

Sleep Quality of Multiple Sclerosis Patients in Qom, Iran, in 2018

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Background & Aims of the Study: Sleep disorders and poor sleep quality can lead to daytime sleepiness, fatigue, and depression as well as physical diseases. Such disorders are prevalent among multiple sclerosis (MS) patients; therefore, the present study aimed to determine the quality of sleep in MS patients in Qom, Iran, in 2018.

Materials and Methods: The present descriptive-analytical study was performed on 272 MS patients who were members of the MS Society of Qom, Iran. The samples were selected based on the inclusion and exclusion criteria using simple random sampling technique. The data were collected using a demographic form and Pittsburgh Sleep Quality Index. Finally, the collected data were analyzed in SPSS software (version 21) using descriptive statistics and analytical statistical tests. A p-value of less than 0.05 was considered statistically significant.

Results: Based on the findings, the mean score of sleep quality was 11.11 ± 4.35 . A total of 12.86% and 48.2% of the subjects had severe and moderate sleep disorders, respectively. However, 5.14% of them were not conflicted with any type of sleep disorder. Moreover, the sleep quality score had a significant relationship with age, occupation, marital status, and disease duration ($P < 0.05$). However, the results of independent t-test showed no significant relationship between the mean sleep quality score and gender ($P = 0.578$).

Conclusion: A significant percentage of patients suffered from some kind of sleep disorder. Therefore, it is recommended to include regular sleep hygiene and sleep quality improvement training in the routine care of such patients.

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Background

Multiple sclerosis (MS) is a relatively common chronic neurological disorder in which the nerve fibers demyelinate in various nerve regions of the central nervous system (1). The cause of the disease is unclear, but it seems that

the immune mechanisms are activated against progressed myelin antigen of the disease and may lead to weakness, inability, and dependence on others for daily activities. This disease is considered one of the reasons for the inability of the young workforce. Accordingly, MS is a costly disease due to its incidence in the working-age and chronicity. Based on

previous studies, women are three times more likely to get diagnosed with MS, compared to men (2).

Based on the statistics, there are 15-30 cases of MS per 10,000 people. According to the experts in Iran MS Society, 5,000 people are added to this population each year (3). Furthermore, the prevalence of MS varies between women and men since 72% of MS patients are young women and girls while the rest are young active men (4). According to the statistics provided by the World Health Organization, a total of 2.5 million people are afflicted with this disease worldwide, 500,000 and 400,000 of whom are in Europe and North America, respectively (5). The disease is so prevalent that it is known as the most common disease of the century, and is the third leading cause of disability in the United States (6).

According to previous research, genetics, distance from the equator, and socioeconomic status are among the factors contributing to the prevalence of the disease (7). A study revealed that 9.17%, 8.38%, 2.11%, and 9.14% of MS patients had severe physical problems, social problems, depression, and anxiety (8). Another common problem in MS patients which causes severe impairment is poor sleep quality and sleep disorders (9).

Sleep disorders include difficulty falling asleep (sleep-onset latency of more than 30 min) and nocturnal awakening (more than once) (10). Such disorders can cause problems, including drowsiness, lethargy during the day, stress, anxiety, headache, and disturbance in daily routine (11). More than 50% of MS patients suffer from sleep disorders; therefore, it can be said that they experience sleep-related issues more than other chronic disease patients and other people in general. Furthermore, previous studies have revealed that female MS patients are more likely to have such problems, compared to men (12).

According to recent studies, sleep deprivation, inadequate sleep, and sleep

disorders can potentially decrease the quality of life and increase the risk of death. Sleep disorders cause pathological, mental and neurological problems, as well as fatigue. Moreover, MS patients with sleep disorders suffer from concentration and learning disorders, and mood swings (14). Given the increasing prevalence of MS, its subsequent high risk of mortality, high costs, and many other problems, special attention should be paid to these patients and efforts should be made to reduce their problems. Based on the author's knowledge and the review of related literature, no similar study had been conducted in Qom province, Iran. Therefore, the present study was conducted to determine the quality of sleep in MS patients in Qom, in 2018.

Materials & Methods

The present cross-sectional study was performed on 272 MS patients who were members of MS society, in Qom. Samples were selected through random sampling method from a list of files in the MS society Center. Subsequently, the samples were called on their phones and asked to participate in the study. The inclusion criteria were willingness to participate and age range of 20-60 years. On the other hand, exclusion criteria were being within the first 2 years of the disease, in the advanced stages of the disease, or non-Iranian. Ethical considerations were respected in the current study. In this regard, the purpose of the study was explained for the participants, the information was kept confidential, and the subjects were informed of the dissemination of a general report of the research results. Moreover, informed consent was obtained from the research participants.

