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Original Article

Sleep Quality and Its Related Factors Among Older Adults in Malayer City: A Cross-sectional Study

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Abstract

Introduction: With age, major changes in sleep pattern and structure occur that causes sleep disturbances and frequent complaints resulting from it. The aim of this study was to determine sleep quality and its related factors among the older adults of Malayer city, west of Iran.

Methods: This descriptive and analytical study was conducted on 298 elderly people in Malayer city. The participants were selected by multi-stage random sampling from the elderly referring to comprehensive health centers in Malayer city. The data collection tool included demographic characteristics and the Pittsburgh Sleep Quality Index (PSQI). Data were analyzed in SPSS version 18 using independent t-tests and one-way analysis of variance (ANOVA).

Results: The mean and standard deviation of the age of the participants was 68.3 ± 6.7 years. According to the results, 25.5% of the elderly did not have a desirable sleep quality and were suspicious of sleep disorders. Also, there is a statistically significant association between age, number of children and having an underlying disease with sleep quality ($P<0.05$).

Conclusion: The findings of this study showed that the sleep quality of a significant part of the older adults is poor, so it seems necessary to emphasize the importance of performing sleep hygiene behaviors.

Keywords: Aging, Sleep wake disorders, Sleep quality, Cross-sectional studies, Iran

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Introduction

The increase in the elderly population due to the decrease in the number of births, the improvement of the health status and the increase in life expectancy has increased the need to pay attention to the problems of this group (1). According to the statistics provided by the World Health Organization (WHO), by 2030, one out of every six people in the world will be 60 years or older (2). It is expected that by 2050, the population of people aged 60 and over in the world will double to 2.1 billion people (2). In Iran, according to the statistics of 2015, the elderly constitute 28.9% of the Iranian population (3). It is predicted that in 2041, about 20% of the country's total population will be people over 60 years old (4). This fact emphasizes the need to pay more attention to the increasing elderly population.

One of the problems affecting the quality of life of the elderly is sleep (5). Aging is associated with a decrease in the quality and quantity of sleep (6). In elderly people, the need for sleep does not change with age, but there are changes in the structure and quality of sleep and the circadian rhythm (7). These changes lead to sleep disorders and frequent complaints (7,8). Sleep is a dynamic and organized biological process known to maintain health that supports vital functions, so maintaining healthy sleep habits is associated with successful aging (9). Evidence shows that more than 57% of the elderly report sleep disorders, and only 12% of them do not complain of sleep problems (10). Insomnia, sleep rhythm disorder, excessive daytime sleepiness, sleep apnea, and restless leg syndrome are the most common sleep disorders in the elderly (11).

According to the studies of Cotroneo et al, sleep with unfavorable quality is the third problem of old age after headaches and digestive disorders (12). One of the most common sleep disorders in older adults is nighttime awakening, difficulty falling asleep, and waking up early (13). For example, in the study by dos Santos et al in

Brazil, the most common sleep complaints in the elderly were early awakening, difficulty initiating and maintaining sleep, use of medication to fall asleep, and daytime napping (14). It is estimated that between 30%-45% of the world's population suffers from insomnia (15). The prevalence of sleep disorders in the general population is between 15%-42% (16). Different statistics are available on sleep disorders in the elderly in different regions of the world. According to Yang et al, the prevalence of insomnia in the elderly is 10%-40% in Western countries and more than 25% in Taiwan (17). Lindstrom et al (18) In Sweden, sleep problems in the elderly were reported by 70%, and Nobahar and Vafaaee (19) and Papi et al (8) reported it by 67% and 86%, respectively.

