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C E R R A H P A Ş A

Research Article

The Relationship between Urinary Incontinence Quality of Life and Sleep Quality in Women Over the Age of 60 Years

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ABSTRACT

Aim: The study aimed to investigate the relationship between urinary incontinence quality of life and sleep quality in women over the age of 60 years.

Method: This cross-sectional study was conducted between May 15 and July 5, 2013. Data were collected from a total of 332 women including 68 women from 3 nursing homes in a provincial center of Eskisehir and 269 women living alone or with family in their own homes in a street of that city. Women's urinary incontinence quality of life was assessed using the incontinence quality of life scale and sleep quality was assessed using the Pittsburgh sleep quality index.

Results: Mean age of the participating women was 71.00±7.42 years. Only 10.8% of the women had incontinence diagnosis; prevalence of anamnesis-based incontinence was 87.7%. Those who lived in their own homes, who had a urinary incontinence diagnosis, who experienced urinary incontinence according to their anamnesis, who were smokers, and who had a poor sleep quality had lower Incontinence Quality of Life Scale scores. Additionally, their quality of life was negatively affected (p<0.05). Poor sleep quality and diagnosis of urinary incontinence were important predictors of the Incontinence Quality of Life Scale of women over 60 years of age and explained 18% of the total variance. The Incontinence Quality of Life Scale scores of the women decreased by 5.67 points in the presence of poor sleep quality and 6.48 points in the presence of urinary incontinence diagnosis.

Conclusion: Urinary incontinence is a common problem seen in older women, is considered as a usual problem due to aging, and is ignored or not taken care of. It also has a negative impact on the quality of life and sleep.

Keywords: Quality of life, sleep, urinary incontinence

INTRODUCTION

Urinary incontinence (UI) has been described as "the complaint of involuntary leakage of urine" by the International Continence Society (Haylen, De Ridder, Freeman, Swift, Berghmans, Lee, et al., 2010). UI is considered even as a symptom or a component of the geriatric syndrome. Urinary incontinence affects more than 40% of the female population over 70 years of age. It is predicted that both the frequency and the severity of UI will increase in the future with the increase in life expectancy (Kaşıkçı, Kılıç, Avşar & Şirin, 2015; Milsom & Gyhagen, 2018; Senturk & Kara, 2012). The prevalence of UI is even higher in the elderly living in nursing homes (Milsom & Gyhagen, 2018). It is stated that at least 50% of those living in nursing homes in England and North America experience Urinary incontinence (Durrant & Snape, 2003). Urinary incontinence symp-

toms of women, especially with increasing age, can be progressive or permanent, and remission of UI decreases (Hagan, Erekson, Austin, Minassian, Townsend, Bynum, & Grodstein, 2018). Furthermore, older women with UI are likely to have care needs that are not met owing to their functional dependence and increased care burden (Yang, Lishai, Walter, Obedin-Maliver, & Huang, 2018). It is stated that one out of five caregivers in the nursing home never check the amount of Urinary incontinence in dementia patients, do not document it, and do not make a toilet plan for nursing home residents with or without mild mental disability (Yenişehir, Çıtak-Karakaya, & Karakaya, 2019).

Urinary incontinence does not have static but dynamic structure, that is, there is a persistent deterioration or progression in the frequency and severity

of the symptom. Many factors such as age, gender, vaginal infections, urinary tract infection, cough, hormone replacement therapy, genital prolapse, cystocele, urogenital surgery, genetic factors, family history, body mass index, constipation, nocturia, daily urination, smoking, alcohol consumption, frequent weight-bearing more than 3 kg, sitting for 2 h or less per day, gestational age, parity, delivery method, birth weight are associated with UI (Amaral, Coutinho, Nelas, Chaves, & Duarte, 2015; Kaşıkçı et al., 2015; Milsom & Gyhagen, 2018; Shaw, Rajabali, Tannenbaum, & Wagg, 2019). These factors may also increase the incidence, severity, and progression of UI or decrease its remission (Milsom & Gyhagen, 2018).

