Medicinska istaživanja 2024; 57(3):41-47 | DOI: 10.5937/medi57-51008

OPEN ACCESS

Medical Research | Published by Faculty of Medicine University of Belgrade

ORIGINAL ARTICLE

Relationship between daily physical activity and quality of sleep in maintenance hemodialysis patients

Trbojević-Stanković Jasna[1,2], Stanimirović Sanja[3], Ristanović Ljubica[4], Nešić Dejan[1,5]

[1]University of Belgrade, Faculty of Medicine, Belgrade, Serbia
[2]Department of Hemodialysis, University Clinical Center "Dr Dragisa Misovic", Belgrade, Serbia
[3]Sports Association "Mia Body Space", Valjevo, Serbia
[4]University of Belgrade, Faculty of Sport and Physical Education, Belgrade, Serbia
[5]University of Belgrade, Faculty of Medicine, Institute for Medical Physiology, Belgrade, Serbia

Recived: 13 May 2024
Revised: 25 May 2024
Accepted: 03 June 2024

Check for updates

Funding information:
The authors report no funding associated with the work reported in this article.

Copyright: © 2024 Medicinska istraživanja

Licence:
This is an open access article distributed under the terms of the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Competing interests:
The authors have declared that no competing interests exist

Correspondence to:
Jasna Trbojević-Stanković
Department of Hemodialysis, University Clinical Center "Dr Dragisa Misovic",
1 Heroja Milana Tepića Street, 11000 Belgrade, Serbia
E-mail: jasna.trbojevic-stankovic@med.bg.ac.rs; ts.jasna@gmail.com

Summary

Introduction/Aim: Hemodialysis patients are often sedentary and experience a high prevalence of sleep disorders. In this study, we aimed to assess the level of physical activity and quality of sleep among patients on maintenance hemodialysis and assess the relationship between these issues.

Material and Methods: Seventy-one hemodialysis patients filled in the International Physical Activity Questionnaire (IPAQ) and the Pittsburgh Sleep Quality Index (PSQI) to assess their level of physical activity and their quality of sleep, respectively. Basic demographic, clinical and treatment-related characteristics were obtained from an electronic medical data system, as well as the results of standard laboratory analyses. The results were analyzed with Student t-test, Pearson chi-square test, linear by linear association, and Spearman correlation.

Results: Nearly half of the patients (46.5%) were poor sleepers with an overall PSQI of 5.7 ± 4.4. Older age was significantly associated with worse sleep quality (p=0.019). Patients reported low, moderate or vigorous levels of daily physical activity in 42.3%, 50.7% and 7% of cases, respectively. No statistically significant associations were noted between demographic characteristics, dialysis vintage, comorbidities and the level of physical activity. Distribution of good and poor sleepers was almost identical among patients with low and moderate physical activity (47% vs 53% and 50% vs 50% respectively), whereas patients with vigorous activity were mostly good sleepers (20% vs 80%), but the difference was not statistically significant (p=0.591).

Conclusion: We observed no statistically significant association between the level of physical activity and quality of sleep in this cohort. Further research with a larger sample might additionally elucidate this issue.

Key words: dialysis, hemodialysis, physical activity, sleep quality

Cite this article as: Trbojević-Stanković J, Stanimirović S, Ristanović Lj, Nešić D. Relationship between daily physical activity and quality of sleep in maintenance hemodialysis patients; Medicinska istaživanja 2024; 57(3):41-47 DOI: 10.5937/medi57-51008

INTRODUCTION

Chronic kidney disease (CKD) is among the leading causes of morbidity and mortality worldwide with an estimated global prevalence between 11% and 15% (1). The terminal stage of CKD, end-stage renal disease (ESRD), is associated with a variety of symptoms affecting patients' physical ability and functioning. Hemodialysis (HD) partially improves certain clinical aspects of the disease but fails to sufficiently recover all aspects of daily functioning. In fact, specific features of this treatment regimen may even contribute to the impairment of certain aspects of daily functioning. Namely, patients' daily physical activity is substantially restricted by being attached to a dialysis machine for at least 12 hours each week in three dialysis sessions. Physical activity is any movement that causes energy expenditure, including daily duties, such as work, household activities, and commuting. HD patients are often sedentary, unrelated to gender, urbanicity and dialysis or nondialysis day, whereas older age is significantly associated with lower mobility and less activity (2). Inactivity even aggravates with time and disease severity. Moderate physical activity in the HD population has been associated with better quality of life and lower mortality, even in patients with comorbidities (3, 4).

