

# Sleep quality in the elderly either living at home or in a nursing home

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## KEY WORDS

elderly, nursing home, sleep quality, Pittsburgh Sleep Quality Index.

## ABSTRACT

### Objective

Changes in sleep duration, pattern, and quality occur with ageing. The aim of this study was to analyse the sleep quality and affecting factors in the elderly living either at home or in nursing homes.

### Design

Descriptive and cross-sectional study

### Setting

Sivas, a central Anatolian city in Turkey.

### Subject

This study was carried out with 112 individuals; 52 were living in a nursing home and 60 at home.

### Main outcome measures

A personal information form and Pittsburgh Sleep Quality Index (PSQI).

### Results

There was no statistically significant difference between mean scores and sleep qualities of both groups ( $p > 0.05$ ). The sleep quality of the individuals in both groups was not significantly influenced by personal variables such as age, gender, education, income, having children, and having a physical illness ( $p > 0.05$ ). Individuals in both groups who reported their sleep as inadequate had sleep problems, and those who reported their sleep was affected for various reasons and who perceived their health as poor had significantly worse sleep quality ( $p < 0.05$ ).

### Conclusion

The sleep quality of the elderly living either at home or in a nursing home were at similar levels and more than half of individuals in both groups had poor sleep quality.

## INTRODUCTION

Ageing is a physiological process that begins at birth. This biologically inevitable process has health-related, social, cultural, and economic dimensions. Although there are commonly used definitions of old age, there is no general agreement on the age at which a person becomes old. At the time of writing there is no United Nations (UN) standard numerical criterion, but the UN has agreed the cut-off is 60+ years to refer to the older population (World Health Organization 2012). In almost every country, the proportion of people aged over 60 years is growing faster than any other age group, as a result of both longer life expectancy and declining fertility rates. In Europe, older people constitute around 17.4% of the total population and it is expected that this will increase to 30% in 2060 (Eurostat 2012). According to data from the Turkish Institute of Statistics (TUIK) in 2012, 7.5% of the Turkish population was 65 and over. It is estimated that it will increase to 10.2% by 2023 (TUIK 2012).

Ageing is not an illness but the increasing number and severity of health problems and declining functional abilities are among the potentially life-changing problems of ageing. People experience many changes in physical, mental, and social aspects as they age. One of the physical changes in older individuals is in the characteristics of their sleep. Changes in sleep duration, pattern, and quality occur with ageing (Goktas and Ozkan 2006). The difficulty of falling asleep, maintaining sleep, sleep fragmentation, getting up too early in the morning, and more day sleeps are the other changes that occur in older people with ageing. Other symptoms include tiredness, tension, anxiety, headaches, poor memory performance, upset stomachs, anger, and lack of energy (Barthlen 2002).

The prevalence of sleep disturbances increases during old age: 50% of people over the age of 65 and 65% of those staying in nursing homes experience sleep disturbances (Fadiloglu et al 2006; Zeitlhofer et al 2000). Also, poor sleep quality becomes common with ageing (Ancoli-Israel 2004; Neubauer 1999). There are many factors affecting sleep quality in older adults, which include respiratory problems during sleep, restless leg syndrome, nocturia, pain, osteoarthritis, heart failure, incontinence, prostate hypertrophy, menopause-related problems, pruritus, allergies, Alzheimer's, depression, dementia, social isolation, loneliness, being bedridden, experiences of loss, drug use, and living in nursing homes (e.g. inadequate lightning, keeping light on during the night, noises, etc.) (Akkus and Kapucu 2008; Eser et al 2007; Goktas and Ozkan 2006). Some of the consequences of poor sleep quality in the elderly include cognitive decline, increased risk of falls, daytime fatigue, and reduced physical and mental health and health-related quality of life status (Bilgili et al 2012).