The type and severity of incontinence are the most important determinants for being in a search of treatment in elderly women (Erekson, Hagan, Austin, Carmichael, Minassian, Grodstein, & Bynum, 2019). Attitudes of women toward UI are considered as one of the barriers for being in a search of health care service (Fouad & Hafez, 2017; Shaw et al., 2019). Many women consider UI as a natural process of aging or believe that they can cope with it (Fouad & Hafez, 2017; Milsom & Gyhagen, 2018; Shaw et al., 2019). In general, approximately 2 out of 10 (16%) elderly women with incontinence symptoms apply to outpatient services, which is an indicator of being in a search of treatment/health services (Erekson et al., 2019), many of them do not seek any help as they are embarrassed or ignore this situation (Fouad & Hafez, 2017; Kwak, Kwon, & Kim, 2016). Moreover, women who have not previously performed pelvic floor muscle training for Urinary incontinence consider Urinary incontinence a natural process of aging (Shaw et al., 2019).

Although Urinary incontinence is not a life-threatening problem for elderly women, if not treated, it may become a condition that damages their lifestyle, especially functional and psychological well-being, causes problems such as skin lesions and weakness, creates social isolation, reduces self-esteem, reduces quality of life (Acar et al., 2011; Fouad & Hafez, 2017; Shaw et al., 2019), leads to sleep deprivation, and reduces sleep quality (Moreno, Santos, Lebrão, Ulhôa, & Duarte, 2018; Nazaripanah, Momtaz, Mokhtari, & Sahaf, 2018; Winkleman et al., 2018). Nurses are responsible for the improvement of the quality of life of women experiencing Urinary incontinence, and the problems experienced by women should first be identified (Aydın-Özkan, Bilgiç, & Kızılkaya-Beji, 2019).

The aim of this study was to investigate the relationship between incontinence quality of life and sleep quality in women over the age of 60 years.

Research Questions
1. What are the variables associated with incontinence quality of life in women over the age of 60 years?
2. Is there a correlation between incontinence quality of life and sleep quality in women over the age of 60 years?

METHOD

Study Design
This study was designed as a correlation study.

Sample
This study was carried out in three nursing homes located in the provincial center of Eskisehir and in a district of this province between May 15 and July 5, 2013. Among 88 elderly women staying in 3 public nursing homes between the dates when the study was conducted, no sample selection was made and a total of 68 elderly women (77.27%) who were not fully dependent, able to communicate, and agreed to participate in the study were included in the study. From a neighborhood determined with cluster sampling and households in which people at the age of 60 years and over lived and which determined with the random route sampling method, a total of 269 elderly women living in their own homes, who were not fully dependent, able to communicate, and agreed to participate in the study were included in the study. As a result, the study group consisted of 332 women, 68 from nursing homes and 269 living in their own homes.

The inclusion criteria of the study were being a woman and being at the age of 60 years or over.

Data Collection
Women who had a complaint of involuntary leakage of urine at least once in the last month were considered to have UI according to anamnesis. Women's Urinary incontinence quality of life was assessed using the incontinence quality of life scale (I-QoL) and their sleep quality was assessed using the Pittsburgh sleep quality index (PSQI). Data were collected by the researchers in face-to-face interviews that lasted approximately 15-20 min.

I-QoL was developed by Wagner et al. in 1996 and Patrick et al. reduced the number of questions to 22 in 1999. This form is recommended at grade A level by the International Consultation on Incontinence (Kelleher et al., 2013). The Turkish validity and reliability study of I-QoL was conducted by Özerdoğan and Kızılkaya in 2003. I-QoL consists of three subscales that are restriction of behaviors, psychosocial impact, and social isolation. In I-QoL, all items are scored using a 5-point Likert-type scoring. A minimum of 22 points and a maximum of 110 points can be scored from I-QoL. The score ranges between 8 and 40 (min-max) points for the restriction of behaviors subscale, 9 and 45 (min-max) points for the psychosocial impact subscale, and 5 and 25 (min-max) points for the social isolation subscale. Higher scores indicate a better quality of life than lower scores. The Cronbach's alpha coefficient was 0.96 for the overall scale in the validity and reliability study of I-QoL (Özerdoğan & Kızılkaya, 2003), and 0.89 in this study.

The Pittsburgh sleep quality index was developed by Buysse et al. in 1989 and the Turkish validity and reliability study was conducted by Ağargün et al. in 1996. Although PSQI consists of 24 items, the score is calculated over 19 items. The index consists of open-ended questions (For example, when did you go to bed during the last month in the evening generally?) and multiple-choice questions (For example, how was your sleep quality during the last month generally? Was it very good or very bad?). A score of 0-3 points is given for each multiple-choice question by individuals. The total score obtained from this index varies between 0 and 21 points and those who score above 5 points are considered as "poor sleep quality" and those who score 5 and lower are considered as "good sleep quality" (Ağargün, Kara, & Anlar, 1996).

