

Sleep Quality and Factors Affecting The Sleep Quality of Patients Presenting to Traditional and Complementary Medicine Centre

Geleneksel ve Tamamlayıcı Tıp Merkezine Başvuran Hastaların Uyku Kaliteleri ve Uyku Kalitelerini Etkileyen Faktörler

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Abstract

Introduction: No studies were encountered in the literature on the effects of traditional and complementary treatments on sleeping problems experienced by patients who underwent those procedures due to other health problems.

Objective: This study aims to determine sleep quality and the factors that affect it among patients presenting to traditional and complementary medicine centre due to various health problems.

Method: A total of 314 patients presenting to traditional and complementary medicine centres were included in this cross-sectional study. Data were obtained with a personal information form, the Cumhuriyet Subjective Sleep Quality Scale, and the Sleep Hygiene Index. The study was reported according to STROBE guidelines.

Results: The median Cumhuriyet Subjective Sleep Quality Scale score of the patients was 22 (IQR: 19) and the median Sleep Hygiene Index score was 25.00 (8.00). It was determined that gender, income, and daily sleep duration had statistically significant effects on sleep quality ($p<0.05$). It was reported by 42.6% of the patients who underwent acupuncture treatment, 37.5% of the hypnosis treatment patients, 40.3% of the cupping treatment patients, 52.4% of the ozone therapy patients, 42.9% of the mesotherapy patients, and 47.5% of the hirudotherapy patients that, compared to before, they had much better sleep after undergoing these treatments.

Conclusion: It was determined in this study that the sleep quality and sleep hygiene of the patients were good. Traditional and complementary therapies can be considered to improve patients' sleep quality and hygiene.

Keywords: Traditional and Complementary Medicine, Sleep Quality, Sleep Hygiene.

Özet

Giriş: Literatürde diğer sağlık sorunları nedeniyle geleneksel ve tamamlayıcı tedavi alan hastalarda, geleneksel ve tamamlayıcı tedavinin uyku sorunlarına etkisini inceleyen çalışmalara rastlanılmamıştır.

Amaç: Bu çalışmanın amacı, çeşitli sağlık sorunları nedeniyle geleneksel ve tamamlayıcı tıp merkezine başvuran hastaların uyku kalitesi ve uyku kalitesini etkileyen faktörleri belirlemektir.

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Yöntem: Bu kesitsel çalışmaya geleneksel ve tamamlayıcı tıp merkezine başvuran toplam 314 hasta dahil edildi. Veriler Kişisel Bilgi Formu, Cumhuriyet Öznel Uyku Kalitesi Ölçeği ve Uyku Hijyeni İndeksi ile toplandı. Çalışma STROBE yönergelerine göre rapor edildi.

Bulgular: Hastaların Cumhuriyet Öznel Uyku Kalitesi Ölçeği ortanca puanının 22 (IQR: 19) ve Uyku Hijyeni İndeksi ortanca puanının ise 25,00 (8,00) olduğu belirlendi. Cinsiyet, gelir düzeyi ve günlük uyku süresinin uyku kalitesini istatistiksel olarak anlamlı düzeyde etkilediği saptandı ($p<0,05$). Bu çalışmada akupunktur tedavisi alan hastaların %42,6'sının, hipnoz tedavisi alan hastaların %37,5'inin, hacamat tedavisi alanların %40,3'ünün, ozon tedavisi alanların %52,4'ünün, mezoterapi hastalarının %42,9'unun ve hirudoterapi hastalarının %47,5'inin önceki zamana kıyasla daha iyi uyudukları belirlendi.

Sonuç: Bu çalışmada, hastaların uyku kalitesi ve hijyenlerinin iyi olduğu görülmüştür. Geleneksel ve tamamlayıcı tedavilerin hastaların uyku kalitesi ve hijyenini geliştirdiği düşünülebilir.

Anahtar Kelimeler: Geleneksel ve Tamamlayıcı Tedavi, Uyku Kalitesi, Uyku hijyeni.

INTRODUCTION

As well as being a crucial component of health, sleep, as a physiological process, is a physiological necessity just like air, water, and food. The fundamental function of sleep is to enable the body to restore energy and rest. Sleeping plays a significant role in physical performance, memory, and learning. Sleep is also necessary for metabolic events and emotional regulation (1).

