Shiraz E-Med J. 2021 August; 22(8):e106830. doi: 10.5812/semj.106830.

Published online 2021 January 16. **Research Article**

The Effects of Environmental Modifications on Improving the Sleep Quality of the Elderly Hospitalized in the Cardiac Care Unit

Masoumeh Shohani [1], Sanaz Azami [1], Hossein Seidkhani [2] and Zeinab Gholami [3, *]

[1]Department of Nursing, Faculty of Nursing and Midwifery, Ilam University of Medical Sciences, Ilam, Iran
[2]Department of Epidemiology and Biostatics, Faculty of Health, Ilam University of Medical Sciences, Ilam, Iran
[3]Department of Nursing, Faculty of Nursing and Midwifery, Student Research Committee, Ilam University of Medical Sciences, Ilam, Iran

[*] *Corresponding author*: Department of Nursing, Faculty of Nursing and Midwifery, Student Research Committee, Ilam University of Medical Sciences, Ilam, Iran. Email: zeinabgholami111@gmail.com

Received 2020 July 08; **Revised** 2020 August 17; **Accepted** 2020 August 20.

Abstract

Background: Sleep deprivation is a common problem among the elderly in the cardiac care unit (CCU).
Objectives: The present study aimed to determine the effects of environmental modifications on sleep quality improvement in these people.
Methods: The study population included 60 elderly patients whose sleep quality was assessed by the Pittsburgh Sleep Quality Index with even domains. The environmental factors that can disturb sleep quality were determined via a questionnaire, including 13 questions on a 5-point Likert scale. Descriptive and inferential statistical analyses were performed in SPSS 22 software via independent sample student *t*-test and chi-square.
Results: After environmental modifications, the total sleep quality scores changed from 11.8 to 5.96, indicating sleep quality improvement. Before executing the environmental modifications, there were no significant correlations between sleep quality scores and demographic variables (sex, age, marital status, and economic status). However, after the modifications, there was a significant relationship between sleep quality and economic status (P = 0.024).
Conclusions: Environmental factors can affect sleep quality in the elderly hospitalized in CCU. Therefore, it is possible to improve sleep quality in these individuals by modulating environmental conditions.

Keywords: Sleep Quality, Elderly, Intensive Care Unit, Effective Factors

1. Background

Aging is a natural and inevitable biological phenomenon. According to the estimates by the United Nations, the world's elderly population will increase up to 1.1 billion in 2025, which can necessitate their regular physical and mental health screening. Sleep is among the most critical circadian circuits and complex biological processes affecting the physical and mental health of the elderly. Sleep patterns are influenced by the circadian (84-hour daytime cycle) and homeostatic (equilibrium) processes, as well as some factors, such as adequate nighttime sleep (sleep quantity), sleep mental quality, and daytime sleepiness (1).

Aging is associated with crucial changes in sleep patterns and qualities. Poor sleep quality is one of the severe problems among the elderly. Overall, 58% of them experience insomnia at least one night a week. After headache and gastrointestinal disorders, poor sleep is the third most common problem in the elderly (2). Their main complaints are related to either delayed or continuous sleep (3). They are hospitalized three times more frequently than those under the age of 60 years. Also, their hospital stay is 50% longer than other age groups (4). During hospitalization, they are usually deprived of adequate sleep, suffer pain, impaired circadian rhythm, and malnutrition, and have limited physical and cognitive activities due to medications. All of these negative changes can lead to undesirable health outcomes and result in crucial disorders at the beginning of the recovery period (5).

Sleep disorders among the elderly hospitalized in the intensive care unit (ICU) can be caused by pain, excessive light, delirium, and problems with the artificial ventilation instrument (6). These factors are unclear and can have negative impacts on them (7). Also, sleep disturbance is a common problem affected by multifarious environmental and non-environmental factors, such as noise, steroids, pre-hospitalization sleep quality, and gender (4). Zakeri Moghaddam et al. (8) found environmental factors such as

telephone ringtone, talks between staff and other patients, and noises by various devices, which can affect sleep quality during hospitalization. Based on these studies highlighting the importance of sleep disorders in hospitalized patients, improving sleep cycle, and assessing sleep quality have been incorporated as parts of patients 'routine care and Relax in the hospital environment makes you feel good (9-11).