Statistical Analysis

To define the data, descriptive statistics (percentage, frequency, mean, and standard deviation) were used. Skewness and Kurtosis values of the scores obtained from the scales were examined and it was seen that the data fit the normal distribution as the values were between +2.0 and −2.0 (George & Mallery, 2010). For this reason, the t test was used to determine whether the difference between the mean scores of two independent groups was significant; analysis of variance test was used to determine whether the difference between the mean scores of

three or more groups was significant; multiple linear regression analysis was used to evaluate the overall impact of independent variables of on the dependent variable and to evaluate the effects of each variable on the dependent variable when other variables were kept under control. The statistical significance level was accepted as $p<0.05$.

Ethical Considerations

Approval for this study was taken from the Ethics Committee of Eskisehir Osmangazi University Faculty of Medicine (2010/206). Verbal consent was obtained from the individuals who accepted to participate in the study and the questionnaire forms were filled by the researchers in face-to-face interviews.

RESULTS

The mean age of the women who participated in the study was 71.00±7.42 years (min=60.00, max=99.00); 80.7% (n=268) of them lived in their own homes and 20.3% (n=64) lived in a nursing home. Of the participants, 63.0% (n=209) of the women were single, and 34.3% (n=114) were illiterate. In total, 36 (10.8%) of the women had incontinence diagnosis; the prevalence of anamnesis-based incontinence was 87.7% (n=291).

The mean total score of the women from I-QoL scale was 87.76±8.98 (min=55.00, max=110.00); the mean "restriction of behaviors" subscale score was 32.32±3.30 (min=20.00, max=40.00); the mean "psychosocial impact" subscale score was 35.89±3.96 (min=24.00, max=45.00); the mean "social isolation" subscale score was 19.53±2.82 (min=10.00, max=25.00). The distribution of the women's I-QoL and subscales according to some independent variables and analysis results obtained are presented in Table 1.

Women who had UI diagnosis, who experienced Urinary incontinence according to their anamnesis, and who had poor sleep quality had lower restriction of behaviors scores (for each, $p<0.05$; Table 1). Those who lived in their own homes, those who had UI diagnosis, who experienced UI according to their anamnesis, who were smokers, and who had poor sleep quality had lower psychosocial impact scores (for each, $p<0.05$; Table 1). Those who were literate, who lived in their own homes, who had Urinary incontinence diagnosis, who experienced Urinary incontinence according to their anamnesis, who continuously used at least one drug, who were smokers, and who had poor sleep quality

Table 1. The distribution of the women's Urinary incontinence quality of life by some of their characteristics