Sleep and rest have a restorative and protective role and it contributes to the restoration of physical and emotional strength. Comfortable and light sleep increases a person's adaptability and concentration on daily activities (20). Also, good sleep is an important factor in the functioning of various fields that affect the quality of life of the elderly (21). In addition, studies have shown that quality sleep increases life expectancy (22). On the other hand, poor sleep quality leads to depression, increased risk of falls, poor memory, impaired concentration, agitation, decreased quality of life, fatigue, cognitive impairment, impaired health status, loss of functional capacity and individual independence, and increased risk of disease. mental problems, disturbances in emotions and communication with others, fatigue, tension and discomfort, and mortality in the elderly (14,23). Therefore, paying attention to the quality of sleep is important for two reasons. First, complaints related to sleep are common, and second, poor quality sleep is an indicator of many diseases. There are many reports that indicate the high prevalence of sleep problems in the elderly. However, few studies have been conducted regarding sleep quality and factors related to it in the elderly and in the country. However, few studies have been conducted regarding sleep quality and factors related to it in the elderly and in the country. Therefore, this research was conducted with the aim of investigating the quality of sleep and its related factors in the elderly of Malayer city.

Materials and Methods

This descriptive-analytic study was conducted among 298 elderly people referred to comprehensive health centers in Malayer city in 2022. The sampling method was a multistage random sampling method. For this purpose, 12 comprehensive health care centers were selected randomly from the comprehensive health centers of Malayer as a cluster. Afterwards, they were referred to comprehensive health centers and from the list of older adults in selected centers, subjects were randomly selected and entered into the study. Inclusion criteria was age above 60 years, communication ability, and willingness to participate in the study. Exclusion criteria included incomplete questionnaires.

The data collection tool included the demographic characteristics of the elderly with 9 questions and the Pittsburgh Sleep Quality Index (PSQI), which was completed by the participants by self-reporting method. The PSQI has 9 items, but since question 5 contains 10 sub-items, the whole questionnaire has 18 items, which are scored on a 4-point Likert scale from 0 to 3. This questionnaire has 7 subscales, which are: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disorders, disturbances, use of sleeping medication and daytime dysfunction. In scoring the sleep quality questionnaire, each component is scored with a minimum score of zero (no problem) and a maximum score of 3 (very serious problem). At the end, the scores of each component are added together and become a total score of 0 to 21. A high score in each component or in the overall score indicates inadequate sleep quality, and an overall score of 5 or more means inadequate sleep quality. The validity and reliability of the questionnaire has been examined and confirmed in previous studies (24). In the present study, the reliability of the questionnaire was evaluated using the internal consistency method among 30 elderly people in Malayer city, and the internal correlation coefficient (Cronbach's alpha) of the questions of the sleep quality questionnaire was estimated at 0.80.

The collected information was entered into SPSS software version 18 and analyzed using independent t-tests and one-way analysis of variance (ANOVA) at a significance level of less than 0.05.

Results

The response rate to the questions among the participants was 92%. The age range of the elderly participants in the study was 60 to 95 years with an average age of 68.3 ± 6.7 years. 61.7% of the participants were women, 39.9% were illiterate and 27.9% had primary educational qualifications. The overall quality of sleep status of the elderly is presented in Table 1. According to the mean score, sleep adequacy and morning performance disorder with scores of 0.18 and 0.31 had the lowest score and the most desirable status and sleep disorders and delayed sleep with scores of 1.17 and 1.13 respectively had the highest score and the most unfavorable quality of sleep among the elderly.

Table 2 shows the overall quality of sleep in the elderly.

Table 1. Mean, Standard Deviation and Range of Obtainable Scores of Petersburg Sleep Quality Questionnaire Dimensions

Sleep Quality Dimensions	Mean	Standard Deviation	Range
Subjective sleep quality	0.68	0.73	0-3
Sleep latency	1.13	0.97	0-3
Sleep duration	0.37	0.61	0-3
Sleep efficiency	0.18	0.47	0-3
Sleep disturbances	1.17	0.61	0-3
Sleep medication use	0.36	0.77	0-3
Daytime dysfunction	0.31	0.62	0-3
Total score	4.21	3.21	0-21

According to the cut-off point of sleep quality questionnaire in the score of 5, 25.5% of the elderly had poor quality of sleep and were suspicious of sleep disorders.