Sleep disorders are highly prevalent in HD patients, with studies accounting that sleep quality in this population is compromised both subjectively and objectively (5). Their origin in dialysis patients is not fully elucidated, but it is established to be multi-factorial. Impaired quality of sleep is reported by more than half of patients receiving dialysis and is associated with cardiovascular events, depression, impaired daily functioning, lower quality of life, and increased mortality risk (6, 7). Nevertheless, despite their frequency and importance, sleep disorders are often underdiagnosed in this population, and evidence of effective management remains limited.

Previous studies suggested a positive association between physical activity and sleep in different populations, especially among the elderly (8, 9). Even moderate long-term physical activity appears to have a positive effect on sleep quality, especially on its depth, latency and performance in the general population (10). Nevertheless, data on the relationship between physical activity and sleep quality among patients with ESRD are limited.

This study aimed to assess the level of physical activity and quality of sleep among patients on maintenance HD and assess the relationship between these issues.

MATERIALS AND METHODS

Population

Seventy-one out of 98 patients from a single HD unit were willing and capable of participating in the study. The inclusion criteria included age over 18 years, at least 6 months of maintenance HD with 3 treatment sessions per week, regular HD attendance, and the ability to walk. We excluded patients with acute aggravation of clinical condition, severe mobility impairment, and cognitive incapacity to respond to questionnaires. The subjects agreed to participate in the study by completing questionnaires. The study protocol was approved by the institutional Ethical Committee (Decision ID: 8028/1-2022).

Demographic, clinical and treatment-related data were obtained from medical records. Body Mass Index (BMI) was calculated by dividing an individual's weight in kilograms by the square of height in meters. Values between 18.5 and 24.9 were considered within a healthy weight, whereas BMI ≥25 denoted overweight patients. Venous blood samples for laboratory analyses were drawn at the mid-week session upon routine monthly check-ups according to the standard protocol for HD patients' follow-ups. Dialysis in the center was performed within commonly established regulations and protocols.

Instruments

The patients were administered the International Physical Activity Questionnaire (IPAQ) and the Pittsburgh Sleep Quality Index (PSQI).

The IPAQ-short form consists of 7 questions related to the frequency and time spent performing vigorous, moderate and walking activities, as well as the average time spent sitting in the previous 7 days. Data collected with IPAQ is reported as median MET-minutes, where MET stands for the metabolic equivalent of task, denoting the proportion of energy expenditure in certain activity compared to energy expenditure at rest. One MET corresponds to the energy expenditure of 1 kcal/kg/h, walking corresponds to 3.3 METS, moderate physical activity to 4 METS and vigorous physical activity to 8 METS. Weekly physical activity reported by IPAQ was calculated as the sum of MET-minutes per week and categorized as low (≤600 MET-min/week), moderate (600-3000 MET-min/week) and vigorous (≥3000 MET-min/week). The IPAQ has been validated in different populations and has been previously used to assess physical activity in CKD and HD patients (12, 13).

PSQI consists of 19 self-rated questions to assess the quality of sleep in the previous 4 weeks (14). Each question yielded information related to 7 specific sleep components: subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbance, use of sleep medication, and level of daytime dysfunction. Sleep latency represents the time it takes to transit from full wakefulness to sleep. Recommended sleep latency is less than 20 minutes. Sleep efficiency is the ratio of time spent asleep (total sleep time) to the amount of time spent in bed. The reference range for sleep efficiency is 80 - 95%. Each component was scored from 0 to 3 to form a final

PSQI score between 0 and 21 where higher scores indicated lower quality of sleep. PSQI ≥5 denotes poor sleep quality. The questionnaire has been previously used in the HD population (7, 15).