Sleep quality is defined as the individual's satisfaction with the sleeping experience. Sleep quality has four attributes: sleep efficiency, sleep latency, sleep duration, and wake after sleep onset (2). Countless practices can increase sleep quality by improving these factors in a positive direction. These practices, which are also called sleep hygiene, include the regulation of environmental factors that contribute to comfortable and quality sleep and the modification of personal habits. Sleep hygiene is said to play a substantial role in improving sleep quality (1).

Sleep quality affects individuals' health (2). Decreased sleep quality can cause dysfunction, anger, fatigue, slowed reactions, and increased caffeine or alcohol consumption in individuals. Low sleep quality can also result in health problems such as diabetes, obesity, heart disease, injuries, psychological problems, anxiety, and depression (2,3). Therefore, improved sleep quality is necessary to avoid such adverse outcomes. As well as ensuring sleep hygiene, various interventions, such as implementing traditional and complementary medicine practices, are used to improve sleep quality. It has been revealed in the literature that traditional and complementary treatments improve sleep quality (4,5). It was indicated in a systematic review and meta-analysis that acupressure practices increase sleep quality (5). In a different systematic review, it was shown that 58.3% of relevant studies indicated that hypnosis had a positive influence on sleep results (6). It was also stated that, compared to the control group, the cupping procedure combined with acupuncture practice was superior in eliminating insomnia for patients with moderate insomnia (7). Li et al. determined that low doses of ozone therapy improved sleep quality parameters (4). It was seen that music therapy, massage, and therapeutic touch applied for critically ill patients increased their sleep quality (8). Gooneratne determined that complementary and alternative medicine treatments such as tai chi, acupuncture, acupressure, yoga, and meditation improved sleep parameters (9). The research in the literature to date has explored the effects of traditional and complementary treatments on sleep problems experienced by patients who underwent those treatments specifically due to their sleeping problems. However, no studies were encountered in the literature on the effects of traditional and complementary treatments on sleeping problems experienced by patients who underwent those procedures due to other health problems. In the

present study, the sleep quality and the factors affecting it among patients who received traditional and complementary treatments due to various health issues were examined. It should be noted that low sleep quality can increase the severity of existing health problems and can cause new health problems.

In this context, it is important that healthcare professionals be familiar with the sleep quality of their patients and the factors that affect it so that they can improve the patients' sleep quality and avoid the exacerbation of existing health problems or the occurrence of new ones.

METHOD

Study Design

This study, which aimed to determine sleep quality and the factors affecting it among patients who presented to a traditional and complementary medicine centre, was designed as a cross-sectional study. The STROBE checklist was applied in the reporting of the findings.

Sampling Method

The study's target population was patients presenting to a traditional and complementary medicine centre with any health issues. A random sampling method was used. The study's inclusion criteria were consent to participate, age of ≥ 18 years, not having any communication problems, and having presented to the traditional and complementary medicine centre. The study's exclusion criteria were age of < 18 years, pregnancy, visual impairments, and cognitive disorders.

The G*Power-3.1.9.2 program was used to determine the sample size, which was calculated as a minimum of 131 for power of 0.95 ($1-\beta$) at $\alpha=0.05$ assuming a standardized effect size of 0.29 based on the study of author's name.¹⁰ Subsequently, 314 patients were enrolled in the study.

Ethical Consideration

Ethics committee approval (E-71522473-050.01.04-146224-182) was obtained before the study began. The participants were informed about the study in accordance with the Declaration of Helsinki and their consent was obtained online via an informed consent form. All participants were enrolled in the study on a voluntary basis.

Data Collection

Data were collected with a survey conducted via Google Forms in June-December 2022.

Measures

Data were collected using a personal information form, the Cumhuriyet Subjective Sleep Quality Scale, and the Sleep Hygiene Index. Permission to use the scales was obtained via e-mail from the authors who developed them.

The personal information form included various questions regarding age, gender, marital status, health, and sleep.

The Cumhuriyet Subjective Sleep Quality Scale was developed by Sarıçam (11). This scale consists of 18 items and three subdimensions (psychosomatic effects, sleeping process, and sleep satisfaction). Items 3, 10, 11, 15, and 17 are reverse-coded. The scale is a four-point

Likert-type scale (0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Frequently). As the scores obtained from the scale increase, sleep quality is considered to decrease. Sarıçam found the scale to have a Cronbach α value of 0.91. In this study, the Cronbach α value was 0.92 (11).