However, today there are significant advances in measuring sleep quality. For example, one can use both subjective (e.g., self-report instruments) and objective (e.g., laboratory methods such as polysomnography and actigraphy) measures (12, 13) to examine the quality of sleep for various purposes and achieve better results.

2. Objectives

The present study aimed to determine the effects of environmental modifications on sleep quality in the elderly hospitalized in the CCU of Shahid Mostafa Khomeini Hospital of Ilam, Iran, 2018.

3. Methods

This quasi-experimental study was carried out on 60 elderly patients hospitalized in the CCU of Shahid Mostafa Khomeini Hospital, Ilam, Iran, from February to March 2018. The patients were chosen by the convenience sampling method and divided into the two groups of before and after environmental modifications. The sample size was estimated as n = 30 per group based on the below formula.

$$n = \frac{\frac{z^2 pq}{d^2}}{1 + \frac{1}{N}\left(\frac{z^2 pq}{d^2} - 1\right)} \quad (1)$$

Inclusion criteria were age > 60 years, at least three days hospitalization in CCU, and consciousness. Exclusion criteria were reluctance to participate in the study, being discharged in less than three days, receiving sedative and anesthetic medications, cardiopulmonary resuscitation during the study, and receiving sleep-disturbing drugs, such as opioids, amphetamines, and diuretics.

The data collection tool included a three-part questionnaire. The first part of the questionnaire addressed demographic information (age, sex, marital status, and economic status). The second part was the Pittsburgh Sleep Quality Index questionnaire, including seven domains, each of which was scored from 0 to 3. Total sleep quality score was calculated as the mean score of these seven domains and ranged from 0 to 21. A higher score indicated lower sleep quality, and as core above 5 indicated a poor sleep quality.

The third part of the questionnaire included a researcher-made survey to address the impacts of environmental factors on the incidence of sleep disorders. The questions of this part were prepared based on the researcher's experience and previous studies (2, 14, 15). This part was designed to assess nursing requirements and measures and identify environmental factors such as noises, temperature, light, instruments, and health care services (e.g., vital signs screening, administrating drugs), which can affect sleep quality during hospitalization. The impact of each of these items on sleep quality was measured as very low (1), low (2), medium (3), high (4), and very high (5). The total score ranged from a minimum of 13 to a maximum of 65.

The content validity of the questionnaire was approved based on the corrective comments suggested by ten faculty members of Ilam University of Medical Sciences. The reliabilities of the Pittsburgh and the sleep quality questionnaires were obtained as 0.792 and 0.737, respectively.

The data was collected in two phases. First, sleep quality and influencing factors were assessed in a group of 30 patients hospitalized in the CCU after three days of admission. These patients received routine nursing care. During the second phase, environmental and nursing measures were modified according to the sleep quality disturbing factors identified in the first phase. Simultaneously, night-shift nurses were educated regarding the actions required to improve patients' sleep quality.

Nursing and environmental modifications included providing therapeutic and caring measures (e.g., vital signs screening, drug administration, blood sampling, echocardiography, and residency visits) before 10 p.m. and after 6:30 a.m., relieving patients' concerns about the illness, avoiding diuretics after 6 p.m., noise controlling(avoiding conversations at night, using noiseless shoes by personnel, replacing old and noisy chairs, preparing medications in a separate room), and finally adjusting ambient light (turning off unnecessary lights and using dim lights at night). Regarding the susceptibility of the elderly to hypothermia and hyperthermia, the ambient temperature was maintained in the range of 25 to 27°C. These changes were implemented with the permission of the respected authorities of the hospital.

The researcher ensured that the environmental adjustments have been implemented through direct monitoring of these changes. The researcher also asked patients whether or not nurses had performed the educated trainings. In the second phase (i.e., after environmental modifications), 30 new patients completed the Pittsburgh Sleep Quality questionnaire after three days of admission.

Sleep quality scores were compared between the two groups using the independent sample student *t*-test. The chi-square test was also used to assess relationships between sleep quality and demographic variables. SPSS 22 software was used for data analysis. The statistical significance level was considered as $P < 0.05$.

4. Results

Given the demographic variables, there were no statistically significant differences to compare the mean sleep quality scores between various groups of demographic variables in neither group 1 (Table 1) nor group 2 (Table 2).