Better quality of life in elderly people can be achieved by increasing sleep quality as well as promoting good sleep. In order to improve their quality of life and health status, the assessment of sleep characteristics by health-care providers, especially by nurses, is essential and is an important caring activity. Nurses play an important role in recognising the negative effects of sleep disturbances on well-being and the quality of life. In the assessment of the sleep characteristics of the elderly, taking a detailed history, sleep hygiene, sleep patterns, medical diseases, and drugs should all be evaluated (Ulusoy Kaymak et al 2010; Beck-Little and Weinrich 1998). Health-care professionals should be aware that the sleep problems of the elderly are an integral part of life. Close observation to detect signs of sleep problems and insomnia, listening carefully to what they say about sleep problems and their complaints about sleep, evaluating their sleeping habits and influencing factors, and implementing interventions for the problem are important (Chen et al 2010; Lai and Good 2005; Ancoli-Israel 2004). The aim of this study is to analyse the sleep quality and the factors affecting it in the elderly living at home or in nursing homes.

## METHOD

### Participants

This descriptive study was conducted from April to July 2012 in Sivas, a Central Anatolian city in Turkey. There were 60 elderly people living in a nursing home which was located in the city centre. As the aim was to include all of the old people living at the nursing home the sample selection was not applied. The sample for this study consisted of elderly people without communication difficulties or dementia who volunteered to participate. Eight of the older people living at the nursing home were excluded due to communication difficulties and hospitalisation during the study period. A total of 112 individuals were included, 52 of whom were living at the nursing home and 60 living at home. Elderly people living at home were selected from Sivas district. Both groups' socio-demographic characteristics were similar.

### Data collection tools

Data were collected with a personal information form and the Pittsburgh Sleep Quality Index (PSQI).

### Personal Information Form

This was prepared by the researchers based on the literature. It consisted of 27 questions about socio-demographic and sleep characteristics.

### Pittsburgh Sleep Quality Index (PSQI)

This was developed by Buysse et al (1989) and is a self-rated questionnaire which assesses sleep quality and sleep disturbances over a 1-month time interval. The scale contains 19 self-rated questions from which seven component scores are calculated and summed into a global score. These components include subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction over the last month. The client self-rates each of the seven areas of sleep quality. The scoring of answers is based on a 0 to 3 scale, where 3 represents the negative extreme on the Likert Scale. Therefore, higher scores represent worse sleep quality: component scores range from 0 to 3 and global scores range from 0 to 21. A global sum of less than 5 indicates *good quality*, while 5 or greater indicates a *poor quality* sleeper.

Turkish translation and validation of the PSQI has been performed by Ağargün et al (1996) and Cronbach's alpha level was reported as 0.80. For this study Cronbach's alpha level was computed as 0.74.

The study was performed according to the Helsinki Declaration, and Cumhuriyet University's Clinical Research Ethics Board approved this study (project decision date: 28.03.2012). Data was collected by researchers via face-to-face interviews with elderly people after explaining the study aim and obtaining their consent. All interviews were undertaken at the day room or in the elderly people's rooms for those living in the nursing home, and by visiting researchers for the elderly living at home. Each interview lasted about 15–20 minutes.

### Data Analyses

SPSS (SPSS, Version 14.0 for Windows 2000) was used for data entry and analysis. Chi-square, t test, Mann Whitney U, and Kruskal Wallis tests were applied for study variables (sleep quality, sleep features and demographics). For all analyses,  $p < 0.05$  was considered significant.

## RESULTS

The mean age of elders living at their own home was  $73.95 \pm 5.85$  and for the elderly living at the nursing home was  $74.78 \pm 8.91$ . The majority of the elders living at home were in the 66–70 and 76–80 age groups, married (68.3%), male (75%), and primary school graduates (53.3%); their income met expenditure (75%), they had children (95%), they perceived their health status as unwell/poor (53.3%), they were non-smokers

(98.3%), they did not need help at home (76.7%), and they lived together with their wives, children, and grandchildren (55%). Most of the elders living in the nursing home were between 76–80; they were widowed (80.8%), male (75%), literate (51.9%), had income which met expenditure (71.2%), had children (65.4%), perceived their health status as unwell/poor (53.8%), were non-smokers (86.5%), and lived in a double room in the nursing home (63.5%).

