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Sleep quality and factors affecting sleep in elderly patients with rheumatoid arthritis in Turkey

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Background/aim: Sleep disorders are more common in people with rheumatoid arthritis (RA). We aimed to determine the sleep quality in adult and elderly people with RA and the factors associated with sleep disorders in each group.

Materials and methods: The study was conducted with 182 patients (83 elderly and 99 adult patients) diagnosed with RA. Data were collected through a patient identification form including sociodemographic and disease characteristics. The Health Assessment Questionnaire (HAQ) and Pittsburg Sleep Quality Index (PSQI) were used to assess quality of life and sleep.

Results: The mean PSQI scores of the elderly group were lower than those of adult subjects ($P = 0.055$). Patients in remission and those with knee involvement had significantly lower PSQI scores ($P < 0.05$). Mean PSQI scores of elderly single patients and subjects with sleep disorders and restless leg syndrome were significantly higher ($P < 0.05$). In elderly subjects, the pain and HAQ scores were positively correlated with the PSQI.

Conclusion: Sleep quality of elderly rheumatoid arthritis patients was determined to be worse than that of adults; however, the difference was not statistically different. Factors negatively affecting sleep included pain, joints involved, high disease activity, and restless leg syndrome.

Key words: Aged, rheumatoid arthritis, sleep quality

1. Introduction

Rheumatoid arthritis (RA) is a systemic inflammatory autoimmune disease that may involve several joints and that manifests itself with morning stiffness and swelling (1,2). Studies have shown that 50%–75% of people with RA experience sleep disorders, which include difficulty in starting and maintaining sleep, extreme sleepiness during the day, and poor sleep quality (1,3). Studies have also shown a relationship between sleep quality of RA patients and pain, depression, disease activity, and fatigue (3–5). Sleep disorders in people with RA create a vicious cycle and may lead to increased pain, increased disease activity, and mood disorders (1,2). This two-way interaction emphasizes the importance of sleep quality in the global care of patients with RA (6).

In a study of older adults, self-reported depression was associated with functional disability, low quality of life, arthritis, and sleep disorders (7). RA is a more common disease in the elderly than the younger; the main clinical difference compared to younger patients is that the prognosis is worse (8). With aging, a number of physiological changes, including changes in sleep pattern, are observed. Indeed, studies have demonstrated that sleep disorders are common among the elderly and affect quality of life (7,9–11). In adults with RA, a particular concern is that increased inflammation may worsen sleep disorders (12).

Quality of sleep plays an important role in the quality of life of patients with RA. Therefore, evaluating sleep quality is also important in determining the effectiveness of RA treatment (13). Patients with RA experience different disorders related to sleep such as difficulty initiating and maintaining sleep, sleep fragmentation, insomnia, and daytime sleepiness (1). To the best of our knowledge, there are no existing studies that evaluate sleep quality in elderly patients with RA. Certain conditions like major depression may also cause significant sleep disorders. Many other chronic conditions like diabetes

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mellitus, hypertension, COPD, obstructive sleep apnea, usage of certain drugs, and restless leg syndrome (RLS) may also affect sleep quality (1,5,11). Helping patients to meet their basic human needs, including adequate sleep, is an essential nursing responsibility. Early and accurate detection of sleep disorders, identification of factors that affect sleep quality, and implementation of supportive nursing interventions like adequate pain control may lead to an improvement in the quality of life for older adults with RA (14).

2. Materials and methods

2.1. Study design

This cross-sectional and observational study was designed to investigate the quality of sleep in adult and elderly RA patients and to determine the factors affecting sleep in each group.

2.2. Setting and sample

The study was designed as a descriptive study among the patients admitted to the rheumatology outpatient clinic of a university hospital between January 2012 and December 2013. Inclusion criteria included a diagnosis of RA based on the ACR/EULAR 2010 criteria (15), ability to communicate, admission to the clinic during the study period, and informed consent. A total of 326 patients were screened retrospectively. Individuals with other chronic conditions that may affect sleep (such as diabetes mellitus, hypertension, COPD, and obstructive sleep apnea), psychiatric diseases (major depression, dementia, and psychosis), acute conditions with the exception of RA flares, and use of medications for sleep were excluded from the study. These conditions were determined from personal statements and medical records. After evaluation for enrollment, 144 patients (diabetes mellitus: 46, hypertension: 43, COPD: 22, obstructive sleep apnea: 5, major depression: 4, dementia: 3, psychosis: 1, acute conditions: 24) were excluded. A total of 182 subjects fulfilling the inclusion criteria were enrolled in the study. The adult group (age <65 years) consisted of 99 and the elderly group (age ≥65 years) consisted of 83 RA patients.