The association between demographic variables and sleep quality is presented in Table 3. According to the results, the results of one-way ANOVA showed that there was a significant association between age and number of children with sleep quality ($P<0.05$). The results of Tukey's post hoc test also showed that the quality score among 60–70-years old people was significantly higher than that of the 71-80 years old ($P<0.001$), which indicates an unfavorable quality of sleep among 60 to 70 years old. The results of Tukey's post hoc test also showed that sleep quality scores among elderly with 1 or 2 children were significantly higher than those with 3 to 5 children or 6 children and more, indicating poor sleep quality among elderly with lower number of children compared to other elderly ($P<0.05$). Also, independent t-test results showed that there was a significant association between having underlying disease and sleep quality, so that the mean score of sleep quality was higher among elderly and underlying disease, which indicates the poor quality of sleep among this group compared to others ($P<0.05$).

Discussion

Considering the importance and role of sleep quality in mental health and consequently the impact it has on physical health; this study was conducted with the aim of determining the quality of sleep and its related factors in the elderly of Malayer city. The results of the study indicated that one-third of the elderly had unfavorable sleep quality and about two-thirds of them had favorable sleep quality. In line with this finding of the study, Yang showed in a review study that the prevalence of sleep disorders in the elderly is 10%-40% in Western countries and 25% in Taiwan (17). In contrast, Lindstrom's study in Sweden showed that 70% of the elderly suffer from sleep problems (18). Khalili et al in Kashan also showed that 56% of the elderly had unfavorable sleep quality (25). Also, more than 90% of the elderly in Rezaei and Shooshtarizadeh's study had poor sleep quality (26). In the study of Nobahar and Vafaaee, the prevalence of sleep disorders in the elderly was reported to be 67% (19). Other studies showed that the sleep quality of the elderly is poor and low (27). In their review, Irwina et al showed that 35-75% of the elderly have sleep disorders (28). Black et al also stated in his study that more than 50% of the elderly had poor sleep quality (29). Wu et al reported the prevalence of sleep disorder among the elderly as 50% and Luo reported this rate as 41.5% (30,31). Therefore, the results of the aforementioned studies were higher than the results of the present studies in terms of the numerical amount of sleep disorders. The difference in these results can probably be due to the diversity in the research methodology, the use of different tools, the research population, the research environment, the difference in the average age and the number of sample sizes under investigation, and the time of conducting the studies. But the noteworthy point is that in all these studies, the sleep quality of the elderly has been reported to be poor.

Table 2. Frequency Distribution of the Overall State of Sleep Quality of the Participants in the Study

Sleep Quality Status	Number	Percent
desirable sleep quality (score less than 5)	222	74.5
Suspected sleep disorder	76	25.5
Total	298	100

Table 3. Association Between Sleep Quality and Demographic Characteristics of Participants

Variables	Mean	Standard Deviation	*P* Value
Age (y)			<0.001
60–70	4.78	3.4	
71–80	2.97	2.9	
>80	3.38	2.5	
Gender			0.142
Male	3.87	2.9	
Female	4.43	3.1	
Marital status			0.606
Single	4.06	3.1	
Marriage	4.27	3.2	
Degree			0.083
Illiterate	3.92	2.7	
Under diploma	4.08	3.2	
Diploma	5.07	3.1	
Academic degrees	5.43	4.7	
Economic status			0.295
Good	4.05	3.1	
Moderate	4.11	3.1	
Weakly	4.91	3.5	
Residence status			0.274
Single	4.06	2.9	
With wife	4.03	3.2	
With wife and children	5.04	3.6	
With children	4.29	2.4	
Number of children			0.007
No children	5.50	4.3	
1 to 2 children	6.22	4.1	
3 to 5 children	3.99	3.1	
6 children and more	3.99	2.9	
Insurance			0.864
Yes	4.23	3.2	
No	4.16	3.1	
Underlying disease			<0.001
Yes	4.89	3.4	
No	3.22	2.4	
Smartphone and internet access			0.146
Yes	4.83	4.1	
No	4.04	2.9	

