PREVALENCE OF SLEEP DISORDER IN OLDER INPATIENTS AT NATIONAL GERIATRIC HOSPITAL 2019

Nguyen Thi Thu Hoai[1,✉], Nguyen Thi Hong Dao[2], Vu Thi Thanh Huyen[1,2], Nguyen Trung Anh[1,2]

[1]National Geriatric Hospital

[2]Hanoi Medical University

Sleep disorders are common in later life although older adults generally require only 5 to 6 hours of sleep per night due to the change in the circadian rhythm and the habit to awaken early. Sleep disorders of elderly in-patients were assessed using Pittsburgh Sleep Quality Index (PSQI) score. This is a cross-sectional study conducted at the National Geriatric Hospital from April to October 2019. Data were collected by using designed tools including general characteristic and PSQI. Redcap and SPSS version 22.0 were used for data analysis. The mean age and standard deviation were 73.25 (9.06). 197 people (82.1%) had poor sleep, 43 people (17.9%) had good sleep. The mean of PSQI score was 9.24 (SD = 4.43). Most participants (87.9%) could not fall asleep within 30 minutes. The mean of sleep efficiency was 76.1% (SD = 18.7). The prevalence of sleep disorder among older people was quite high and further preventions for reduce sleep disorders are necessary.

Keywords: Sleep disorder, older people, prevalence of sleep disorder, sleep disturbance

I. INTRODUCTION

Sleep is one of the basic needs of human beings and constitutes about one-third of human life. It means that sleep is a part of what is called the sleep-wake cycle, which consists of roughly 8 hours of nocturnal sleep and 16 hours of daytime wakefulness.[1,2] Meanwhile, sleep is a period of inactivity and restoration of mental and physical function. In other words, the human's body systems restore their energy and repair their tissues and is fundamental to the wellbeing and optimal health during sleep. Therefore, when people get enough and good sleep, they have more energy, better cognitive function and healthier immune systems. Good sleep improve memory, alertness, attentiveness, and performance throughout the day.[3] In contrast, poor sleep is associated with serious consequences on their physical and psychological and it is both a cause and a result.

Sleep disorder are common in later life although older adults generally require only 5 to 6 hours of sleep per night due to the change in the circadian rhythm and they tend to awaken early.[4] Older people need longer time to fall asleep, may awaken more frequently during the night, and have greater difficulty getting back to sleep. Sleep problems are considered as part of the normal aging process so are frequently underexplored and untreated in the elderly.[5]

Moreover, sleep disorders aggravate the underlying diseases, especially in the elderly because it can be associated with serious physical and psychosocial consequences such as depression, fall, memory impairments, concentration problems, irritability, low quality of life, dementia, fatigue, and mood

Corresponding author: Nguyen Thi Thu Hoai

National Geriatric Hospital

Email: ntththu.bvlk@gmail.com

Received date: 18/09/2020

Accepted day: 15/12/2020

instability.[6,7]

Thus, there are several studies over the world about sleep disorders, especially in older people. Research showed the prevalence of poor sleep quality was 45.8% in elderly Chinese females and (35.8%) in Chinese elderly males. It increased with age, from 32.1% (aged 60-69 years) to 52.5% (aged ≥ 80 years).[8]

The prevalence of sleep disturbance among older women in Vietnam was 38.9%.[4] There has been few studies about sleep disorder in Vietnam, therefore, this study was conducted to determine the prevalence of sleep disorder in old inpatients using Pittsburgh Sleep Quality Index (PSQI) questionnaire.

II. SUBJECTS AND METHODS

1. Subjects

Older inpatients aged 60 years old and over, hospitalized at the National Geriatric Hospital from April 2019 to October 2019 were involved in the study.

2. Sample size

The sample size was collected based on the entire sampling method and was calculated by using the formula:

$$n = \frac{Z_{1-\alpha/2}^2 \, p(1-p)}{d^2}$$

From the formula, the estimated sample size was n = 229 older patients. The number of older patients in our study was 240 (p = 0.183).[5]

3. Study and design

A cross-sectional study was conducted on 240 participants with convenience sampling.

Inclusion criteria

- Patients aged 60 years old and over

- The patients had the physical and cognitive abilities to do a face-to-face interview.

- Patients and patient's family agreed to participate in this study

Exclusion criteria

- Patients unable to communicate.

- Patients did not complete the research questionnaire.

Variables and data processing

- General information

Gender, age, educational level, marital status.

- Pittsburgh Sleep Quality Index (PSQI)

The PSQI score is calculated by total points of seven components:

+ Component 1: Subjective sleep quality: The answer is one in 4 options: (0 point) very good, (1 point) fairly good, (2 point) fairly bad, (3 point) very bad.

+ Component 2: Sleep latency: There are 2 questions about time to sleep and cannot get to sleep within 30 minutes. Sum of 2 questions above is calculated into component 2 score: (0 point) 0, (1 point) 1 - 2, (2 point) 3 - 4, (3 point) 5 - 6. To prevent bias in the collecting process we repeated question twice.