2.3. Ethical consideration

Ethics committee approval was obtained from our university's scientific ethics committee before starting the study. Permission was received from the hospital where the study was conducted. Informed consent was obtained from all patients.

2.4. Measurements/instruments

The pain statuses of the subjects were assessed using a 100-mm visual analog scale (VAS; 0 = none, 100 = very much). The current disease activity was measured by the Disease Activity Score 28 (DAS28) based on C-reactive protein (CRP). The DAS28 incorporates information about general health, number of tender and/or swollen joints, and serum CRP levels into an overall score. According to disease activity scoring of the European League Against Rheumatism (EULAR), DAS28 scores of >5.1 indicate highly active disease, 5.1–3.2 active disease, 3.2–2.6 slightly active disease, and <2.6 remission (16).

2.4.1. Demographic data form

A demographic data form was developed by the researchers. It included questions related to sleep quality, such as age, sex, educational level, marital status, place of residence, knowledge about the disease, family history of RA, disease duration, drugs used (classical disease modifying antirheumatic drugs, antitumor necrosis factor agents, and corticosteroids), joints involved, sleep disorders, and RLS.

2.4.2. Health Assessment Questionnaire

The Health Assessment Questionnaire (HAQ) was used to assess the functional state relating to the disease, as modified by Pincus et al. (17), and a validity and reliability study for Turkey was performed by Küçükdeveci et al. (18). The scale investigates eight activities with 20 questions. Each activity score is determined based on the highest score obtained from the questions in that specific group. The scores are then added and divided by eight to calculate the total score. The total score ranges between 0 and 3 and the higher the score is, the higher the level functional dependency.

2.4.3. Pittsburgh Sleep Quality Index

The Pittsburgh Sleep Quality Index (PSQI), used to assess sleep quality, was developed by Buysse et al. (19) and validated and checked for reliability for Turkey by Ağargün et al. (20). The scale consists of 24 items; eighteen items are scored and yield seven component scores. Each component is scored between 0 and 3 and the total of these scores gives the scale score. The total score ranges between 0 and 21 and the higher the score is, the worse the sleep quality. A total score under 5 indicates 'good sleep quality', while a score above 5 shows 'bad sleep quality'. The scale is applied in 10 min.

2.5. Data analysis

Data analyses were conducted using SPSS 16.0 for Windows. Normality of distribution of the data was analyzed using the Kolmogorov–Smirnov test. The chi-square test was used to compare categorical data (comparisons between age and sociodemographic status, disease, and sleep disturbance groups). Since the data did not show normal distribution the Mann–Whitney U test and Kruskal–Wallis tests were used to compare continuous variables (comparisons between PSQI, HAQ, and VAS pain scores and sociodemographic status, disease, and sleep disturbance groups). For correlation analyses Spearman's test was performed. Univariate correlation analyses were also performed in each age group separately. Linear

regression analysis was performed in the whole group and in each age group separately to determine independent correlates of increased PSQI scores. Factors associated with PSQI score in univariate analysis included age group, sex, marital status, joint involvement pattern, presence of RLS, corticosteroid treatment, classical DMARD or antitumor necrosis factor (anti-TNF) agents, and DAS28 and HAQ scores. Although the general VAS and pain-VAS scores were correlated in univariate analysis, they were not included in the regression analysis to avoid collinearity effect. A two-sided P-value of <0.05 was used to define statistical significance.

3. Results

3.1. Relationship between mean scores of sleep quality and sociodemographic characteristics

All sociodemographic features except for educational level were similar for both groups. Among the adult patients, no relationship was observed between sociodemographic data and the mean PSQI score (P > 0.05). In elderly women, the pain score (P < 0.05) and the mean PSQI score among single patients (P < 0.05) were significantly higher compared to other groups. The sociodemographic characteristics of both groups are presented in Table 1.