Table 1. Mean Total Score of Sleep Quality in the First Group (Before Implementing Modifications) Based on Demographic Variables

Variables	No. (%)	Mean ± SD	P Value
Age (y)			0.366
60 - 67	19 (63.3)	42.6 ± 26.08	
68 - 74	13 (10)	44.3 ± 66.05	
75 - 87	18 (26.7)	3 ± 41.7	
Gender			0.265
Male	16 (53.3)	43.4 ± 18.62	
Female	14 (46.7)	5 ± 41.9	
Marital status			0.475
Widowed	11 (36.7)	41.5 ± 1.17	
Married	19 (63.3)	42.5 ± 63.52	
Economical stats			0.211
Good	7 (23.3)	40.8 ± 71.31	
Moderate	7 (23.3)	44.4 ± 28.82	
Poor	16 (53.3)	41.3 ± 73.97	

Based on the participants' perspectives in the first group, the most critical factors disturbing sleep quality among the elderly (i.e., the high and very high answers) included administrating drugs (96.7%), vital signs screening (93.3%), diagnostic tests (90%), other patients' companions (90%) and conversations (83.3%), and inappropriate room temperature (60%) (Table 3).

The overall sleep quality score was obtained as 11.8 in the first group. In this group, sleep quality scores were 2.06, 2.73, 2.80, 2.73, and 1.46 in the domains of mental disorders, latent sleep, sleep duration, sleep adequacy, and sleep disorders, respectively. In the second group, the scores of mental disorders, latent sleep, sleep duration, sleep adequacy, and sleep disorders domains were 0.36, 1.6, 1.36, 1.6, and 0.96, respectively. The total mean score of sleep quality in the second group was 5.96 (Table 4).

Table 2. Mean Total Score of Sleep Quality in the Second Group (After Implementing Modifications) Based on Demographic Variables

Variables	No. (%)	Mean ± SD	P Value
Age (y)			0.195
60 - 67	16 (53.3)	5.2 ± 5.03	
68 - 74	10 (33.3)	6.2 ± 4.11	
75 - 87	4 (13.4)	6.1 ± 75.89	
Gender			0.411
Male	16 (53.3)	6.2 ± 22.04	
Female	14 (46.7)	5.2 ± 58.06	
Marital status			0.386
Widowed	11 (36.7)	5.1 ± 5.71	
Married	19 (63.3)	6.2 ± 2.19	
Economical stats			0.024
Good	7 (23.3)	5.2 ± 16.28	
Moderate	7 (23.3)	2 ± 5.16	
Poor	16 (53.3)	6.1 ± 92.38	

5. Discussion

The results of this study showed that 73.3% of the elderly hospitalized in the CCU had sleep disorders. Overall, 41% and 59% of the patients had sleep quality scores of ≤ 5 and > 5, respectively. In the study of Malek et al. (16), 60.7% and 39.3% of participants achieved sleep quality scores of ≤ 5 and > 5, respectively. In a study by Kumar et al. (17), 57% of patients had poor sleep quality. In a study in Babol, Iran, Jafarian et al. (18) described that most of the patients hospitalized in different hospital wards had poor sleep qualities. Consistent with the present study, Ahmadi et al. (19) showed that their patients' sleep quality was decreased by 54 to 57% after hospitalization. The patients admitted to CCU seem to have disrupted sleeps and frequent waking up episodes due to stressful environments, acute diseases, and incessant health care interventions. Overall, they have poorer sleep quality in hospitals than the time they are at home.

The results of this study showed improvements in the sleep quality of the elderly hospitalized in CCU after environmental modifications in terms of mental disorders, latent sleep, sleep duration, sleep adequacy, and sleep disorders. We did not include patients who received sleep-inducing medications, nor did we determine the disrupted daily activity as a part of environmental adjustments. According to our results, there were significant differences between the two groups (i.e., before and after environmental modifications) regarding sleep quality scores in the five studied domains. In addition, the total sleep

Table 3. Factors Disturbing Sleep Quality from the Perspectives of Patients in the First Group[a]

