ORIGINAL ARTICLE

ANALYSIS OF THE CORRELATION BETWEEN SLEEP QUALITY AND LONELINESS LEVELS IN GERIATRIC INDIVIDUALS

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Abstract

Introduction: This study aims to investigate the correlation between sleep quality and loneliness levels in the geriatric population.

Materials and Method: A cross-sectional study was conducted with individuals aged 65 and older (N = 89) registered at a community health centre in Turkey. Participants completed a Descriptive Characteristics Form, the Loneliness Scale (UCLA-LS), the Standardized Mini Mental State Examination, and the Pittsburgh Sleep Quality Index (PSQI).

Results: The mean scores for loneliness and sleep quality were 46.09 ± 9.15 and 7.47 ± 3.12, respectively. A moderate positive correlation was found between loneliness scores and the components of Subjective Sleep Quality, Sleep Latency, Sleep Disturbance, Sleep Medication Use, and total PSQI ($p<0.05$).

Conclusion: The study revealed that geriatric individuals experienced moderate levels of loneliness and reported poor sleep quality. It was also found that the more loneliness they felt, the worse their sleep quality.

Keywords: Aged; Sleep; Loneliness.

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INTRODUCTION

With the advances in healthcare and technological developments, the increase in the average life expectancy in many countries around the world, has increased the proportion of people over the age of 65 in the population. As a natural result of this, the health and social problems of individuals in the geriatric age group are becoming more and more important (1). In geriatric individuals, the changes in sleep patterns and quality, along with the increase in the likelihood of many diseases and the use of medications as they age, lead to changes in their sleep structure. This causes geriatric individuals to face difficulties in performing activities of daily life (2). In a previous study performed by Aşiret and Çetinkayain which the sleep quality of elderly patients was evaluated, it was reported that these individuals had very poor sleep quality (3). In another study performed on geriatric individuals in Turkiye, it was found that elderly participants woke up very often at night and that this negatively affected their sleep quality (4). The results of many studies performed on the sleep quality of geriatric individuals in the world support the above results, and it has been determined that most geriatric individuals have sleep problems and their sleep quality levels are low (5-7).As aging progresses, older adults often shift from active roles to more passive ones and gradually withdraw from professional, social, and cultural environments. This transition can lead to increased isolation, reduced communication with others, and a heightened sense of loneliness(8,9).

One of the groups that has important roles in the care of geriatric individuals and is interested in the care of these individuals is nurses, who provide care to elderly participants in nursing homes, primary care centers, and psychiatric wards (10). Identifying the relationship between sleep quality and loneliness in the elderly is crucial, as addressing both issues together can support nursing care and medical interventions. Psychiatric nurses should be equipped to recognize and assess these problems, which can help enhance the quality of life and overall health of geriatric individuals. The researcher evaluated the correlation between sleep quality and loneliness levels of geriatric individuals.

Research Question:

1. Is there a relationship between sleep quality and loneliness levels in older individuals?

MATERIALS AND METHOD

Design

The study used a descriptive cross-sectional fashion and looked at 89 people aged 65 and up who were registered at a Community Healthcare center in Elazığ between October 2024 and March 2025.

Sample and Participants

To determine the sample size, the required sample size was calculated based on statistical techniques appropriate to the research question (Is there a relationship between sleep quality and loneliness levels in older individuals?). The required sample size for the study was calculated using correlation analysis using the G*Power 3.1.9.7 package program. The required sample size was found to be 84 (11), with a medium effect size (0.3), β=0.80, and α=0.05. Thanks to the researcher's efforts, 89 elderly participants participated in the study. Computer-assisted simple random sampling was used to determine the participants.

Inclusion Criteria

- A Standardized Mini Mental Test score of 24 and above
- Being open to communication and collaboration
- Volunteering to participate in the study

Exclusion Criteria

- Having a communication problem
- Having a psychiatric disease

Data Collection Tools

The Descriptive Characteristics Form, the Standardized Mini Mental Test, UCLA-LS, and PSQI were employed to collect the data.

Descriptive Characteristics Form

The form had 10 questions prepared by the researcher by scanning the literature, including age, sex, marital, educational and employment status, chronic disease, regular medication use, sleep quality, who you live with, and smoking habit.

Standardized Mini-Mental Test

Developed by Folstein et al. (1975), the original test, and the one developed by Molloy and Standish (1997) are easy to apply and provide data about the degree of cognitive impairment (12, 13). The validity-reliability of the SMMT was performed by Gülgen et al. in our country in 2002 .Gülgen et al.'s study reported that the threshold value of the scale was 23/24 with a sensitivity of 0.91, a specificity of 0.95, and high reliability between examiners (Pearson coefficient: 0.99, Kappa: 0.92) (14).