The results of the study indicated that delay in falling asleep and sleep disorders had the highest average score among other types of sleep disorders. That is the delay in falling asleep and sleep disorders have affected the quality of sleep more than other areas and have caused a decrease in sleep quality. The most common sleep complaint of the elderly is delay in falling asleep, which is related to problems in initiating sleep or staying asleep, leading to inadequate sleep, increased risk of falls, problems with concentration and memory, and overall reduced quality of life (32). In Foley et al and McCall's studies, problems in maintaining sleep were reported more than problems in starting sleep (10,33). Also, in the present study, most of the elderly complained of sleep disorders. This complaint was mostly caused by environmental factors such as the noise of family members, light, and heat. In confirmation of this finding, Wooten has mentioned that environmental stimuli are the cause of sleep disorders in the elderly. Because the elderly are more sensitive to environmental stimuli (34). In Raymond and colleagues' study, more people complained about sleep disorders. These complaints were either related to environmental factors such as noise and ambient light, or to personal factors such as delirium, depression, and stress (35) which is consistent with the findings of the present study. An interesting finding in this study was that the score of sleep quality in people aged 60 to 70 years was significantly higher than that of people aged 71 to 80 years. This indicated the unfavorable quality of sleep among people aged 60 to 70 years. That is, those who were between 71 and 80 years old had better sleep quality. While the evidence shows that the quality of sleep in the elderly decreases with age (36). Contradictory to this finding, studies showed that with increasing age, there are changes in the quantity and quality of sleep, which causes sleep disorders and frequent complaints. so that the elderly have a more unfavorable quality of sleep than the middle-aged, and as the age increases, the quality of sleep becomes weaker (5,37). Also, some studies reported a direct and meaningful relationship between young age and good sleep quality (38). The difference in the results can be attributed to the number of samples studied, the measurement tools, the average age of the participants, the type of variables studied, the environments studied, and the time of the study. A justification in terms of age in this study may be due to the small number of participants in the age range of 71 to 80 years. Of course, it is worth remembering that although studies claim that changes in people's sleep patterns are related to aging, but it seems that aging alone is not the cause of sleep disorder and probably other factors along with age are involved in this matter.

Also, the results of the present study showed that there is a statistically significant relationship between underlying disease and sleep quality. So that the average sleep quality score was higher among the elderly with underlying disease; which indicates the unfavorable quality of sleep in this age group compared to others. It should be mentioned that the disease acts as a physical and mental stressor and affects sleep (39). In other words, any disease that causes significant pain and discomfort affects the quality and quantity of sleep (40). Also, according to the evidence, with increasing age, chronic diseases and disabilities increase in a person. For example, heart disease, cancer, diabetes, arthritis, hypertension, chronic respiratory disease, digestive disease, chronic musculoskeletal disease, and stroke are chronic conditions commonly faced by the elderly (10). Khalili et al showed that the elderly with underlying hypertension reported significantly more sleep disorders than their counterparts (25). In many studies between sleep disorders and the underlying disease of diabetes, a statistically significant relationship has been observed, which can be mentioned in Zhu and Ahmet's studies (41,42) These results are consistent with the results of the present study.

The results of the present study showed a significant relationship between the number of children and the quality of sleep. However, Aliasgharpoor & Eybpoosh (27) and Rezaei & Shooshtarizadeh (26) showed the opposite of this finding. This difference can be related to the age range of the studied population, the number of the statistical population and the time of the study. In relation to other demographic variables, the findings of this study showed that there is no statistically significant relationship between gender, marital status, education level, economic status, living status, insurance, and internet access with sleep quality This finding was similar to the results of other studies (43). However, it was contrary to the results of other evidence, which showed a significant relationship between these variables and sleep quality (44). One of the limitations of the current research is the subjectiveness of the sleep quality questionnaire, which may reflect these disorders less than the real level. Completing the questionnaires in a self-administered manner, which can be a factor of distortion and provide wrong data, is another limitation of the present study.