Statistical Analysis

Data analysis was performed using IBM SPSS statistics for Windows, ver. 26 (Armonk, NY: IBM Corp.). Population characteristics were analyzed with descriptive statistics. Continuous variables were depicted using mean and standard deviations, whilst categorical variables were expressed as percentages. Continuous variables were analyzed by comparison of means with the Student's t-test. Categorical variables were analyzed with Pearson chi-square test or linear by linear association. The Spearman correlation coefficient was used to assess the correlation between IPAQ and PSQI. Differences were considered significant if the *p*-value of the test was less than .05.

RESULTS

Demographic, clinical and dialysis-related characteristics of the study population are presented in **Table 1**. The study population consisted of 41 men and 30 women, the age range was 35 – 94 years, and the dialysis vintage was 6 – 216 months. Most patients were 65 years or older. Only 2 patients (2.8%) were actively employed. None of the patients were malnourished according to BMI values. Underlying renal disease was hypertension in 27 patients (52.1%), diabetes in 12 patients (16.9%), glomerulonephritis in 11 patients (15.5%), polycystic renal disease in 7 patients (9.9%), obstructive nephropathy in 3 patients (4.2%), and one patient (1.4%) had congenital disease. HD was performed according to standard protocols on a thrice- weekly basis, using machinery with controlled ultrafiltration, bicarbonate-based dialysate and high and low flux dialyzers. Exactly half of the patients were dialyzed in the morning shift.

Table 1. Basic demographic, clinical and dialysis-related characteristics of the population

Study sample (n)	71
Gender (n, %)	
Male	41 (57.7%)
Female	30 (42.3%)
Median age (years)	71
Age range (n, %)	
18 – 39	3 (4.2%)
40 – 64	14 (19.7%)
65 years and above	54 (76.1%)
Nutrition status (n, %)	
Healthy weight	33 (46.5%)
Overweight	38 (53.5%)
Smoking habit (n, %)	31 (43.7%)
Comorbidities (n, %)	
Cardiovascular	27 (38.0%)
Cerebrovascular	32 (45.1%)
Hypertension	54 (76.1%)
Diabetes	20 (28.2%)
Respiratory	4 (5.6%)
Renal osteodystrophy	27 (38.0%)
Median dialysis vintage (months)	36
Adequate dialysis (n, %)	47 (66.2%)

Sleep Quality

Nearly half of the patients (33; 46.5%) were poor sleepers with an overall PSQI of 5.7 ± 4.4. Patients slept 6.5 ± 1.6 hours per night on average. Average sleep latency, sleep efficiency, and subjective sleep quality grade were 31.2 ± 36.3 minutes, 71.2 ± 21.5% respectively, and 1.7 ± 0.8 respectively. Older age was significantly associated with poor sleep (p=0.019), while none of the other demographic variables, dialysis vintage and comorbidities were associated with sleep quality **(Table 2)**. Also, no

Table 2. Comparison of demographic data, comorbidity, dialysis-related characteristics and physical activity status in good and poor sleepers

Variable		Good sleepers	Poor sleepers	p
Age (years)	18 - 39	3 (7.9%)	0 (0%)	0.019*
	40 – 64	10 (26.3%)	4 (12.1%)	
	≥65	25 (65.8%)	29 (87.9%)	
Sex (male, %)		24 (63.2%)	17 (51.5%)	0.320
Smoking habit (n, %)		19 (50.0%)	12 (36.4%)	0.248
Nutrition status	Healthy weight	16 (42.1%)	17 (51.5%)	
	Overweight	22 (57.9%)	16 (48.5%)	0.431
Dialysis vintage <36 months (n, %)		20 (52.6%)	15 (45.5%)	0.546
Adequate dialysis (n, %)		26 (68.4%)	21 (63,6%)	0.671
Cardiovascular disease (n, %)		11 (28.9%)	16 (48.5%)	0.091
Cerebrovascular disease (n, %)		18 (47.4%)	14 (42.4%)	0.676
Hypertension (n, %)		29 (76.3%)	25 (75.8%)	0.956
Diabetes (n, %)		12 (31.6%)	8 (24.2%)	0.493
Renal osteodystrophy (n, %)		17 (44.7%)	10 (30.3%)	
Physical activity	Low	16 (42.1%)	14 (42.4%)	0.591
	Moderate	18 (47.4%)	18 (54.5%)	
	Vigorous	4 (10.5%)	1 (3.0%)	

