



SLEEP QUALITY AND ASSOCIATED FACTORS AMONG NON-PHYSICIAN HEALTH PERSONNEL

Cevriye Ozdemir*¹ and Ahmet Ozturk²

¹Dialysis Program, University of Kayseri, Kayseri, Turkey.

²Faculty of Medicine Department of Public Health, University of Erciyes, Kayseri, Turkey.

*Corresponding Author: Cevriye Ozdemir

Dialysis Program, University of Kayseri, Kayseri, Turkey.

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ABSTRACT

One of the basic needs which need to be met in order an individual to continue its existence is sleep, without any doubt. Lack of sleep or deterioration of its quality might result in various physical or emotional ailments in individuals. Healthcare personnel is a group which sometimes might work in shifts or on irregular basis, and therefore has a high probability of deterioration of sleep in the data collection, Pittsburgh Sleep Quality Index (PSQI) and Epworth Sleepiness Scale (ESS) were used. In analyzing the data, chi-square test was used, and $p < 0.05$ values were considered statistically significant. The sample of the study consisted of 933 people. The Pittsburgh Sleep Quality Index point mean of those who have participated in the study was 7.96 ± 3.57 , and the percentage of those who have gotten five points or more, in other words who have poor sleep quality was found to be 72.6%. In individuals with poor sleep quality, it has been established that the situation of daytime sleepiness is more common. The percentage of poor sleep quality of non-physician health personnel is rather high, and it is considered that by trainings intended for the groups which the risks are identified to be higher, and through the arrangements to be made by the managements especially for the individuals who work in shifts or at the units worked for.

KEYWORDS: Health care workers, sleep quality, sleepiness.

INTRODUCTION

Sleep is the temporary, partial and periodic loss of the organism's communication with the environment in a way that is reversible with varying severity and stimulus.^[1-3] Sleep is a concept that has attracted the attention of human beings for centuries, and many researches have been done on it, and according to some, it is called "half-death". Sleep is inseparable with the circadian rhythm.^[2,4] The circadian rhythm forms a part of the biological clock of the human and one of its important tasks is to prepare the person for sleep, which is the resting period at night. Disorders in the circadian (endogenous) rhythm also cause disorders in the individual's sleep pattern. Sleep; It can be affected by various factors such as life style, environmental factors, occupation, social, economic status, general health status.^[2] There may be an increase in the need for sleep in relation to physical work (working in hard work), exercise, illness, pregnancy, stress and increased mental activity. In addition, working at night, in shifts or irregular hours, which is another factor that negatively affects this rhythm, can reduce the quality and duration of sleep.^[5]

Health personnel, especially nurses, are a group that can work in shifts or irregularly from time to time, and therefore, their sleep quality is likely to deteriorate. In a

study conducted on nurses, it was determined that the quality of daytime sleep after the night shift was also quite low.^[6] On the other hand, due to their efforts and interventions that address human health, health personnel need to be constantly alert and attentive during their working hours. However, studies have reported that another problem caused by working in the night shift is drowsiness, and that accidents are common as a result of napping while driving while working in alternating shifts.^[7] In another study, it was determined that the most suitable shift in terms of sleep quality and duration is the day shift, where the employee can arrange the hours to sleep and wake up in the best way, and the night shift is the worst.^[8]

Studies have been conducted on nurses and assistants, shift work system and sleep quality among health workers, but no study on this subject related to other health personnel has been found in the literature.^[4,6,7] In this study, it is aimed to reveal the level of sleep quality of non-physician health personnel and some factors that may affect this situation.

MATERIALS AND METHODS

This study is a cross-sectional study conducted to determine the sleep quality and related factors of non-physician health personnel. Research data were collected

between September 2012 and April 2013. In the study, it was thought to take the entire population (1323) without sampling, but 390 personnel who were on leave, on a report or who did not agree to participate in the study could not be reached during the data collection phase. As a result, the sample group consisted of 933 people (71%). Personal information form (21 questions), Pittsburgh Sleep Quality Index-PSQI and Epworth Sleepiness Scale-ESS were used to collect data. The personal information form consisted of 21 questions revealing the demographic and individual characteristics of individuals that may affect sleep quality. The Pittsburgh Sleep Quality Scale is a scale developed by Buysse et al. in 1989 to evaluate sleep quality.^[9] The total score has a value between 0-21, and a scale score of five or more indicates poor sleep quality. The Epworth sleepiness scale was developed by Dr. It was developed by Murray Johns.^[10] The score that can be obtained from the scale is in the range of 0-24. If the overall score is 10 or higher than 10, it can be said that there is excessive daytime sleepiness. The personal questionnaire, PDCA and ISS were filled in by individuals who agreed to participate in the study, without any time limit, by briefly explaining

