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Comprehensive Geriatric Assessment and Sleep Disorders Relationship in Older Nursing Home Residents

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Abstract

Aim: Our study aims to determine the factors affecting sleep disorders and quality through a comprehensive geriatric assessment in individuals aged 65 and over living in nursing homes.

Materials and methods: 107 older individuals (67 women and 49 men) who applied to the geriatric outpatient clinic and lived in a nursing home between May and July 2016 were included in the study. A comprehensive geriatric assessment was performed and their information was recorded. SF-36 quality of life scale score, Pittsburgh Sleep Quality Index (PSQI), and sleep Stanford scale score tests were performed to evaluate sleep quality.

Results: 35 (34.7%) of the individuals had a Sleep Pittsburgh scale score of less than 5 (no sleep disorder), and 66 (65.3%) had more than 5 (sleep disorder). When the cases were grouped with SF-36 scores, a negative, weak linear relationship was detected between the Stanford sleepiness scale scores and the SF-36 scale subscales of physical function, general health status, vitality, social function, and emotional function scores. (respectively; rho=-0.307, p=0.002, rho=-0.274, p=0.006, rho=-0.349, p<0.001, rho=-0.242, p=0.015, rho=-0.248, p=0.012) a positive, statistically significant relationship was found between PSQI scores and all sub-dimensions of the SF-36 scale (p<0.001).

Conclusion: Our study showed that poor sleep quality is a common problem in older individuals living in nursing homes. We determined that one of the important risk factors for poor sleep quality is the quality of life level of older people.

Keyword: Older people • Quality of life • Sleep quality • Pittsburgh scale

Introduction

The World Health Organization (WHO) defines old age as "the decrease in the ability to adapt to environmental factors" [1]. WHO considers those aged 65 and above as older. With aging, some changes occur in the sleep process, and due to these changes, the number of applications to health institutions by older people increases [2]. The prevalence of sleep problems is higher in the older than in the adult population. More than 50% of the older adults have sleep problems [3]. A study conducted in Türkiye showed that the incidence of sleep disorders was higher in older people living in nursing homes [4].

Deterioration in sleep quality in older people can cause emotional and mental disorders and loss of motivation. People who do not sleep enough experience physical, emotional, and cognitive collapse [5]. Deterioration of sleep quality also; causes daytime sleepiness, fatigue, depression, anxiety, irritability, increased sensitivity to pain, muscle tremors, decrease in mental functions, and deterioration in general health and functional status [6]. It has been observed that poor sleep quality affects individuals aged 65 and over in all biopsychosocial aspects. In our country, relatively few studies examine the factors causing sleep disorders in older people. Additionally, our study is notable for being one of the most comprehensive investigations into sleep disorder factors among older adults living in nursing homes. We aimed to determine the prevalence of sleep disorders in this population through a comprehensive geriatric assessment and to enhance sleep quality by identifying the risk factors.

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Materials and Methods

This cross-sectional, descriptive study was conducted at Bilkent city hospital geriatrics outpatient clinic between May and July 2016. The study was conducted on 107 patients from our geriatrics outpatient clinic out of 300 individuals residing at the nursing home elderly care and rehabilitation center. Participants were informed about the study, and consent was obtained from those who were literate, aged 65 and over, and volunteered.

We collected data on the patient's gender, age, education level, marital status, number of children, financial status, profession, presence of a primary caregiver, number of falls in the past year, diseases, previous surgeries, duration of stay in the nursing home (in months), number of medications used, co-morbidity status, and use of alcohol, cigarettes, or substances, as well as urinary incontinence. Body Mass Index (BMI) was calculated from height and weight measurements.

We administered several tests: Walking speed, Mini-Mental State Examination (MMSE), Mini Nutritional Assessment (MNA), Geriatric Depression Scale (GDS), Lawton-Brody Instrumental Activities of Daily Living Scale (L and B EGYA), SF-36 quality of life scale, Pittsburgh Sleep Quality Index (PSQI), and the Stanford sleepiness scale.

The PSQI provides a reliable, valid, and standardized measure of sleep quality, distinguishing between "good" and "poor" sleepers. It includes 24 questions, 19 self-reported, and 5 answered by a spouse or roommate for clinical purposes only, without affecting the score.

The SF-36 assesses health status and quality of life through 36 statements covering two main dimensions (physical and mental) and eight concepts (physical function, role limitations due to physical problems, pain, vitality, social function, role limitations due to emotional problems, mental health, and general health perception). Scores range from 0 to 100, with higher scores indicating better health-related quality of life [7,8].

The Stanford sleepiness scale is a subjective questionnaire used to gauge daytime sleepiness, rated from 1 (mildest) to 7 (most severe) [9].