UCLA-LS

Russell, Peplau, and Ferguson (1978) developed the UCLA Loneliness Scale to measure the loneliness levels of individuals (15). The validity-reliability study of this scale in Turkish was performed by Demir (16), and it was reported that it was suitable for Turkiye. The internal consistency analyses were calculated on a total of 72 people, and the Cronbach α was calculated as .96in the study.

PSQI

A self-report measure called the PSQI is used to assess sleep disruption and quality over a one-month period. The PSQI was created by Buysse et al. in 1989 and has demonstrated sufficient validity, test-retest reliability, and internal consistency (17). Ağargün, Kara, and Anlar evaluated the validity-reliability of the index in our nation and concluded that it was appropriate for Turkish society. It was discovered that the Cronbach's α was 0.80. Each item is evaluated on a 0-3 scale, and the sum of the 7 component scores constitutes the total PSQI score. The total score has a value between 0-21 and higher scores indicate poor sleep quality (PSQI $\leq$5 = good sleep quality and PSQI >5 = poor sleep quality (18).

Data Collection

Researcher collected data in a Community Healthcare Center in Elazığ using the face-to-face interview method in a room. The researcher read data collection tools to participants and filled in according to the answers received, which took 20-25 min.

Data Analysis

Cronbach's α was employed to see the internal consistency. Normality distributions were examined by Skewness-Kurtosis values. The data were given with percentage frequency, mean scores, and standard deviation values. The Independent Groups T-Test was employed to compare the mean scores of two independent groups, and the One-Way Anova Test was employed to compare the mean scores of three or more independent groups. The Pearson Correlation Analysis was employed to determine relational inferences. Effect sizes were given with the Partial Eta Squared Value and the Cohen's d-Value. Analyses were made with IBM SPSS 25.

Ethical Aspects of the Study

Health Sciences Non-Interventional Clinical Research Ethics Committee of Inonu University approved the study (22-10-2024,2024/6498).

RESULTS

It was found that 61.8% of the elderly were between the ages of 65-68, 62.9% were women, 77.5% were married, 36% were primary school graduates, 71.9% were unemployed, 52.8% did not have any chronic disease, 75.3% did not smoke, 52.8% did not use regular medication, 44.9% had moderate sleep quality, and 52.8% lived with their spouses (Table 1).

No statistically significant differences were found between age, sex, marital, educational, employment, chronic disease, and smoking status, regular medication use, sleep quality level, and who they lived with and the average score of the PSQI (Table 2).

No statistically significant differences were found between the variables of age, gender, marital, educational, employment, chronic disease, and smoking status, regular medication use, sleep quality level, living with, and the UCLA-LS mean scores (Table 2).

Elderly individuals had the following mean component scores: Subjective Sleep Quality (1.29±0.76), Sleep Latency (2.01±0.67), Sleep Duration (0.30±0.71), Habitual Sleep Efficiency (0.28±0.75), Sleep Disturbance (1.75±0.73), Sleep Medication Use (0.58±0.86), and Daytime Dysfunction (1.25±0.87). The mean total PSQI score was 7.47±3.12, and the mean UCLA-LS score was 46.09±9.15 (Tablo 3).

A moderate positive correlation was found between loneliness scores and the components of Subjective Sleep Quality, Sleep Latency, Sleep Disturbance, Sleep Medication Use, and total PSQI ($p<0.05$). A weak positive correlation was observed with Daytime Dysfunction ($p<0.05$). No significant correlation was found with Sleep Duration or Habitual Sleep Efficiency ($p>0.05$) (Tablo 3).

Table 1. The Distribution of Elderly People Based on Sociodemographic Data (n=89)

Characteristics	Variables	N	%
Age	65-68	55	61.8
	69 and above	34	38.2
Sex	Female	56	62.9
	Male	33	37.1
Marital status	Married	69	77.5
	Single	20	22.5
Education Status	Primary education	32	36.0
	Secondary Education	27	30.3
	High school and above	30	33.7
Working status	Working	25	28.1
	Not working	64	71.9
Chronic disease status	Yes	42	47.2
	No	47	52.8
Smoking status	Yes	22	24.7
	No	67	75.3
Regular medication use	Yes	42	47.2
	No	47	52.8
How does s/he evaluate sleep quality?	Bad	24	27.0
	Middle	40	44.9
	Good	25	28.1
Who does s/he live with?	Spouse	47	52.8
	Children	19	21.3
	Other	23	25.8

Table 2. The Comparison of the Scores Based on Sociodemographic Data (n=89)