+ Component 3: Sleep duration: > 7 hours (0 point), 6 - 7 hours (1 point), 5 - 6 hours (2 point), < 5 hours (3 point). We asked participants twice to reduce bias.

+ Component 4: Sleep efficiency: Sleep efficiency = (total slept)/ (hours in bed) × 100%

+ Component 5: Sleep disturbance: Sum of 9 questions is calculated into component 5 score: (0) 0, (1) 1 - 9, (2) 10 - 18. (3) 19 - 27.

+ Component 6: Use of sleep mediation: Ask

the patients how often they have taken sleeping pills. The answer has 4 options: (0) none, (1) less than once a week, (2) once or twice a week and (3) ≥ 3 times a week

+ Component 7: Daytime dysfunction: Total score of 2 questions is calculated into component 7 score: (0) 0, (1) 1 - 2, (2) 3 - 4, (3) 5 - 6

+ Total score PSQI is calculated by sum of 7 components.

- Evaluation

Maximum of a normal sleep is less than 5. If result is more than or equal 5, the participant will get poor sleep.[6]

4. Process of data analysis

Data was entered on Redcap software and then analyzed using SPSS software version 22.0

5. Ethical issues

All data collected was used for research. The results of the study were proposed for improving health of community, not for other purposes and all ethical issues in biological research were ensured.

III. RESULTS

A total number of 240 patients participated to our study in all inpatient departments of National Geriatric Hospital from April 1st to October 31st, 2019.

Demographic details of patients in this study are shown in table 3.1. The male participating the research were 113 people (54.6%) and 109 participants (45.4%) were female. The mean age of the patients was 73.25 ± 9.06 with a minimum of 60 and a maximum of 98. The age was divided into three groups: 99 people (41.3%) from 60 to 69, 79 people (32.9%) from 70 to 79 and 62 people (25.8%) more than 80 years old. Most of participants are married (83.8%). 127 respondents (52.9%) had completed secondary school and lower, 65 others (27.1%) graduated from high school and 48 people (20%) had completed college/university and above. (Table 1)

Table 1. Patients Demographics (n = 240)

Characteristics	Frequency (n)	Percentage (%)
Age (mean of age ± SD: 73.25 ± 9.06)		
60 - 69	99	41.3
70 - 79	79	32.9
≥ 80	62	25.8
Gender		
Male	131	54.6
Female	109	45.4
Marital status		
Married	201	83.8

Characteristics	Frequency (n)	Percentage (%)
Marital status		
Single/Widowed/Divorced	40	16.2
Educational level		
Secondary school and below	127	52.9
High school	65	27.1
College/university and above	48	20

Figure 1 presented prevalence of sleep disorder among older patients in the past 1 month. The number of patients with poor sleep was 197 people (82.1%), good sleepers were 43 people (17.9%). (Figure 1)

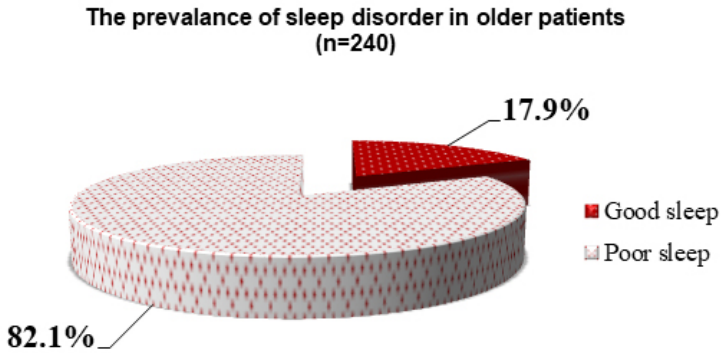

Figure 1. The percentage of people about quality of sleep (n=240)

The mean of PSQI score was 9.24 (SD = 4.43). The average of bedtime, which when patient went to bed, was 9.5pm and wake up at 5am in the morning. The mean of sleep latency was 30.8 minutes (SD = 25.5). The patients' average night sleep duration was 5.7 hours (SD = 1.49). The average bedtime was 7.5 hours (SD = 1.24). The mean of sleep quality, sleep disturbance in the night and daytime function was 1.6 (SD = 0.77), 1.39 (SD = 0.57) and 1.62 (SD = 1.03) respectively. The mean of sleep efficiency was 76.1% (SD = 18.7). (Table 2)

Table 2. The average of some variable in PSQI questionnaire (n = 240)

Variable	Mean	SD
PSQI score	9.24	4.43
Sleep quality	1.6	0.77
Sleep disturbance	1.39	0.57
Daytime function	1.62	1.03
Sleep latency	30.8 minutes	25.5
Sleep duration	5.7 hours	1.49
Bedtime	7.5 hours	1.24

Variable	Mean	SD
Sleep efficiency	76.1%	18.7

Most patients were unable to sleep within 30 minutes representing 87.9% (n = 199). Sleep efficiency was calculated by (total of hours asleep)/ (total of hours in bed) ×100 showing that the prevalence of people having sleep efficiency more than 85% was 41.3% and less than 85% was 58.7%. 45.4% of patients had nightmare. The proportion of patients feeling cold and hot was 34.6% and 22.9% respectively. (Table 3)