Sleep Disturbing Factors	Very Low	Low	Moderate	High	Very High
Light	1 (3.3)	12 (40)	13 (43.3)	4 (13.3)	0
Diagnostic tests	0	1 (3.3)	2 (6.7)	20 (66.7)	7 (23.3)
Vital signs screening	0	0	2 (6.7)	14 (46.7)	14 (46.7)
Drug administration	0	0	1 (3.3)	11 (36.7)	18 (60)
Room temperature	3 (10)	0	10 (30)	12 (40)	6 (20)
Noisy chairs	2 (6.7)	10 (33.3)	18 (60)	0	0
Talking	4 (13.3)	15 (50)	9 (30)	2 (6.7)	0
Patients' talking	1 (3.3)	0	2 (6.7)	25 (83.3)	2 (6.7)
Companions' talking	0	0	3 (10)	11 (36.7)	16 (53.3)
Noisy instruments	2 (6.7)	15 (50)	12 (40)	1 (3.3)	0
Air conditioner noise	2 (6.7)	10 (33.3)	18 (60)	0	0
Noisy walking	3 (10)	13 (43.3)	13 (43.3)	1 (3.3)	0
Telephone ringtone	0	17 (56.6)	11 (36.7)	2 (6.7)	0

[a] Values are presented as No. (%).

Table 4. Comparing the Total Sleep Quality Scores of the Elderly Admitted to CCU Before and After Environmental Modifications Based on the Petersburg Standard Sleep Quality Questionnaire

Domains	Before Modifications (Group 1)	After Modifications (Group 2)	P Value
Mental disorders	2 ± 44.6	0 ± 366.49	< 0.001
Latent sleep	2 ± 73.44	1 ± 6.49	< 0.001
Sleep duration	2 ± 8.4	1 ± 36.80	< 0.001
Sleep adequacy	2 ± 73.44	1 ± 6.49	< 0.001
Sleep disorders	1 ± 46.5	0 ± 96.49	< 0.001
Total score	11.1 ± 8.42	5.2 ± 96.04	< 0.001

quality score improved from 11.8 (before) to 5.96 (after the modifications). These findings were consistent with the results of Zakeri Moghaddam et al. (8), Zulfaghari et al. (20), and Zeraati et al. (21), who assessed sleep quality in patients with coronary artery diseases. Furthermore, our findings were in parallel with those of Kazemizadeh and Behpour (22).

Izadi Onaji et al. (23) used the Pittsburgh sleep quality questionnaire to determine sleep quality and its related factors in hospitalized elders. In the recent study, the mean scores of mental sleep quality, latent sleep, sleep duration, sleep adequacy, and sleep disorder domains were 1.2 ± 0.92, 1.44 ± 1.66, 1.25 ± 0.96, 0.74 ± 0.34, and 1.29 ± 0.65, respectively. The researchers in the recent study reported improvements in the sleep quality of hospitalized elders after introducing minor changes in nurses' daily work routine, which was similar to the results of our study.

However, in this study and other similar studies, tools such as the Pittsburgh questionnaire have been used to merely measure patients' subjective state by self-assessment. The measurement will be more accurate using objective methods. The PSG is generally considered to be the gold standard to diagnose sleep-related breathing disorders (obstructive sleep apnea (OSA), central sleep apnea, and sleep-related hypoventilation/hypoxia), but it can also be utilized to evaluate other sleep disorders including nocturnal seizures, narcolepsy, periodic limb movement disorder, and rapid eye movement sleep behavior disorder (24).

The results of the present and other studies (25-27) confirmed the substantial role of nurses in the diagnosis of sleep disorders, as well as improving sleep quality among the elderly. This can be accomplished by eliminating disturbing environmental factors, addressing patients' physical and mental needs, and rescheduling nursing routine care programs.

According to our study, there were no significant relationships between sleep quality, age, gender, and marital status. Age and sleep quality have a complex biological relationship that depends on the co-existence of other diseases. In other similar studies, sleep quality had no correlations with age (24, 28). In terms of the relationship between gender and sleep quality, our findings were consistent with the results of Zeraati et al. (21). In another study; however, gender was identified as one of the factors affecting sleep quality (11). Given the marital status, Izadi Onaji et al. (23) reported a significant relationship between marital status and sleep quality because married people, with all

emotional support, are expected to have better sleep qualities than unmarried individuals. Furthermore, the presence of underlying diseases and their nature should be perceived as critical sources of stress and insomnia in unmarried people.

The present study showed no significant relationships between sleep quality and economic status in the first group (i.e., before environmental modifications). Nevertheless, there was a significant relationship between these two variables in the second group (i.e., after environmental modifications). Izadi Onaji et al. (23) described that sleep quality was significantly associated with occupation and economic status. According to Adams et al., whereas the strong economic status (i.e., a better job, higher income) could improve the sleep quality of the elderly, the poor economic status can impose the extra financial burden of hospitalization on them and exaggerate their stress, which is one of the psychological factors disturbing sleep quality (28).