The Sleep Hygiene Index was developed by Mastin et al. (12). The validity and reliability of the index's Turkish version were confirmed by Güzel Özdemir et al. (13). The index consists of 13 items and is a 5-point Likert-type scale (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Frequently, 5 = Always). The lowest possible score is 13 and the highest is 65. High scores indicate worse sleep hygiene practices. The Cronbach α value was found to be 0.70 in the study conducted by Güzel Özdemir et al. (13). In this study, the Cronbach α value was 0.71.

Data Analysis

IBM SPSS Statistics 24 was used to analyse the data. Numbers and percentage ranges were calculated for the participants' personal information. Cronbach α coefficients were calculated for internal consistency. Spearman correlation was used in order to identify the relationship between the Cumhuriyet Subjective Sleep Quality Scale and Sleep Hygiene Index. Normality testing was performed to determine the tests to be applied in evaluating the collected data. As the normality test results showed that the scores for the Cumhuriyet Subjective Sleep Quality Scale and Sleep Hygiene Index were not normally distributed, the nonparametric Mann-Whitney U and Kruskal-Wallis H tests were used to analyse the data.

RESULTS

A total of 314 patients presenting to a traditional and complementary medicine centre were included in this study. The mean age of the patients was 44.89±11.86 years and 71.7% were women. The demographic characteristics of the patients are given in Table 1.

Table 1. Demographic Characteristics of the Study Sample, N=315

Variable	N	%
Age 44.89±11.86 years (min: 18, max: 86)		
BMI 27.65±6.82		
Gender		
Female	225	71.7
Male	89	28.3
Marital status		
Single	49	15.6
Married	265	84.4
Income		
Good	84	26.8
Medium	219	69.7
Low	11	3.5
Working status		
Worker	172	54.8
Not employed	113	36
Retired	29	9.2
Work schedule		
Starts in the morning	287	91.4
Shift worker	27	8.6
Smoking		
Yes	48	15.3
No	266	84.7
Exercise		
Yes	129	41.1
No	185	58.9

It was determined that 18.8% of the patients presented to the traditional and complementary medicine centre due to musculoskeletal system problems, 6.4% due to the gastrointestinal system, 3.8% due to the cardiovascular system, 14% due to the nervous system, 2.9% due to gynaecological problems, 4.5% due to psychological problems, 2.2% due to insomnia, 8.3% due to obesity and metabolic problems, 32.2% due to pain, and 7% due to other problems (allergies, restless leg syndrome, urticaria, wounds, fatigue, oedema, cancer, bruxism, acne, asthma, sweating, uveitis, overactive bladder, dementia, and eczema). Furthermore, 38.2% of the patients stated that their sleep had improved compared to before after receiving traditional and complementary treatment (Table 2).

Table 2. Reasons for Patients to Present to the Traditional and Complementary Medicine Centre and Characteristics of Their Sleep, N=315

Variable	N	%
Reasons for patients to present to the traditional and complementary medicine centre		
Musculoskeletal system problems	59	18.8
Gastrointestinal system problems	20	6.4
Cardiovascular system problems	12	3.8
Nervous system problems	44	14
Women's health problems	9	2.9
Psychological problems	14	4.5
Insomnia	7	2.2
Obesity and metabolic problems	26	8.3
Pain	101	32.2
Other problems	22	7
Daily sleep duration		
4-7 hours	154	49
>7 hours	160	51
Consumption of tea/coffee before bed		
None	128	40.8
1-3 cups	109	34.7
3-5 cups	77	24.5
Sleep quality before receiving traditional and complementary treatment		
Good	121	38.5
Moderate	116	36.9
Low	77	24.5
Sleep quality after receiving traditional and complementary treatment		
No changes	194	61.8
Better compared to before	120	38.2

It was determined that 82.2% of the patients underwent acupuncture, 12.7% hypnotherapy, 70.4% cupping therapy, 6.7% ozone therapy, 22.3% mesotherapy, 19.4% hirudotherapy, and 5.8% other alternative treatments (phytotherapy, homeopathy, osteopathy, prolotherapy, and reflexology).