the purpose of the study. In the evaluation of the data, variables such as age, gender, marital status, educational status were independent; PUKS and ESS scores were evaluated as dependent variables. The data were evaluated in the SPSS for Windows (Statistical Package for Social Sciences for Windows) 16 package program. Chi-square test or Fisher exact chi-square test was used when examining the status of categorical data in the study according to other categorical features. Means are shown with standard deviation. Significance level was accepted as $p < 0.05$ in all analyzes.

RESULTS AND DISCUSSION

Individuals between the ages of 25-34 cover 61.0% of the research group, and the majority of the group (76.3%) are female participants. 68.1% of the participants are married and the rate of those who have children is 56.5%. Those living with their spouse and/or children also comprise 63.6% of the group. When the educational status of the individuals is examined, it is seen that 65.8% of the employees are undergraduate graduates, while 6.8% of them have graduate or higher education (Table 1).

Table 1: Distribution of some demographic characteristics of individuals.

Demographic characteristics	n	%	
Age	24 years and under	93	10.0
	25-34 years old	569	61.0
	35 years and older	271	29.0
Gender	Female	712	76.3
	Male	221	23.7
Marital status	Married	636	68.1
	Divorced	9	1.0
	Single	288	30.9
Status of having children	Yes	527	56.5
	No	406	43.5
Number of children (n=527)	One child	168	32.0
	Two kids	262	49.5
	Three children and above	97	18.5
Where and with whom does he live?	Alone at home	31	3.3
	At home with friend	31	3.3
	In lodging	92	9.9
	With parents	166	17.8
	With spouse and/or children	593	63.6
	Extended family	20	2.1
Educational status	High school and below	76	8.1
	Associate degree	180	19.3
	Licence	614	65.8
	Graduate and above	63	6.8

More than half (61.5%) of the participants in the study are nurses. About half of the research group has a working time of less than 5 years, and 56.8% of them work in shifts that change day and night. 54.7% of the

participants work 41 hours or more per week, while the remaining participants work 40 hours or less. Although it varies according to the department, those who work 40 hours or less are on maternity leave, radiology, MR, etc.

with high radiation. technicians and technicians working in the departments, etc. form (Table 2).

Table 2: Examination of some professional characteristics of the individuals participating in the research.

Occupational Characteristics		n	%
Occupation	Nurse	574	61.5
	Pharmacist/Dietitian	37	4.0
	Biologist/Chemist	39	4.2
	Health technician/technician*	162	17.4
	Laboratory Staff	121	13.0
Department of Study	Internal partitions	298	31.9
	surgical departments	127	13.6
	Operating Rooms	58	6.2
	Intensive Care	88	9.4
	emergency services	62	4.3
	laboratories	300	34.5
Year of study	5 years and below	430	46.1
	between 6-10 years	269	28.8
	11 years and above	234	25.1
How it works	all day long	358	38.4
	perpetual night	45	4.8
	changing day and night	530	56.8
Weekly working hours	shift system	423	45.3
	40 hours and below	510	54.7

*: EKG, EEG, Anesthesia, Radiology.

As can be seen in Table 3, the habit of sleeping every day or sometimes during the day was found to be higher

in the individuals who are on duty, and this situation was found to be statistically significant.

Table 3: Distribution of watch keeping and daytime sleep habits of individuals participating in the study.

