

THE EFFECT OF SLEEP ROUTINE OF GERIATRICS LIVING IN NURSING HOMES ON THEIR MOBILITY AND QUALITY OF LIFE

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Abstract: Our objective in this study was to research the effect of sleeping routine on mobility and the quality of life for geriatric patients living in nursing homes.

Materials and Methods: Our study was conducted on 50 geriatric people living in Barınyurt Nursing Home and Galatasaraylılar Yurdu Aileden Biri Nursing and Rest Home. Two groups each consisting of 25 people were formed, one of which consisted of patients without daytime sleepiness (Group 1) and the other group with daytime sleepiness.(Group 2). The groups were made up of people over 65 years of age, who were willing to cooperate, able to communicate and have a score of 23 and over from their Standard Mini Mental Test(SMMT) were involved in our study. The Ephworth Sleepiness Scale was used for determining sleepiness level, the Pittsburg Sleep Quality Index (PSQI) was used for Sleep Quality, the Tinetti Balance and Gait Assessment (TBGA) was used for mobility, and the WHOQOL-OLD was used for quality of life.

Results: As a result of the assessment conducted, it was found that there was a statistically reasonable decrease in total PSQI score ($p=0,001$), TBGA lower balance score ($p=0,00$) and total scores ($p=0,006$) in the group with sleepiness. No significant change was found in TBGA gait score ($p=0,162$). No significant change was found in WHOQOL-OLD score ($p=0,369$).

Conclusions: The study displayed that there was no difference in the quality of life for geriatric patients whereas as it was discovered that the mobility and especially the balance of the group of geriatric patients with sleepiness was more impaired. It was concluded that in order to reduce the risk of falling in geriatric patients, a consistent sleep pattern should be developed in order to increase their mobility and balance.

Keywords: Nursing Home, Geriatrics, Sleep, Mobility, Quality Of Life.

1. INTRODUCTION

The greatest issue of 21st century is the fact that societies are getting older. Life expectancy has extended and the number of elderly people in society has increased due to a variety of factors such as: improvements in medicine, science, technology, fewer wars, an increase in the level of education and people's awareness about health issues^{1,2}.

Sleep is one of the most essential needs of a person. A person spends one third of their life sleeping³. Sleeping is vital not only for relaxation of the body, but is also necessary for the completion of a person's biological cycle⁴. Sleep disorders leads to a lower quality of life and health concerns⁵.

As a person ages his sleep patterns start to change. It is estimated that there is a tendency to go to sleep earlier and wake up earlier.⁶ The time when individuals fall asleep gets shorter and they tend to wake up frequently during the night. Therefore, they get a lower quality sleep and become more sleepy during the day.

Eighty percent of the elderly population has complained about having sleep disorders at least once in their lifetime.⁷

It is reported that as a result of suffering from sleeping disorders, an older person may feel exhausted, may have trouble focusing, functioning in daily tasks, and there is an increase in morbidity, mortality and the risk of falling. Studies also show that there is a decrease in their quality of life.⁸

There are many studies on sleep quality and balance disorders and therefore, on the

risk of falling. A study conducted Terzi et al⁹ demonstrates that a person who repeatedly falls down mostly has a sleeping disorder, and an elderly person with lower sleep quality was three times more likely to fall when compared to a healthy person.⁹

Developing a healthy sleep pattern plays an important role in our quality of life. When evaluating an elder's quality of sleep, their quality of life is also taken into consideration.¹⁰

A study conducted by Gündüz et. al.¹¹ demonstrated that an older person with a sleep disorder tends to have a lower quality of life. There aren't enough studies on sleep patterns, mobility and quality of life. Therefore, a study was conducted in order to find out the effects of sleep patterns on the quality of life and mobility.

2. MATERIALS AND METHODS

Individuals:

The study was conducted between February 2016 and April 2016. People at the age of 65 and over, who were willing to cooperate and have a SMMT score of 23 and above were involved in the study.

The participants were divided into two groups: People who were sleepy during the day and not based on Epworth sleep quality. There were two groups of 25, 50 in total. The study got an approval in accordance with Medipol University non-interventional Clinical research Ethic Committee dated 26/02/2016 with the meeting number 10840098 and file number 604. The participants were informed about the study and were asked to sign a waiver.