Most of the patients who underwent acupuncture (31%), cupping therapy (33.9%), mesotherapy (37.1%), hirudotherapy (31.1%), reflexology (75%), and phytotherapy (42.9%) were patients suffering pain. Most patients who underwent hypnosis (17.5%) and all patients undergoing prolotherapy had musculoskeletal system problems. While 33% of patients who underwent homeopathic treatment had insomnia, 33% suffered from pain and 33% had obesity and metabolism-related problems. Finally, 2.2% of the patients presented to the traditional and complementary medicine centre with insomnia complaints and 1.6% of those patients underwent acupuncture, 5% hypnosis, 2.3% cupping therapy, and 33.3% homeopathy.

The median score of the patients according to the Cumhuriyet Subjective Sleep Quality Scale was 22 (IQR: 19). The median scores obtained for the subdimensions of psychosomatic effects, sleep duration, and sleep satisfaction were 7.00 (6.00), 7.00 (7.00), and 7.00 (7.00), respectively. The median Sleep Hygiene Index score of the patients was 25.00 (8.00). Spearman correlation was used to evaluate the relationship between the Cumhuriyet Subjective Sleep Quality and Sleep Hygiene Index and a positive relationship was found (rs=0.436, p=0.000).

Table 3. Variables Affecting Sleep

Characteristics	Cumhuriyet Subjective Sleep Quality Scale Median (IQR)	Sleep Hygiene Index Median (IQR)
Gender		
Female	24.00 (20.50)	26.00 (8.00)
Male	20.00 (17.50)	24.00 (8.00)
	z=-2.348 p=0.019	z=-2.007 p=0.045
Marital status		
Single	25.00 (19.50)	27.00 (6.50)
Married	22.00 (18.00)	25.00 (8.00)
	z=-0.612 p=0.541	z=-2.488 p=0.013
Income		
^a Good	16.00 (18.00)	25.00 (7.00)
^b Medium	23.00 (19.00)	25.00 (8.00)
^c Low	31.00 (16.00)	29.00 (13.00)
	$\chi^2=12.347$ p=0.002	$\chi^2=4.320$ p=0.115
	a<b p=0.023 a<c p=0.009	
Work schedule		
Starts in the morning	22.00 (19.00)	25.00 (8.00)
Shift worker	22.00 (21.00)	27.00 (6.00)
	z=-0.98 p=0.922	z=-2.006 p=0.045
Daily sleeping duration		
4-7 hours	26.50 (23.00)	25.00 (7.00)
>7 hours	21.00 (16.00)	25.00 (8.75)
	z=-2.844 p=0.004	z=-0.384 p=0.701
Smoking		
Yes	26.00 (20.00)	26.50 (7.00)
No	21.50 (18.25)	25.00 (8.00)
	z=-1.910	z=-2.090
	p=0.056	p=0.037
Sleep quality before receiving traditional and complementary treatment		
^a Good	14.000 (10.00)	23.000 (7.00)
^b Medium	28.500 (14.00)	26.000 (7.00)
^c Low	31.000 (21.00)	27.000 (8.50)
	$\chi^2=74.664$ p=0.000	$\chi^2=26.583$ p=0.000
	a<b p=0.000 a<c p=0.000	a<b p=0.000 a<c p=0.000

IQR: Interquartile Range.

Women’s Cumhuriyet Subjective Sleep Quality Scale and Sleep Hygiene Index scores were statistically significantly higher compared to men (p<0.05). While Cumhuriyet Subjective Sleep Quality Scale scores did not show a statistically significant difference regarding marital status (p>0.05), unmarried people had statistically significantly higher Sleep Hygiene Index scores (p<0.05). Compared to those with medium and lower income status, people with higher incomes had statistically significantly lower Cumhuriyet Subjective Sleep Quality Scale scores (p<0.05). Shift workers had higher Sleep Hygiene Index scores (p<0.05). Patients who

reported having sleeping problems had higher Cumhuriyet Subjective Sleep Quality Scale and Sleep Hygiene Index scores ($p < 0.05$). People sleeping 4-7 hours a day had statistically significantly higher Cumhuriyet Subjective Sleep Quality Scale scores compared to those sleeping ≥ 7 hours. Finally, the Cumhuriyet Subjective Sleep Quality Scale and Sleep Hygiene Index scores of patients who stated that their sleep quality was good before undergoing traditional and complementary treatment were lower compared to those with medium and poor sleep quality ($p < 0.05$) (Table 3).