The state of being on guard	Daytime sleeping habits						X ²	P
	Everyday		Sometimes		Never			
	n	%	n	%	n	%		
Yes	49	8.4	363	61.9	174	29.7	72.25	<0.001
No	4	1.2	149	42.9	194	55.9		
Total	53	5.7	512	54.9	368	39.4		

The rate of those over the age of 35 with poor sleep quality decreases to 63.1%, and the difference between the groups was also statistically significant. While the rate of poor sleep quality was determined as 76.1% in women, this rate was found as 61.1% in men. This difference between the genders was also found to be statistically significant. While the rate of those with poor sleep quality in married individuals decreased to 69.8%, poor sleep quality was found to be statistically significantly higher in widows and singles. While the rate of those with poor sleep quality decreased to 69.6% in individuals with children, the poor sleep quality was found to be statistically significantly higher in individuals without children ($p < 0.05$).

While the rate of poor sleep quality, which is 72.6% in the research group, is below this rate in all other occupational groups, it increases to 82.4% in nurses. This difference was also statistically significant ($p < 0.05$).

While the rate of poor sleep quality, which was 72.6% in the research group, was lower in those working in the

operating room and laboratory; It was found to be higher in those working in emergency services, internal and surgical departments, and intensive care units, and this difference was statistically significant ($p < 0.05$).

While the rate of poor sleep quality, which is 72.6% in the research group, decreases to 69.2% in those who work for 6 years or more, it increases to 76.5% in those who work for 5 years or less. This difference was also statistically significant ($p < 0.05$).

While the rate of those who have poor sleep quality decreases to 55.9% in those who work continuously during the day, it increases to 84.2% in those who work in shifts. This situation was also statistically significant ($p < 0.05$).

While the rate of poor sleep quality was determined as 67.8% for those who work 40 hours or less per week, this rate rises to 76.5% for those who work 41 hours or more per week. This difference was also statistically significant ($p < 0.05$).

The rate of those who had poor sleep quality in the last month was found to be higher than those who did not. This difference was also found to be statistically significant ($p < 0.05$).

As seen in Table 4, it was determined that 81.1% of the participants who had the habit of sleeping during the day

every day had poor sleep quality. The same rate was 65.8% in those who never had the habit of sleeping during the day, and this difference was also statistically significant. It has been determined that the sleep quality of those who exercise regularly is statistically significantly better.

Table 4: Sleep quality and distribution according to various characteristics of individuals participating in the study.

Specifications		Sleep quality				X ²	P
		Good		Bad			
		n	%	n	%		
Age	24 years and under	22	23.7	71	76.3	17.17	<0.001
	25-34 years old	134	23.6	435	76.4		
	35 years and older	100	36.9	171	63.1		
Gender	Woman	170	23.9	542	76.1	19.15	<0.001
	Boy	86	38.9	135	61.1		
Marital status	The married	192	30.2	444	69.8	7.59	0.02
	Widow	2	22.2	7	77.8		
	Single	62	21.5	226	78.5		
Having children	Yes	160	30.4	368	69.6	5.19	0.023
	No	96	23.6	310	76.4		
Job	Nurse	101	17.6	473	82.4	87.45	<0.001
	Dietitian/Pharmacist	17	45.9	20	54.1		
	Biologist/Chemist	11	28.2	28	71.8		
	Health Technician/ technician	61	37.7	101	62.3		
	lab staff	66	54.5	55	45.5		
Department of Study	Internal Sections	53	17.8	245	82.2	54.84	<0.001
	surgical departments	24	18.9	103	81.1		
	Operating Rooms	27	46.6	31	53.4		
	intensive care	19	21.6	69	78.4		
	emergency services	7	17.5	33	82.5		
	lab	126	39.1	196	60.9		
Year of study	5 years and below	101	23.5	329	76.5	6.25	0.012
	6 years and above	155	30.8	348	69.2		
Way of Working	all day long	158	44.1	200	55.9	86.18	<0.001
	perpetual night	14	31.1	31	68.9		
	Shift system that changes day and night	84	15.8	446	84.2		
weekly working hours	40 hours and below	136	32.2	287	67.8	8.63	0.003
	41 hours or more	120	23.5	390	76.5		
Night watch status in the last month	Yes	102	17.4	484	82.6	79.64	<0.001
	No	154	44.4	193	55.6		
Regular exercise status	Doing	40	41.7	56	58.3	10.88	0.001
	Doesn't	216	25.8	621	74.2		
Daytime sleeping habits	Every day	10	18.9	43	81.1	14.62	0.001
	Sometimes	120	23.4	392	76.6		
	Never	126	34.2	242	65.8		

In Table 5, the relationship between poor sleep quality and daytime sleepiness of the individuals participating in the study was found to be statistically significant.

