wjpmr, 2025, 11(5), 01-02

SJIF Impact Factor: 6.842

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

Research Article

ISSN 2455-3301

WJPMR

SEDENTARY LIFESTYLE AND LOSS OF AUTONOMY IN CHRONIC HEMODIALYSIS PATIENTS: AN UNDERESTIMATED REALITY

O. Berrada*, F. Elghali, A. Cheggali, N. Mtioui, S. Elkhayat, M. Zamd, G. Medkouri and M. Benghanem

Department of Nephrology, Hemodialysis and Kidney Transplantation, Ibn Rochd University Hospital, Casablanca, Morocco.

***Corresponding Author: O. Berrada**

Department of Nephrology, Hemodialysis and Kidney Transplantation, Ibn Rochd University Hospital, Casablanca, Morocco.

Article Received on 26/02/2025 **Article Revised on 19/03/2025** **Article Published on 09/04/2025**

ABSTRACT

Assessing physical activity and functional autonomy in chronic hemodialysis patients is crucial for optimizing their management and improving their quality of life. This single-center, descriptive and analytical study, conducted on 40 hemodialysis patients, aimed to measure their walking perimeter using a pedometer and to evaluate their functional autonomy via the SMAF (Functional Autonomy Measurement System) scale. The results revealed a high prevalence of sedentary behavior (52.5%) and reduced autonomy, influenced by factors such as sex, age, anemia, and disturbances in calcium-phosphate balance. A significant correlation was found between physical activity level and duration on hemodialysis ($P < 0.05$), highlighting the negative impact of prolonged dialysis on patient mobility.

KEYWORDS: Chronic hemodialysis, Functional autonomy, Walking Perimeter, Physical activity assessment.

INTRODUCTION

While life-saving, chronic hemodialysis leads to a marked decline in physical activity and functional autonomy. These limitations have a direct impact on quality of life and are associated with increased cardiovascular morbidity and mortality. Identifying the determinants of physical activity and functional independence is essential for tailoring therapeutic and rehabilitative strategies.

The aim of this study is to assess the walking range of chronic hemodialysis patients, examine their level of functional autonomy, and identify factors associated with sedentary behavior and dependency.

MATERIALS AND METHODS

This is a single-center, retrospective, descriptive, and analytical study conducted over a 3-month period in the nephrology department of Casablanca University Hospital.

Chronic hemodialysis patients were included based on the following criteria

- Inclusion criteria: age ≥ 18 years, on chronic hemodialysis for ≥ 6 months
- Exclusion criteria: patients unable to independently use a pedometer, those with prosthetic limbs, or with neurological disorders impairing walking ability.

Physical activity was measured using a pedometer application installed on the patients' smartphones over the course of one month. Patients were classified according to their average number of steps per day as follows: Very active: ≥ 12,500 steps/day, Active: 10,000 – 12,499 steps/day, Moderately active: 7,500 – 9,999 steps/day, Low activity: 5,000 – 7,499 steps/day, Sedentary: ≤ 4,999 steps/day

Functional autonomy was assessed using the SMAF scale, which evaluates five domains: Activities of Daily Living (ADLs), Mobility, Communication, Mental Functions, and Instrumental Activities of Daily Living (IADLs). Scores range from 0 (full autonomy) to 3 (complete dependency).

Clinical and biological data analyzed included: age, sex, BMI, duration on hemodialysis, hemoglobin, PTH, serum calcium, phosphorus, and C-reactive protein (CRP)

RESULTS

A total of 40 patients with end-stage renal disease (ESRD) were included, with a slight male predominance (sex ratio: 1.06). The mean age was 50 years (range: 19–67).

The average dialysis vintage was 192 months (range: 18–372), and the mean BMI was 21 kg/m² (range: 14–31).

Among the participants, 8% had a proximal arteriovenous fistula (AVF), while 92% had a distal AVF. Three patients had previously been on peritoneal dialysis before transitioning to hemodialysis, and one patient had returned to hemodialysis after a failed kidney transplant.

Regarding comorbidities, 10% had hypertension, 1.6% had diabetes, and none had dyslipidemia.

