



Identification of the Perceived Stress Levels and Sleep Quality among Caregivers of Patients Hospitalized in the Palliative Care Clinic

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How to cite this paper: Yildirim, S. and Karakurt, P. (2022) Identification of the Perceived Stress Levels and Sleep Quality among Caregivers of Patients Hospitalized in the Palliative Care Clinic. *Open Access Library Journal*, 9: e8607.

<https://doi.org/10.4236/oalib.1108607>

Received: March 12, 2022

Accepted: April 16, 2022

Published: April 19, 2022

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Abstract

Sleep disorders are common among the caregivers of older people with chronic diseases and those with anxiety and depressive disorders. This study aims to identify the perceived stress levels and sleep quality among caregivers of patients hospitalized in palliative care clinics. This study involves the caregivers of patients who were treated in the palliative care clinics of a city hospital in a city. The study utilized no sampling method, and the participants were composed of 153 caregivers who met the research criteria and agreed to participate in the study. Data were collected using the Socio-Demographic Form, the Perceived Stress Scale (PSS), and the Pittsburgh Sleep Quality Index (PSQI). Participating caregivers' Perceived Stress Scale (PSS) mean score was found 23.76 ± 6.84 and the PSQI total mean score was found 9.16 ± 3.33 . While the difference was found to be statistically significant according to caregivers' marital status, kinship to the patient, financial effects, and the duration of the treatment in the palliative care unit in the Perceived Stress Scale (PSS) mean score, it was statistically significant according to the kinship to the patient and knowledge about providing care to the patient in the PSQI total mean score. A statistically significant, positive, and low-level relationship was found between the Perceived Stress Score and the total PSQI score. It was found that the caregivers' perceived stress levels were above-average and they had poor sleep quality. Caregivers' stress levels and sleep quality were found to be affected by a number of variables.

Subject Areas

Nursing

Keywords

Caregiver, Nursing, Palliative Care, Perceived Stress, Sleep Quality

1. Introduction

The scientific developments in medicine in the twenty-first century and improvements in the quality of patient care have led to a decrease in sudden deaths from diseases and thus an increase in people's lifespan, which also prolonged the time in which patients become subject to disease complications such as pain and ache [1]. Palliative care, which developed during the same time, has focused on eliminating physical and psychosocial symptoms, encouraging and making common decisions. Palliative care services involve provision of help and support not only for the patients but also for their caregivers [2] [3]. The condition of a patient on palliative care increasingly worsens as their chronic disease progresses. Patient relatives who give primary care constitute an important and integrative part of the care and treatment [4]. The primary concern and purpose of palliative care are to improve quality of life in both patients and their families, to support them emotionally and spiritually throughout the care and in the period of grief and to manage the symptoms [5].

Stress is defined as a complex psychobiological process experienced when a danger is perceived in the environment [6] [7]. It is expected that the caregivers of the patients in palliative care clinics would have high levels of stress in this process. Caregivers typically are prone to physical and psychological morbidity, are responsible for a large number of tasks such as symptom management, are compromised in financial terms, become isolated socially, have many unmet needs, and experience similar levels of psychological troubles as their patients [8]. Studies [9] [10] have shown that increased care burden of caregivers leads to increased incidences of depression and impaired physical, emotional and psychological conditions in these individuals. Caregivers today frequently suffer from conditions that increase their stress levels, such as chronic health problems, and psychosocial and behavioural changes [11].

The agitation and stress experienced by these people are known to be the leading factors affecting their sleep quality negatively [12]. Sleep disorders are common among the caregivers of older people with chronic diseases and those with anxiety and depressive disorders. It is known that this may affect physical and mental health as well as business and social life, and even cause life-threatening accidents [13]. A study made with the caregivers of patients with Alzheimer's disease has reported that the caregivers had the symptoms of sleep disorders [14]. Another study has concluded that agitation and stress were the most fundamental factors negatively affecting sleep quality when compared to all the other factors affecting the quality of sleep [12]. Another study investigating whether stress affects the brain and sleep status has reported that 54.4% of the participants stated that they felt stressed generally in their daily living. This result shows that a large number of people are exposed to stress and stress has an impact on sleep [15].