Table 5: Distribution of daytime sleepiness according to sleep quality of the participants.

Sleep Quality	Daytime sleepiness				X ²	P
	Yes	%	No	%		
Good	77	30.1	179	69.9	109.0	<0.001
Bad	460	67.9	217	32.1		
TOTAL	537	57.6	396	42.4		

Most of the research group (61.0%) is between the ages of 25-34 and 76.3% of them are female participants. When their marital status was evaluated, it was determined that 68.1% of them were married, and 85.1% were graduated from higher education (Table 1). 49.7% of Turkey's population is male, 50.3% is female, and the median age is 33.1.^[11] Another problem with night shifts is the habit of sleeping during the day. In our study, it was determined that the habit of sleeping during the day was 70.3%. In some studies, it was determined that nurses who work at night and keep irregular shifts tend to fall asleep more often than nurses who work during the day and regular hours.^[12,13] Only 10.3% of the participants reported that they could exercise regularly. Turkey nutrition and health survey (TUBSA) found the rate of those who exercise regularly once or twice a week to be 9.7%. Although health personnel are expected to exercise more than the general population; shift work, shift work, etc. It can be thought that they do not have time to exercise regularly for reasons.

In a study conducted with nurses, it was found that female nurses had poor quality sleep.^[14,15] The PUKI score obtained in our study was found to be higher than in other studies. With advancing age, it is expected to learn to cope with sleep problems and fatigue. When the sleep quality of the participants was examined according to their age, it was seen that the sleep quality was significantly worse ($p<0.05$) in those under 35 years of age, but the sleep quality improved in other age groups (Table 4). The reduction of seizures that require long-hour shifts, especially in nurses and other health personnel, at older ages (Table 4) and the fact that they moved to areas where they work only during the daytime, such as polyclinics, may have also been effective in this result. Our study result is similar to another study.^[16] Studies show that women's sleep and quality are worse due to many factors such as changes in hormone levels, stress, illness, lifestyle and sleep environment.^[17] In this study, the rate of poor sleep quality in women was found to be statistically significantly higher than in men ($p<0.001$; Table 4). In a similar study, women's sleep quality was found to be worse than men.^[14]

When sleep quality is examined according to marital status; it was found that the sleep quality of married participants was significantly better than those of widows and singles ($p<0.05$; Table 4). This may be due to the fact that single and widowed people are more on duty than married people and work in more intensive departments.

Especially for individuals who have small children, feeding, sleeping or illness etc. It can be thought that their sleep may be interrupted due to their condition and their sleep quality may be worse than those who do not have children. However, in our study, the sleep quality of those who had children was found to be better ($p<0.05$; Table 4).

Nurses constitute one of the few professional groups who work night shifts and varying working hours throughout their working lives. Working the night shift means sleeping during the day, which can affect sleep both qualitatively and quantitatively. As a matter of fact, when the sleep quality of the participants according to their occupations is examined; poor sleep quality in nurses was found to be statistically significantly higher than in other professions ($p<0.05$; Table 4). In a study, in parallel with our study, it was found that nurses had worse sleep quality compared to other professions.^[15] The poor sleep quality of nurses can be attributed to the different working conditions, working areas (intensive care, emergency room), working hours and shift systems from other employees. According to the clinics studied in the study, sleep quality was collected in 6 main groups. When the sleep quality of the group was examined according to the clinics; While the rate of poor sleep quality was low in those working in the operating room; It was found to be higher in those working in emergency departments, internal and surgical departments. This difference is also statistically significant ($p<0.05$; Table 4). In a study, the sleep quality of individuals working in night shifts and in clinics with intensive working conditions was found to be worse.^[14] In addition, in the same study, the sleep quality of the nurses working in the operating room was found to be good, and this was based on better control of environmental factors, limited entrance and exit to the environment, and more regular working hours. In another study conducted on healthcare personnel, similar to our finding, working in the intensive care unit and emergency room affected sleep quality badly.^[18] In our study, it can be attributed to the poor sleep quality of the individuals working in the intensive care units, emergency services, surgery and internal medicine departments, the more stressful working environment, the high patient rotation, and the fatigue and worsening working conditions.