Conclusion

The findings of this study showed that the sleep quality of a significant part of the elderly is poor, so it seems necessary to emphasize the importance of performing sleep hygiene behaviors.

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Authors' contribution

Conceptualization: Maryam Zanghaneh, Majid Barati.
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Competing Interests
This article has no conflict of interest.

Ethical Approval
This study was approved by the Research Ethics Committee of Hamadan University of Medical Sciences (ID: IR.UMSHA.REC.1400.972).

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References
1. Reimer MA, Flemons WW. Quality of life in sleep disorders. Sleep Med Rev. 2003;7(4):335-49. doi: 10.1053/smrv.2001.0220.
2. World Health Organization (WHO). Ageing and Health. Available from: https://www.who.int/news-room/fact-sheets/detail/ageing-and-health. Accessed September 22, 2023.
3. Iran Statistical Yearbook: Iran Statistics Center Press. Iran Sco. 2016.
4. Dindar Farkoush J, Kazemipour Sabet S, Ansari H. Investigating the needs of the elderly population of Iran in different regions and population groups up to 1420 and its role in social development. J Iran Soc Dev Stud. 2023;15(57):93-111. doi: 10.30495/jisds.2022.66492.11705. [Persian].
5. Park JH, Yoo MS, Bae SH. Prevalence and predictors of poor sleep quality in Korean older adults. Int J Nurs Pract. 2013;19(2):116-23. doi: 10.1111/ijn.12047.
6. Hossein-Abadi R, Nowrouzi K, Pouresmaili R, Karimloo M, Maddah SSB. Acupoint massage in improving sleep quality of older adults. Arch Rehabil. 2008;9(2):8-14. [Persian].
7. Leproult R, Holmbäck U, Van Cauter E. Circadian misalignment augments markers of insulin resistance and inflammation, independently of sleep loss. Diabetes. 2014;63(6):1860-9. doi: 10.2337/db13-1546.
8. Papi S, Karimi Z, Ghaed Amini Harooni G, Nazarpour A, Shahry P. Determining the prevalence of sleep disorder and its predictors among elderly residents of nursing homes of Ahvaz city in 2017. Iran J Ageing. 2019;13(5):576-87. doi: 10.32598/SIJA.13.Special-Issue.576. [Persian].
9. Pires GN, Ishikura IA, Xavier SD, Petrella C, Piovezan RD, Xerfan EMS, et al. Sleep in older adults and its possible relations with COVID-19. Front Aging Neurosci. 2021;13:647875. doi: 10.3389/fnagi.2021.647875.
10. Foley DJ, Monjan AA, Brown SL, Simonsick EM, Wallace RB, Blazer DG. Sleep complaints among elderly persons: an epidemiologic study of three communities. Sleep. 1995;18(6):425-32. doi: 10.1093/sleep/18.6.425.
11. Neikrug AB, Ancoli-Israel S. Sleep disorders in the older adult - a mini-review. Gerontology. 2010;56(2):181-9. doi: 10.1159/000236900.
12. Cotroneo A, Gareri P, Lacava R, Cabodi S. Use of zolpidem in over 75-year-old patients with sleep disorders and comorbidities. Arch Gerontol Geriatr Suppl. 2004(9):93-6. doi: 10.1016/j.archger.2004.04.015.
13. Hellström A, Hellström P, Willman A, Fagerström C. Association between sleep disturbances and leisure activities in the elderly: a comparison between men and women. Sleep Disord. 2014;2014:595208. doi: 10.1155/2014/595208.
14. dos Santos AA, dos Santos Mansano-Schlosser TC, Ceolim MF, lost Pavarini SC. [Sleep, fragility and cognition: a multicenter study with Brazilian elderly]. Rev Bras Enferm. 2013;66(3):351-7. doi: 10.1590/s0034-71672013000300008. [Portuguese].