3.2. Relationship between mean scores of sleep quality and disease characteristics

No difference was seen between the groups in terms of mean disease duration of patients (adult = 8.3 ± 6.6, elderly = 9.5 ± 7.9, P = 0.456), disease activity, and the use of steroids (Table 2). As far as joint involvement is considered, the most affected joints are the hands and feet among the elderly and the hands and the wrists among adult patients, and this difference was statistically significant (P < 0.001). Use of anti-TNF agents among adult subjects was found to be significantly higher. Among the adult group, the PSQI, VAS pain, and HAQ scores were significantly lower in patients with remission (P < 0.05). Similarly, subjects with knee involvement had significantly lower PSQI (P < 0.05) and HAQ scores (P < 0.005). While HAQ (P < 0.05) and the VAS pain scores (P < 0.05) were lower in elderly groups using anti-TNF, the mean PSQI scores were insignificant (P > 0.05).

3.3. Relationship between mean scores of sleep quality and sleep characteristics in adults and elderly patients

More than 50% of both the adult and elderly groups had poor sleep quality. No significant relationship was observed between group assignment and sleep characteristics (P > 0.05) (Table 3). The mean percentage

Table 1. The mean PSQI scores according to sociodemographic characteristics of patients.

Characteristics	Adult		Elderly		Statistical analysis
	n (%)	Mean ± SD	n (%)	Mean ± SD	
Sex					
Female	80 (80.8)	6.28 ± 3.08	68 (81.9)	7.55 ± 4.12	$\chi^2 = 0.037$ P = 0.501
Male	19 (19.2)	4.57 ± 3.35	15 (18.1)	5.73 ± 3.59	
	MWU = 481.000, P = 0.013		MWU = 386.000, P = 0.140		
Level of education					
Illiterate	37 (37.4)	6.23 ± 3.33	58 (69.9)	7.36 ± 4.06	$\chi^2 = 22.253$ P < 0.001
Literate	13 (13.1)	5.38 ± 3.15	10 (12.0)	8.20 ± 3.35	
Primary	39 (39.4)	5.94 ± 3.54	13 (15.7)	5.30 ± 4.19	
Secondary	10 (10.1)	6.00 ± 3.90	2 (2.4)	10.0 ± 5.65	
	KW = 0.770, P = 0.857		KW = 5.696, P = 0.127		
Marital status					
Married	85 (85.9)	5.84 ± 3.48	63 (75.9)	6.57 ± 4.02	$\chi^2 = 2.945$ P = 0.064
Single	14 (14.1)	6.64 ± 2.87	20 (24.1)	9.30 ± 3.58	
	MWU = 494.000, P = 0.308		MWU = 367.500, P = 0.005		
Place of residence					
Village	15 (15.2)	4.60 ± 2.35	15 (18.1)	5.73 ± 3.75	$\chi^2 = 1.063$ P = 0.588
Town	24 (24.2)	6.08 ± 3.35	24 (28.9)	6.25 ± 3.50	
City	60 (60.6)	6.25 ± 3.61	44 (53.0)	8.27 ± 4.25	
	KW = 2.747, P = 0.253		KW = 5.986, P = 0.055		

MWU = Mann–Whitney U, KW = Kruskal–Wallis.

Table 2. The mean PSQI scores according to disease characteristics of patients.

Characteristics	Adult		Elderly		Statistical analysis
	n (%)	Mean ± SD	n (%)	Mean ± SD	
Disease activity					
Remission	15 (15.2)	4.26 ± 2.52	8 (9.6)	4.62 ± 3.24	$\chi^2 = 4.862$ P = 0.182
Slightly active	20 (20.2)	5.90 ± 3.82	10 (12.0)	8.30 ± 3.91	
Active	45 (45.5)	7.89 ± 3.22	41 (49.4)	7.14 ± 4.18	
Highly active	19 (19.1)	5.95 ± 3.40	24 (28.9)	7.79 ± 4.04	
	KW = 9.657, P = 0.022		KW = 4.676, P = 0.197		
Joints involved					
Hands and feet	33 (33.3)	7.50 ± 3.12	40 (48.2)	7.82 ± 3.91	$\chi^2 = 17.353$ P < 0.001
Hands and wrists	61 (61.6)	5.63 ± 3.42	30 (36.1)	7.53 ± 4.32	
Knees	5 (5.1)	2.60 ± 1.81	13 (15.7)	4.61 ± 3.22	
	KW = 11.738, P = 0.003		KW = 7.736, P = 0.021		
Drug group used					
DMARD	30 (30.3)	6.76 ± 3.26	37 (44.6)	8.00 ± 4.32	$\chi^2 = 3.955$ P = 0.033
Anti-TNF	69 (69.7)	5.60 ± 3.42	46 (55.4)	6.60 ± 3.79	
	MWU = 796.000, P = 0.067		MWU = 699.000, P = 0.162		
Steroid use					
Yes	77 (77.8)	6.15 ± 3.32	63 (75.9)	7.63 ± 4.07	$\chi^2 = 0.089$ P = 0.450
No	22 (22.2)	5.27 ± 3.66	20 (24.1)	5.95 ± 3.89	
	MWU = 713.000, P = 0.257		MWU = 461.500, P = 0.071		
Information received about the disease					
Yes	37 (37.4)	5.08 ± 3.42	31 (37.3)	6.45 ± 4.28	$\chi^2 = 0.003$ P = 0.560
No	62 (62.6)	6.48 ± 3.30	52 (62.7)	7.69 ± 3.90	
	MWU = 825.000, P = 0.019		MWU = 645.000, P = 0.128		