It was reported by 42.6% of the patients treated with acupuncture, 37.5% of the hypnosis patients, 40.3% of the cupping patients, 52.4% of the ozone therapy patients, 42.9% of the mesotherapy patients, 47.5% of the hirudotherapy patients, 66.7% of the prolotherapy patients, 75% of the reflexology patients, 100% of the osteopathy patients, 66.7% of the homeopathy patients, and 28.6% of the phytotherapy patients they had much better sleep after undergoing these treatments (Table 4).

Table 4. Sleep Quality of Patients After Undergoing Traditional and Complementary Treatment

Type of treatment	No changes N (%)	Better compared to before N (%)
Acupuncture	148 (57.4)	110 (42.6)
Hypnosis	25 (62.5)	15 (37.5)
Cupping therapy	132 (59.7)	89 (40.3)
Ozone therapy	10 (47.6)	11 (52.4)
Mesotherapy	40 (57.1)	30 (42.9)
Hirudotherapy	32 (52.5)	29 (47.5)
Prolotherapy	1 (33.3)	2 (66.7)
Reflexology	1 (25)	3 (75)
Osteopathy	0 (0)	1 (100)
Homeopathy	1 (33.3)	2 (66.7)
Phytotherapy	5 (71.4)	2 (28.6)

DISCUSSION

Sleep quality affects physical and mental health. Impaired sleep quality can lead to various new health problems, increases in the severity of existing health issues, decreased productivity, and an increased likelihood of accidents. Accordingly, understanding sleep quality and the factors that affect it are crucial in eliminating those adverse outcomes (14).

In a broad sense, it was determined in the present study that the sleep quality and sleep hygiene of the participants were good. Overall, 38.2% of these patients reported that their sleep was better after receiving traditional and complementary treatments compared to the period before treatment. More specifically, 42.6% of those treated with acupuncture, 37.5% treated with hypnosis, 40.3% with cupping, 52.4% with ozone therapy, 42.9% with mesotherapy, 47.5% with hirudotherapy, 66.7% with prolotherapy, 75% with reflexology, 100% with osteopathy, 66.7% with homeopathy, and 28.6% with phytotherapy stated that, compared to before, they had much better sleep after undergoing these treatments.

Similar to our study, other researchers have concluded that acupuncture affects the sleeping process (15-17). Acupuncture was found to improve sleep quality by affecting neurotransmitter levels and regulating the biological clock (16).

It was stated that hypnosis could be used for sleeping problems because it can cause relaxation, increase suggestibility, enable access to preconscious levels of the mind and emotions, and permit cognitive reconstruction (18). In the present study, 37.5% of those who underwent hypnotherapy stated that their sleep was better after treatment. A systematic review

found that 58.3% of relevant studies showed that hypnosis benefited sleep quality, 12.5% reported mixed results, and 29.2% indicated no benefits (6).

In this study, 40.3% of those who underwent cupping therapy stated that their sleep was much better compared to before. It was indicated in another study that cupping therapy applied along with acupuncture was superior for patients with moderate insomnia (7).

We found that 52.4% of the patients who underwent ozone therapy considered their sleep quality to be much better compared to before. It was previously revealed that low doses of ozone therapy improved sleep quality parameters (4).

Among patients who underwent mesotherapy, 42.9% stated that, compared to before, their sleep was much better. Sleep quality among patients who underwent mesotherapy could have improved because most of the people receiving mesotherapy (37.1%) suffered from pain, which the treatment successfully addressed. It was previously shown that as pain decreased, the sleep quality of patients increased (19). Therefore, it is not surprising that sleep was improved among patients whose pain was relieved.

In this study, most patients who underwent hirudotherapy also complained about pain and also reported that their sleep improved. It was suggested in the literature that hirudotherapy can be used against pain, as pain may be alleviated by anaesthetic substances in the saliva of leeches (20). Another study showed that hirudotherapy decreased the severity of joint pain (21). Similarly, in our study, patients slept better after pain relief via hirudotherapy.