All patients were receiving three hemodialysis sessions per week, each lasting four hours. Post-connection intradialytic hypotension occurred in 20% of the cohort.

Laboratory data revealed a mean hemoglobin level of 9.2 g/dL, mean parathyroid hormone (PTH) level of 1023 pg/mL, serum calcium of 2.05 mmol/L, serum phosphate of 1.82 mmol/L, and a mean C-reactive protein (CRP) level of 15.7 mg/L.

In terms of physical activity levels, 52.5% of patients were sedentary, 17.5% were classified as having low activity, 20% were moderately active, 5% were active, and 5% were very active.

Functional dependency levels showed that: 13% of patients were dependent for at least one basic activity of daily living (e.g., bathing, dressing), 25% required assistance with mobility, 83% had preserved mental autonomy, 91% communicated independently, 30% were fully autonomous in instrumental activities of daily living.

Statistical Correlations

- Sedentary behavior was significantly associated with longer duration on hemodialysis ($P = 0.023$).
- Severe anemia (Hb < 9 g/dL) was correlated with reduced functional autonomy ($P = 0.015$).
- Elevated PTH levels (> 800 pg/mL) were associated with impaired mobility ($P = 0.031$).

DISCUSSION

The assessment of physical activity and functional autonomy in hemodialysis patients is an emerging area of interest in nephrology, as these parameters are closely linked to quality of life and long-term outcomes. Our findings show that 52.5% of patients were classified as sedentary—a rate comparable to previous studies, albeit with some notable differences.

In the study by Johansen et al. (2010), which included 1,547 hemodialysis patients in the United States, average physical activity levels were significantly lower than those of the general population of the same age group, with over 50% of patients categorized as sedentary. Our results are consistent with this trend, highlighting the limited mobility among dialysis patients. However, our sample size was smaller (40 patients), which may limit the generalizability of our findings.[1]

A Moroccan study conducted by Rafik et al. (2019) on chronic dialysis patients reported a sedentary rate of 51.2%, closely aligning with our 52.5%.[2] This similarity supports the notion that sedentary behavior is a universal issue among dialysis patients, regardless of geographical context. Furthermore, Rafik et al. noted that only 6% of patients achieved an optimal level of physical activity, which is comparable to our finding of 5% classified as very active.

The evaluation of functional autonomy using the SMAF scale in our study showed that 25% of patients required assistance with mobility, a figure slightly lower than the 30% reported by Don Carléone Sanama et al. (2022).[3] In addition, dependence in at least one basic activity of daily living (ADL) was observed in 13% of our cohort, compared to 10% in the Sanama et al. study, suggesting slight differences in patient autonomy that may be influenced by hospital setting or care practices.

A Canadian study by Gervais et al. (2019) assessed loss of autonomy in elderly dialysis patients and reported mental impairment in 24% and motor impairment in 24% of patients—rates higher than those observed in our study (5% and 25%, respectively).[4] These differences may be partly explained by the younger average age of our cohort (50 years versus 65 years in the Gervais study).

CONCLUSION

Our study confirms the high prevalence of sedentary behavior among chronic hemodialysis patients and highlights significant correlations between physical activity, functional autonomy, and biological factors. These findings are broadly consistent with the existing literature, although some differences may arise depending on the context and assessment methods. The implementation of tailored rehabilitation programs could contribute to improving the quality of life in this patient population.

Conflict of Interest

The authors declare no conflict of interest.

REFERENCES

1. Johansen KL, et al. Low level of self-reported physical activity in ambulatory patients new to dialysis. Kidney Int., 2010; 78: 1164–1170.
2. Rafik H, et al. L'activité physique mesurée par podomètre chez les hémodialysés chroniques. Science & Sports, 2019.
3. Don Carléone Sanama B, et al. Evaluation of Autonomy in Chronic Hemodialysis, at the Military Hospital of Rabat in Morocco: About 38 Cases. Acta Scientific Medical Sciences, 2022; 6(3): 36-38.
4. Gervais P, et al. Classification des personnes âgées en perte d'autonomie fonctionnelle : comparaison des profils Iso-SMAF aux groupes Iso-ressources issus de la grille AGGIR. doi.org/10.3917/mav.026.0205.