Characteristics	Variables	PSQI		UCLA-LS	
		Mean±SD	Test and p	Mean±SD	Test and p
Age	65-68	7.20±2.82	t=-1.045 p=0.299 d=0.228	46.60±9.08	t=0.667 p=0.506 d=0.146
	69 and above	7.91±3.56		45.26±9.33	
Sex	Female	7.75±3.23	t=1.096 p=0.276 d=0.240	45.54±7.60	t=-0.743 p=0.460 d=0.163
	Male	7.00±2.93		47.03±11.38	
Marital status	Married	7.59±3.13	t=0.684 p=0.496 d=0.174	46.72±8.85	t=1.219 p=0.226 d=0.310
	Single	7.05±3.14		43.90±10.02	
Education Status	Primary	7.97±3.76	F=0.679 p=0.510 η2=0.016	45.72±9.36	F=0.091 p=0.913 η2=0.002
	Secondary	7.33±2.79		45.89±9.96	
	High school and above	7.07±2.65		46.67±8.41	
Working status	Working	6.80±2.83	t=-1.273 p=0.206 d=0.300	44.40±7.31	t=-1.091 p=0.278 d=0.267
	Not working	7.73±3.21		46.75±9.74	
Chronic disease status	Yes	7.83±3.25	t=1.033 p=0.305 d=0.219	46.36±8.72	t=0.259 p=0.796 d=0.055
	No	7.15±3.01		45.85±9.60	
Smoking status	Yes	7.14±2.83	t=-0.579 p=0.564 d=0.142	48.14±8.17	t=1.213 p=0.228 d=0.298
	No	7.58±3.22		45.42±9.40	
Regular medication use	Yes	7.83±3.25	t=1.033 p=0.305 d=0.219	46.36±8.72	t=0.259 p=0.796 d=0.055
	No	7.15±3.01		45.85±9.60	
How does s/he evaluate sleep quality?	Bad	8.25±3.49	F=1.869 p=0.161 η2=0.042	46.92±9.86	F=0.192 p=0.825 η2=0.004
	Middle	7.58±2.56		46.10±9.18	
	Good	6.56±3.45		45.28±8.68	
Who does s/he live with?	Spouse	8.04±2.99	F=1.731 p=0.183 η2=0.039	46.70±8.82	F=0.597 p=0.553 η2=0.014
	Children	6.68±3.25		44.05±10.41	
	Other	6.96±3.18		46.52±8.87	

UCLA-LS: Loneliness Scale, PSQI: Pittsburgh Sleep Quality Index

Table 3. The Mean Scale Scores of the Elderly and Results of Correlation Analysis Regarding Mean Scores (N=89)

	X ±SD (Min-Max)		UCLA-LS Loneliness Inventory
Subjective Sleep Quality	1.29±0.76 (0-3)	R	**0.387****
		P	**0.001**
Sleep Latency	2.01±0.67 (1-3)	R	**0.326****
		P	**0.002**
Sleep Duration	0.30±0.71 (0-3)	R	0.060
		P	0.575
Habitual Sleep Activity	0.28±0.75 (0-3)	R	-0.149
		P	0.164
Sleep Disorder	1.75±0.73 (0-3)	R	**0.436****
		P	**0.000**
Sleeping Pills Use	0.58±0.86 (0-3)	R	**0.353****
		P	**0.001**
Daytime Dysfunction	1.25±0.87 (0-3)	R	**0.241***
		P	**0.023**
PSQI	7.47±3.12 (2-17)	R	**0.408****
		P	**0.000**
UCLA-LS	46.09±9.15 (29.00-71.00)	R	1
		P	

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

UCLA-LS: Loneliness Scale, PSQI: Pittsburgh Sleep Quality Index

DISCUSSION

In the study, it was found that the score geriatric individualsreceived on the loneliness scalewas 45.85±8.76. Therefore, it can be argued that the geriatric individuals participating in the study felt moderate loneliness as a result of the negative stimuli they encountered while continuing their lives. There are many studies in the literature supporting this result in geriatric individuals (9, 19, 20). It can be argued that the results are similar to the studies performed on the loneliness levels of geriatric individuals. A possible explanation for the moderate loneliness levels observed in geriatric individuals can be considered to be that the place where they live plays active roles in social activities and culture, and the time spent by elderly participants with their children and friends is not as much as expected. The reason for this might be that elderly participants came to the place where the study was performed alone during the data collection process and did not want to socialize. The fact that geriatric individuals feel moderate loneliness during the aging process has been shown in many studies, and that many variables affect this (8, 9, 19). In this study performed on geriatric individuals, unlike the literature data, there were no statistically significant differences between loneliness and age, sex, marital, educational, employment, chronic disease, and smoking status, regular medication use, sleep quality level and who they live with.

Many studies have shown that loneliness in the elderly is associated with sociodemographic factors such as sex, age, marital status, lifestyle, education, income, health behaviors, health status, and sleep quality (20,21). The differences between this study's findings and the literature may stem from factors such as the small sample size, participants' reluctance to express feelings during face-to-face interviews, the subjective nature of loneliness, and regional or cultural influences on its perception.

