

## Fatigue among patients undergoing hemodialysis

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### Abstract

**Background:** Fatigue is a common and debilitating symptom, affecting 42–89% of end-stage kidney disease patients, persisting even in pre-dialysis care and stable kidney transplantation, with huge repercussions on functioning, quality of life and patient outcomes. Fatigue is frequently experienced by patients undergoing hemodialysis and it has a negative effect on their quality of life.

**Methods:** This is a narrative review study in which various information banks and search motors such as PubMed, google scholar, SCOPUS, were reviewed. Hemodialysis, fatigue, ckd and ESRD keywords from cross sectional, cohort, clinical experimental studies were also used in the study construction.

**Conclusion:** Fatigue is a common phenomenon among patients with kidney disease who is undergoing dialysis, yet it is often unrecognized and undertreated. The lack of a comprehensive definition and a relatively poor understanding of its pathogenesis and measurement issues combine to make treatment development challenging across the spectrum of advanced kidney disease.

**Keywords:** Fatigue, chronic kidney disease, ESRD, hemodialysis

### Introduction

Many patients undergoing long-term dialysis therapy find fatigue as a crippling symptom or side effect. Many patients perceive fatigue to be more essential than survival, and it has a significant impact on their health-related quality of life. Reducing weariness in dialysis patients presents several issues for renal providers. The correct identification of this symptom is complicated by the absence of a legitimate, sensitive, and reliable fatigue scale. Fatigue shares symptoms with sadness and daytime sleepiness, which makes it challenging to tailor therapy. Furthermore, a number of long-term dialysis patients have chronic health issues that might aggravate their weariness and affect how much their fatigue varies throughout the day [26].

### During dialysis fatigue

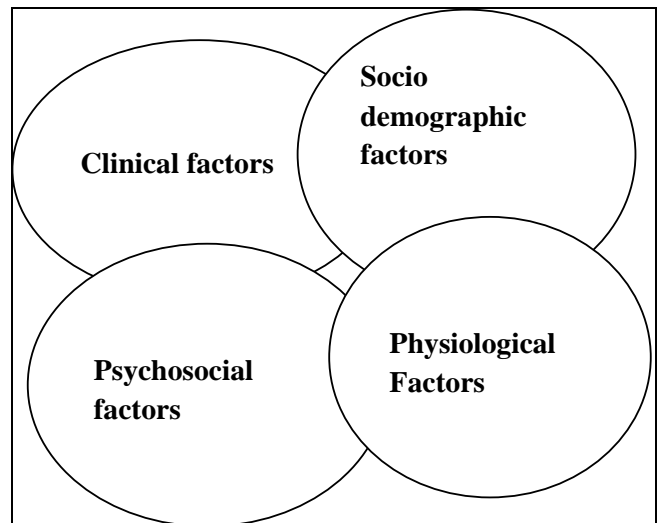
It appears just before the dialysis session and gets worse or develops over the course of the therapy. Every HD session is a physically and mentally taxing experience that alters perfusion, metabolism, cardiovascular health, and mental health. Fatigue is the hallmark of IDF; it starts or gets worse right before the HD treatment begins and lasts the whole course of the treatment [23] 60% to 80% of patients describe fatigue as the most prevalent symptom during the HD process, and it seems to be worse right before or during the procedure than it is on days when patients do not receive dialysis [14, 22].

### Fatigue following dialysis

It takes place after dialysis, Patients have described PDF as a distinct and crippling type of fatigue in qualitative research; a recurring theme in these studies is the feeling of being "worn out" or "exhausted" following HD treatment, and the necessity of "collapsing" after HD before gradually recovering in time to undergo another HD treatment and experience fatigue once more [14, 21]. Patients who needed nearly five hours of sleep to recuperate from dialysis also reported higher rates of sadness, sleeplessness, and bodily

aches compared to those who did not experience post-dialysis weariness [2].

### Factors associated with fatigue



#### 1. Clinical factors

Numerous studies have demonstrated that people with HD who are exhausted have much higher extra renal multimorbidity than patients who are not fatigued [9, 10, 11]. Increased burden and stress, longer hospital stays, and the need for extra therapies are all consequences of multimorbidity, and they can all lead to increased tiredness [7].