15. Léger D, Poursain B, Neubauer D, Uchiyama M. An international survey of sleeping problems in the general population. Curr Med Res Opin. 2008;24(1):307-17. doi: 10.1185/030079907x253771.
16. Arasteh M, Yousefi F, Sharifi Zh. Investigation of Sleep Quality and its Influencing Factors in Patients Admitted to the Gynecology and General Surgery of Besat Hospital in Sanandaj. Medical Journal of Mashhad University of Medical Sciences. 2014; 57(6):762-769. doi: 10.22038/MJMS.2014.3543.
17. Yang PY, Ho KH, Chen HC, Chien MY. Exercise training improves sleep quality in middle-aged and older adults with sleep problems: a systematic review. J Physiother. 2012;58(3):157-63. doi: 10.1016/s1836-9553(12)70106-6.
18. Lindstrom V, Andersson K, Lintrup M, Holst G, Berglund J. Prevalence of sleep problems and pain among the elderly in Sweden. J Nutr Health Aging. 2012;16(2):180-3. doi: 10.1007/s12603-011-0356-2.
19. Nobahar M, Vafaaee A. Elderly sleep disturbances and management. Geriatric. 2007;2(4):263-8.
20. Hadi Toroghi H, Masoudi S. The effectiveness of group-based acceptance and commitment therapy on the improvement of sleep quality in elderly people with chronic pain. Med J Mashhad Univ Med Sci. 2020;63(3):2295-301. doi: 10.22038/mjms.2020.16382.
21. Foley DJ, Vitiello MV, Bliwise DL, Ancoli-Israel S, Monjan AA, Walsh JK. Frequent napping is associated with excessive daytime sleepiness, depression, pain, and nocturia in older adults: findings from the National Sleep Foundation '2003 Sleep in America' Poll. Am J Geriatr Psychiatry. 2007;15(4):344-50. doi: 10.1097/01.jgp.0000249385.50101.67.
22. Mazzotti DR, Guindalini C, Moraes WA, Andersen ML, Cendoroglo MS, Ramos LR, et al. Human longevity is associated with regular sleep patterns, maintenance of slow wave sleep, and favorable lipid profile. Front Aging Neurosci. 2014;6:134. doi: 10.3389/fnagi.2014.00134.
23. Allami Z, Khankeh H, Dalvandi A, Zadehmohammadi A, Rezasoltani P. Effect of music-therapy on quality of sleep among elderly male of the Isfahan city petroleum's Retirement Association 2012. J Geriatr Nurs. 2014;1(1):55-63. [Persian].
24. Sheikhy L, Karami Mattin B, Chupani J, Hookari S, Fallah B. Evaluation the status of sleep quality in elderly people in Kermanshah city. Sci J Rehabil Med. 2014;3(4):81-8. [Persian].
25. Khalili Z, Sadrollahi A, Aseman E, Gholipour F, Abbasian M. Evaluation of sleep quality and related factors in hospitalized elderly people in Shahid Beheshti hospital of Kashan. J Geriatr Nurs. 2016;2(3):32-43. doi: 10.21859/jgn.2.3.32. [Persian].
26. Rezaei B, Shooshtarizadeh S. Factors related to sleep quality among elderly residing at Isfahan nursing homes. J Geriatr Nurs. 2016;2(2):37-49. [Persian].
27. Aliasgharpoor M, Eybpoosh S. Quality of sleep and its correlating factors in residents of Kahrizak nursing home. Nurs Midwifery J. 2011;9(5):374-83. [Persian].
28. Irwina AS, Amita A, Ifa N. Quality of sleep on the elderly: a systematic review. Proceedings of the 8th International Nursing Conference "Education, Practice and Research Development in Nursing"; 2017.
29. Black DS, O'Reilly GA, Olmstead R, Breen EC, Irwin MR. Mindfulness meditation and improvement in sleep quality and daytime impairment among older adults with sleep disturbances: a randomized clinical trial. JAMA Intern Med. 2015;175(4):494-501. doi: 10.1001/jamainternmed.2014.8081.
30. Wu CY, Su TP, Fang CL, Yeh Chang M. Sleep quality among community-dwelling elderly people and its demographic, mental, and physical correlates. J Chin Med Assoc.