Table 3. Comparison of demographic data, comorbidity, dialysis-related characteristics and quality of sleep related to the level of physical activity

Variable		Physical activity level			p
		Low	Moderate	Vigorous	
Age (years)	18 – 39	2 (6.7%)	1 (2.8%)	0 (0%)	0.284
	40 – 64	8 (26.7%)	4 (11.1%)	2 (40.0%)	
	≥65	20 (66.7%)	31 (86.1%)	3 (60.0%)	
Sex (male, %)		18 (60.0%)	22 (61.1%)	1 (20.0%)	0.314
Smoking habit (n, %)		12 (40.0%)	16 (44.4%)	3 (60.0%)	0.699
Nutrition status	Healthy weight	18 (60.0%)	13 (36.1%)	2 (40.0%)	0.454
	Overweight	12 (40.0%)	23 (63.9%)	3 (60.0%)	
Dialysis vintage <36 months (n, %)		14 (46.7%)	17 (47.2%)	4 (80.0%)	0.367
Adequate dialysis (n, %)		21 (70.0%)	22 (61.1%)	4 (80.0%)	0.853
Cardiovascular disease (n, %)		10 (33.3%)	16 (44.4%)	1 (20.0%)	0.839
Cerebrovascular disease (n, %)		12 (40.0%)	18 (50.0%)	2 (40.0%)	0.621
Hypertension (n, %)		21 (70.0%)	29 (80.6%)	4 (80.0%)	0.360
Diabetes (n, %)		9 (30.0%)	10 (27.8%)	1 (20.0%)	0.680
Renal osteodystrophy (n, %)		14 (46.7%(	10 (27.8%)	3 (60.0%)	0.551

statistically significant association was found between the quality of sleep and the level of reported daily physical activity in our patient's cohort **(Table 2)**.

Physical activity

Half of the patients (36; 50.7%) had moderate levels of physical activity, 30 patients (42.3%) had low physical activity, and only 5 individuals (7.0%) reported vigorous physical activity. No statistically significant associations were noted between patients' demographic characteristics, dialysis vintage, comorbidities and the level of physical activity **(Table 3)**.

Patients with moderate physical activity had the highest subjective sleep quality, those with vigorous daily activity had the highest sleep duration and the lowest sleep latency, while sleep efficiency was optimum among individuals with the lowest physical activity. Nevertheless, there was no statistically significant difference related to the level of physical activity in any of the observed determinants of sleep quality **(Table 4)**.

Distribution of good and poor sleepers was almost identical among patients with low and moderate physical activity (47% vs 53% and 50% vs 50% respectively), whereas patients with reported vigorous levels of physical activity were mostly good sleepers (20% vs 80%), but the difference between the groups was not statistically significant (p=0.591) **(Figure 1)**.