Independent variables	n	Restriction of behaviors Mean±SD	Test value t/F; p	Psychosocial impact Mean±SD	Test value t/F; p	Social isolation Mean±SD	Test value t/F; p	Incontinence quality of life Mean±SD	Test value t/F; p
Age group									
60-65 (0)	48	32.47±2.33	1.537;	36.02±2.94	1.236;	19.41±2.44	1.502;	87.91±6.37	1.390;
65-69 (1)	120	32.64±2.71	0.191	35.94±3.61	0.296	19.66±2.56	0.201	88.25±7.82	0.237
70-74 (2)	72	31.50±3.08		35.30±3.99		18.95±2.65		85.76±8.67	
75-79 (3)	51	32.62±4.20		35.62±3.90		19.60±3.00		87.86±9.98	
80 or older (4)	41	32.31±4.62		36.97±5.63		20.24±3.79		89.53±12.99	
Marital status									
Single	209	32.35±3.67	0.202;	36.08±4.33	1.203;	19.69±3.02	1.380;	88.12±9.99	1.063;
Married	123	32.28±2.57	0.840	35.57±3.24	0.230	19.27±2.42	0.169	87.13±6.93	0.289
Education level									
Illiterate (0)	114	32.45±3.99	1.380;	36.35±4.66	1.004;	19.99±3.04	2.829;	88.80±10.72	1.694;
Literate (1)	63	31.57±3.13	0.249	35.33±3.91	0.391	18.77±2.64	0.039	85.68±8.52	0.168
Primary school (2)	107	32.52±2.99		35.83±3.51		19.65±2.80		88.00±8.13	
Secondary school and over (3)	48	32.58±2.11		35.66±3.06		19.20±2.31		87.45±6.19	
Pairwise Comparison (Tukey)						(0-1) p=0.031			
BMI									
Normal	103	31.76±3.37	2.736;	35.36±4.16	1.313;	19.31±2.93	1.246;	86.44±9.31	1.914;
Overweight	166	32.72±2.99	0.066	36.13±3.70	0.270	19.78±2.55	0.289	88.63±8.20	0.149
Obese	63	32.20±3.85		36.12±4.28		19.26±3.26		87.60±10.20	
Living place									
Nursing home	64	33.06±5.18	1.361;	38.26±5.31	4.225;	21.28±3.72	4.426;	92.60±13.28	3.497;
Own home	268	32.15±2.65	0.178	35.32±3.34	0.000	19.12±2.38	0.000	86.60±7.17	0.001
Presence of any chronic disease (except incontinence)									
No	45	32.31±2.83	−0.037;	36.75±3.24	1.569;	19.73±2.18	0.469;	88.80±7.24	0.833;
Yes	287	32.33±3.38	0.970	35.75±4.05	0.118	19.50±2.91	0.620	87.59±9.22	0.405
Incontinence diagnosis by physician									
No	296	32.58±3.03	3.039;	36.15±3.76	3.540;	19.79±2.61	3.923;	88.54±8.24	3.495;
Yes	36	30.22±4.54	0.004	33.72±4.91	0.000	17.41±3.52	0.000	81.36±11.98	0.001
Presence of incontinence according to anamnesis									
No	41	37.26±2.94	12.325;	41.43±3.82	10.063;	23.51±2.27	11.330;	102.21±7.90	13.797;
Yes	291	31.63±2.71	0.000	35.11±3.31	0.000	18.97±2.41	0.000	85.72±7.05	0.000
Continuously used at least one drug									
No	138	32.08±3.05	−1.147;	35.48±3.93	−1.588;	19.10±2.72	−2.360;	86.68±8.77	−1.855;
Yes	194	32.50±3.47	0.252	36.18±3.97	0.113	19.84±2.85	0.019	88.53±9.07	0.064
Smoking status									
Yes (0)	145	32.24±1.43	0.099;	34.58±1.90	17.108;	18.72±1.72	12.999;	85.55±3.03	8.993;
No (1)	180	32.38±4.30	0.906	37.01±4.83	0.000	20.23±3.34	0.000	89.63±11.57	0.000
No longer using (2)	7	32.57±0.78		34.28±0.95		18.42±1.39		85.28±1.97	
Pairwise Comparison (Scheffe)				(0-1) p=0.000		(0-1) p=0.000		(0-1) p=0.000	
Presence of fall at least once in the last year									
No	101	32.02±3.95	−0.976;	35.85±4.20	−0.131;	19.26±3.19	−1.077;	87.14±10.19	−0.822;
Yes	231	32.45±2.98	0.331	35.91±3.86	0.896	19.65±2.63	0.283	88.03±8.41	0.412
Sleep quality									
Good	79	33.35±4.42	2.549;	38.49±4.69	6.005;	21.25±3.13	5.827;	93.10±11.32	5.167;
Poor	253	32.00±2.80	0.012	35.08±3.32	0.000	19.00±2.49	0.000	86.09±7.39	0.000
Total	332	32.32±3.30		35.89±3.96		19.53±2.82		87.76±8.98	

BMI: Body mass index; SD: Standard deviation

Table 2. Pearson correlation values among the incontinence quality of life scale and the Pittsburgh sleep quality scale and its subscales

Scales and subscales	1	2	3	4	5	6	7	8	9	10	11	12
I-QoL scale and subscales												
1 Restriction of behaviors	1.000	-	-	-	-	-	-	-	-	-	-	-
2 Psychosocial impact	0.643**	1.000	-	-	-	-	-	-	-	-	-	-
3 Social isolation	0.673**	0.744**	1.000	-	-	-	-	-	-	-	-	-
4 Incontinence quality of life	0.863**	0.912**	0.890**	1.000	-	-	-	-	-	-	-	-
PSQI and subscales												
5 Subjective sleep quality	-0.048	-0.053	-0.131*	-0.082	1.000	-	-	-	-	-	-	-
6 Sleep latency	-0.103	0.056	0.053	0.003	0.135*	1.000	-	-	-	-	-	-
7 Sleep duration	-0.061	-0.222**	-0.255**	-0.201**	0.168**	-0.093	1.000	-	-	-	-	-
8 Habitual sleep activity	-0.117*	-0.245**	-0.299**	-0.245**	0.225**	-0.033	0.705**	1.000	-	-	-	-
9 Sleep disorder	0.004	-0.167**	-0.134*	-0.114*	0.181**	0.104	0.027	0.121*	1.000	-	-	-
10 Sleep medication use	-0.030	-0.216**	-0.153**	-0.154**	0.108*	-0.082	0.095	0.120*	.270**	1.000	-	-
11 Daytime dysfunction	-0.146**	-0.321**	-0.290**	-0.286**	0.129*	-0.164**	0.289**	0.355**	0.338**	0.320**	1.000	-
12 PSQI total score	-0.135*	-0.325**	-0.346**	-0.302**	0.466**	0.137*	0.729**	0.795**	0.423**	0.456**	0.593**	1.000