Table 3. The result of some components of PSQI (n = 240)

Component of PSQI	Classification	Percentage (%)
Sleep latency	Can sleep within 30 minutes	12.1
	Cannot sleep within 30 minutes	87.9
Sleep efficiency	≥ 85%	41.3
	< 85%	58.7
Sleep disturbance	Getting up at midnight or early morning	84.6
	Getting up to use bathroom	82.9
	Feeling pain	68.7
	Coughing	56.2
	Having nightmare	45.4
	Feeling difficult to breath	36.2
	Feeling cold	34.6
	Feeling hot	22.9
	Other	17.1
Sleep medication	Non-users	88.8
	Taking sleeping pills	11.2
Daytime function	No suffering from difficult in acting in daytime	17.5
	Difficult in acting in daytime	82.5

IV. DISCUSSION

This study conducted 240 participants with 131 male (54.6%) and 109 females (45.4%). It was different from one research in Thailand with a total of the 266 people, 59.4% were women and 40.6% were men.[9] It was different from that study because Iran's (Or Thailand?) research assessed the association between urinary incontinence and quality of sleep. Therefore, research subject of them mainly focused on women. Almost the study had the rate of female being higher than the rate of male. The reason may be explained by different research subject or sample size. The average age of participants in this study was 73.25 years old (SD = 9.06).

It was similar to previous research in China, the average age of participants was 72.2 years (SD = 8.3).[8]

The study showed that almost the participants had poor sleep (82.1%), with the score of PSQI ranged from 1 to 19, and mean score 9.24 (SD = 4.43). In Malaysia's study, the PSQI score ranged from 0 to 16 with a mean score of 7.1 (SD = 3.4), and majority (76.8%, n = 116) of the residents had high sleep quality index (≥ 5) indicating poor sleep quality.[10] This result was higher than the result of a research in Malaysia. The reason was that the sample size in this study was bigger than the sample size in Malaysia's study (240 > 116).

Many of participants (87.9%) could not fall asleep within 30 minutes; while this prevalence in China was lower, just 12.6%.[8] The sample size can explain for the difference (n = 240 < n = 1086)

The major of patients had to get up to use bathroom (82.9%), and wake up in the middle night or early morning (84.6%). The prevalence was also high in Thailand's study with 71.8% of participants got up to use bathroom and woke up in the middle of the night or early in the morning (64.9%).[9]

12.9% of patients reported subjectively that their sleep quality was very bad, in comparison to 19.2% in the Ethiopia's study.[6] The prevalence in Ethiopia was higher because of a larger sample size.

There were strengths and limitations of this study. Firstly, this research indicated that the prevalence of poor sleep quality among the elderly within the study area was high. The second strength was that the questionnaires used has high internal consistency and a reliability coefficient. There were several limitations in the research. First, the results can be generalized only to the field of research due to the power of the sample size calculation. Second, sleep quality was measured by self-reporting only and no objective measure, such as a polysomnography test, was included.

V. CONCLUSION

After evaluating the quality of sleep and its factors among 240 older inpatients, the results indicated a remarkable findings of 82.1% patients had poor sleep.

Acknowledgements

This work was supported by all patients and staff of the National Geriatric Hospital. I would like to thank the General Planning Department and my colleague Nguyen Lan Anh for providing me with all the necessary facilities for the study.

REFERENCES

1. Barbara, A. and R. Philips, Sleep-wake cycle: its physiology and impact on health. Washington, DC: *National Sleep Foundation, 2006*.

2. Badr, M.S., et al., Recommended amount of sleep for a healthy adult: a joint consensus statement of the American Academy of Sleep Medicine and Sleep Research Society. *Journal of Clinical Sleep Medicine,* 2015. 11(06): p. 591-592.

3. Pete, B., Quality sleep: the center of a healthy life, *Evidence of the essential role of sleep and what happens when we don't get enough of it*. 2013.

4. O'Neill, P., Caring for the older adult: A health promotion perspective. 2002: *Elsevier Health Sciences*.

5. Park, J.H., M.S. Yoo, and S.H. Bae, Prevalence and predictors of poor sleep quality in K orean older adults. *International journal of*

nursing practice, 2013. 19(2): p. 116-123.

6. Buysse DJ, Reynolds CF 3rd, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry Res* (1989) 28(2):193–213.

7. Krishnan, P. and P. Hawranik, Diagnosis and management of geriatric insomnia: a guide for nurse practitioners. *Journal of the American Academy of Nurse Practitioners*, 2008. 20(12): p. 590-599.

8. Luo, J., 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): p. e81261.

9. Thichumpa, W., et al., Sleep quality and associated factors among the elderly living in rural Chiang Rai, northern Thailand. *Epidemiology and health*, 2018. 40.

10. Rashid, A., E.K. Ong, and E.S.Y. Wong, Sleep quality among residents of an old folk's home in Malaysia. *Iranian journal of nursing and midwifery research*, 2012. 17(7): p. 512.