5.1. Conclusions

The results of this study showed that environmental factors can largely affect hospitalized elders' sleep quality. It is essential to improve their sleep quality by introducing appropriate environmental modifications and effective corrective programs in ICUs. These modifications can eliminate environmental stressors against sleep quality.

5.2. Recommendations and Limitations

The present study is a result of a Msc. thesis in nursing. Due to time limitations, it was not feasible to conduct objective assessments (such as polysomnography). Also, some keywords (CCU-stay days, cardiac arrhythmias, overall wellbeing, need for antinational medications, BP etc.) were not included in the literature search to avoid so many results. Sample size was another limitation to this study. Thus, it is recommended that another study be conducted to address these shortcomings.

Footnotes

Authors' Contribution: All authors contribute equally.

Conflict of Interests: There was no conflict of interest between authors.

Ethical Approval: Ilam University of Medical Sciences (IR.MEDILAM.REC.1398.048).

Funding/Support: This study was approved by Ilam University of Medical Sciences. We thank the Deputy of Research and Technology of the University for Financial Support.

References

1. Hosseini SR, Saadat P, Esmaili M, Bijani A. The Prevalence of Self-Reported Sleep Problems and Some Factors Affecting It Among the Elderly in Amirkola. *Shiraz E Med J*. 2017;**19**(3). e59461. doi: 10.5812/semj.59461.
2. Shirazi M, Fardin MA, Arab A, Sanagoue G, Nazar Alisofi A. The Impact of Positive Psychological States in Predicting Sleep Quality Amongst Pregnant Women. *Iran J Psychiatry Behav Sci*. 2016;**10**(4). e5767. doi: 10.17795/ijpbs-5767.
3. Leger 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. [PubMed: 18070379].
4. Thichumpa W, Howteerakul N, Suwannapong N, Tantrakul V. Sleep quality and associated factors among the elderly living in rural Chiang Rai, northern Thailand. *Epidemiol Health*. 2018;**40**. e2018018. doi: 10.4178/epih.e2018018. [PubMed: 29807410]. [PubMed Central: PMC6060346].
5. Unruh ML, Buysse DJ, Dew MA, Evans IV, Wu AW, Fink NE, et al. Sleep quality and its correlates in the first year of dialysis. *Clin J Am Soc Nephrol*. 2006;**1**(4):802–10. doi: 10.2215/CJN.00710206. [PubMed: 17699290].
6. Kiejna A, Rymaszewska J, Wojtyniak B, Stokwiszewski J. Characteristics of sleep disturbances in Poland - results of the National Health Interview Survey. *Acta Neuropsychiatr*. 2004;**16**(3):124–9. doi: 10.1111/j.0924-2708.2004.00063.x. [PubMed: 26984163].
7. Khodaveisi M, Ashtarani F, Beikmoradi A, Mohammadi N, Mahjub H, Mazdeh M, et al. The Effect of Continuous Care on the Lifestyle of Patients with Multiple Sclerosis: A Randomized Clinical Trial. *Iran J Nurs Midwifery Res*. 2017;**22**(3):225–31. doi: 10.4103/1735-9066.208170. [PubMed: 28706548]. [PubMed Central: PMC5494953].
8. Zakeri Moghadam M, Shaban M, Kazemnejad A, Ghadyani L. [Comparison of effective factors on sleeping the nurses and hospitalized patients' viewpoints]. *Hayat*. 2006;**12**(2):5–12. Persian.
9. Sohrabzadeh M, Menati R, Tavan H. [Survey on patient against female nurses and lack of reporting aggressive event in Ilam hospitals at 2012]. *Iran Occup Health*. 2015;**12**(1):47–55. Persian.
10. Aivazi AA, Tavan H. Prevalence of conceived violence against nurses at educational hospitals of Ilam, Iran, 2012. *Int J Afr Nurs Sci*. 2015;**2**:65–8. doi: 10.1016/j.ijans.2015.04.001.
11. Rahmani Nia F, Mohebi H, Saberian M. [The effect of walking on quality, quantity and some physiological parameters related to sleep in old men]. *J Sport Biosci*. 2009;**1**(3):111–26. Persian.
12. Tavalaie A, Asari S, Habibi M. [Subjective sleep quality in chemical warfare veterans]. *Iran J Psychiatry Clin Psychol*. 2006;**12**(3):263–9. Persian.
13. Madarshahian F, Hassanabadi M. [Sleep disturbances in chemical and non-chemical war victims]. *Iran J War Public Health*. 2009;**2**(1):27–32. Persian.
14. Oshvandi K, Moghadarikoosha M, Cheraghi F, Fardmal J, Nagshtabrizi B, Falahimia G. [The impact of nursing interventions on quality of sleep among patients in coronary care unit of Ekbatan Hospital in Hamadan City, Iran]. *Avicenna J Nurs Midwifery Care*. 2014;**22**(1):60–9. Persian.
15. Jahdi F, Rezaei E, Behboodi MZ, Hagani H. [Prevalence of sleep disorders in the pregnant women]. *Payesh*. 2013;**12**(6):629–35. Persian.
16. Malek M, Halvani GH, Fallah M, Jafari NR. [A study of the relationship between the Pittsburgh sleep quality index and road accidents among truck drivers]. *Occup Med*. 2011;**3**(1):14–20. Persian.
17. Kumar B, Tilea A, Gillespie BW, Zhang X, Kiser M, Eisele G, et al. Significance of self-reported sleep quality (SQ) in chronic kidney disease (CKD): the Renal Research Institute (RRI)-CKD study. *Clin Nephrol*. 2010;**73**(2):104–14. doi: 10.5414/cnp73104. [PubMed: 20129017].