Nurses are supposed to provide consultancy service by sparing time for patients and their caregivers, identifying their views and expectations, allowing

sharing of emotions, and providing guidance in symptom management. Inclusion of information on palliative care in the education provided to patient relatives during hospitalization and treatment is among the roles and responsibilities of nurses [16]. Caregivers should be able to change their reactions to developing circumstances in order to reduce stress, prepare themselves beforehand for situations that will cause stress, think about positive sides of situations, focus on the intended outcome rather than on feelings such as anxiety, uneasiness and anger they experience, and in this way reduce stress levels to improve sleep quality. This study was conducted to determine the perceived stress levels and sleep qualities of the caregivers of patients who are bedded in palliative care clinics. The answers to the following questions were also sought in the study.

Study Questions

- 1) How are the perceived stress levels and sleep qualities of the caregivers of palliative care patients?
- 2) Do some variables of the caregivers of palliative care patients affect their perceived stress levels and sleep qualities?
- 3) Is there a relationship between the perceived stress levels and the sleep qualities of the caregivers of palliative care patients?

2. Methods

This is a descriptive study. This study was conducted between February 2020 and April 2021. The population of the study consisted of the caregivers of the patients hospitalised in the Palliative Care Clinics of the Ministry of Health-Elazığ Fethi Sekin City Hospital. No sample was selected for the study and 153 caregivers who met the study criteria and volunteered to take part in the study were included. A post-hoc analysis was performed to test the adequacy of the sample size. The power analysis performed showed that the study had a study power of 0.99 at a 0.05 significance level and within a 95% confidence interval [17].

Inclusion criteria:

- Openness to communication and cooperation;
- Absence of any known psychiatric disorder;
- Actively giving care to their patient who has been staying in the clinic for at least a month;
- Volunteering to take part in the study.

2.1. Data Collection Forms Used in the Study

The study data were collected using the form of a descriptive characteristic, the Perceived Stress Scale-10 (PSS) and the Pittsburgh Sleep Quality Index (PSQI).

Descriptive Characteristics Form: The form consisted of a total of 10 questions, 5 about the socio-demographic characteristics of the caregivers (age, gender, education status, marital status, relationship to the patient) and another 5 about caregiver information (knowing how to give care to their patient, sources

of information about their patient's disease, how long their patient has been receiving treatment in the palliative care unit, how long they have been giving care to their patient).

Perceived Stress Scale-10 (PSS-10): Developed by Cohen, Kamarck and Mermelstein (1983), this 10-item scale intends to measure how individuals rate their stressful life events within the last one month; unpredictable, uncontrollable or difficult to cope with. The scale was found to have a two-factor structure, but the lowest score obtainable from the scale without naming was found to be 0 and the highest score 40. Higher scores obtained from the scale indicate higher levels of stress perceived by the person [18]. The scale was adapted to Turkish by Eskin *et al.* in 2013. As a result of the analyses carried out, the scale was found to have a two-factor structure; insufficient self-confidence and perceived stress or discomfort. The overall reliability of the scale was found to be 0.82 and the test-retest reliability 0.88 [19]. Its internal validity coefficient was found to be 0.780 in this study.

Pittsburgh Sleep Quality Index (PSQI): PSQI was developed by Buysse *et al.* in 1989 and adapted to Turkish language by Ağargün *et al.* in 1996 [20]. PSQI is a 19-item self-report scale evaluating sleep quality and sleep disorders within the past one month. The index consists of 24 items in total, 19 of which are self-report questions and 5 are to be answered by the spouse or roommate. The scored 18 questions of the scale consist of 7 components. Subjective sleep quality, sleep latency, duration of sleep, habitual sleep efficiency, sleep disturbances, use of sleeping pills, and daytime dysfunction are these 7 components. Each component is scored from 0 to 3. The sum of the scores from these 7 components gives the total score of the scale. The total score ranges from 0 to 21. A total score greater than 5 indicates a "poor sleep quality". The diagnostic sensitivity of PSQI in distinguishing between good and poor sleepers was found to be 89.6% and specificity 86.5% [21]. The scale's internal validity coefficient was found to be 0.637 in this study.

