

## Research Article

# Sleep Quality Level of Patients With Heart Failure and Affecting Factors

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**Abstract**

**Introduction:** The sleep quality of patients with heart failure is important for the protection of physiological and psychological health.

**Objective:** This study was conducted as a descriptive study to examine the sleep quality of patients with heart failure and the factors affecting sleep quality.

**Method:** The research is descriptive type, which was conducted with 121 heart failure patients in the cardiology service of a university hospital between November 2019 and February 2020. Research data were collected using the Patient Identification Form and the Pittsburgh Sleep Quality Index. The questionnaires were collected by the researcher by interviewing the patients. The data were evaluated in the SPSS 16.0 package program on the computer, and arithmetic means, percentage, significance test of the difference between two means, analysis of variance, correlation, and Kruskal-Wallis tests were used for analysis.

**Results:** The mean age of the patients participating in the study was  $64.41 \pm 12.52$ . Of the patients, 55.3% were women, 63.6% were married, and 50.3% had a diagnosis of hypertension. It was determined that the majority of the patients (61.9%) had 5-7 hours of sleep per day, and the mean PSQI score of the participants was  $14.16 \pm 2.46$ . When the sub-dimensions of PSQI were evaluated, the worst was determined as "daytime dysfunction" and the best was determined as "using sleeping pills". It was determined that the sleep quality of female, married, chronically ill patients with heart failure who had a sleep habit of fewer than 5 hours and more than 7 hours were worse than the others and there was a statistically significant difference in sleep quality ( $p < 0.05$ ).

**Conclusion:** In this study, it was determined that the sleep quality of patients with heart failure was poor. Therefore, planning nursing care and practices that will increase sleep quality can positively affect the psychological and physiological well-being of patients with heart failure.

**Keywords**

- Heart failure
- Nursing
- Sleep quality

**INTRODUCTION**

Heart failure (HF) is an important health problem in the world and also in our country. It is a disease that needs to be evaluated socially because of its high mortality and morbidity rates, increasing prevalence, worsening symptoms over time, adversely affecting the quality of life, and high hospitalizations. HF is one of the important cardiovascular diseases that increase the prevalence and incidence of cardiovascular diseases (1). In parallel with the developments in health services, the prolongation of life expectancy and the decrease in deaths cause an increase in the incidence of HF (3). It is supported by the data of the World Health Organization (WHO) that there are approximately 26 million HF patients worldwide (2).

When HF is not controlled with appropriate treatment, symptoms such as dyspnea, pain, persistent cough, and edema may lead to decreased sleep quality (3). More than half of individuals with HF report at least one symptom that negatively affects sleep quality (3-5). In studies evaluating the sleep quality

of individuals with chronic diseases; found a significant decrease in sleep quality in HF patients compared to the general population (6-9). 41% of HF patients have difficulty falling asleep, 39% of them have an early awakening and 32% of them stated that they experience early or short-term night awakenings and then they have problems in the transition to sleep (10). It has been revealed in the results of the study that respiratory problems such as sleep apnea experienced during sleep are seen in more than half of HF patients (11-13).

Sleep problems can have a negative impact on the quality of life and self-care of HF patients. Metabolic changes due to the disease and life restrictions due to the disease, dyspnea, pain, fatigue, and emotional problems that occur with advanced age may cause sleep problems in patients (12-13). Deterioration in sleep quality causes the patient's energy level to decrease and to be tired and exhausted during the day (10). Identifying the factors that affect the sleep quality of patients with HF may help improve their sleep and quality of life.

This study was conducted to evaluate the sleep quality of patients with HF and the factors affecting it and to draw attention to the importance of sleep quality in nursing practices.

## METHOD

### Type of Research

The research was conducted in a descriptive framework to determine the sleep quality of patients with HF and its affecting factors.

### Location and Characteristics of the Research

The study was conducted with patients with HF who were treated in the cardiology of the university hospital.

### Sample of the Research

No sample selection was made in the study and all patients who met the research criteria and accepted to participate in the study were included in the study.

Inclusion criteria for the study; Patients aged 18 years and older, diagnosed with New York Heart Association (NYHA) stage III-IV and who agreed to participate in the study were included in the study.

Exclusion criteria from the study; Pregnant women with severe mental disorders, who could not answer the questionnaire and scale questions at the time of data collection, and those who wanted to leave the study were excluded from the study.

Individuals' compliance with the criteria for inclusion and termination of the study was also evaluated through patient file records and interviews with the physician.

No sample selection was made in the study. The study is descriptive type, which was conducted with 121 HF patients who agreed to participate in the study in the cardiology service of a university hospital between November 2019 and February 2020.