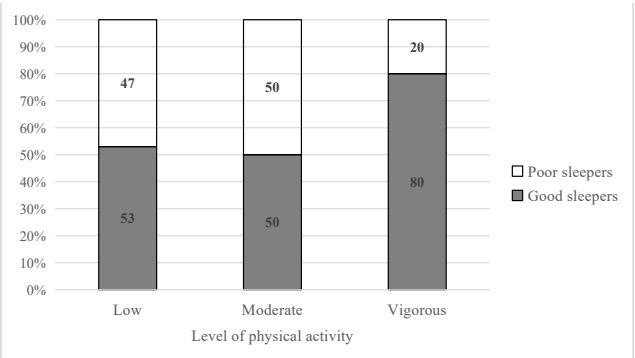

Figure 1. Quality of sleep among maintenance HD patients with different levels of physical activity

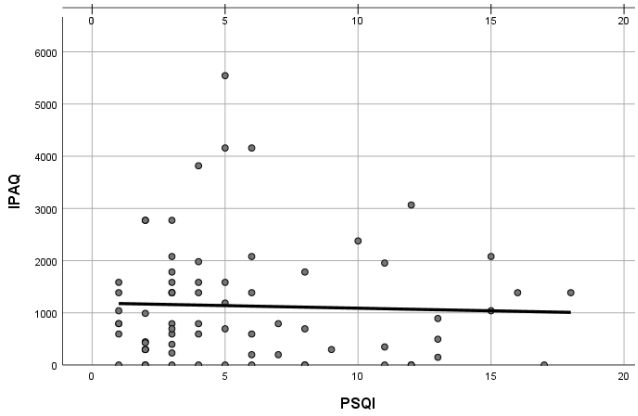

Figure 2. Correlation between PSQI and IPAQ scores

Analysis of the correlation between PSQI and IPAQ scores suggests that higher PSQI, denoting worse sleep quality, is associated with lower IPAQ (Figure 2), denoting the lower level of physical activity, but this correlation was not statistically significant (rho=-0.06; p=0.960).

Table 4. Relationship between sleep determinants and daily physical activity

Sleep determinant	Physical activity level			
	Low (Mean ± SD)	Moderate (Mean ± SD)	Vigorous (Mean ± SD)	P
Subjective sleep quality	1.60 ± 0.62	1.89 ± 0.95	1.40 ± 0.55	0.227
Sleep duration (hours)	6.70 ± 1.51	6.42 ± 1.71	6.80 ± 1.30	0.733
Sleep latency (minutes)	33.50 ± 38.59	29.94 ± 35.15	27.00 ± 37.35	0.894
Sleep efficiency (%)	72.50 ± 20.25	70.28 ± 21.32	70.00 ± 33.73	0.911

DISCUSSION

The present study assessed physical activity and the quality of sleep in the end-stage kidney disease patients treated with maintenance in-center HD. Several methods were used in previous studies to measure the physical activity of dialysis patients: accelerometers, pedometers, and self-reported questionnaires (16, 17). Consumer-grade wearable tracking devices have recently emerged as a less expensive and more practical option than accelerometers, but more data are still needed on their validity and reliability.

Previous research established that HD patients are less active than their healthy counterparts, with the most remarkable difference among the elderly (18). Also, patients with cardiovascular disease, ongoing inflammation, protein-energy wasting, obesity, and diabetes appear predisposed to low physical activity levels, while previous transplantation and higher muscle mass were associated with higher physical activity (19).

Earlier studies have demonstrated a significant relationship between older age and poor sleep quality among patients on maintenance HD (7), while the association between sleep quality and sex in this population yielded conflicting results (7, 20). In our study cohort, older age was also significantly associated with a higher prevalence of poor sleep quality, while other investigated demographic, dialysis-related and clinical parameters were not related to the quality of sleep in our study population.

Data on the relationship between demographic and clinical parameters and physical activity in HD patients are limited. One large study which recruited 1,611 HD patients from 27 dialysis facilities reported a significant association between older age and male sex and a higher level of physical activity in this population, but no association with dialysis vintage and comorbidities (21). However, physical activity in this research was defined as regular exercise, thus not quite corresponding to the definition describing physical activity as any movement that causes energy expenditure, including, but not limited to, daily household activities and commuting. In our study population, we observed no significant association between the level of physical activity and demographic, clinical and dialysis-related indicators. One possible explanation is that only a minor share of patients fit the criteria for vigorous physical activity.