People who had a SMMT score lower than 23, who had neurological problems, sight or hearing loss, who used assistive devices, who were diagnosed to have sleep disorders, who had been through a trauma or any kind of operation in last 6 months and who had just been recovering from an acute disease were not involved in the study.

Evaluation:

The evaluation was conducted on an individual basis. An evaluation form which included personal information like the individual's age, weight, marital status, education and health condition was designed.

The participants' cognitive functions were measured with Standardized Mini Mental test (SMMT), sleep quality was measured with PSQI and Epworth sleepiness Scale. The mobile assessment was made with Tinetti Balance and Gait. Finally, in order to evaluate the participant's quality of life the World health Organization – Quality of Life Assessment for Older Adults was used.

The Pittsburgh Sleep Quality Index:

PSQI was developed in 1989 by Buysse and his associates. The validity and reliability of PSQI was proven by the same group again. The validity and reliability in Turkish was shown by Ağargün and his associates in 1996.¹² The distinction between people 'who have good sleep pattern' and 'who have bad sleep pattern' can be clearly defined. PSQI, is a scale which evaluates sleep quality.¹³ PSQI is a self-rated scale which consists of 19 items and which can evaluate the sleep quality and disorder within the last one month. It consists of 24 questions: 19 of these 24 questions are self-rated questions and 5 are the ones to be asked to the spouse the roommate. These 5 questions are used for the clinic information and are not included in the score.

18 questions of the scale that are to be scored have 7 components. The questions are scored out of 0-3. The higher scores demonstrate bad sleep quality. The components are subjective sleep, sleep latency, sleep duration, habitual sleep efficiency, sleeping disorders, use of sleeping medications and daytime dysfunction over the last month. First, each of them is evaluated separately and then all the scores of the components are added. If the overall score is 2 and above, it is considered to be bad sleep quality. In short, good sleep quality is shown as (0-4 points) and bad sleep quality is shown as (5-21 points)

Epworth Sleepiness Scale:

ESS is a scale which is simple and based on self-rated. It evaluated the individual's general sleepiness level. It aims to observe the individual's chance of falling asleep and feeling sleepy over in 8 different daily activities. It is a simple, user friendly, valid and reliable scale consisting of 8 items and applied to evaluate an adults' general sleepiness level. According to ESS, a person can have a score between 0-24. A person who scores 10 and above are considered to have ' increased sleepiness during the day.¹⁴

Tinetti Balance and Gait Assessment (TBGA):

This assessment was first developed by Mary Tinetti to evaluate the patients with a high risk of falling. TBGA analyzes balance ability and gait in two sections. The first nine questions are about balance and the next seven questions are about gait. According to the scale, a person who has the overall score of 18 or less has a high risk of falling and a person who has the overall score between 19-24 has a moderate risk of falling. Finally a person who has the overall score of 24 has a low risk of falling.^{15,16}

World Health Organization Quality of Life Assessment for Older Adults (WHOQOL-OLD):

WHOQOL group designed WHOQOL-OLD module due to the lack of suitable scales to evaluate elders' quality of life thoroughly. They designed the module simultaneously in 22 different countries and proved its validity.

The validity and reliability of WHOQOL-OLD in Turkish was accomplished in 2004 by Eser and associates.¹⁷ WHOQOL-OLD module consists of 24 question. The answers were collected with quinary Likert scale in 6 dimensions. The higher the score is, the better the quality of life is.

3. STATISTICAL ANALYSIS

Statistical analysis were designed using SPSS 21.0 package. Data was expressed as average \pm standard deviation. Frequency and percentage values were calculated for the descriptive statistics. In order to get the group average, student's t independent test was used. In relation to the correlation analysis, the coefficients of spearman correlation were calculated and the p value was accepted as $p < 0.05$.

Results:

In our study Group 1 had the an average age of 77.28 ± 9.44 whereas in Group 2 the average was 83.16 ± 6.95 . The study showed that there was a difference in different age groups. Table 1 shows the participants' VK1, gender, marital status and education.