I-QoL: Incontinence quality of life scale; PSQI: Pittsburgh sleep quality index.
*p<0.05.; ** p<0.001

had lower social isolation scores (for each, $p<0.05$; Table 1). The incontinence quality of life scores of those who lived in their own homes, who had Urinary incontinence diagnosis, those who experienced Urinary incontinence according to their anamnesis, who were smokers, and who had poor sleep quality were significantly lower and their quality of life was negatively affected (for each, $p<0.05$; Table 1).

In total, 76.2% (n=253) of the research participants had poor sleep quality. The results of the Pearson correlation analysis performed between the I-QoL and the PSQI scale and its subscales are shown in Table 2.

According to multiple linear regression analysis results, the two variables were found to contribute to Urinary incontinence quality of life score significantly. Poor sleep quality and Urinary incontinence diagnosis affect 18% of the incontinence quality of life of women over the age of 60 years. The incontinence quality of life scores of the women decreased by 5.67 points in the presence of poor sleep quality and by 6.48 points in the presence of UI diagnosis (Table 3).

DISCUSSION
Urinary incontinence is an important public health problem triggered by many factors (Amaral et al., 2015) and can be either a cause or a result. Although the prevalence of Urinary incontinence is higher in women, the small number of individuals diagnosed and treated is remarkable (Acar et al., 2011; Erekson et al., 2019). However, one-third of the elderly women who are questioned in terms of UI can be diagnosed by anamnesis (Acar et al., 2011). Although only 10.8% of the women included in this study had a UI diagnosis, the prevalence of UI based on anamnesis was 87.7%. Although the prevalence of UI among women is high and even their quality of life is damaged, considering the low rate of searching for help, women may not perceive UI as a problem in general or can ignore UI (Milsom & Gyhagen, 2018). In various studies conducted, UI has been reported to vary between 40.6% and

Table 3. Results of the multiple linear regression analysis of variables affecting I-QoL scale scores

| Model* | I-QoL scale scores | | | | | |
| | Unstandardized | | Standardized | | | |
	B	SE	Beta	t	p	VIF
Poor sleep quality	− 5.675	1.091	− 0.269	− 5.200	0.000	1.089
UI diagnosis	− 6.482	1.435	− 0. 225	− 4.516	0.000	1.004
R² = 0.185	F = 26.016	SE= 8.11	p = 0.000	Durbin-Watson: 1.948		

I-QoL: Incontinence quality of life scale; SE: Standard Error; UI: Urinary Incontinence; VIF: Variance inflation factor
*Variables that cannot enter the regression model: Age, Being married, Being illiterate, Being literate, Being a primary school graduate, Being overweight, Being Obese, Living in own home, Presence of chronic disease, Drug use, Smoking, Presence of fall.

51.6% in women in the Turkish population (Kaşıkçı et al., 2015; Senturk & Kara, 2012; Silay et al., 2016).

As the prevalence of Urinary incontinence increases in the elderly, their quality of life decreases (Ceyhan, Göriş, & Zincir, 2018). In many studies, it has been reported that UI negatively affects the quality of life of women (Amaral et al., 2015; Ceyhan et al., 2018; Kwak et al., 2016). UI is not a natural part of the aging process and has a significant effect on the quality of life of elderly women. Therefore, it should not be expected that elderly women should tolerate this situation (Shaw et al., 2019). However, it is known that physical and social restrictions in the daily life of elderly women and Urinary incontinence are associated (Kwak et al., 2016). In this study, as the incontinence quality of life of women was deteriorated, restriction of behaviors, psychosocial impact, and social isolation increased. Moreover, it was also determined that women who reported incontinence problems, whether or not they had been diagnosed before, they limited their behaviors more, were psychosocially affected, and experience social isolation. Likewise, it is reported that almost half of the elderly women limit their behaviors owing to UI by avoiding coughing and sneezing, limiting the fluid intake, and taking care not to lift anything heavy, and isolate themselves by avoiding long journeys (Kaşıkçı et al., 2015). Elderly women with Urinary incontinence are reported to have a 2-fold potential to experience stress and a 1.5-fold potential to have depression (Kwak et al., 2016). In this study, it was seen that having a Urinary incontinence diagnosis decreased the incontinence quality of life by 6.48 points. This may be associated with the fact that those who have been diagnosed by a physician consider Urinary incontinence as a disease or the fact that those with more severe Urinary incontinence apply to a physician

