energy, or fatigue (0–100)	3.97 ± 0.14	3.93 ± 0.46	.505
General health perception (0–100)	43.75 ± 13.26	46.16 ± 15.19	.351
Mental health perception (0–100)	49.00 ± 7.16	46.98 ± 7.93	.154
Physical health perception (0–100)	57.53 ± 12.10	56.44 ± 12.43	.631
Patient anxiety level	1.44 ± 0.511	1.78 ± 0.422	.027
Patient depression level	1.84 ± 0.375	1.70 ± 0.470	.268

of life)⁵; anxiety and depression (Hospital Anxiety and Depression Scale; 14 items; score range: 0 to 21; higher score indicating more anxiety and depression),⁶ sexual relation (Relationship and Sexuality Scale; 10 items; total score range, 0 to 72; higher scores indicating better sexual relationship),⁷ and marital status (Revised Marital Adjustment Scale; 14 items; total score range, 0 to 69; higher scores indicating better marital adjustment).⁸ Patients were also assessed for medical comorbidities (Ifudu comorbidity index; 42 items; total score range, 0 to 42; higher scores indicating more medical comorbidities).⁹

For statistical analysis, we used SPSS 13. We used χ^2 and independent sample *t*-test (based on the variable type) for comparing the demographic and clinical variables as well as the scores of morbidity measures between the two groups. A *P* value of less than .05 considered to be significant.

RESULTS

Among 125 kidney recipients included in the study, 82 (68%) were male and 98 (78%) were married. The overall mean age was 42 ± 12 years (range, 18 to 73). Fifteen (12%) patients had a history of previous kidney transplantation. All patients received allografts from living donors. Their primary cause of ESRD was hypertension in 17 (13%), glomerulonephritis in 15 (12%), diabetes mellitus in 10 (8%), urologic complications in 4 (3.3%), other complications in 17 (14%), and unknown reason in 61 (49%) patients.

Seventy-eight (62%) subjects were poor sleepers components (Table 1). The mean (SD) of total PSQI score was 6.45 ± 2.59. Their mean (SD) scores were for perceived sleep quality (0.98 ± 0.75), sleep latency (1.3 ± 0.92), sleep duration (1.00 ± 1.16), habitual sleep efficiency (0.06 ± 0.30), sleep disturbances (1.41 ± 0.59), sleep sufficiency (0.09 ± 0.48), and sleep medication (1.57 ± 0.69). We found that poor sleepers showed significantly higher total comorbidity (*P* = .009); higher anxiety level (*P* = .02); lower sexual relationship score (*P* = .04); higher bodily pain (*P* = .02), and lower general mental health (*P* = .02) and physical function (*P* = .02). Poor sleep displayed no signif-

icant association with age, gender, marital adjustment, depression level, previous transplantation history, or hemodialysis history.

DISCUSSION

Previous studies of improved sleep disturbances after kidney transplantation¹⁰ show promise of a significant reduction in the prevalence of sleep disorders after kidney transplantation. Our study revealed higher prevalence of poor sleep than what was previously supposed reaching 62%, which is comparable to the 52% prevalence in transplanted patient previously reported and the 50% to 80% documented in hemodialysis patients.^{1,2} Among the mechanisms of sleep disturbances in renal transplant recipients are factors of comorbidities, emotional disorders, and immunosuppressive therapies. Other studies have observed that medical comorbidity negatively influences the quality of sleep in kidney recipients. In addition, hypertension, the most prevalent comorbidity in ESRD,¹¹ is a known contributor to sleep disorders.^{12,13}

Similar to previous studies,^{1,2,14} we found that general mental health and anxiety were correlated with sleep disorders. An improvement in emotional disorders could reduce the sleep disorder symptoms.¹⁵ Although some studies reported immunosuppressive therapy to be a contributor to sleep problems among kidney recipients,^{7,8} other studies did not confirm this relationship.^{1,16}

We conclude that poor sleep a problem in kidney recipients, was related to anxiety, some dimensions of HRQOL, medical comorbidity, and sexual relationships.

REFERENCES

1. Sabbatini M, Crispo A, Pisani A, et al: Sleep quality in renal transplant patients: a never investigated problem. *Nephrol Dial Transplant* 20:194, 2005
2. Iliescu EA, Coo H, McMurray MH, et al: Quality of sleep and health-related quality of life in haemodialysis patients. *Nephrol Dial Transplant* 18:126, 2003

3. Fletcher EC: Obstructive sleep apnea and the kidney. *J Am Soc Nephrol* 4:1111, 1993
4. Buysse DJ, Reynolds CF III, Monk TH, et al: The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry Res* 28:193, 1989
5. Ware JR Jr, Kosinsky M, Keller SD: SF-36 Physical and Mental Health Summary scores: A user's manual. Boston: The Health Institute, New England Medical Center, 1994
6. Montazeri A, Vahdaninia M, Ebrahimi M, et al: The Hospital Anxiety and Depression Scale (HADS): translation and validation study of the Iranian version. *Health Qual Life Outcomes* 1:14, 2003
7. Berglund G, Nystedt M, Bolund C, et al: Effect of endocrine treatment on sexuality in premenopausal breast cancer patients: a prospective randomized study. *J Clin Oncol* 19:2788, 2001
8. Busby DM, Christensen C, Crane RD, et al: A revision of the dyadic adjustment scale for use with distressed and nondistressed couples: construct hierarchy and multidimensional scales. *J Marital Family Ther* 21:289, 1995
9. Ifudu O, Paul HR, Homel P, et al: Predictive value of functional status for mortality in patients on maintenance hemodialysis. *Am J Nephrol* 18:109, 1998
10. Novak M, Molnar MZ, Ambrus C, et al: Chronic insomnia in kidney transplant recipients. *Am J Kidney Dis* 47:655, 2006
11. Valderrabano F, Golper T, Muirhead N, et al: Chronic kidney disease: why is current management uncoordinated and suboptimal? *Nephrol Dial Transplant* 16(Suppl 7):61, 2001
12. Nieto FJ, Young TB, Lind BK, et al: Association of sleep-disordered breathing, sleep apnea, and hypertension in a large community-based study. Sleep Heart Health Study. *JAMA* 283:1829, 2000
13. Peppard PE, Young T, Palta M, et al: Prospective study of the association between sleep-disordered breathing and hypertension. *N Engl J Med* 342:1378, 2000
14. Karam VH, Gasquet I, Delvart V, et al: Quality of life in adult survivors beyond 10 years after liver, kidney, and heart transplantation. *Transplantation* 76:1699, 2003
15. Kimmel PL, Weihs K, Peterson RA: Survival in hemodialysis patients: the role of depression. *J Am Soc Nephrol* 4:12, 1993
16. Iliescu EA, Yeates KE, Holland DC: Quality of sleep in patients with chronic kidney disease. *Nephrol Dial Transplant* 19:95, 2004