2.2. Data Collection

The data were collected using the form of a descriptive characteristic, which was prepared by the investigator by referring to the literature, the Perceived Stress Scale-10 (PSS) and the Pittsburgh Sleep Quality Index (PSQI). The data were collected by the investigator through face-to-face interviews with the caregivers of the patients staying in the Palliative Care Clinics and the caregivers were provided with the necessary explanations. Completion of the forms took approximately 15 - 20 minutes.

2.3. Assessment of Data

The data obtained from the study were analysed using the database prepared on the SPSS for Windows 21.0 statistics program. In analysing the data, numbers, percentages, means, standard deviations were used as well as the t-test and Va-

riance Analysis in Independent groups for normally distributed measurements, and the Mann Whitney U analysis, Kruskal Wallis Analysis, Pearson and Spearman Correlation Analysis in not normally distributed measurements.

2.4. Ethical Concerns

After obtaining approval from Erzincan Binali Yıldırım University, Human Studies Ethics Committee (numbered E.10309 and dated 05/02/2020), written permission was obtained from the Ministry of Health, Elazığ Fethi Sekin City Hospital. Before starting the study, the caregivers to take part in the study were explained the purpose, duration and implementation phase of the study and thereby the informed consent principle was fulfilled. Verbal consents of the caregivers who would take part in the study were obtained and those who volunteered were included in the study.

2.5. Study Limitations

The study was confined to the Palliative Care Clinics of Elazığ Fethi Sekin City Hospital. It was also restricted with the responses provided by the caregivers who volunteered to take part in the study.

3. Results

Of the caregivers participating in the study, 53.6% were female, 31.4% were graduates of high school and 64.1% were married. The children of the patients comprised 41.8% of the caregivers and 54.2% reported that they were affected financially by the disease process. Of the patients, 65.4% have been receiving care for 1-3 months and 70.6% of the caregivers have been giving care to their patients for longer than 6 months. The mean age of the caregivers was 40.34 ± 12.22 with ages ranging between 18 and 69.

The mean scores obtained by the caregivers from the Perceived Stress Scale (PSS) and PSQI Sleep Quality Index and its subdimensions are shown in **Table 1**.

As seen from **Table 1**, the caregivers obtained 23.76 ± 6.84 from the Perceived Stress Scale (PSS) and the scores obtained ranged between 8 and 40. The mean total score of the caregivers from PSQI was 9.16 ± 3.33 , the scores ranging from 2 and 15 (**Table 1**).

The comparison of the Perceived Stress Scale scores of the caregivers with respect to their descriptive and some patient-related characteristics is presented in **Table 2**.

The difference in the mean Perceived Stress Scale (PSS) total score with respect to marital status, relationship to patient, being financially impacted by the process, and duration of treatment in palliative care unit is statistically significant ($p < 0.01$). The mean scores of those who are married and who have been financially impacted by the process are higher. With respect to the relationship to the patient, the Perceived Stress Scale (PSS) scores of those who were the

Table 1. Mean scores obtained by caregivers from Perceived Stress Scale (PSS) and PSQI and its subdimensions.

Scale and Subscales	N	Min.	Max.	Mean	SD
Perceived Stress Scale	153	8	40	23.76	6.84
Subjective Sleep Quality	153	0	3	1.81	0.86
Sleep Latency	153	0	3	2.00	0.80
Sleep Duration	153	0	3	1.46	0.90
Habitual Sleep Efficiency	153	0	3	0.32	0.62
Sleep Disturbances	153	1	3	1.64	0.61
Use of Sleeping Pills	153	0	3	0.18	0.57
Daytime Dysfunction	153	0	3	1.75	1.06
Total PSQI	153	2	15	9.16	3.33

fathers of their patients were lower than those who were their mothers and spouses. With respect to the duration of treatment in palliative care unit, the scores of those who received treatment in palliative care for more than 6 months were lower (**Table 2**).