2012;75(2):75-80. doi: 10.1016/j.jcma.2011.12.011.
31. Luo J, Zhu G, Zhao Q, Guo Q, Meng H, Hong Z, et al. Prevalence and risk factors of poor sleep quality among Chinese elderly in an urban community: results from the Shanghai aging study. PLoS One. 2013;8(11):e81261. doi: 10.1371/journal.pone.0081261.
32. Ancoli-Israel S, Ayalon L, Salzman C. Sleep in the elderly: normal variations and common sleep disorders. Harv Rev Psychiatry. 2008;16(5):279-86. doi: 10.1080/10673220802432210.
33. McCall WV. Management of primary sleep disorders among elderly persons. Psychiatr Serv. 1995;46(1):49-55. doi: 10.1176/ps.46.1.49.
34. Wooten V. Evaluation and management of sleep disorders in the elderly. Arab J Psychiatr. 1990;1(2):93-103.
35. Raymond I, Nielsen TA, Lavigne G, Manzini C, Choinière M. Quality of sleep and its daily relationship to pain intensity in hospitalized adult burn patients. Pain. 2001;92(3):381-8. doi: 10.1016/s0304-3959(01)00282-2.
36. Lee S, Cheong YS, Park EW, Choi EY, Yoo HK, Kang KH, et al. Prevalence of sleep disorder and associated factors in family practice. Korean J Fam Med. 2010;31(11):837-44. doi: 10.4082/kjfm.2010.31.11.837.
37. During EH, Kawai M. The functions of sleep and the effects of sleep deprivation. In: Miglis MG, ed. Sleep and Neurologic Disease. San Diego: Academic Press; 2017. p. 55-72. doi: 10.1016/b978-0-12-804074-4.00003-0.
38. Izadi Avanji FS, Adib Hajbaghery M, Afazel MR. Quality of sleep and it's related factors in the hospitalized elderly patients of Kashan hospitals in 2007. Feyz. 2009;12(4):52-60. [Persian].
39. Sonoda Y, Sawano S, Kojima Y, Kugo M, Taniguchi M, Maegawa S, et al. Comprehensive geriatric assessment of effects of hospitalization and long-term rehabilitation of patients following lower extremity arthroplasty. J Phys Ther Sci. 2016;28(4):1178-87. doi: 10.1589/jpts.28.1178.
40. Fiorentino L, Ancoli-Israel S. Insomnia and its treatment in women with breast cancer. Sleep Med Rev. 2006;10(6):419-29. doi: 10.1016/j.smrv.2006.03.005.
41. Zhu BQ, Li XM, Wang D, Yu XF. Sleep quality and its impact on glycaemic control in patients with type 2 diabetes mellitus. Int J Nurs Sci. 2014;1(3):260-5. doi: 10.1016/j.ijnss.2014.05.020.
42. Keskin A, Ünalacak M, Bilge U, Yildiz P, Güler S, Selçuk EB, et al. Effects of sleep disorders on hemoglobin A1c levels in type 2 diabetic patients. Chin Med J (Engl). 2015;128(24):3292-7. doi: 10.4103/0366-6999.171415.
43. Nasiri Ziba F, Veisimiankali M, Haghani H. Association between demographic characteristics and sleep quality of elderly patients with coronary artery disease hospitalized in Imam Ali hospital during 2018. J Ilam Univ Med Sci. 2020;28(1):1-11. doi: 10.29252/sjimu.28.1.1. [Persian].
44. Nasiri K, Behnam Movahed M, Jafari M, Poorhamzeh S. Evaluation of sleep quality and related factors in the elderly patients in Imam Khomeini hospital of Khalkhal, 2016. J Health. 2019;10(4):480-8. doi: 10.29252/j.health.10.4.480. [Persian].