MWU = Mann–Whitney U, KW = Kruskal–Wallis.

of elderly individuals stating that they have sleep disorders was 56.6% and the most common disorder stated was insomnia (53.2%), while the most common cause of the problem was identified to be pain (57.4%). The PSQI (P < 0.001) and HAQ (P < 0.05) scores were higher in subjects with sleep disorders. The VAS pain (P < 0.05) and HAQ (P < 0.05) scores were significantly higher in patients with RLS, regardless of group assignment.

3.4. Relationship between age disease duration, pain, HAQ, and PSQI

The VAS pain and HAQ scores among elderly patients were significantly higher than those in adult patients (Table 4). Although the mean PSQI scores of the elderly group were higher than those in the adult group, the difference was not statistically significant (P = 0.055). The PSQI scores revealed that sleep quality was poor in both groups.

3.5. Relationship between PSQI and age, disease duration, DAS28 score, pain, and HAQ

No relationship was observed among age, disease duration, and the PSQI (Table 5). The PSQI, VAS pain score, and HAQ scores were positively correlated. The DAS28 and PSQI were positively associated with poor sleep quality, regardless of age, with more disease activity (P = 0.040), pain (P = 0.035), and worse functional status in both groups (P < 0.001).

3.6. Regression analyses

Linear regression analysis in the whole group revealed that presence of RLS (OR = 2.3, 95% CI 1.2–3.4, P < 0.001) and worse HAQ (OR = 1.6, 95% CI 0.7–2.5, P < 0.001) were independently correlated with increased PSQI score (r^2 of the model = 0.32). When the regression analysis was done separately in the age groups, these results were also valid

Table 3. The mean PSQI scores according to sleep-related characteristics of patients.

Characteristics	Adult		Elderly		Statistical analysis
	n (%)	Mean ± SD	n (%)	Mean ± SD	
Sleep disorders					
Yes	59 (59.6)	7.22 ± 3.40	47 (56.6)	8.80 ± 5.16	$\chi^2 = 0.164$ P = 0.400
No	40 (40.4)	4.10 ± 2.42	36 (43.4)	5.16 ± 2.53	
	MWU = 565.000, P < 0.001		MWU = 423.000, P < 0.001		
Sleep disorder experienced					
Waking up frequently	3 (5.1)	9.00 ± 5.19	4 (8.5)	10.75 ± 3.77	$\chi^2 = 1.486$ P = 0.476
Difficulty initiating sleep	18 (30.5)	8.05 ± 2.46	18 (38.3)	10.33 ± 4.07	
Inability to sleep	38 (64.4)	6.68 ± 3.61	25 (53.2)	7.40 ± 4.25	
	KW = 3.259, P = 0.196		KW = 5.031, P = 0.081		
Reason for sleep disorders					
Pain	31 (52.5)	7.54±3.37	27 (57.4)	9.70 ± 4.09	$\chi^2 = 2.495$ P = 0.476
Stress	21 (35.6)	6.76±3.34	12 (25.5)	5.91 ± 4.07	
Rheumatoid arthritis	7 (11.9)	7.66±4.22	8 (17.1)	8.80 ± 3.03	
	KW = 1.017, P = 0.601		KW = 6.346, P = 0.042		
Restless leg syndrome					
Yes	30 (30.3)	7.63 ± 3.49	30 (36.1)	9.53 ± 3.91	$\chi^2 = 0.697$ P = 0.249
No	69 (69.7)	5.23 ± 3.11	53 (63.9)	5.92 ± 3.58	
	MWU = 629.000, P = 0.002		MWU = 387.000, P < 0.001		
Sleep quality according to the PSQI score					
Good	39 (39.4)	2.76 ± 1.15	25 (30.1)	2.84 ± 0.94	$\chi^2 = 1.703$ P = 0.125
Poor	60 (60.6)	8.03 ± 2.69	58 (69.9)	9.12 ± 3.37	
	MWU = 19.500, P = 0.000		MWU = 7.230, P < 0.001		

MWU = Mann–Whitney U, KW = Kruskal–Wallis.