TABLE 1: The Participants' Sociodemographic Properties

		Group 1	Group 2		
		mean \pm sd	mean \pm sd	p	
Age		77,28 \pm 9,44	83,16 \pm 6,95	,016*	
BMI		25,32 \pm 3,43	24,88 \pm 3,32	,647	
		Group 1		Group 2	
		n	%	n	%
Gender	Female	10	40	15	60
	Male	15	60	10	40
Marital Status	Married	3	12	3	12
	Single	22	88	22	88

Educational Level	Primary School	2	8	5	20
	Middle School	9	36	6	24
	High School	10	40	11	44
	University	4	16	3	12
Systemic disease (number)		17	68	21	84
*p<0,05					

Table 2 shows the difference between the quality of sleep, Tinetti balance score and quality of life measurements of group 1 and group 2.

The study pointed out that the group who felt sleepy during the day had higher PUKİ scores. Moreover, although the groups were not designed based on age, when compared, the participants in Group 1 had less sleeping time.

According to the study, the group who felt sleepy during the day had lower Tinetti balance and overall Tinetti scores. (Table 2)

According to WHOQOL-OLD scores, no significant results in parameters about the quality of life were obtained between the two groups. (Table 2).

TABLE 2: The Participants' PSQI, TINETTI and WHOQOL-OLD Scores

	Group 1(n=25)	Group 2(n=25)	p
	mean±sd	mean±sd	
PSQI	3,12±2,80	6,20±3,35	,001*
TINETTI			
Tinetti Balance	14,76±1,89	12,72±1,86	,000*
Tinetti Gait	10,20±2,19	9,36±1,97	,162
Tinetti Total	24,96±3,49	22,40±3,72	,006*
WHOQOL-OLD			
Sensory Functions	83,25±19,49	78,50±17,95	,375
Autonomy	71,75±15,84	78±9,39	,096
Past, Present and Future Activities	71,25±15,83	75,25±12,43	,325
Social Participation	61,00±17,61	63±16,42	,680
Death and Dying	90±19,76	92,75±12,19	,557
Intimacy	73±16,60	78,50±19,01	,281
Total Score	75,04±10,65	77,66±9,81	,369
*p<0,05			

4. DISCUSSION

In the study that we conducted on the effect of sleep patterns on the mobility and quality of life of geriatric patients who were living in the nursing home, it was concluded that the mobility scores of the patients who were sleepy during the day were lower compared to the patients who had a better sleep pattern during the night. Patients with a good sleep pattern had a lower risk of falling as well. The study also demonstrated that patients who were sleepy during the day had a lower score in the balance section of TGBA score which lead to a higher risk of falling. However, no significant relationship between the sleep pattern and quality of life in either group was found. On the other hand, both groups had high scores in regards to quality of life.

People at the age of 65 and above are considered to be geriatrics in literature. We involved people between the ages of 65-85 in our study. It was seen that the age average of the group who was sleepy during the day was higher. We assume that this is due to the changes in sleep pattern that occur as we age.

Daytime sleepiness is one of the biggest sleep problems that old people encounter. It brings along cognitive and concentration problems and a tendency to fall down. According to the study conducted by Soykök and et al¹⁸, the percentage of encountering cognitive functions with people who has daytime sleepiness is %63,7 whereas the percentage

of encountering cognitive functions with people who have sleep disorders during the night is %53.8. The frequency of having a cognitive disorder with people who felt sleepy during the day is 3.48 times more than the ones who don't feel sleepy. Having chosen old patients with SMMT 23 and above, we eliminated the possibility of such cognitive problems.

Sleep problems are the most common problems that elders have. %50 of people living in their own houses and %65 of old people living in the nursing homes are complaining about sleep problems. In their study Fadiloğlu et al¹⁹ evaluated elderly people's quality of sleep using PSQI. People with no cognitive disorder, who can communicate and were willing to participate were involved. %23 of the participants complained about having trouble falling asleep, %52 of them expressed that they sleep 7-8 hours, %47 stated that they wake up frequently during the night. So it was concluded that %77 of the participants had poor quality of sleep and the score of their quality of sleep was 8.02 ± 2.87 . Also in our study it was found out that it takes a longer time to fall asleep and the sleeping period and the quality of sleep that the people who feel sleepy during the day is quite low. Geriatrics also support the fact that the older you get, the lower the quality of sleep becomes.