The comparison of the PSQI Sleep Quality scores of the caregivers included in the study with respect to their descriptive and patient-related characteristics is presented in **Table 3**.

As seen in **Table 3**, the difference in the mean PSQI Total score with respect to relationship to patient and knowing to give care to patient is statistically significant ($p < 0.01$). In the further analysis (LSD) to determine from which group the difference originated with respect to relationship to patient, the Perceived PSQI Total scores of those who are the father of the patient were found lower than those who are the mother, spouse, sibling or children of the patient. The mean score of those who did not know how to give care to their patient was higher (**Table 3**).

The relationship of the age of the participating caregivers with the Perceived Stress, PSQI total and subdimension scores is presented in **Table 4**.

As seen in **Table 4**, there is a statistically significant, low, positive correlation between age and Perceived Stress Scale (PSS) total score ($p < 0.01$). With advancing age, the Perceived Stress Scale (PSS) total score increases. There is no statistically significant relationship between the age of caregivers and the PSQI total score ($p > 0.05$) (**Table 4**).

The relationship between the Perceived Stress Scale (PSS) score of the caregivers included in the study and their PSQI total and subdimension scores is presented in **Table 5**.

There is a statistically significant, positive and low correlation between the Perceived Stress Scale (PSS) total score of the caregivers and their PSQI total score ($p < 0.01$). As the Perceived Stress Scale (PSS) total score increased, the

Table 2. Comparison of perceived stress scale (PSS) scores of caregivers with respect to their demographic and other characteristics.

		n	Perceived Stress Score			
			Mean	SD	Test	p
Gender	Female	82	24.27	6.63	t = 0.979	0.329
	Male	71	23.18	7.08		
Education Status	Literate	15	26.60	6.33	F = 2.325	0.059
	Primary school	34	24.29	7.80		
	Secondary school	26	25.85	6.70		
	High school	48	22.56	6.83		
	University and higher	30	21.87	5.27		
Marital Status	Married	98	24.58	7.08	t = 1.992	0.048
	Single	55	22.31	6.18		
Relationship to Patient	Mother	10	28.30	8.18	F = 5.586	0.000
	Father	13	21.00	6.06		
	Spouse	12	28.50	7.75		
	Sibling	13	24.69	8.04		
	Child	64	24.75	5.68		
	Other	41	20.32	6.05		
Being Financially Affected by the Process	Yes	83	25.18	7.36	t = 2.912	0.004
	No	70	22.09	5.78		
Knowing to Give Care to Patient	Yes	124	23.28	6.74	t = -1.818	0.071
	No	29	25.83	7.00		
Sources of Knowledge about the Disease	Physician	23	21.91	7.28	t = -1.423	0.157
	Physician and nurse	128	24.10	6.70		
Duration of Treatment in Palliative Care Unit	Months 1 - 3	100	23.86	6.87	F = 3.114	0.047
	Months 3 - 6	30	25.60	7.11		
	More than 6 months	23	20.96	5.60		
Duration of Giving Care to Patient	Less than 6 months	45	22.71	6.75	t = -1.232	0.220
	More than 6 months	108	24.20	6.86		

Table 3. Comparison of PSQI sleep quality scale scores of caregivers with respect to their demographic and other characteristics.