18. Jafarian Amiri SR, Zabihi A, Babaie F, Sefidchian AR, Bijanee A. [Sleep quality and associated factors in hospitalized patients in Babol, Iran]. *Hormozgan Med J*. 2011;**15**(2):144–51. Persian.
19. Ahmadi S, Khankeh H, Mohammadi F, Khoshknab F, Reza Soltani P. [The effect of sleep restriction treatment on quality of sleep in the elders]. *Iran J Ageing*. 2010;**5**(2):7–15. Persian.
20. Zolfaghari M, Farokhnezhad Afshar P, Asadi Noghabi AA, Ajri Khameslou M. [Modification of environmental factors on quality of sleep among patients admitted to CCU]. *Hayat*. 2013;**18**(4):61–8. Persian.
21. Zeraati F, Seif Rabie MA, Araghchian M, Sabouri T. [Assessment of quality of sleep and use of drugs with sedating properties in adult patients hospitalized in Hamadan Ekbatan Hospital]. *Avicenna J Clin Med*. 2010;**16**(4):31–6. Persian.
22. Kazemizadeh V, Behpour N. [The effect of sleep deprivation on quality of life of sport science students]. *J School of Public Health*. 2020;**18**(2):189–98. Persian.
23. Izadi Onaji F, Adib Hajjbagheri M, Afazel M. [Sleep quality and related factors in elderly hospitalized at Kashan hospitals in 2007 year]. *Feyz Sci Res J*. 2009;**12**(4):52–9. Persian.
24. Rundo JV, Downey R. Polysomnography. *Handb Clin Neurol*. 2019;**160**:381–92. doi: 10.1016/B978-0-444-64032-1.00025-4. [PubMed: 31277862].
25. Kor A, Muosavi S, Reza Masouleh S, Behnam Puor N. [Assessment of the correlation between lifestyle and quality of sleep in elderly who referred to retirement center in Rasht, 2007]. *J Holist Nurs Midwifery*. 2007;**17**(2):15–22. Persian.
26. Jafarzade FM, Behnam VH, Vahedian SM. [The quality of life of the elderly in Sabzevar, Iran]. *J Sabzevar Univ Med Sci*. 2010;**17**(3):213–7. Persian.
27. Habibi A, Nikpour S, Seiedoshohadaei M, Haghani H. [Quality of life and status of physical functioning among elderly people in west region of Tehran: A cross-sectional survey]. *Iran J Nursing*. 2008;**21**(53):29–39. Persian.
28. Adams SK, Williford DN, Vaccaro A, Kisler TS, Francis A, Newman B. The young and the restless: Socializing trumps sleep, fear of missing out, and technological distractions in first-year college students. *Int J Adolesc Youth*. 2016;**22**(3):337–48. doi: 10.1080/02673843.2016.1181557.