The level of physical activity is known to be positively associated with sleep quality in healthy populations of all ages, with the most notable improvement in sleep-related to physical activity and exercise among older adults (22, 23, 24). On the other hand, there are limited data on the relationship between physical activity and sleep quality in the ESRD population. Studies are scarce, sample sizes small, and methodologies highly variable (25, 26). Furthermore, interventional studies assessing the effect of different physical exercise programs on sleep quality in CKD and ESRD patients so far yielded inconclusive results. Preliminary evidence suggests improvements in self-reported sleep quality following exercise interventions, but high heterogeneity and small effect size limit these results (27). In our study population, HD patients with lower levels of physical activity had worse sleep quality, as assessed by the implemented tools, but the correlation was not statistically significant.

We acknowledge certain limitations to our study. The relatively low number of participants might present a statistical bias in our conclusions. Moreover, we did not perform the nocturnal polysomnography as a gold standard for the diagnosis of sleep-disordered breathing that might influence patients' sleep. Nevertheless, given the scarcity of data in this area we believe that inputs from this research might contribute to the insight on the complexity of the subject.

CONCLUSIONS

Hemodialysis has a profound impact on patients' lives, habits, daily routines and functioning. Thus, any intervention that might be beneficial should be thoroughly explored. In this study, we confirmed a significant association between poor sleep quality and older age in the HD population. No statistically significant association was found between the level of physical activity and quality of sleep in this cohort, but additional research with a larger sample should further elucidate this issue.

Conflicts of Interest: The authors declare no conflicts of interest.

Author Contributions: JTS contributed to study conceptualization, design, supervision, data interpretation, and manuscript editing, SS contributed to data acquisition and analysis, and literature search, LJR contributed to data analysis and interpretation, and DN contributed to data interpretation and manuscript preparation. The final version of the manuscript was reviewed and approved by all the authors.

REFERENCES

1. Kovesdy CP. Epidemiology of chronic kidney disease: an update 2022. *Kidney Int Suppl (2011)*. 2022;12(1):7-11. doi:10.1016/j.kisu.2021.11.003
2. Malhotra R, Kumar U, Virgen P, et al. Physical activity in hemodialysis patients on nondialysis and dialysis days: Prospective observational study. *Hemodial Int*. 2021;25(2):240-248. doi:10.1111/hdi.12913
3. Wu YH, Hsu YJ, Tzeng WC. Physical Activity and Health-Related Quality of Life of Patients on Hemodialysis with Comorbidities: A Cross-Sectional Study. *Int J Environ Res Public Health*. 2022;19(2):811. doi:10.3390/ijerph19020811
4. Zhang F, Wang H, Wang W, Zhang H. The Role of Physical Activity and Mortality in Hemodialysis Patients: A Review. *Front Public Health*. 2022; 10:818921. doi:10.3389/fpubh.2022.818921