		n	Total PSQI			
			Mean	SD	Test	p
Gender	Female	82	9.40	3.17	t = 0.979	p = 0.333
	Male	71	8.87	3.51		
Education Status	Literate	15	10.00	2.95	F = 1.477	p = 0.212
	Primary school	34	10.15	2.97		
	Secondary school	26	8.65	2.94		
	High school	48	8.71	3.65		
	University and higher	30	8.77	3.57		
Marital Status	Married	98	9.22	3.19	t = 0.334	0.739
	Single	55	9.04	3.60		
Relationship to Patient	Mother	10	11.10	3.25	F = 2.767	0.020
	Father	13	6.54	3.20		
	Spouse	12	10.00	2.98		
	Sibling	13	9.46	3.10		
	Child	64	9.39	3.11		
	Other	41	8.80	3.54		
Being Financially Affected by the Process	Yes	83	9.53	3.32	t = 1.515	0.132
	No	70	8.71	3.32		
Knowing to Give Care to Patient	Yes	124	8.86	3.30	t = -2.287	0.024
	No	29	10.41	3.25		
Sources of Knowledge about the Disease	Physician	23	9.30	3.94	t = -0.135	0.893
	Physician and nurse	128	9.20	3.20		
Duration of Treatment in Palliative Care Unit	Months 1-3	100	9.05	3.34	F = 1.437	0.241
	Months 3-6	30	10.00	2.95		
	More than 6 months	23	8.52	3.70		
Duration of Giving Care to Patient	Less than 6 months	45	9.47	3.66	t = -0.741	0.460
	More than 6 months	108	9.03	3.20		

Table 4. Relationship of the age of caregivers with perceived stress, PSQI total and sub-dimension scores.

Scales and their Subdimensions		Age
Perceived Stress Scale Score	r	0.179
	p	0.026
	N	153
Subjective Sleep Quality	r	0.166
	p	0.040
	N	153
Sleep Latency	r	0.204
	p	0.011
	N	153
Sleep Duration	r	0.083
	p	0.308
	N	153
Habitual Sleep Efficiency	r	0.023
	p	0.781
	N	153
Sleep Disturbances	r	0.190
	p	0.019
	N	153
Use of Sleeping Pills	r	0.039
	p	0.628
	N	153
Daytime Dysfunction	r	0.015
	p	0.853
	N	153
PSQI Total Score	r	0.097
	p	0.232
	N	153

PSQI total score also increased (**Table 5**).

4. Discussion

The perceived stress levels of the caregivers included in the study were found to be higher than moderate level (23.76 ± 6.84). Looking at the literature, we see that care stress was low in the study made by Öztürk Kaynar and Vural on the caregivers of patients with colorectal cancer and caregiver stress was at a moderate level in the study made by Desbiens *et al.* on the caregivers of older patients [22] [23]. On the contrary, care stress was found high by Yıldız *et al.* in the

Table 5. Relationship between Perceived Stress Scale (PSS) score of caregivers and their PSQI total and subdimension scores.

Scales and their Subdimensions		Perceived Stress Scale Score
Subjective Sleep Quality	r	0.405
	p	0.000
	N	153
Sleep Latency	r	0.262
	p	0.001
	N	153
Sleep Duration	r	0.150
	p	0.064
	N	153
Habitual Sleep Efficiency	r	0.018
	p	0.828
	N	153
Sleep Disturbances	r	0.224
	p	0.005
	N	153
Use of Sleeping Pills	r	-0.100
	p	0.220
	N	153
Daytime Dysfunction	r	0.360
	p	0.000
	N	153
PSQI Total Score	r	0.350
	p	0.000
	N	153

caregivers of patients with cancer, by Lu and Wykle in the caregivers of patients with dementia, and by Khan *et al.* in the caregivers of patients with MS [24] [25] [26]. In another study made to determine the stress level in the caregivers of home care patients and the factors affecting it, the mean stress scale scores of the caregivers were found at a moderate level [27]. The result of the present study is similar to those in the literature and this result may have been influenced by the fact that the patient groups that were provided care had different diagnoses and there was the worry that the general health conditions of palliative care patients could change at any moment as they were in their terminal periods.

The genders of caregivers did not affect their perceived stress status. Although there are conflicting results in the literature about the relationship between gender and stress, it was reported that women found themselves in stressful

conditions more often than men [28]. In their study with caregivers of cancer patients, Kim *et al.* found that women had higher levels of stress than men, but gender did not affect the level of stress [29]. Malak and Dicle concluded in their study that gender did not affect the level of stress [30]. The result of the present study is similar to those in the literature. The numbers of female and male caregivers being close to each other in the study may have influenced this result.