Based on the results obtained from this study, the mean score of sleep quality of geriatric individuals was 7.47±3.12. In this context, the fact that the total sleep quality score was greater than 5 indicates that the geriatric individuals in our study had poor sleep quality. In a previous study investigating the sleep quality of geriatric individuals in Portugal, it was observed that the majority of geriatric individuals had poor sleep quality (2). In a study evaluating sleep quality and its sub-dimensions among elderly nursing home residents in Turkiye,similar results were found with our study (10). In a cross-sectional study performed in China on the sleep quality of the elderly, it was reported that the sleep quality of the

participants was poor (22). It is seen that the results obtained from this study provide data consistent with other studies performed on the sleep quality of geriatric individuals. The possible reason for the poor sleep quality observed in geriatric individuals may be the physiological and hormonal changes observed in elderly participants because of aging, deterioration in body functions, chronic diseases and the use of various drugs related to this, lifestyle, loneliness, social isolation and environmental factors, which may be the effect of many factors.This study found no statistically significant relationship between sleep quality and sociodemographic factors such as age, sex, marital status, education, employment, chronic illness, smoking, regular medication use, sleep quality level, or cohabitation (6,7). While some studies in the literature support these findings, showing no association between sleep quality and most sociodemographic variables, others have reported significant correlations (1,5). The reason for this might be the insufficient sample size, the fact that stronger factors affecting sleep quality were not included in the analyses, the fact that PSQI is a subjective scale, the possibility of measurement errors, or the presence of uncontrolled variables.As can be seen, the literature provides different data on demographic characteristics and sleep quality levels. It can be argued that theresults contribute to the limited literature on sleep quality in elderly participants and the factors affecting it.

A moderate positive correlation was found between loneliness levels and subjective sleep quality, sleep latency, sleep disturbance, sleeping pill use, and overall PSQI scores, while a weak positive correlation was observed with daytime dysfunction ($p<0.05$). This relationship may stem from the psychological and physiological impacts of loneliness, which is linked to conditions such as depression and anxiety, contributing to delayed sleep onset and disrupted sleep patterns, thereby lowering overall sleep quality (8). In a population-based cohort study performed in the USA to investigate the correlation between social isolation and loneliness and the onset of insomnia symptoms among middle-aged and older adults, it was reported that social isolation might negatively affect the daily routines of older individuals, making it difficult for them to establish regular sleep habits (19).A cross-sectional study examining social isolation and sleep in the elderly found that reduced social interaction negatively impacts emotional well-being, leading to poorer sleep quality. Current research supports that loneliness affects sleep through both psychological and social pathways, showing a significant relationship between the two. The findings of this study align with existing literature on sleep quality in older adults (10).

The results obtained in the current study indicate that loneliness is associated with sleep quality in elderly individuals. This result, consistent with the existing literature data, supports the significant effect of loneliness on sleep quality.A study performed on the relationships between loneliness and social isolation and actigraph and self-reported sleep quality in a national sample of older adults found significant relationships between loneliness levels and sleep quality in these individuals (23).Recent studies also report a significant correlation between loneliness and sleep quality. For example, a systematic review and meta-analysis study that revealed a correlation between loneliness and sleep quality in older adults found that older individuals who were lonely were 1.75 times more likely to have poor sleep quality, and emphasized the strong correlation between these two variables (20). Similarly, a cross-sectional study in Shandong Province, China, reported significant correlations between loneliness and sleep quality, and an increase in loneliness negatively affected sleep quality (24). Another study performed on elderly participants with complex needs found that loneliness and social isolation were associated with sleep problems, and that this effect of loneliness on sleep contributed to inadequate sleep (25). These findings confirm that loneliness significantly impacts the sleep quality of older adults and

align with previous research. Studies indicate that the relationship between loneliness and sleep is complex and influenced by multiple factors. Both are key health concerns in the elderly, and reducing loneliness may help improve sleep. Physical health, social support, and psychological factors are central to this relationship, highlighting the need for holistic strategies to promote better sleep and overall well-being.

CONCLUSION

The findings of this study indicate that exposure to negative environmental and psychosocial stimuli throughout life leads to moderate loneliness and poor sleep quality in geriatric individuals. Furthermore, a moderately positive and significant relationship was found between individuals' loneliness levels and their sleep quality. These results suggest that increased feelings of loneliness have a negative effect on sleep quality, and that sleep problems can intensify individuals' experiences of social isolation and emotional deprivation. To improve the quality of life of geriatric individuals, it is clear that social support mechanisms to address loneliness should be strengthened, as well as interventions to promote healthy sleep. In this context, the development of holistic approaches that are sensitive to the psycho-social needs of these individuals can contribute to both the reduction of feelings of loneliness and the improvement of sleep quality.

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