5. Arazi H, Mohabbat M, Saidie P, Falahati A, Suzuki K. Effects of Different Types of Exercise on Kidney Diseases. *Sports (Basel)*. 2022;10(3):42. doi:10.3390/sports10030042
6. Cheng E, Evangelidis N, Guha C, et al. Patient experiences of sleep in dialysis: systematic review of qualitative studies. *Sleep Med*. 2021; 80:66-76. doi:10.1016/j.sleep.2021.01.019.
7. Trbojević-Stanković J, Stojimirović B, Bukumirić Z, Hadzibulic E, Andric B, Djordjevic V, et al. Depression and quality of sleep in maintenance hemodialysis patients. *Srp Arh Celok Lek*. 2014;142(7-8):437-443.
8. De Nys L, Anderson K, Ofosu EF, Ryde GC, Connelly J, Whittaker AC. The effects of physical activity on cortisol and sleep: A systematic review and meta-analysis. Psychoneuroendocrinology. 2022; 143:105843. doi:10.1016/j.psyneuen.2022.105843
9. Sejbuk M, Mirończuk-Chodakowska I, Witkowska AM. Sleep Quality: A Narrative Review on Nutrition, Stimulants, and Physical Activity as Important Factors. Nutrients. 2022;14(9):1912. doi:10.3390/nu14091912
10. Wilckens K.A., Erickson K.I., Wheeler M.E. Physical Activity and Cognition: A Mediating Role of Efficient Sleep. *Behav. Sleep Med*. 2018; 16:569–586. doi: 10.1080/15402002.2016.1253013.
11. Tattersall J, Martin-Malo A, Pedrini L, Basci A, Canaud B, Fouque D, et al. EBPG guideline on dialysis strategies. Nephrol Dial Transplant. 2007; 22(Suppl 2):iii5-21.
12. Lou X, He Q. Validity and Reliability of the International Physical Activity Questionnaire in Chinese Hemodialysis Patients: A Multicenter Study in China. *Med Sci Monit*. 2019; 25:9402-9408. doi:10.12659/MSM.920900
13. Király E, Szőllősi GJ, Jenei Z, Kárpáti I. Association between physical activity and quality of life in haemodialysed and peritoneal dialyzed patients in Hungary. *Ren Fail*. 2024;46(1):2324079. doi:10.1080/0886022X.2024.2324079
14. Buysse DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index (PSQI): a new instrument for psychiatric research and practice. Psychiatry Res. 1989; 28(2):193-213.
15. Tian H, Wang L, He Q, et al. Association between sleep quality and cardiovascular disease in maintenance hemodialysis patients: a prospective cohort study. *Ren Fail*. 2023;45(2):2278310. doi:10.1080/0886022X.2023.2278310
16. Cupisti A, D'Alessandro C, Finato V, Del Corso C, Catania B, Caselli GM, Egidi MF. Assessment of physical activity, capacity and nutritional status in elderly peritoneal dialysis patients. BMC Nephrol. 2017;18(1):180. doi: 10.1186/s12882-017-0593-7.
17. Zhang H, Wang H, Huang L, Bai Y, Zhang F. Interventions to increase physical activity level in patients with whole spectrum chronic kidney disease: a systematic review and meta-analysis. Ren Fail. 2023;45(2):2255677. doi: 10.1080/0886022X.2023.2255677.
18. Han M, Williams S, Mendoza M, Ye X, Zhang H, Calice-Silva V, Thijssen S, Kotanko P, Meyring-Wösten A. Quantifying Physical Activity Levels and Sleep in Hemodialysis Patients Using a Commercially Available Activity Tracker. Blood Purif. 2016;41(1-3):194-204. doi: 10.1159/000441314.
19. Panaye M, Kolko-Labadens A, Lasseur C, Paillasseur JL, Guillodo MP, Levannier M, Teta D, Fouque D. Phenotypes influencing low physical activity in maintenance dialysis. J Ren Nutr. 2015;25(1):31-9. doi: 10.1053/j.jrn.2014.07.010.
20. Alshammari B, Alkubati SA, Pasay-An E, Alrasheeday A, Alshammari HB, Asiri SM, Alshammari SB, Sayed F, Madkhali N, Laput V, Alshammari F. Sleep Quality and Its Affecting Factors among Hemodialysis Patients: A Multicenter Cross-Sectional Study. Healthcare (Basel). 2023;11(18):2536. doi: 10.3390/healthcare11182536
21. Kang SH, Do JY, Jeong HY, Lee SY, Kim JC. The Clinical Significance of Physical Activity in Maintenance Dialysis Patients. Kidney Blood Press Res. 2017;42(3):575-586. doi: 10.1159/000480674.
22. Sullivan Bisson AN, Robinson SA, Lachman ME. Walk to a better night of sleep: testing the relationship between physical activity and sleep. Sleep Health. 2019;5(5):487-494. doi: 10.1016/j.sleh.2019.06.003.
23. Vanderlinden J, Boen F, van Uffelen JGZ. Effects of physical activity programs on sleep outcomes in older adults: a systematic review. Int J Behav Nutr Phys Act. 2020 5;17(1):11. doi: 10.1186/s12966-020-0913-3.
24. Hasan F, Tu YK, Lin CM, Chuang LP, Jeng C, Yuliana LT, Chen TJ, Chiu HY. Comparative efficacy of exercise regimens on sleep quality in older adults: A systematic review and network meta-analysis. Sleep Med Rev. 2022; 65:101673. doi: 10.1016/j.smrv.2022.101673.
25. Sabbagh R, Iqbal S, Vasilevsky M, Barré P. Correlation between physical functioning and sleep disturbances in hemodialysis patients. Hemodial Int. 2008;12 Suppl 2:S20-4. doi: 10.1111/j.1542-4758.2008.00319.x
26. Yoshikoshi S, Yamamoto S, Suzuki Y, Imamura K, Harada M, Yamabe S, Matsunaga Y, Osada S, Tagaya H, Matsunaga A. Association between Physical Frailty and Sleep Disturbances among Patients on Hemodialysis: A Cross-Sectional Study. Nephron. 2024;148(3):152-159. doi: 10.1159/000533418.
27. Zhang F, Wang H, Huang L, Bai Y, Wang W, Zhang H. Effect of exercise interventions for sleep quality in patients with chronic kidney disease: a systematic review and meta-analysis. Int Urol Nephrol. 2023;55(5):1193-1204. doi: 10.1007/s11255-022-03413-z.