Considering the sleep quality of the participants according to the working year; Sleep quality was found to be better in those with a working year of more than 5 years, with a statistically significant difference compared to those with fewer working years ($p<0.05$; Table 4). In a way that supports our study, it was found that the sleep

problems of nurses working between 1 and 5 years were more common compared to the following years.^[14,19] This may be attributed to the fact that employees who are newer in their professional life are generally employed in night shifts and in busy clinics, and that their coping mechanisms are insufficient.^[19]

Although the quantity (duration) and quality of sleep is individual, the sleep duration of shift workers varies according to the shift they are in. Persons working in shifts cannot sleep adequately and in a quality manner during the daytime, and they have problems falling asleep.^[20] The most suitable shift in terms of sleep quality and duration is the day shift, where the employee can best arrange the hours to sleep and wake up, and the worst is alternate shifts and night shifts.^[8] When the sleep quality of the participants was examined according to their working styles, it was found that the sleep quality of those who worked continuously during the day was found to be better with a statistically significant difference, while the sleep quality of those who worked in day and night shifts was found to be worse ($p < 0.05$; Table 5). In support of our study, in a study conducted, it was determined that working in alternating shifts negatively affected sleep quality due to sleep problems, sleep interruptions and sleep changes that increased with the change of nurses' circadian rhythms, and nurses were dissatisfied with working in alternate shifts.^[18] In the study conducted by Edell-Gustafsson (2002), it was found that sleep problems are very common in healthcare workers working in alternate shifts.^[19] In studies conducted in different occupational groups, it is stated that the deterioration in sleep quality is most common in those who work in shifts.^[5] In our research, individuals who work continuously during the day or at night have better sleep quality; It can be attributed to the fact that they have more opportunities to rest and fulfill their responsibilities after the end of the working hours, and that they sleep more regularly than those who work in the shift system that changes day and night.

Considering the sleep quality according to the weekly working hours, it was found that the sleep quality of the staff working 41 hours and more was lower than those working 40 hours and less. A statistically significant relationship was found between the weekly working hours of the participants and their sleep quality ($p < 0.05$; Table 4). In a study, the sleep quality of nurses working 40 hours or more was found to be lower.^[14] This may be due to the fact that individuals do not have a rest after work and, most importantly, a certain sleep pattern due to overwork time.

Among the participants, the sleep quality of those who kept the night shift was worse than those who did not, and there was a statistically significant difference ($p < 0.001$; Table 4). It is known that night shift workers have more irregular sleep than those who work continuously during the day, and therefore their sleep quality is impaired.^[18] The fact that more than two-thirds

of the individuals on duty in our study had the habit of napping during the daytime is also an indicator of this irregular sleep.

In our study, it was determined that the sleep quality of the participants who had the habit of sleeping every day or sometimes during the day was worse at a higher rate than the participants who did not have the habit of sleeping during the day. This difference was also statistically significant ($p < 0.001$, Table 4). This situation suggests that the quality of night sleep may deteriorate due to daytime sleepiness, and it may also be an indication that they need to sleep during the day because of poor night sleep quality.

CONCLUSION

The Pittsburgh Sleep Quality Scale mean score of the participants was 7.96 ± 3.57 , and the rate of those who scored 5 or higher, that is, those with poor sleep quality, was found to be 72.6%. It was found that the sleep quality was significantly worse in the specified groups: those aged 35 and younger, women, widowed and single, nurses, internal and surgical departments, those working in the emergency and intensive care units, those with 5 years or less working years, changing day and night those who work in shifts, those who work 41 hours or more per week, those who have been on night shift in the last month, those who do not have regular exercise habits, those who have the habit of sleeping every day and sometimes during the day, and those who have daytime sleepiness. Since the number of shifts assigned to new employees, widows and singles more than other employees causes sleep problems in these employees, it can be ensured that the shift lists are made equally and fairly by the responsible persons. In-service training programs can be organized in order to improve the working conditions and to increase the sensitivity of the people responsible for arranging work programs in order to increase the sleep quality of intensive care units, internal/surgical services and emergency services. When it is determined that the sleep-related features (quality, daytime sleepiness, etc.) of the personnel working in shifts are found to be worse than normal, they can be taken to the day shift at certain periods in a way that can bring their sleep times back to normal.

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