### Data Collection Tools

As data collection tools, the Patient Information Form (HBF) and the Pittsburg Sleep Quality Scale (PUKI), which were created by the researchers through literature review, were used.

#### *Patient Information Form (HBF)*

HBF; consists of a total of 15 questions that include information on age, gender, marital status, alcohol and smoking use, and the presence of a chronic disease other than the degree of heart failure of patients with heart failure.

#### *Pittsburgh Sleep Quality Index (PSQI)*

PSQI is a self-report scale that assesses sleep quality and sleeps disturbance over a one-month period. PSQI was developed by Buysse et al. in 1989 and has been shown to have sufficient internal consistency, test-retest reliability, and validity (14). Cronbach's alpha internal consistency coefficient was found to be 0.80. In the evaluation of PSQI, 18 items are included in the scoring. PSQI has 7 components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbance, use of sleeping pills, and daytime dysfunction, and the sum of the component score constitutes the total PSQI score.

The total score has a value between 0-21, a high total score indicates poor sleep quality. A total PSQI score of  $\leq 5$  indicates "good sleep quality", and  $>5$  indicates "poor sleep quality" (15).

### Data Collection

Patients were informed about the study and those who accepted to participate voluntarily were evaluated. In the study, the data were collected by the researcher by interviewing the patients with HBF and PSQI.

### Evaluation of Data

Analysis of the research data was carried out using the SPSS for Windows (statistical package for social sciences) 16.0 package program, using the arithmetic mean, standard deviation, significance test of the difference between two means, analysis of variance, correlation, Kruskal Wallis test, and Mann Whitney U test. Statistical significance level (p) was shown together with the related tests (when  $p > 0.05$  was considered insignificant).

### Ethical Dimension of Research

To conduct the research, the decision of the Academic Board was made by obtaining the ethics committee permission (2019-03 / 39) and Institutional Permission from the Medical Faculty Clinical Research Ethics Committee where the study was conducted. Also, the patients participating in the study were informed about the study and their verbal and written informed consent was obtained.

## RESULTS

The PSQI total scale and subcomponent score averages of the patients in the study are given in Table 1. The mean total PUKI score of the patients was  $14.16 \pm 2.46$ . PSQI subcomponent scores of the patients;  $1.71 \pm 0.47$  in "subjective sleep quality",  $2.11 \pm 0.90$  in "sleep latency",  $2.27 \pm 0.54$  in "sleep duration",  $2.02 \pm 0.23$  in "habitual sleep efficiency",  $2.26 \pm 0.64$  in "sleep disorder" drug use" was  $1.22 \pm 0.42$  and "daytime dysfunction" was found as  $2.49 \pm 0.78$ .

The mean age of the patients participating in the study was  $64.41 \pm 12.52$ , slightly more than half of them (55.3%) were women, and the marital status of the vast majority (63.6%) was determined as married. Half of the patients (50.3%) participating in the study had hypertension, 47.1% had coronary artery disease, and 44.6% had diabetes mellitus. The sleep quality mean

**Table 1.** PSQI Total and Sub-Component Mean Scores of the Patients.

| PSQI Sub-Dimensions X $\pm$ SD | PSQI Sub-Dimensions X $\pm$ SD     |
|--------------------------------|------------------------------------|
| Subjective Sleep Quality       | 1.71 $\pm$ .47                     |
| Sleep Latency                  | 2.11 $\pm$ .90                     |
| Sleep Time                     | 2.27 $\pm$ .54                     |
| Habitual Sleep Efficiency      | 2.02 $\pm$ .23                     |
| Sleep Disorder                 | 2.26 $\pm$ .64                     |
| Use of Sleeping Pills          | 1.22 $\pm$ .42                     |
| Daytime Dysfunction            | 2.49 $\pm$ .78                     |
| <b>PSQI Total</b>              | <b>14.16 <math>\pm</math> 2.46</b> |

scores of women, married and those with comorbid hypertension were worse than the others, and the difference was statistically significant ( $p < 0.05$ ). However, it was determined that 61.9% of the patients who participated in the study slept 5-7 hours a day, 28.2% slept more than 7 hours a day, and 9.9% slept less than 5 hours a day. The difference between sleep duration and sleep quality mean scores was statistically significant ( $p < 0.001$ ).

## DISCUSSION

Studies have shown that HF patients spend less time asleep than healthy individuals (10-14). The cause of sleep problems frequently experienced in HF patients is associated with treatment and disease duration (9). In our study, the sleep quality of the patients was found to be poor ( $14.18 \pm 2.58$ ) (Table 1). This finding was found to be compatible with previous studies (16-19).