A comparison of the sleep qualities of the elders living at home and in the nursing home is presented in table 1. It was determined that 55.8% of the elderly living in the nursing home and 63.3% of those living in their own home had poor sleep quality. There was no statistically significant difference between general sleep score average and the sleep qualities of both groups ( $p > 0.05$ ).

**Table 1: Comparison of the Sleep Qualities of the Elderly Living in Nursing Homes and at Home**

Sleep Quality	Home		Nursing Home		Test
	n	%	n	%	
Good sleep quality	22	36.7	23	44.2	$\chi^2 = 0.663$ $p = 0.415$
Poor sleep quality	38	63.3	29	55.8	
Total	60	100.0	52	100.0	

The mean scores for the PSQI in general and for subgroups of the elders are provided in table 2. For elders living at home, the PSQI general score average is  $7.28 \pm 3.97$ ; subjective sleep quality,  $1.10 \pm 0.87$ ; sleep latency,  $1.33 \pm 1.15$ ; sleep duration,  $1.13 \pm 1.21$ ; habitual sleep efficiency,  $1.30 \pm 1.22$ ; sleep disturbances,  $1.48 \pm 0.65$ ; use of sleep medication,  $0.26 \pm 0.82$ ; and daytime dysfunction,  $0.66 \pm 0.81$ . For the elders living in the nursing home the PSQI general score average is  $7.44 \pm 4.40$ ; subjective sleep quality,  $1.15 \pm 1.05$ ; sleep latency,  $1.69 \pm 1.11$ ; sleep duration,  $1.17 \pm 1.23$ ; habitual sleep efficiency,  $1.19 \pm 1.35$ ; sleep disturbances,  $1.48 \pm 0.57$ ; use of sleep medication,  $0.21 \pm 0.72$ ; and daytime dysfunction  $0.53 \pm 0.89$ . There was no statistically significant difference between the general and subgroup average scores of both groups ( $p > 0.05$ ).

**Table 2: The Mean Scores of PSQI general and subgroups**

Mean scores of PSQI general and subgroups	Home (n = 60)		Nursing home (n = 52)		t	p
	$\bar{x}$	SD	$\bar{x}$	SD		
PSQI General	7.28	3.97	7.44	4.40	0.201	0.841
Subjective sleep	1.10	0.87	1.15	1.05	0.295	0.769
Sleep latency	1.33	1.15	1.69	1.11	1.665	0.099
Sleep duration	1.13	1.21	1.17	1.23	0.172	0.864
Habitual sleep efficiency	1.30	1.22	1.19	1.35	-0.441	0.660
Sleep disturbances	1.48	0.65	1.48	0.57	-0.022	0.983
Use of sleep medication	0.26	0.82	0.21	0.72	-0.374	0.709
Daytime dysfunction	0.66	0.81	0.53	0.89	-0.792	0.430

In this study, the sleep quality of the individuals in both groups was not significantly influenced by demographic variables such as age, gender, education, income, having children, and having a physical illness ( $p > 0.05$ ; table 3). Although it was not statistically significant, the elders in the 62–65 and 76–80 age groups who did

not have a partner, were female, high school education level had PSQI mean scores that were higher than others groups living at home. Similarly, elders in the 76–80 age group, who did not have a partner, and had a primary school education level had PSQI mean scores that were higher than others groups living in the nursing home.