seeking help. Similarly, as the severity of Urinary incontinence symptoms perceived by women increases, their help searching behavior increases (Bilgiç, Kızılkaya-Beji, Özbaş, Çavdar, Aslan, & Yalçın, 2017).

It is seen that women use multiple behavioral strategies to cope with Urinary incontinence such as limiting their distant travels, avoiding social activities, taking spare clothes when they are away from home, having vaginal showers or using scented pads to reduce bad odor, and using waterproof covers to protect their furniture (Öz & Altay, 2018). In this study, women who lived in their own homes experienced more psychosocial impact and social isolation than women who lived in a nursing home and their incontinence quality of life was worse. Similarly, in the study conducted by Ceyhan et al., it was reported that the elderly isolated themselves as a coping strategy in case of a decrease in the quality of life due to Urinary incontinence (Ceyhan et al., 2018). In this study, it was thought that women who were in constant contact in their homes and with their environment had higher anxiety of stigmatization owing to Urinary incontinence compared with women who lived in nursing homes and thus isolated themselves from their environment. Contrary to expectations, the reason for the fact that women who lived in a nursing home had a higher quality of life may be because of the necessary preventive measures taken for incontinence in nursing homes or the successful management of Urinary incontinence.

Nicotine may directly affect the bladder or may have an indirect effect on the bladder and innervation through other system diseases such as vascular diseases. There is a correlation between smoking and detrusor instability in women (Bulmer, Yang, & Abrams, 2001). In addition, smoking history may increase the incidence of Urinary

incontinence by 1.23 times in women and the current smoking rate may increase by 1.18 times (Townsend, Lajous, Medina-Campos, Carzin-Kuhlmann, Lopez-Ridaura, & Rice, 2017). In this study, women who were smokers had more psychosocial impact and social isolation in case of incontinence and their quality of life decreased. In the study conducted by Kwak et al., it was reported that there was no correlation between smoking and Urinary incontinence in elderly women; however, those with Urinary incontinence experienced more stress and depression (Kwak et al., 2016). Although smoking cessation does not directly affect Urinary incontinence, the smoking-induced cough may contribute to stress incontinence (Al-Bashaireh et al., 2018). In this respect, we think that smoking may have had indirect effects on psychosocial impact and social isolation based on Urinary incontinence.

In total, 76.2% of the women who participated in the study had poor sleep quality. Sleep disorder and fatigue have negative effects on physical and mental health and, therefore, may cause problems such as anxiety, depression, and high psychological stress that may affect Urinary incontinence symptoms (Ge, Vetter, & Lai, 2017). Women with poor sleep quality limit their behavior in case of incontinence and experience psychosocial impact and social isolation, and their quality of life is poorer. Likewise, it is stated that sleep disorder is associated with an increase in the severity of Urinary incontinence symptoms, higher and disturbing Urinary incontinence, and poorer quality of life (Ge et al., 2017).

In this study, as the incontinence quality of life of women worsened, sleep duration was shortened, habitual sleep activity got worsened, sleep disorder, sleep medication use, and daytime dysfunction increased, and sleep quality was deteriorated. Similarly, it is reported that incontinence is associated with poor sleep quality and sleep disorders (Moreno et al., 2018; Winkleman et al., 2018) and as the incidence of Urinary incontinence increases, sleep dysfunction increases, as well (Winkleman et al., 2018). In fact, it is stated that the sleep complaints of elderly individuals with Urinary incontinence are four times higher than those without Urinary incontinence (Nazaripanah et al., 2018). In this study, women's incontinence quality of life scores decreased by 5.67 points in the presence of poor sleep quality. In the study conducted by Ceyhan et al., it was reported that sleep quality in the elderly was not affected by incontinence and incontinence quality of life (Ceyhan et al., 2018).