In addition to changes in sleep pattern that occur as we age, there is also decline in the mobility and an increase in the risk of experiencing balance disorder. Terzi et al⁹ researched the relevant factors of geriatric patients' repetitive fall. 61 old people who had experienced falling twice in the previous year was compared to 60 old people had no history of falling. Mobility was evaluated using Berg balance and the get up and walk test, the quality of sleep was evaluated using PSQI and depression was evaluated using Geriatric Depression Scale. As a result, statistically reasonable differences in terms of gender, age, vision problems, use of more than four different medications, depression, quality of sleep and balance occurred within the group who had experienced falling the previous year compared to the other group. In our study, the TGBA balance and total scores of daytime sleepiness group were considered to be far more significant than the other group. It was concluded that feeling sleepy during the day and old age can lead to loss of balance.

In their study Mesas et al²⁰ worked with 1542 patients at the age of 68 and above. They evaluated the participants' health conditions, life styles, comorbid conditions and quality of sleep. It was found that women who sleep for 11 hours or more have a higher risks of falling. There was no reasonable correlation between sleep and falling down when men below the age of 75 were studied.

When people older than 75 were evaluated, it was found that people who sleep for 5 hours and less and 11 hours and more tend to fall more than people who sleep for 7-8 hours. Therefore, it was concluded that the period of sleeping time had an effect on falling. Although we did not separate people into groups according to ages in our study, we found out that people who were sleepy during the day generally had fewer sleeping hours and low balance and mobility. We believe that, in order to reduce the geriatric patients' risk of falling they should develop a healthy sleep pattern.

As people get older, there is a change in their life expectation and there is a decline in their quality of life. Their quality of life declines due to the fact that they live dependently on others, they have to get by with their pensions and they have visual or auditory problems. When we researched the correlation between sleep pattern and quality of life there was no difference between the groups.

A study was conducted by Bilgili et al²¹ on the quality of life of the people living in Turkey. The WHOQOL-OLD scale was used in order to evaluate their quality of life. Sociodemographic information of 300 elders was taken. There were differences in their social participation, sensory functions and autonomy. People around the age of 75 had low scores of social participation and autonomy while they had high scores of sensory functions. Sensory functions, past- present and future activities, social participation and the answers to the questions related to death and about dying were higher with the people with a higher education level. Age, gender, marriage, giving birth, social security, diseases, living places and income played a considerably important role on structuring old people's quality of life. Our study pointed out that people in the nursing homes had a better quality of life. We assume that this is because they are taken care of well, they don't have financial problems and they have a very good social environment.

Almomani et al²² conducted a study on 221 old people to research the correlation between their quality of life and physical, cognitive and mental disabilities. The assessments were made using SMMT, TGBA, and Health Related Quality of Life and Geriatric Depression Scale. According to the results, there was a relationship between TGBA and quality of life in terms of health, not having enough sleep, having pains and being in need of other people's help. No significant

relationship was found between TBGA and quality of life in our study. We assume that, these results are due to the difference of quality of life scale.

Uzunkulaoğlu et al²³ conducted a study on 100 geriatric patients to research the factors of sleep disorders and their effects on quality of life. Medical Outcomes Study Sleep Scale (MOSS-SS) scores, Geriatric Depression Scale, Charlson Comorbidity Index and Short form- 36 health survey (SF-36) were used in this study. It was found that 48% of the participants had sleep disorders. When two groups – the group with and without sleep disorder- were compared, no significant difference in terms of gender, marital status, life style, mini mental test score, comorbidity, polypharmacy and use of sleeping medications was found. Only SF-36 mental health score was considered to be statistically significant. Different sleep and quality of life evaluation scales other than ours were used and different results were found.

5. RESULT

In our study, although there was no difference in the geriatrics' quality of life, it was found out that people who had daytime sleepiness had mobility and especially balance problems. It was concluded that in order to reduce the risk of falling, a healthy sleep pattern should be developed and mobility and balance should be improved.

We also drew the conclusion that in order to avoid balance disorder of people who suffer from sleep disorder and therefore, daytime sleepiness, they should be involved in muscle strengthening and balance programmes. Besides, we believe that if we can reduce sleep disorder and improve their quality of sleep by providing them with sleep hygiene, then we can prevent them from daytime sleepiness and get rid of balance and mobility problems.

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