**Table 3: Mean Scores of PSQI according to demographic variables of the elderly living in nursing homes or at home**

Demographic variables	Home (n = 60)	Nursing Home (n = 52)
	$\bar{\chi} \pm SD$	$\bar{\chi} \pm SD$
<b>Age</b>		
62–65	9.20±4.08	5.37±3.50
66–70	6.75±4.90	7.71±5.46
71–75	6.33±3.19	7.00±3.74
76–80	8.43±4.24	8.81±4.81
81–88	6.62±2.06	7.16±4.21
	F = 0.967, p = 0.433	F = 0.860, p = 0.495
<b>Marital status</b>		
Married	6.70±3.91	-
Single	-	5.30±3.74
Divorced/widow	8.52±3.90	7.95±4.43
	MU = 137.500, p = 0.091	MU = 291.000, p = 0.116
<b>Gender</b>		
Female	8.93±3.67	7.61±5.15
Male	6.73±3.95	7.38±4.19
	MU = 226.000, p = 0.056	MU = 249.500, p = 0.932
<b>Education</b>		
Literate	8.08± 3.65	6.37±3.84
Primary	6.43±3.71	8.72±4.51
High school and over	9.66±8.02	7.66±7.37
	KW = 2.698, p = 0.259	KW = 2.542, p = 0.281
<b>Income and expenditure</b>		
Meets	6.93±3.81	7.35±4.19
Not meets	8.33±4.38	7.66±5.02
	MU = 276.000, p = 0.292	MU = 275.000, p = 0.960

Abbreviations: KW: Kruskal Wallis; MU: Mann Whitney U.

Individuals in both groups who reported their sleep to be inadequate had sleep problems, and those who reported that their sleep was affected for various reasons and who perceived their health to be bad had significantly worse sleep quality ( $p < 0.05$ ). Also, old people with physical illness and in pain who were living at home as well as in the nursing home reported not feeling rested after waking up and had a significantly poor sleep quality ( $p < 0.05$ ; table 4).

**Table 4: Mean Scores of PSQI according to sleep features of the elderly living in nursing homes or at home**

Sleep features	Home (n = 60)	Nursing Home (n = 52)
	$\bar{\chi} \pm SD$	$\bar{\chi} \pm SD$
<b>Effecting factor of sleep</b>		
Yes	9.05±4.35	9.48±4.54
No	6.40±3.49	5.24±3.01
	MU = 259.000, p = 0.026	MU = 160.500, p = 0.001
<b>Sleep problem</b>		
Yes	10.62±4.08	11.15±3.94
No	6.06±3.19	5.30±3.036
	MU = 143.000, p = 0.000	MU = 83.500, p = 0.000
<b>Perception of the sleep adequacy</b>		
Adequate	6.52±3.46	5.51±3.06
Not adequate	9.78±4.62	12.20±3.52
	MU = 195.000, p = 0.026	MU = 51.500, p = 0.000
<b>Feeling rested after waking up</b>		
Yes	6.92±3.73	6.14±3.32
No	7.90±4.37	10.11±5.19
	MU = 370.500, p = 0.465	MU = 162.000, p = 0.008
<b>Physical disease status</b>		
Yes	7.70±3.92	7.75±4.50
No	5.20±3.70	6.75±4.21
	MU = 153.500, p = 0.055	MU = 252.500, p = 0.480
<b>Perception of health</b>		
Good	5.78±3.27	5.66±3.96
Moderate	8.57±4.08	8.18±4.65
Poor	8.63±4.38	10.00±3.56
	KW = 6.775, p = 0.034	KW = 9.171, p = 0.010
<b>Pain status</b>		
Yes	8.32±4.07	8.06±4.53
No	5.60±3.22	6.52±4.13
	MU = 265.500, p = 0.015	MU = 254.500, p = 0.184

Abbreviations: KW: Kruskal Wallis; MU: Mann Whitney U.

## DISCUSSION

In general, sleep is important for every age group. Elders need quality sleep to maintain an optimal quality of life as well as to protect both their body and mental functions (Hoffman 2003). Sleep takes up approximately one-third of human life and is an important factor in the promotion and maintenance of health.