Statistical analysis

We used Statistical Package for Social Sciences (SPSS) for Windows 21 (IBM SPSS Inc, Chicago, IL) for statistical analysis. The suitability of variables to normal distribution was examined using visual (histogram and probability graphs) and analytical methods (Kolmogorov-Smirnov/Shapiro-Wilk tests). Descriptive analyses were performed using mean and standard deviation for normally distributed variables, and median and maximum-minimum values for non-normally distributed variables. The frequency of categorical variables was expressed as (%). Correlation analysis was performed by Spearman rho. The statistical significance level was accepted as $p<0.05$.

Results

Of the participants in the study, 62.6% (n=67) were female, with a mean age of 82.40 ± 6.33 years. Other demographic data and the comprehensive geriatric assessment are summarized in Tables 1-3.

Variables		n (%)
Sex		
Female		67 (62.6)
Male		40 (37.4)
Educational status		
Elementary school-no education		36 (46.7)
Middle school-high school		57 (53.3)
Age groups		
Young old		12 (11.2)
Middle old		58 (54.2)
Old		37 (34.6)
Age		82.40 ± 6.33
Walking speed		1.11 ± 0.96
Weight	11.35	68.92 ± 11.35
Height	12.34	157.21 ± 12.34
BMI		27.38 ± 4.32

Years of living in a nursing home (months)	48.82	76.64 ± 48.82
Number of drugs		5.98 ± 2.84

Table 1. Descriptive statistics of participants.

Variables	n (%)
Walking speed group	
<0.8	50 (46.7)
>0.8	57 (53.3)
Fall	
No	75 (72.1)
Yes	29 (27.9)
Obesity	
No	78 (72.9)
Yes	29 (27.1)
Hypertension	
No	25 (23.4)
Yes	82 (76.6)
Coronary artery disease	
No	70 (65.4)
Yes	37 (34.6)
Diabetes mellitus	
No	83 (77.6)
Yes	24 (22.4)
Serebrovascular disease	
No	92 (86.0)
Yes	15 (14.0)
Dementia	
No	83 (77.6)
Yes	24 (22.4)
Parkinson's disease	
No	97 (90.7)
Yes	10 (9.3)
Depression	
No	78 (72.9)
Yes	29 (27.1)
Chronic obstructive pulmonary disease	
No	96 (89.7)
Yes	11 (10.3)
Heart failure	

No	95 (88.8)
Yes	12 (11.2)
Cancer	
No	99 (92.5)
Yes	8 (7.5)

Table 2. Number and percentage distributions of the variables specified for individuals.

Variables	**n (%)**
Incontinence	
No	50 (46.7)
Yes	57 (53.3)
Comorbidity	
<3	51 (47.7)
≥ 3	56 (52.3)
Geriatric depression scale	
Mild depression	69 (64.5)
Severe depression	38 (35.5)
Mini mental test	
No cognitive impairment	9 (8.4)
Mild cognitive impairment	50 (46.7)
Dementia	48 (44.9)
Mini nutritional assessment	
No risk of malnutrition	77 (72.0)
Low risk of malnutrition	24 (22.4)
High risk of malnutrition	6 (5.6)
Polypharmacy	
No	37 (34.6)
Yes	70 (65.4)

Table 3. Number and percentage distributions of the variables specified for individuals.

The mean score of the Pittsburgh sleep quality scale was calculated as 6.33 ± 4.03. 35 (34.7%) of the individuals had a score of less than 5 (no sleep disorder), and 66 (65.3%) had more than 5 (sleep disorder).

When the PSQI sub-components were evaluated individually, it was seen that latency had the highest median score. In further examination, the median PSQI score of individuals with sleep latency was 6. It was seen that the most important condition causing sleep disturbance in individuals was difficulty falling asleep.

When the cases were grouped with SF-36 scores, a negative, weak linear relationship was detected between the Stanford sleepiness scale scores and the SF-36 scale subscales of physical function, general health status, vitality, social function, and emotional function scores. Spearman rho values and significant subgroups are shown in Table 4.

Variables × Sleep-Pitsburg scale	**Sperman Rho coefficient**	**p**
Physical function	0.522	<0.001

Physical role	0.45	<0.001
General health status	0.48	<0.001
Life	0.523	<0.001
Social function	0.437	<0.001
Emotional function	0.476	<0.001
Mental health status	0.287	0.003
Pain	-0.041	0.692

Table 4. Correlation analysis of sleep Pittsburgh scale with SF 36 scale sub-dimensions.

A positive, statistically significant relationship was found between PSQI scores and all sub-dimensions of the SF-36 scale. A linear relationship was found between all sub-dimensions of the quality of life scale and PSQI scores (except for the mental health status sub-dimension). It was found to be statistically significant ($p<0.001$).