Study Limitations
The first limitation of the study was that the participants were not classified on the basis of type (stress, urge, functional, overflow, and mixed), severity, and management of Urinary incontinence. The second limitation was that the results of the study could not be generalized to all women with Urinary incontinence over the age of 60 years.

CONCLUSION AND RECOMMENDATIONS
As a result of this study, it was determined that 1 out of 10 (10.8%) women included in the study had an incontinence diagnosis and that approximately 8 out of 10 women (87.7%) had incontinence according to anamnesis. Women who lived in their own homes, who were diagnosed with Urinary incontinence, who had Urinary incontinence according to their anamnesis, who were smokers, and who had poor sleep quality had lower incontinence quality of life. It was found that as the incontinence quality of life of women decreased, their sleep quality got worsened.

Urinary incontinence is a common problem seen in women in the Turkish society, is considered as a usual problem due to aging, and is ignored or not taken care of. Therefore, health professionals should be on the watch on this issue and incontinence should be questioned in all health institutions and especially in elderly individuals who are smokers and who live in their own homes. Studies investigating whether those who have Urinary incontinence have poor sleep quality or Urinary incontinence is common in those who have poor sleep quality are recommended. Additionally, health personnel should explore Urinary incontinence and sleep problems together.

REFERENCES

Acar, O., Özbilen-Acar, G., Alphan, M. E., Akıcı, A., Akman, M., Akyüz, G., et al. (2011). *Holistic approach to elderly health for family physicians.* (1st ed.). İstanbul, Turkey: Deomed Publishing.

Ağargün, M., Kara, H., & Anlar, Ö. (1996). The validity and reliability of the Pittsburgh sleep quality index. *Turkish Journal of Psychiatry, 7*(2), 107-115.

Al-Bashaireh, A. M., Haddad, L. G., Weaver, M., Kelly, D. L., Chengguo, X., & Yoon, S. (2018). The effect of tobacco smoking on musculoskeletal health: A systematic review. *Journal of Environmental and Public Health, 2018,* 1-106. [Crossref]

Amaral, M. O., Coutinho, E. C., Nelas, P. A., Chaves, C. M., & Duarte, J. C. (2015). Risk factors associated with urinary incontinence in Portugal and the quality of life of affected women. *International Journal of Gynecology and Obstetrics, 131*(1), 82-86. [Crossref]

Aydın-Özkan, S., Bilgiç, D., & Kızılkaya-Beji, N. (2019). The examination of nursing postgraduate theses related to urinary incontinence in Turkey. *Acibadem University Health Sciences Journal, 10*(2), 201-210. [Crossref]

Bilgiç, D., Kızılkaya-Beji, N., Özbaş, A., Çavdar, I., Aslan, E., & Yalçın, O. (2017). Coping and help-seeking behaviors for management of urinary incontinence. *Lower Urinary Tract Symptoms, 9*(3), 134-141. [Crossref]

Bulmer, P., Yang, Q., & Abrams, P. (2001). Does cigarette smoking cause detrusor instability in women? *Journal of Obstetrics and Gynecology, 21*(5), 528-529. [Crossref]

Ceyhan, Ö., Göriş, S., & Zincir, H. (2018). An important problem affecting sleep in elderly individuals: Incontinence. *Journal of Health Sciences, 27*(1), 29-35.

Durrant, J., & Snape, J. (2003). Urinary incontinence in nursing homes for older people. *Age and Ageing, 32*(1), 12-18. [Crossref]

Erekson, E., Hagan, K. A., Austin, A., Carmichael, D., Minassian, V. A., Grodstein, F., et al. (2019). Outpatient evaluation and management visits for urinary incontinence in older women. *The Journal of Urology, 202*(2), 333-338. [Crossref]

Fouad, R. A., & Hafez, S. A. (2017). Impact of urinary incontinence on self-esteem and quality of life of elderly females residing in assisted living facilities. *Alexandria Scientific Nursing Journal, 19*(1), 91-108.

Ge, T. J., Vetter, J., & Lai, H. H. (2017). Sleep disturbance and fatigue are associated with more severe urinary incontinence and overactive bladder symptoms. *Urology, 109,* 67-73. [Crossref]

George, D., & Mallery, M. (2010). *SPSS for Windows step by step: A simple guide and reference, 17.0 update.* (10th ed.). Boston, USA: Pearson.