The education status of the caregivers taking part in the study was not found to affect their perceived stress levels. Adelman *et al.* have also found in their study that the education statuses of caregivers did not affect their stress levels [31]. The result of our study is similar to those in the literature. This result may have been influenced by the fact that the caregivers in our culture perceive giving care to their patient as an obligation no matter what their education status is.

Those who are married were found in the study to have higher stress levels. Gök Uğur and Çatiker have reported in their study that the marital status of the caregivers of patients receiving home care did not affect caregiver stress [27]. The results obtained from the study show that perceived stress scores were higher in married individuals. This result may have been influenced by the fact that married persons understand the stress and responsibility involved in the concept of being a family better than single individuals.

The relationship to the patient was found to affect the stress levels of caregivers in this study. No similar or different results were encountered in the literature about stress level with respect to relationship to patient. However, there are studies in the literature reporting that patient spouses have a higher care giving burden [31] [32] [33] [34]. The studies of Karlıkaya and Freeman have reported in their study that there was no significant correlation between degree of relationship and care giving burden [35] [36]. Also in the study of Duman, degree of relationship to the patient did not affect caregiver burden [37]. It has been reported that women have more chronic stress than men and are exposed to more daily stress due to their routine roles [38]. This is an expected result since women in the Turkish society are occupied more with care giving works and the responsibility and engagement from being a mother are at a higher level, whereas men have lower stress as they are more alien to the role of care giving.

From the caregivers included in the study, those who were financially affected by the process were found to have more stress than those who were not financially affected. Similar to this result of the present study, another study has also reported that financial instability was among the major factors affecting stress in families [39]. Gott *et al.* have reported in their study that patient relatives wished to fulfil all the desires of their patients no matter what they were and this disturbed their financial balance considerably [40]. In their study, Başdınç found that patient relatives with a poor financial status had significantly more care giving burden than those whose financial statuses were moderate and good [41]. The result of the present study is similar to those in the literature and the present study contributes to the literature by showing that financial status is associated

with the stress levels of caregivers.

The extent to which the caregivers included in the study knew how to give care was not found to affect their perceived stress levels. We were unable to find any study in the related literature comparing the extent to which the caregivers knew how to give care to their palliative care patients with their perceived stress levels. It is an expected result that the perceived stress levels of caregivers would not be affected as they had already become competent in the process of giving care to their patients by the time their patients has come to the stage of receiving palliative care.

As for the duration of receiving care in a palliative care unit, the caregivers of those patients who have been receiving treatment in palliative care for more than 6 months had lower levels of stress than those who gave care to patients receiving treatment for 3 - 6 months. It was observed in a study that depression symptoms emerged in 75% of those giving care between 6 months and a year and in 77.3% of those giving care for more than a year, indicating that giving care for longer than 6 months increased depressive symptoms [42]. In a study made by Pasacrete *et al.*, a directly proportional relationship was found between the time spent as a caregiver and the amount of stress experienced [43]. In some studies in the literature, no significant correlation was found between care burden and duration of care [44] [45]. This result may have been influenced by the fact that the caregivers of palliative patients usually do not see any clinical improvement in their patients during this time, they come to acknowledge their patients' condition with passing time and ultimately lose their hope.

The duration of giving care by the caregivers included in the study was not found to affect their stress levels. We were unable to find any study in the literature comparing the duration of giving care and stress levels in caregivers of palliative care patients. This result may have been influenced by the fact that the patients go through certain stages until they come to the point of receiving palliative care and since these stages take a long time, the caregivers feel prepared for the process once their patients are admitted to the palliative care unit, which renders their stress levels unaffected.