In this study, a statistically significant difference was found between gender and sleep quality ( $p < 0.001$ ) and it was determined that women's sleep quality was worse than men's sleep quality (Table 2). Studies have shown that women experience sleep disorders more frequently than men, especially in the premenopausal and postmenopausal age ranges (19-21). This situation is also thought to be due to the difference in the prevalence of anxiety and depression between the sexes, and Wang et al. showed that the rate of depression is higher in patients with poor sleep quality (21-22).

It was determined that more than half of the patients participating in the study were married, and the total mean PSQI score of the married was worse than that of the single, and the difference was statistically significant ( $p < 0.001$ ). (Table 2). In studies on family members of HF patients, similar to this study,

it was determined that the sleep quality of married patients was worse than that of single patients (20,23). It is thought that the reason for the poor sleep quality of married patients is that they are away from home and family during the treatment and they experience loss of a role in the family. In addition, it is thought that the sleep quality of married people decreases because they experience anxiety, stress, and other emotional problems in daily life more than those who are single (22).

It was determined that all of the patients participating in our study had another chronic disease. The mean PSQI scale scores of individuals with hypertension and diabetes were worse than those with other chronic diseases, and the difference was statistically significant ( $p < 0.001$ ). (Table 2). In a study, it was determined that sleep scores were poor in patients with chronic diseases (14). While the medications (beta-blockers, insulin) that patients regularly use in the treatment of diabetes and hypertension make it difficult to fall asleep, they also disrupt the nighttime sleep process (24). For this reason, nurses' evaluation of the medication and treatment processes of individuals with chronic diseases other than HF, taking into account the sleep process, may affect the treatment process positively. The average sleep requirement for adults is 7-8 hours (12,25). In this study, it was found that 61.9% of the patients slept 5-7 hours a day, and the sleep quality was worse ( $p < 0.001$ ) in patients with less than 5 hours or more (more than 7 hours) sleep (Table 2). In studies, the poor sleep quality of patients who sleep 4-5 hours a day is considered to be an expected result (24-26). In addition, it can be thought that the poor sleep quality of patients with a sleep duration of more than 7 hours may be an indicator that increasing the quality of sleep is more important than increasing the duration of sleep. A decrease in reflexes and an increased risk of cardiovascular disease were found in patients with poor sleep quality (27-30).

**Table 2.** Distribution of Patients' PSQI Scores According to Some Variables.

| Variables  |                         | n=121 | %    | PSQI X±SD    |
|--|-------------------------|-------|------|--------------|
| Age  | X±SD= 64.41 ± 12.52     |       |      |              |
|  | *r = .078 p = .676      |       |      |              |
| Gender   | Female                  | 67    | 55.3 | 15.62±1.35   |
|  | Male                    | 54    | 44.7 | 12.45±2.31   |
| Marital Status   | Married                 | 77    | 63.6 | 15.64±2.27   |
|  | Single                  | 44    | 36.4 | 11.72±2.68   |
|  | **t = 3.653 p = .001    |       |      |              |
| Another chronic disease  | Diabetes                | 54    | 44.6 | 15.77 ± 1.51 |
|  | Coroner arter disease   | 57    | 47.1 | 12.25± 2.66  |
|  | Hypertension            | 61    | 50.3 | 14.14± 2.38  |
|  | ***KW = 12.570 p = .002 |       |      |              |
| Total sleep time   | < 5 hours               | 12    | 9.9  | 16.84±0.45   |
|  | 5-7 hours               | 75    | 61.9 | 11.66 ± 0.56 |
|  | >7 hours                | 34    | 28.2 | 13.24±2.18   |
|  | ***KW = 72.475 p = .001 |       |      |              |
| *Correlation analysis, ** student t test, ***Kruskal Wallis analysis |                         |       |      |              |

## CONCLUSION

Sleep quality and the time spent in sleep can have an impact on the improvement of quality of life. It is emphasized that the evaluation of sleep quality is important in controlling the symptoms of cardiovascular diseases. Sleep disturbances are one of the most common symptoms in HF patients. Sleep quality may be adversely affected in HF disease, which has difficult processes such as long treatment periods and repeated hospitalizations. In this study, among the factors affecting sleep quality in HF patients; Women, married, having hypertension, diabetes, sleeping more than 7 hours or less than 5 hours can be counted. For this reason, nurses can improve sleep quality by being aware of such factors that may affect the sleep quality of HF patients and by including planning and practices that can positively affect the sleep process patient care.

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