

# Insomnia in Chronic Hemodialysis Patients: Prevalence and Associated Factors

A. Korchi<sup>1\*</sup>, I. Katir<sup>1</sup>, N. Kissa<sup>1</sup>, M. Sabir<sup>1</sup>

Faculty of Medicine and Pharmacy of RABAT

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\*Corresponding author: A. Korchi

Faculty of Medicine and Pharmacy of RABAT

## Abstract

## Original Research Article

Insomnia is a frequent but underrecognized sleep disorder in patients with chronic kidney disease on hemodialysis. This cross-sectional study, conducted in October 2024 at a private nephrology center in Kénitra (Morocco), evaluated 47 patients using the Insomnia Severity Index (ISI). The sample (mean age 57 years, 58% men, mean dialysis duration 10 years) showed a high prevalence of insomnia (74.5%), with 42.5% presenting moderate to severe forms. Common comorbidities included hypertension (25.5%), diabetes (19.1%), and heart failure (17%). Contributing factors involve metabolic imbalances, circadian rhythm disturbances, somatic symptoms, medication side effects, and psychiatric comorbidities. Insomnia significantly affects quality of life and may increase cardiovascular morbidity and mortality. Despite its impact, insomnia is rarely screened or managed in hemodialysis care. Simple measures—such as sleep hygiene education, cognitive-behavioral therapy, management of somatic symptoms, and cautious pharmacological interventions like melatonin—could improve outcomes. Insomnia is highly prevalent among chronic hemodialysis patients. Systematic screening and multidimensional management are essential to improve quality of life and reduce complications.

**Keywords:** Insomnia, Hemodialysis, Chronic kidney disease, Prevalence, Associated factors, Quality of life, Comorbidities, Circadian rhythm, Cognitive-behavioral therapy, Melatonin.

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## INTRODUCTION

Sleep is a fundamental physiological need that plays a crucial role in maintaining both physical and mental health. In individuals with chronic illnesses, particularly end-stage renal disease, sleep quality is often compromised. Patients undergoing hemodialysis are especially vulnerable due to their multiple comorbidities and the therapeutic burden imposed by the disease.

Despite the high frequency of sleep disorders, they are often overlooked in medical follow-up, in favor of complications perceived as more urgent or life-threatening. Insomnia, defined as a subjective complaint of poor sleep quality accompanied by daytime repercussions, is a frequent but underdiagnosed condition in this population.

## OBJECTIVE

The aim of this study is to determine the prevalence of insomnia and to identify the sociodemographic and medical factors associated with it among chronic hemodialysis patients.

## METHODOLOGY

This descriptive cross-sectional study was conducted in a private nephrology center in Kénitra, Morocco, in October 2024. An anonymous questionnaire was distributed to chronic hemodialysis patients who gave their informed consent.

### The questionnaire collected:

- Sociodemographic data (age, gender, marital status, employment status, socioeconomic level)
- Clinical data (hemodialysis duration, comorbidities)
- Insomnia assessment using the Insomnia Severity Index (ISI)

The ISI consists of 7 items rated from 0 to 4. The total score classifies patients as:

- 0–7: No clinical insomnia
- 8–14: Subclinical insomnia
- 15–21: Moderate insomnia
- 22–28: Severe insomnia

## RESULTS

### 1. Sociodemographic characteristics (n = 47)

- **Mean age:** 57 years (range: 30–82 years)
- **Gender:** Men 58%, Women 42%
- **Marital status:** Widowed 31.9%
- **Employment status:** Retired 38.3%
- **Socioeconomic level:** Middle in 61.5% of cases
- **Mean duration on hemodialysis:** 10 years

### INTERPRETATION

The sample was mostly male, older, and retired. The long duration of hemodialysis suggests good treatment adaptation but also a cumulative risk of chronic complications, including sleep disorders.

### 2. Insomnia assessment (ISI)

- **No clinical insomnia:** 12 patients (25.5%)
- **Subclinical insomnia:** 15 patients (31.9%)
- **Moderate insomnia:** 11 patients (23.4%)
- **Severe insomnia:** 9 patients (19.1%)

#### Interpretation:

More than two-thirds (74.5%) had some form of insomnia, with 42.5% having moderate to severe cases—an alarming rate that highlights the need for systematic insomnia screening in this population.