#### 2. Socio demographic factors

That includes dialysis patients' age, gender, and educational attainment may also play a part in their weariness. Liu discovered that haemodialysis patients in the beginning of their sixties had far higher levels of overall fatigue ( $r = 0.24$ ,  $P < 0.01$ ) than those in their thirties [3].

### 3. Psychosocial factors

Numerous psychological characteristics, such as depression, health-related quality of life, anxiety, loneliness, and social support, have been linked to fatigue. It seems that there is a reciprocal relationship between exhaustion and physiological and psychological components, even though the direction of these associations cannot be discerned. Depression and fatigue are linked, and fatigue and low energy are two ways that depression can appear [12]. In three research studies, haemodialysis patients' levels of fatigue and depression were found to be significantly associated [4, 5, 6].

### 4. Physiological Factors

Studies have looked into the physiological factors that are related to dialysis patients' fatigue. It is challenging to pinpoint the precise aspect of human physiology that is most responsible for the development of fatigue. In fact, haemodialysis patients' tiredness may be caused by a variety of physiological variables [7].

### Management

#### 1. Cognitive-behavioral therapy

Has demonstrated encouraging results on fatigue in dialysis patients experiencing sleep disturbances, with small but substantial decreases in fatigue levels following intervention. Similar findings were found in Yngman's extremely small individual sleep intervention research, where four out of nine patients reported feeling less fatigued [13].

#### 2. Exercise and Physical Activity

Physical activity has been demonstrated to improve PDF in patients receiving maintenance HD, according to small clinical trials. On days when dialysis is not performed, interventions have included walking sessions and intradialytic exercise [14, 15, 16, 17]. The impact of physical activity on weariness was examined in small clinical trials. In a 12-week study including 36 patients with CKD stages 3b–5, aerobic exercise vs combined aerobic and weight training improved the FACIT-F fatigue score from baseline in both groups, with no significant difference in improvement between the groups [18, 19].

#### 3. Vitamin D Supplementation

In a single study, the impact of vitamin D supplementation on CKD patients' functional status and level of weariness was assessed. 97 individuals in all were randomly assigned to either cholecalciferol or a placebo, and despite the fact that the drug had positive effects on parathyroid hormone, calcium, and vitamin D levels [18, 20].

### Materials and methods

Search in anticipation of a large volume of research examining the impact of fatigue among patients undergoing hemodialysis a narrative review approach was selected to synthesize the evidence and capture what other factors have been explored to date. This narrative review was guided by principles and methods of a systematic review. To identify relevant articles, the following databases were searched: i) pubmed, (ii) google scholar iii) scopus. A combination of ESRD, fatigue, hemodialysis, ckd, terms was used. Only articles that measured fatigue or vitality and reported explicit findings related to potential predictors of fatigue/vitality, measured by independent instruments, were included in this review.

### Results

Few studies have shown that fatigue is most bothering among most of the symptom which is being experienced by hemodialysis patients. About 51 HD patients participated in a prospective, observational study that revealed the following mean fatigue scores (+SD) on the day of HD treatment: 3.92 (2.59), 95% CI [3.19–4.65], one hour prior to dialysis; 4.14 (2.84), 95% CI [3.34–4.94], shortly before to dialysis; 5.08 (2.53), 95% CI [4.37–5.79], immediately following dialysis; and 5.45 (2.75) [24]. One hundred haemodialysis patients took part in this quantitative cross-sectional study. In elderly individuals, there were statistically significant increases in both physical and mental fatigue ( $p=0.001$  and  $p=0.001$ ) [25].

### Discussion

The aim of this review is build on previous reviews, by concentrating exclusively on the currently available evidence fatigue among hemodialysis patients and also to this reviewed highlighted on the major causes of the fatigue, also on post dialytic and intrdialytic fatigue. Studies that address fatigue have found that fatigue is more prevalent among older. This provided the author information on the how bothersome fatigue could be to the patients undergoing hemodialysis.

### Conclusions

Patients with renal illness frequently experience fatigue, yet this condition is frequently misdiagnosed and inadequately managed. Treatment development is problematic across the range of advanced kidney disease due to a lack of a comprehensive definition, a relatively limited understanding of its pathophysiology, and measurement challenges. It seems that a person's diet, sleep patterns, and level of physical inactivity are all major behavioural influences on weariness. Fatigue may also be influenced by the kind of renal replacement therapy received; individuals undergoing transplants tend to be far less tired than those receiving dialysis.

### Declaration by Authors

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