Discussion

In our study, it was determined that 65.3% of older people individuals had sleep disorders. Results were reported to be similar in studies conducted in our country and abroad. In the study conducted by Chiu et al. on 1034 older individuals in China, it was found that 75% of them had sleep disorders [10]. In the study conducted by Malakouti et al. on 400 older individuals living in nursing homes in Iran, it was observed that 83% of the older individuals had poor sleep quality and 29% had increased daytime sleepiness [11]. The study by Çalık İ. determined that 48% had poor sleep quality and 77% had excessive daytime sleepiness [12]. Both physiological changes related to age and health problems caused by multiple mobilities cause sleep problems to be encountered frequently in older adults. More comprehensive studies should be conducted to determine whether physiological changes that occur with age or increasing comorbidities and polypharmacy with age cause sleep disorders.

We found that the most significant factor causing sleep disorders in individuals was difficulty falling asleep. We found that our study was consistent with similar studies. In a study conducted by Fadıloglu et al. on older individuals living in nursing homes; it was found that 23% of older individuals had difficulty falling asleep, 47% woke up frequently after falling asleep, and 32% had difficulty falling asleep again after waking up. Reasons why patients have difficulty falling asleep: It is thought that this may be due to them trying to sleep in front of the television, trying to sleep with the room's light on, and the noise coming from other rooms in the nursing home.

One of the hypotheses of our study is that low quality of life may negatively affect sleep disturbance. Quality of life is a broad concept often defined as "well-being" and encompasses an individual's physical health, psychological state, and social relationships. Among general quality of life scales, the Short Form-36 (SF-36) is the most well-known and widely used in health care research. In this study, the quality of life of elderly individuals was assessed using the SF-36 scale and compared with Pittsburgh Sleep Quality Index (PSQI) scores, which evaluate sleep quality. A linear relationship was found between all sub-dimensions of the SF-36 and PSQI scores, except for the mental health status sub-dimension. In our study, in contrast to other studies, the quality of life of older adults was compared with their Stanford sleepiness scale scores, which assess daytime sleepiness. A linear, weak but statistically significant relationship was found with all sub-dimensions of the quality of life scale, except for mental health status and physical role sub-dimensions. As a result of the data determined by applying two scales in our study, it is seen that poor sleep quality and daytime sleepiness negatively affect the quality of life in older individuals living in nursing homes.

We found in this study, that the quality of life is directly related to sleep disorders. For older people to have high sleep quality, they must have a good quality of life. Many studies have found that mental health, physical illnesses, and quality of life may be related to sleep quality [13-16].

In our study, a relationship was found only in individuals with a positive history of dementia and CVA. Sleep disorders increase as the dementia stage progresses, and it has been reported that more pronounced sleep problems are observed in people with middle-stage dementia than in those with early or advanced stages. If the studies on this subject and the results of our study are evaluated, it is obvious that comorbidities negatively affect sleep quality. Having comorbidities can affect sleep quality in many ways: It can increase medication use, and cause chronic pain and stress. All these reasons can reduce the quality of life and disrupt the directly related sleep quality. It can be predicted that taking these diseases under control and treating them together with a comprehensive geriatric assessment will improve both the patient's quality of life and sleep quality. It is seen that for a night of quality sleep, it is important for every older person to have a comprehensive geriatric assessment, where all complaints are evaluated one by one and diagnosed early.

In our study, many data were obtained as a result of comprehensive geriatric assessment. PSQI and Stanford sleepiness scales were statistically analyzed with median scores. These data are

for older individuals living in nursing homes; No significant relationship was found with gender, BMI, duration of stay in nursing homes, walking speed, mini nutritional evaluations, mini mental test, and median scores of PSQI and Standford Sleepiness Scales in statistical analysis. Although the fact that these data were found to be meaningless in our study suggests that they may be unrelated, the small number of participants included in the study and the use of subjective scales suggest that the results will not be definitive. The most important limitation of our study is the small number of participants. It is seen that for a night of quality sleep, it is important for every older person to have a comprehensive geriatric assessment, where all complaints are evaluated one by one and diagnosed early.

Conclusion

Our study showed that poor sleep quality is a common problem in older individuals living in nursing homes. It has been shown that the most important cause of poor sleep quality is falling asleep. Individuals receiving treatment for sleep disorders have been shown to have worse sleep quality. In our study, it was determined that sleep quality in older individuals is directly related to the level of quality of life.

Conflict of Interest

The authors declare no conflict of interest.

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Ethics

Ethics committee approval was obtained from Yıldırım Beyazıt University Faculty of Medicine with decision number 215.

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