### 3. Associated comorbidities

- **Hypertension:** 25.5%
- **Diabetes:** 19.1%
- **Heart failure:** 17%
- **No comorbidities:** 17%
- **Others** (anemia, chronic pain, etc.): 21.3%

### INTERPRETATION

Cardiovascular and metabolic comorbidities are common and may impair sleep through direct mechanisms (nocturnal dyspnea, pain, nocturia) or indirect mechanisms (stress, anxiety, chronic fatigue).

## DISCUSSION

Our findings confirm the high prevalence of insomnia among chronic hemodialysis patients, consistent with literature reporting rates of 40–80% depending on diagnostic criteria.

#### Possible contributing factors include:

- **Physiopathological:** metabolic imbalances (urea, calcium), secondary hyperparathyroidism, chronic anemia
- **Psychological:** anxiety about treatment dependence, depression, social isolation
- **Dialysis-related:** discomfort during sessions, post-dialysis fatigue, circadian rhythm disturbances
- **Iatrogenic:** side effects of medications (antihypertensives, EPO, etc.)

Longer dialysis duration and dialysis membrane quality have also been linked to insomnia severity.

### Study Limitations

- Small sample size (n = 47), limiting generalizability
- Subjective data, not confirmed by polysomnography
- No parallel psychiatric evaluation (depression, anxiety)

Insomnia is one of the most common sleep disorders among patients with chronic kidney disease (CKD) undergoing hemodialysis (HD). In our study, nearly 74.5% of surveyed patients reported some form of insomnia (subclinical, moderate, or severe), a figure consistent with the literature, where prevalence ranges from 50% to 80% depending on the samples and assessment tools used [1,2].

Several pathophysiological and psychosocial factors may explain this high prevalence. First, the accumulation of uremic toxins not eliminated between dialysis sessions disrupts the regulation of neurotransmitters involved in sleep, particularly dopamine, serotonin, and GABA [3]. Second, circadian rhythm disorders, frequently observed in these patients, are partly due to the loss of synchronization between sleep–wake cycles and the irregular dialysis schedules [4].

Furthermore, insomnia is often comorbid with psychiatric disorders, particularly anxiety and depression, which are themselves highly prevalent among hemodialysis patients [5]. In our study, although psychiatric comorbidity was not systematically assessed, literature data show that up to 30–40% of HD patients suffer from significant depressive symptoms [6], which in turn exacerbate insomnia.

Other somatic factors, such as uremic pruritus, nocturnal muscle cramps, bone pain, anemia, and calcium metabolism disorders, have also been linked to poor sleep quality [7]. In our sample, the most common comorbidities were hypertension (25.5%), diabetes (19.1%), and heart failure (17%), conditions that are themselves associated with reduced sleep quality [8].

Our study also highlights a substantial proportion of patients with moderate (23.4%) or severe (19.1%) insomnia. These forms are associated with significant impairment in quality of life and increased cardiovascular mortality [9]. The ISI (Insomnia Severity Index) used here is a validated, sensitive, and specific tool for screening insomnia in this population [10].

Finally, it is worth noting that insomnia remains insufficiently addressed in the overall management of hemodialysis patients. Fatigue is often attributed to kidney disease or the dialysis process itself, overlooking the possibility of a coexisting sleep disorder. Yet, simple interventions can improve sleep quality: sleep hygiene

education, tailored cognitive-behavioral therapy (CBT), management of somatic symptoms, and, in some cases, judicious use of melatonin or other hypnotics [11,12].

## CONCLUSION

Insomnia is highly prevalent among patients undergoing chronic hemodialysis, significantly impacting their quality of life and potentially contributing to increased morbidity and mortality. The multifactorial etiology involves both physiological and psychosocial mechanisms, including uremic toxin accumulation, circadian rhythm disruption, somatic symptoms, and psychiatric comorbidities. Despite its clinical importance, insomnia remains under-recognized and insufficiently addressed in this population. Systematic screening with validated tools, combined with tailored interventions such as sleep hygiene education, cognitive-behavioral therapy, optimized management of somatic symptoms, and judicious pharmacological treatment, could substantially improve patient outcomes. Future research should focus on integrating sleep disorder management into the routine care of hemodialysis patients and evaluating its impact on survival and quality of life.

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