Hagan, K. A., Erekson, E., Austin, A., Minassian, V. A., Townsend, M. K., Bynum, J. P. W., et al. (2018). A prospective study of the natural history of urinary incontinence in women. *American Journal of Obstetrics and Gynecology, 218*(5), 502. e1-502.e8. [Crossref]

Haylen, B. T., De Ridder, D., Freeman, R. M., Swift, S. E., Berghmans, B., Lee, J., et al. (2010). An International Urogynecological Association (IUGA) International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction. *International Urogynecology Journal, 21*(1), 5-26. [Crossref]

Kaşıkçı, M., Kılıç, D., Avşar, G., & Şirin, M. (2015). Prevalence of urinary incontinence in older Turkish women, risk factors, and effect on activities of daily living. *Archives of Gerontology and Geriatrics, 61*(2), 217-223. [Crossref]

Kelleher, C., Staskin, D., Cherian, P., Cotterill, N., Coyne, K., Kopp, Z., et al. (2013). Patient-reported outcome assessment. In P. Abrams, L. Cardozo, S. Khoury & A. Wein (Eds.), *Incontinence: 5th international consultation on incontinence* (pp. 389-427). Paris, France: Health Publications Ltd.

Kwak, Y., Kwon, H., & Kim, Y. (2016). Health-related quality of life and mental health in older women with urinary incontinence. *Aging & Mental Health, 20*(7), 719-726. [Crossref]

Milsom, I., & Gyhagen, M. (2018). The prevalence of urinary incontinence. *Climacteric, 22*(3), 217-222. [Crossref]

Moreno, C. R. d. C., Santos, J. L. F., Lebrão, M. L., Ulhôa, M. A., & Duarte, Y. A. d. O. (2018). Sleep disturbances in older adults are associated to female sex, pain, and urinary incontinence. *Brazilian Journal of Epidemiology, 21*(Suppl. 2), 1-8. [Crossref]

Nazaripanah, N. S., Momtaz, Y. A., Mokhtari, F., & Sahaf, R. (2018). Urinary incontinence and sleep complaints in community dwelling older adults. *Sleep Science, 11*(2), 106-111. [Crossref]

Öz, Ö., & Altay, A. (2018). Relationships among use of complementary and alternative interventions, urinary incontinence, quality of life, and self-esteem in women with urinary incontinence. *Journal of Wound Ostomy & Continence Nursing, 45*(2), 174-178. [Crossref]

Özerdoğan, N., & Kızılkaya, N. B. (2003). The prevalence and risk factors of urinary incontinence and its influence on the quality of life in 20 years or older of women in Eskişehir, Afyon, Kütahya, Bilecik cities. *Florence Nightingale Journal of Nursing, 13*(51), 37-50.

Senturk, S., & Kara, M. (2012). Risk factors and prevalence of urinary incontinence in postmenopausal women in Turkey. *Clinical and Experimental Obstetrics & Gynecology, 39*(1), 69-71.

Shaw, C., Rajabali, S., Tannenbaum, C., & Wagg, A. (2019). Is the belief that urinary incontinence is normal for ageing related to older Canadian women's experience of urinary incontinence? *International Urogynecology Journal, 30*(12), 2157-2160.

Sılay, K., Akıncı, S., Ulas, A., Yalcın, A., Sılay, Y. S., Akıncı, M. B., et al. (2016). Occult urinary incontinence in elderly women and its association with geriatric condition. *European Review for Medical and Pharmacological Sciences, 20*(3), 447-451.

Townsend, M. K., Lajous, M., Medina-Campos, R. H., Catzin-Kuhlmann, A., López-Ridaura, R., & Rice, M. S. (2017). Risk factors for urinary incontinence among postmenopausal Mexican women. *International Urogynecology Journal, 28,* 769-776. [Crossref]

Winkleman, W. D., Warsi, Q. A., Huang, A. J., Schembri, M., Rogers, R. G., Richter, H. E., et al. (2018). Sleep quality and daytime sleepiness among women with urgency predominant urinary incontinence. *Female Pelvic Medicine & Reconstructive Surgery, 24*(2), 76-81. [Crossref]

Yang, E., Lishai, N. E., Walter, L., Obedin-Maliver, J., & Huang, A. J. (2018). Urinary incontinence in a national cohort of older women: Implications for caregiving and care dependence. *Journal of Women's Health, 27*(9), 1097-1103. [Crossref]

Yenişehir, S., Çıtak-Karakaya, İ., & Karakaya, M. G. (2019). Knowledge and practice of nursing home caregivers about urinary incontinence. *European Geriatric Medicine. 10*(1):99-105. [Crossref]

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