A demographic characteristics form and Pittsburgh Sleep Quality Index (PSQI) were used for data collection. PSQI measures 7 aspects of sleep through 19 items, namely

subjective sleep quality, prolonged sleep onset latency, sleep duration, sleep efficiency, sleep disorders, usage of hypnotic medications, and disturbance in daily routine. Each aspect was scored based on a scale from zero (no disorders) to three (severe disorders). To calculate the overall sleep quality score, the scores for each aspect were added to each other and a total score was achieved (0-21). A high score in each domain or the total score indicates poor sleep quality (15, 16). The validity and reliability of the abovementioned questionnaire have been confirmed in previous studies. The validity of the questionnaire was confirmed by Hosseiniabadi *et al.* ($r=0.88$) and Soleimani *et al.* ($r=0.84$) through test-retest (17, 18). Moreover, the reliability of the questionnaire was verified through content and face validity tests by six faculty members of Faculty of Nursing and Midwifery, Azad University, Isfahan (Khorasgan) Branch, Iran (19).

The data were collected by a trained interviewer who was supposed to complete the questionnaires after interviewing the patients. Subsequently, the collected data were analyzed in SPSS software (version 21) using descriptive statistics and analytical tests, including independent t-test, ANOVA, and a post hoc test (i.e., Duncan). A p-value of less than 0.05 was considered statistically significant.

Results

Mean age of the participants was 37.95 ± 9.14 years. Furthermore, the mean of disease duration in MS patients was 6.18 ± 5.08 years. The rest of the demographic characteristics of the study subjects are presented in Table 1.

Mean score of sleep quality in the studied samples was 11.11 ± 4.35 . A total of 33.8%, 48.2%, and 12.86% had mild, moderate, and severe sleep disorders, whereas 14.5% had no sleep disorders. Table 2 shows the frequency and percentage of sleep quality status and its subscales in the subjects of the study.

According to the results of the independent t-test, there was no significant relationship between gender and sleep quality aspects ($P < 0.05$). However, the independent t-test results showed a significant association between the mean sleep quality score (total score) and marital status ($P = 0.005$). Moreover, there was a significant relationship between sleep disorders aspect and marital status ($P < 0.001$).

Results of data analysis using ANOVA showed that the mean score of sleep quality (total score) had a statistically significant relationship with the occupations of the subjects ($P = 0.041$). Accordingly, Duncan's test showed

Table 1) Frequency distribution of demographic characteristics of the subjects

Demographic characteristics		Number	Percentage
Gender	Male	98	36
	Female	174	64
Marital status	Single	80	29.4
	Married	192	70.6
Occupation	Self-employed	144	52.9
	Governmental	81	29.8
	Housewife	45	16.5
	Unemployed	2	0.7
Financial status	1 < million Tomans	76	27.9
	1-2 million Tomans	76	27.9
	2-3 million Tomans	65	23.9
	<3 million Tomans	37	13.6
	No income	18	6.6

Table 2) Frequency distribution of sleep quality aspects in the subjects

Sleep quality aspects	No sleep disorder	Mild sleep disorder	Moderate sleep disorder	Severe sleep disorder
Subjective sleep quality	8.5% (23)	36.8% (100)	35.3% (96)	19.5% (53)
Prolonged sleep onset latency	15.1% (41)	30.1% (82)	36.4% (99)	18.4% (50)
Sleep duration	24.3% (66)	25.7% (82)	24.6% (67)	25.4% (69)
Sleep efficiency	0	0	0	100%
Sleep disorders	1.5% (4)	50.4% (137)	39.7% (108)	8.5% (23)
Usage of hypnotic medications	35.7% (97)	26.56% (72)	23.2% (63)	14.7% (40)
Disturbance in daily routine	17.3% (47)	37.5% (102)	31.6% (86)	13.6% (37)
Total sleep quality	5.14%(14)	33.8%(92)	48.2(131)	12.86%(35)

Table 3) Correlation of sleep quality aspects with the age and disease duration

Demographic characteristics		Subjective sleep quality	Prolonged sleep onset latency	Sleep duration	Sleep efficiency	Sleep disorders	Consumption of hypnotic medications	Disturbance in daily routine	Sleep quality (total score)
Age	r	0.286	0.209	0.250	0.291	0.379	0.369	0.119	0.409
	P	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.050	<0.001
Disease duration	r	0.299	0.245	0.194	0.148	0.288	0.381	0.045	0.367
	P	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.456	<0.001

that the mean score of sleep quality of housewives was significantly lower than that of the other groups, while the sleep quality score of the unemployed subjects was significantly higher than that of the other groups. Furthermore, the ANOVA test showed no significant relationship between the mean score of sleep quality aspects and income ($P > 0.05$).