This study aimed to analyse sleep quality and factors affecting it in the elderly living at home or in a nursing home; it showed that more than half of the individuals living at home had poor quality sleep and a high PSQI score. Results from other studies support this finding. Studies examining the sleep quality of elders living at home have reported that more than half of the subjects had sleep disturbances (Karagül et al 2011; Malakouti et al 2009; Foley et al 1995). In this study, the elderly living in the nursing home had poor quality sleep and high PSQI scores. Previous studies from Turkey on the elderly living in nursing homes have reported similar

results; different studies have reported poor sleep quality in 77% (Fadiloğlu et al 2006), 60.9% (Eser et al 2007), and 50.5% (Bilgili et al 2012) of the subjects included. Also, a study by Fetveit and Bjorvatn (2002) found that two out of three respondents had some sleep difficulties; another study (Babacan et al 2009) reported that more than half of elders living at a nursing home had sleep problems such as 'falling asleep', 'maintaining sleep', and 'taking a nap'.

In this study there was no statistically significant difference between general sleep score average and the sleep qualities of both groups. Sleep-related problems are common in the general population. With an ageing society, medical and physiological problems increase and one of these is poor sleep quality (Martin et al 2006). Consistent with these findings, Bilgili et al (2012) reported there was no statistically significant difference between elders living at home or in nursing homes.

In the present study, the sleep quality of the individuals in both groups was not significantly influenced by personal variables such as age, gender, education, income, having children, and having a physical illness. In several studies gender has been considered a predictor, with women having better quality sleep than men (Babacan et al 2009; Malakouti et al 2009; Fadiloglu et al 2006; Goktas and Ozkan 2006). Other studies in Turkey have shown the mean scores for the sleep quality of elders were not significantly influenced by marital status, education, income (Babacan et al 2009; Fadiloglu et al 2006), or gender (Bilgili et al 2012).

In this study, individuals in both groups who reported their sleep to be inadequate had a sleep problem, and those who reported their sleep was affected for various reasons and who perceived their health to be poor, had physical illnesses, were in pain, reported not feeling rested after waking up, and who were living either at home or in the nursing home reported significantly poor sleep quality. Advancing age, increasing physical illness, more medications, acute and chronic diseases, and drugs have negative effects on sleep. Common symptoms in elderly people such as pain, dyspnoea, coughs, and frequent urination can continue during the night causing sleep disturbances (Goktas and Ozkan 2006). Lack of sleep, sleep problems and the perception of poor health negatively affects the quality of sleep in an old person. As a result of the advancement of age, problems related to sleep increase and adversely affect an individual's perception of poor health and sleep (Ulusoy Kaymak et al 2010). In the literature, poor health status and physical illness have been reported to be correlated with an increase in sleep complaints (Bilgili et al 2012; Babacan et al 2009; Eser et al 2007; Beck-Little and Weinrich 1998).

### **LIMITATIONS OF THE STUDY**

Several limitations must be considered when interpreting data from this study. This is a cross-sectional study and causality cannot be assumed. The sleep pattern in this study was evaluated using self-reports, and there was no validation by more objective measures such as polysomnography. The healthy independent sample of the study, self-reported sleep quality may not be truly representative and limits to the generalisation of results to other groups.

### **CONCLUSION**

According to the study's findings, the sleep qualities of the elderly either living at home or in a nursing home are at similar levels, and more than half of the individuals in both groups have poor sleep quality. In Turkey, the number of elderly individuals in the population is gradually increasing and, as a result, the problems of elderly people are growing. Elderly people need to have good quality sleep in order to maintain their quality of life. Sleep problems are common among elders. Recently, increased attention to the sleep problems of the elderly has been observed in Turkey. As in other health-care settings, health-care professionals working in nursing homes and family care centres should conduct research to improve the quality of care for elderly

people. They should be mindful of the issue of sleep in any environment, and address this issue together with the elderly in order to develop interventions for their sleep problems. In order to improve their quality of life and health status, health-care providers should recognise and take the necessary actions to alleviate these problems.

In conclusion, because nurses encounter elderly people in every setting, it is important to evaluate sleep problems, educate them about sleep hygiene, and provide consultancy to elderly people.

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