As the ages of the caregivers included in the study advanced, their scores obtained from the Perceived Stress Scale (PSS) increased. Similar to the result of this study, another study has also found that age affected the levels of coping with stress in caregivers [46]. Unlike the result of the present study, Gök Uğur and Çatıker reported in their study that age did not affect the stress levels of caregivers [27]. The result of our study is similar to those in the literature. This result of the present study may have been influenced by the fact that younger caregivers tried to reduce stress by seeking social support and older caregivers used ineffective approaches to cope with stress.

The mean PSQI score of the caregivers included in the study turned out to be 9.16 ± 3.33 , which showed a poor performance. A search of the literature also showed that caregivers of cancer patients had a poor sleep quality [47] [48] [49].

Another study assessing fatigue and sleep quality in caregivers of advanced stage cancer patients found that the sleep quality of caregivers was poor [50]. The result of the present study is similar to those in the literature. Sleep quality is associated with physical and psychological stress; thus, it is an expected result that caregivers with a stress level above moderate have a poor sleep quality.

When the mean PSQI scores of the caregivers included in the study with respect to some of their descriptive characteristics are compared, it is seen that their gender did not affect their mean PSQI total score. Looking at the literature, we see that the study of Uzelli Yılmaz and Sarı also found that gender did not affect the mean PSQI total score of patient relatives [4]. Other study results including those of Peng *et al.* and Lindsay *et al.* showed that gender did not affect the mean PSQI total score [51] [52]. Therefore, the result of the present study is similar to those in the literature. As for the mean subscale scores, the mean sleep latency and sleep disturbances subscale scores of female caregivers are observed to be higher compared to male caregivers. Present analyses of sleep quality between genders show that women have poorer sleep quality than men. A study investigating sleep complaints, their reflections and predominance between genders has found that a large majority of women complained about poor sleep more than men [53].

Education status of caregivers was not found to affect their sleep quality. Unlike the result of this study, Uzelli Yılmaz and Sarı found in their study with caregivers that there was statistically significant difference between education status and PSQI total scores [4]. Similar to the result of the present study, Chin *et al.* found that education level did not affect the mean PSQI total score [54]. In this context, we have encountered results similar to and different from the result of our study in the literature. This result suggests that education status of caregivers has no effect on their planning of sleep activities.

The marital status of the caregivers included in the study was not found to affect their sleep quality. Looking at the literature, we see that the study made by Bartolomei *et al.* with the caregivers of patients with Parkinson's disease found that marital status did not affect the mean PSQI total score of caregivers [55]. Another study with a similar result to that of the present study reported that marital status did not affect the mean PSQI total score [56]. The result of the present study is similar to those in the literature in this respect and shows that sleep quality is not influenced by caregivers' being single or married.

The caregivers' degree of relationship to the patient was found to affect their sleep quality. A study made by Yılmaz *et al.* with caregivers demonstrated that there was no significant difference between the degree of relationship to patient and the mean PSQI score [56]. The scores obtained by patient fathers from the sleep disturbances, sleep latency and subjective sleep quality subdimensions were found to be lower compared to other patient relatives. This result may have been influenced by the fact that women in the capacity of a mother are believed to be more compassionate and sensitive than men and their uneasiness due to their

worries about their patient prevents them from falling in a deep sleep.

The extent to which the caregivers included in the study were financially affected by the process was not found to affect their sleep quality. Uzelli Yılmaz and Sarı also did not find in their study any statistically significant difference between income level and the mean PSQI total score [4]. While some studies in the literature on the socioeconomic statuses of caregivers showed that caregivers with a low income had more burden [57], there were also studies that did not find any relationship between care giving burden and income level [58]. There are differing results between income level and sleep quality and our study shows similarity to the literature. This result shows that income level is not effective in planning sleep activity and does not affect sleep quality.