The sleep quality score had a significant correlation with age ($r=0.409$, $P<0.001$) and disease duration ($r=0.367$, $P<0.001$). Table 3 shows the correlation of sleep quality aspects with age and disease duration of participants.

Discussion

The results of the present study, which aimed to determine the sleep quality of MS patients in Qom during 2018, revealed that about 95% of the subjects had moderate to severe sleep disorders. This finding was in line with those of previous studies which showed that more than 50% of MS patients suffered from poor sleep quality. Similarly, in a study performed by Sahraian *et al.*, 87.5% of MS patients had poor sleep quality (20). Moreover, in another study conducted by Kotterba *et al.*, sleep disorder was observed in 55.47% of MS

patients (21). Veauthier *et al.* in their study also reported that 96% of MS patients suffering from fatigue, had sleep disorders as well (22). In general, poor sleep quality is a common issue among MS patients (23). According to previous research, sleep disorders and poor sleep quality are more prevalent in MS patients, compared to the public and patients with other chronic diseases (12). The high prevalence of such issues in these patients can be due to restless legs syndrome, pain, waking up for urination, and chronic fatigue (9, 24).

According to the results, there was a significant relationship between sleep quality and marital status of MS patients so that single people had a better sleep quality. Similarly, other previous studies have revealed that marital status had a significant association with sleep quality and that single people had a better sleep quality (25) which could be due to the fact that married people are more occupied with thoughts about various difficulties. It can be said that married MS patients are more concerned due to their responsibilities toward their children and other family members, the anxiety associated with their illness, and fear of the future, which finally results in poor sleep quality. However,

some studies revealed that the sleep quality of married people is better (26), which may be due to differences in the statistical population of the study.

Based on the findings, there is a significant relationship between the occupation of patients and their sleep quality. Therefore, the quality of sleep in housewives was better than that in people with other occupations. Moreover, the present study revealed that unemployed people had poor sleep quality. This is in line with the results of other studies conducted by Arasteh *et al.*, Zargarian *et al.*, Adams *et al.*, and Friedman *et al.* which have shown that people with a better socioeconomic status have better sleep quality (25) (27-29). Given the economic burden of MS, it is important to have a job that provides the patients with enough money. Moreover, the interactions between coworkers can be effective, regarding the provision of social support and mental peace which can affect their sleep quality (26).

In addition, a significant relationship was observed between disease duration and sleep quality which is consistent with the findings of a study performed by Vitkova *et al.* (30). Moreover, based on the results, the disease duration has a significant association with poor sleep quality. Furthermore, it was revealed that the progressive disease complications, decreased quality of life, and increasing age of the patient are effective factors resulting in the decrease of sleep quality (9, 31, 32). The results showed that there is a negatively significant relationship between the age of patients and their sleep quality which is in line with the findings of studies conducted by Tabrizi *et al.* (33) and Motaharnejad *et al.* (34) which revealed that sleep quality decreases with age (26). Furthermore, findings showed that there was no significant relationship between gender and sleep quality which is in line with that of a study performed by Merlino *et al.* (35). However, it is inconsistent with the results of the studies

conducted by Vitkova *et al.* (30), and Leonavicius *et al.* (32) which could be due to a difference in the study populations.

In the present study, the highest prevalence of poor sleep quality was related to the aspects of sleep efficiency and sleep duration. A total of 100% of patients had very poor sleep efficiency and about 26% of them had severe sleep problems. Depression, fatigue, pain, nocturnal awakenings, daytime sleepiness, spasms, and restless legs syndrome are major causes of sleep issues in MS patients (21, 32, 36, 37).

One of the limitations was that the subjects were selected from the MS Society in Qom; consequently, the results cannot be generalized to all of the MS patients. The present study did not investigate the causes of poor sleep quality; therefore, future studies are recommended to investigate the causes and predictors of effective factors on sleep quality in MS patients. Moreover, it is suggested to conduct interventional studies in order to improve the sleep quality of these patients. Results of such studies can be used to evaluate the degree of poor sleep quality in MS patients. Moreover, the decision-makers can utilize the findings to develop programs in order to improve the patients' sleep quality, thereby enhancing their quality of life.

Conclusion

The results showed that poor sleep quality is a common problem in MS patients. Moreover, since the symptoms of this disease affect sleep quality, it is necessary to provide them with interventions. These interventions should include special training to improve symptoms, sleep hygiene, and sleep quality. Therefore, it is recommended to include regular sleep hygiene and sleep quality improvement training along with the routine care of such patients.

Footnotes

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Conflict of Interest

The authors declare no conflict of interest in this article.

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