Table 4. The mean disease duration and pain, HAQ, and PSQI scores of patients.

Characteristics	Adult Mean ± SD	Elderly Mean ± SD	Statistical analysis Mann–Whitney U, P
VAS pain score (0–100)	52.2 ± 24.1	60.6 ± 23.7	3288.500, 0.020
HAQ score (0–3)	0.7 ± 0.5	1.1 ± 0.8	2814.000, <0.001
PSQI score (0–21)	5.9 ± 3.4	7.2 ± 4.0	3431.500, 0.055

Table 5. Correlation between PSQI score and disease characteristics of patients.

Characteristics	PSQI			
	Adult		Elderly	
	*r	P	*r	P
Age	0.065	0.523	–0.104	0.352
Duration of disease	–0.015	0.880	–0.195	0.077
DAS28	0.312	0.002	0.160	0.149
VAS Pain	0.201	0.046	0.276	0.012
HAQ	0.426	0.000	0.403	0.000

*Spearman's correlation coefficient.

for the elderly group (presence of RLS OR = 2.9, 95% CI 1.2–4.5, P = 0.001 and HAQ score OR = 1.6, 95% CI 0.4–2.8, P = 0.007; r^2 of the model = 0.38). In the adult group only HAQ score was independently associated with worse sleep quality (HAQ score OR = 1.8, 95% CI 0.3–3.3, P = 0.022; r^2 of the model = 0.26).

4. Discussion

This study was conducted to determine sleep quality in adult and elderly patients with RA and factors associated with poor sleep quality. The sleep quality tended to be worse in elderly RA patients; however, the difference was not significant. In the whole group, higher HAQ score and presence of RLS were independently associated with worse sleep quality. When either group was analyzed separately, these factors were also independently associated with worse sleep quality in the elderly group, while only HAQ was independently associated with worse sleep quality in the adult group. Of note, the frequency of RLS was very high in both groups.

One of the most important determinants of well-being in the elderly is sleep quality (21). Although the reason is not known, sleep duration and sleep quality tend to decrease with age (22). Sleep disorders commonly observed in the elderly population also have a negative impact on quality of life (9,10). In one study, 77.7% of elderly participants were poor sleepers and the mean PSQI score was found to be 7.0 ± 5.5 (10). In several studies, it was found that mental health, general health status, vitality, social functioning, emotional role, physical functioning, bodily pain, and quality of life were associated factors of good sleepers in elderly patients (10,11,23). A study performed by Wu et al. (21) showed that elderly patients with high physical activity have better sleep quality. In our study, there is a positive correlation between HAQ (expressing functional disability) and PSQI. This result shows that the poor sleep quality in patients with RA leads to physical limitations related to the disease.

RA is a disease that causes pain and a relationship was established between pain and sleep disorders (2,4,23). In previous studies, it was detected that patients with RA have poor sleep quality compared to healthy individuals (2,5). About 61% of patients with RA had poor sleep quality in one study and the mean PSQI score was found to be 7.40 ± 4.07 (3). In another study, there was a relationship between sleep disturbance and pain and the mean PSQI score was found to be 7.6 ± 3.8 (2). Our findings concerning poor sleep quality in patients were similar to the incidence mentioned in literature; however, the mean PSQI score was found to be lower among adult patients.

In patients with RA, sleep quality may be adversely affected by pain and inflammation (13). Although effective drugs are used for the treatment of inflammation, pain continues to be an important issue for patients with RA (4). Treharne et al. (24) concluded that the incidence of sleep disorders is increased by high stress levels in patients with RA. Sleep disorders might be aggravated in patients with RA with pain, fatigue, feeling of stiffness, and stress (13). More than 33% of patients with RA state that they have sleep disorders due to pain (6). These findings are consistent with our conclusions (factors affecting the sleep quality in elderly patients were pain, joints involved, and high disease activity). However, these factors do not seem to be independently associated with sleep quality in our study.