The extent to which the caregivers included in the study knew how to give care to their patient was found to affect their sleep quality. No results, either similar or different, were encountered in the literature about the relationship between knowledge on care giving and sleep quality. However, it was reported that as the duration of care giving prolonged, sleep quality was increasingly impaired [56]. The present study found that there was a significant relationship between those who did not know how to give care to their patient and those who knew it with respect to sleep latency and daytime dysfunction subdimensions. This result may have been influenced by the fact that the sleep quality of those who did not know how to give care was negatively affected because they were inadequate in observing their patient's condition and any changes that may have occurred in their patient.

The duration in which the patients of the caregivers included in the study received treatment in the palliative care unit was not found to affect their sleep quality. Looking at the literature, we could not find any study comparing the duration in which the patients of the caregivers received treatment in the palliative care unit with the sleep quality of caregivers. We think that this is an expected result in that the caregivers adapt themselves to this process because the process of patients' receiving palliative care is generally long and that giving care to their patients for a long time does not affect their sleep quality.

The duration of giving care to their patients by the caregivers included in the study was not found to affect their sleep quality. When we searched the literature, we could not find any study comparing the duration in which the caregivers gave care to their patients in the palliative care unit with the sleep quality of caregivers. We think that it is an expected result that the duration of giving care to their patients being long and caregivers adapting themselves to the care process does not affect their sleep quality.

The mean ages of the caregivers included in the study was not found to affect their sleep quality. Similar to our study results, a study has also reported that age did not affect sleep quality [56]. This result may have been influenced by the fact that caregivers in all age groups may experience sleep disturbances.

A significant relationship was found in this study between the stress levels of

caregivers and their sleep quality. As the Perceived Stress score increased, the PSQI total score also increased. Similar to the result of this study, it has been reported that stress adversely affects sleep quality [59]. It is also concluded that sleeplessness is directly or indirectly associated with stress, night awakening and emotional reactions to stress. In fact, a significant correlation has been found between the prevalence of stress and sleep quality. Giving care to terminal stage patients in palliative care clinics is a difficult process for caregivers. The thought of losing their relatives at any time affects stress levels in caregivers negatively. Increasing stress levels negatively affect sleep quality and this is an expected result.

5. Conclusion

The following results have been obtained from this study, which was conducted to determine the perceived stress levels and sleep qualities of the caregivers of the patients bedded in the palliative care clinics of Elazığ Fethi Sekin City Hospital:

- The stress levels of the caregivers were found to be above moderate and their sleep quality poor;
- Marital status, relationship to the patient, being financially affected by the process, and duration of receiving treatment in the palliative care unit were found to affect the stress levels of the caregivers included in the study;
- Gender, education status, knowing to give care to patient, sources of knowledge about the disease, and the duration of giving care to patient were not found to affect the stress levels of the caregivers;
- Degree of relationship to patient and knowing to give care to patient were found to affect the sleep quality of the caregivers, whereas gender, education status, marital status, being financially affected by the process, sources of knowledge about the disease, the duration of treatment in palliative care unit, and the duration of giving care to the patient did not affect sleep quality;
- It was found that as ages of caregivers increased, their stress levels also increased, but age did not affect sleep quality;
- As the stress levels of the caregivers included in the study went up, their sleep quality declined.

Based on these results, our recommendations include the following:

- The frequency of education to reduce stress levels of caregivers should be increased;
- Interventions to improve sleep quality of caregivers giving care to their patients should be organised;
- Factors other than those affecting the stress levels of caregivers (marital status, degree of relationship to patient, being financially affected by the process, duration of treatment in palliative care unit, and age) and affecting their sleep quality (degree of relationship to patient and knowing to give care to patient) should be identified and necessary measures are taken;

- The study should be repeated with a larger sample group.

Acknowledgements

The authors acknowledge the contributions of all patients with caregiver who took part in the study, and thank the clerical staff of the clinic where these data were gathered.

Availability of Data and Materials

The datasets analyzed during the current study are available from the corresponding author upon reasonable request.

Ethics Approval

The research was conducted after approval by the joint Erzincan Binali Yıldırım University, Human Studies Ethics Committee (numbered E.10309 and dated 05/02/2020).

Conflicts of Interest

The author declares no conflicts of interest.

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