In the present study, the percentage of patients presenting to the traditional and complementary medicine centre with insomnia was rather low, but among those patients, 33.3% underwent homeopathy. It was suggested in a randomized controlled study that homeopathy was effective in treating sleeping disorders (22). However, another systematic review showed that homeopathy was not an effective treatment method for insomnia and disorders related to sleep (23). Randomized controlled studies with larger samples are required in this regard.

It was revealed in the present study that as sleep hygiene increased, so did sleep quality. A previous study found that sleep hygiene practices are significant variables that affect sleep quality (24). The concept of sleep hygiene behaviour was first introduced by Peter Hauri (25). Behaviours that promote good sleep are accepted as sleep hygiene. Ensuring regular sleeping and waking hours, keeping bedrooms comfortable and silent, avoiding occasional naps, not performing challenging tasks in the bedroom, and avoiding caffeine, nicotine, and alcohol before bed are some examples of sleep hygiene behaviours (26). It is expected that practicing these behaviours can increase sleep quality.

The present study showed that women had poorer sleep quality and sleep hygiene compared to men. Similar results were previously obtained (27,28). In another study, on the other hand, it was revealed that gender did not affect sleep quality (29). The reason why women had poorer sleep quality and sleep hygiene in our study may be that most of the participants were women (71.7%), the study was conducted with people who had various diseases, and women have more household responsibilities in Turkish society compared to men, such as child care, cooking, and household chores.

Marital status was found not to affect sleep quality in this study. However, compared to married individuals, unmarried individuals had poorer sleep hygiene. Similarly, Deniz Doğan

et al. concluded that marital status did not affect sleep quality (30). In another study, compared to unmarried individuals, married individuals had better sleep quality (31). The differences in our study could have arisen from the fact that research was carried out on individuals with different diseases.

It was revealed in this study that, compared to those with medium and lower income statuses, patients with higher incomes had better sleep quality. Similarly, it was previously determined that individuals with medium income status had poorer sleep quality compared to those with high income status (32). On the other hand, a study of patients with heart failure concluded that income level did not affect sleep quality (33). The difference in our study might have arisen from the fact that all patients included in the study had undergone traditional and complementary treatment at least once in their lifetimes regardless of income status.

Shift work is becoming more and more prevalent in today's world. Shift workers sleep at unusual hours. It was revealed in this study that patients who began work in the morning had better sleep hygiene than shift workers did. In another study, it was suggested that shift work affected life quality and had an adverse impact on sleep schedules; shift workers frequently consumed caffeine as a fatigue management strategy (34). Poorer sleep hygiene among shift workers compared to others might have arisen from the increased consumption of tea and coffee and disturbance of biological rhythms and traditional sleep patterns.

It was determined in this study that patients sleeping 4-7 hours a day had poorer sleep quality compared to those sleeping more than 7 hours. Generally, 7.5-8 hours of nightly sleep is said to be sufficient for adults (35). It was found in another study that sleeping less or more than this standard recommended amount adversely affects sleep quality (36). Our results support those findings.

This study had some limitations. The first limitation was that the information collected on sleep quality and hygiene was based on participants' self-assessments. The second limitation was that the research was conducted in a single centre. Therefore, the results of this study cannot be generalized across wider geographic areas. The third limitation was that data were collected online. The fourth limitation was the study's cross-sectional nature; therefore, we cannot offer objective implications. The fifth limitation was the inability to measure patients' sleep quality and sleep hygiene both before and after they presented to the traditional and complementary medicine centre.

It can be suggested that further studies conducted with patients treated at traditional and complementary medicine centres evaluate the severity of the patients' health problems and identify the relationship between severity and sleep. This would make it possible to identify whether sleep quality improves thanks to the applied treatment or the treatment of already existing diseases.

CONCLUSION

This study has shown that the sleep quality and hygiene of patients presenting to a traditional and complementary medicine centre were both generally good.

The participating patients, who presented to the centre due to various health problems, had improved sleep after receiving traditional and complementary treatments. Specifically, individuals who received acupuncture, hypnotherapy, cupping therapy, ozone therapy, mesotherapy, hirudotherapy, prolotherapy, reflexology, osteopathy, phototherapy, and homeopathy treatments had improved sleep compared to the period before these treatments.

Gender affected both sleep quality and sleep hygiene. While the daily duration of sleep and income status affected sleep quality, marital status and type of work affected sleep hygiene. Finally, it was seen that sleep hygiene increased sleep quality.

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