Pain, infection, and inflammation in patients with RA cause poor sleep quality and this leads to extreme sleepiness during the day (2,25). In a study by Ulus et al. (5), a positive correlation between pain, fatigue, depression, disease activity, and the PSQI score was shown. The study by Luyster et al. (3) conducted in patients with RA revealed a correlation between poor sleep quality and major depression, severity of pain, fatigue, and functional limitation. In our study, the findings associated with sleep quality, pain, and functional status were in accordance with the literature.

In one study, poor sleep quality represented 50% of the elderly patients with hypertension. Logistic regression analysis indicated that sleep quality predicts the prevalence of hypertension, the body mass index being the only factor affecting this association (26). The elderly receiving chemotherapy (62.9%) had a score compatible with poor sleep quality. Through multiple logistic regression analysis, an increase of 21% in the probability of having poor sleep quality was observed for each single point of increase in the intensity of the pain (23). The prevalence of poor sleep quality was 71% in elderly hemodialysis patients. However, poor sleep quality is a very common issue and is associated with both depression and lower quality of life in elderly hemodialysis patients (11). Sleep disorders in patients with RA and other chronic diseases (cancer, chronic renal failure) are observed at similar rates. However, sleep disorders are more frequent in RA patients compared to patients with hypertension. This may be caused by less interference of hypertension with functional status and pain.

Restless leg syndrome is a disturbing condition that presents itself as numbness in the calf region of the leg that subsides with motion (27). Although the incidence of its mild form is 5% in the general population, it is common in uremia, diabetes, RA, and polyneuropathy patients and in pregnancy (27,28). Quality of life of RLS patients is worse than that of healthy controls, and even worse than that of patients with chronic diseases (29,30). RLS is the primary risk factor for sleep disorders (6,30). Quality of life of RLS patients was significantly improved after treatment

as PSQI score was significantly decreased after treatment among RLS patients (29). RLS is reported to be common in patients with RA. Taylor-Gjevre et al. (6) specified the incidence of RLS among patients with RA to be 27.7%. Our study conforms to the literature with regard to the incidence of RLS and the poor sleep quality of patients experiencing this condition. Notably, the presence of RLS was independently associated with poor sleep quality in the whole group and in the elderly group. Although the frequency of RLS tended to be higher in the adult group, presence of RLS did not seem to be independently associated with poor sleep quality in this group.

Sleep quality is an important indicator for evaluating health and well-being (13). Sleep disorders are considered to be related to poor quality of life and increased morbidity and mortality (6,31). Monitoring activity restriction during treatment and changes in fatigue and sleep disorders are accepted as important parameters that may be used to evaluate the clinical improvement of patients with RA (32). In a study with RA patients, improved sleep quality and 'awakening after sleep onset' time were associated with anti-TNF-a therapy (33). Our study shows that anti-TNF treatment is associated with better treatment effect, as patients receiving this treatment have lower pain and HAQ scores. Moreover, it is assumed that since the percentage of patients in adult groups receiving anti-TNF is significantly higher, this may be factor positively affecting sleep quality. However, using anti-TNF treatment was not significantly associated with a better PSQI score in the multivariate analysis.

Our study has certain limitations to be raised; first, we only investigated the role of aging, demographic features of diseases in RA patients, and sleep disorders. However, other potential factors that may affect sleep quality including seasonal differences, emotional situation, fatigue, and daytime sleep habits were not examined. In further studies, these parameters need to be questioned to submit wider data associated with sleep disorders in RA patients.

We conclude that poor sleep quality is very common in adult and elderly patients with RA. Factors independently affecting the quality of sleep in elderly RA patients seem to be a higher HAQ score and presence of RLS. On the other hand, only higher HAQ score seems to be independently associated with worse sleep quality in adult patients. Although assessment of sleep quality may benefit a large number of patients, a multidisciplinary approach based on cooperation in determining and treating sleep disorders in patients with RA would be more beneficial in patient care. In this context routine questioning for quality of life in RA patients and for the presence of RLS, especially in elderly RA patients, seems to be rational.

In the light of our findings, patients' sleep quality is important to raise awareness among nurses who are responsible for taking measures against sleep disorders. With measures taken against sleep disorders in patients with RA, particularly factors causing sleep disorders like pain can be controlled. Factors affecting sleep quality such as number of inflammatory joints, disease activity, and functional limitation are also associated with patients' drug adherence. For this purpose, nurses have vital roles in disease management, treatment, and future clinic visits. These measures will make an important contribution in preventing sleep disorders and in improving the quality of life.

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