FIZIČKA AKTIVNOST I KVALITET SNA KOD BOLESNIKA LEČENIH HRONIČNIM HEMODIJALIZAMA

Trbojević-Stanković Jasna[1,2], Stanimirović Sanja[3], Ristanović Ljubica[4], Nešić Dejan[1,5]

Sažetak

Uvod/Cilj: Bolesnici na hroničnoj hemodijalizi često imaju smanjenu fizičku aktivnost i loš kvalitet sna. Cilj ovog istraživanja bio je da se proceni nivo uobičajene fizičke aktivnosti i kvalitet sna kod bolesnika na hemodijalizi, kao i da se proceni povezanost između ova dva entiteta.

Materijal i metode: Sedamdeset jedan hemodijalizirani bolesnik je popunio Internacionalni upitnik o fizičkoj aktivnosti i Pitsburški upitnik o kvalitetu sna. Osnovne demografske, kliničke i karakteristike dijalizne terapije, kao i rezultati laboratorijskih analiza, dobijeni su iz elektronskih istorija bolesti. Rezultati su obrađeni Studentovim t-testom, Pirsonovim hi-kvadrat testom, linearnom asocijacijom i Spirmanovom korelacijom.

Rezultati: Gotovo polovina bolesnika (46,5%) ima loš kvalitet sna sa prosečnim PSQI 5,7 ± 4,4. Stariji bolesnici su imali značajno lošiji kvalitet sna (p=0,019). Fizička aktivnost je bila niska kod 42,3% bolesnika, umerena kod 50,7% i visoka kod 7%. Nije uočena značajna udruženost između nivoa fizičke aktivnosti, demografskih karakteristika, dužine dijaliziranja i komorbiditeta. Distrubucija dobrog i lošeg kvaliteta sna bila je gotovo identična kod bolesnika sa niskom i umerenom fizičkom aktivnošću (47% vs 53%, odnosno 50% vs 50%), dok su bolesnici sa visokim nivoom aktivnosti češće dobro spavali (20% vs 80%), ali bez statistički značajne razlike (p=0,591).

Zaključak: Nije uočena značajna povezanost između nivoa fizičke aktivnosti i kvaliteta sna kod hemodijaliziranih bolesnika u ovom istraživanju. Ispitivanje većeg broja bolesnika moglo bi doprineti boljem uvidu u ovaj problem.

Ključne reči: dijaliza, hemodijaliza, fizička aktivnost, kvalitet sna

Primljen: 13.05.2024. I **Revizija:** 25.05.2024. I **Prihvaćen:** 03.06.2024.

Medicinska istaživanja 2024; 57(3):41-47