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Factors affecting preoperative sleep quality in patients undergoing myomectomy and hysterectomy

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ABSTRACT

Objective: In this study, preoperative subjective sleep quality (SP) and the factors which affect the SP were investigated in patients who underwent myomectomy and hysterectomy.

Material and Methods: A total of 172 patients were included in the present study; 67 patients undergoing myomectomy and 105 undergoing hysterectomies were evaluated. Pittsburgh Sleep Quality Index (PSQI), Beck Anxiety Inventory (BAI), and Beck Depression Inventory (BDI) were used preoperatively to evaluate subjective sleep quality, anxiety, and depression, respectively. The patients were classified into two groups according to sleep quality score: good quality (PSQI $\leqslant$ 5) and poor quality (PSQI > 5).

Results: Overall, 56.4% of patients reported poor sleep quality with a PSQI score > 5. The total PSQI score, BAI score, subjective sleep quality, sleep latency, sleep duration, sleep disturbances, and the use of sleeping medication of the patients undergoing hysterectomy were significantly higher than those undergoing myomectomy ($p < 0.05$). Age (odds ratio [OR] = 1.082; 95% confidence interval [CI], 1.012–1.157; $p = 0.021$), operation type (OR = 1.071; 95% CI, 1.015–1.149; $p = 0.035$), and BAI score (OR = 1.097; 95% CI, 1.073–1.294; $p = 0.001$) were significantly associated with poor sleep quality. Logistic regression analysis showed that age, the BAI score, and the type of surgery were significantly associated with poor sleep quality.

Conclusion: The preoperative sleep quality of patients was significantly associated with the surgical procedure, patient age, and patient anxiety. Preoperative sleep quality of patients who underwent hysterectomy was worse than those who underwent myomectomy.

Keywords: Gynecological surgery, preoperative anxiety, Pittsburgh sleep quality index, sleep quality

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INTRODUCTION

Sleep quality is important for general health, as it affects the quality of life and daytime functioning (1). It is affected by many factors, including age, gender, and physical and psychological health. Poor sleep quality has been reported in hospitalized patients due to psychiatric disorders, anxiety about surgical or diagnostic procedures, and medical or surgical problems (2,3). Perioperative sleep disturbance is a common problem that affects a large number of patients undergoing surgery (4,5). About 8.8-79.1% of patients suffer from sleep disturbances before surgery (6).

Studies have shown that sleep disturbances during the preoperative period are associated with anxiety, pain, the magnitude of the surgery, the type and duration of the procedure, and the severity of the disease (7,8). The size of the surgical intervention is a factor affecting the sleep quality of patients, which is worse for patients requiring major surgery than those in need of a minor or intermediate-level surgical procedure (e.g., open cholecystectomy or colonic resection) (9). In one study, the quality of sleep the night before thoracic surgery was profoundly affected; although age and the timing of surgery were strong predictors of poor sleep, no relationship was found between sleep quality and the type of surgery (8).

It has been reported that preoperative sleep quality is most adversely affected by fear of the unknown, organ loss, and anxiety about being disabled after a major surgical intervention (10). Sleep disturbances and anxiety are prevalent among women undergoing hysterectomy, as loss of the uterus can be a major psychological trauma (11).

The purpose of this study was to evaluate the preoperative sleep quality of patients who underwent myomectomy and hysterectomy and to determine the factors affecting sleep.

MATERIAL and METHODS

This cross-sectional study was conducted at Zekai Tahir Burak Women's Health Education and Research Hospital between August 2018 and May 2019. The hospital's institutional review board approved the study (permission number: 37/2018), and all patients provided written informed consent before their enrollment.

The study enrolled 172 patients, and they were recruited from the gynecology outpatient clinic with abnormal uterine bleeding or pelvic pain; all were scheduled for hysterectomy or myomectomy. A semi-structured anamnesis was taken from all patients to evaluate existing sleep disorders, including obstructive sleep apnea syndrome, chronic insomnia, and excessive daytime sleepiness.

Patients with these sleep disorders were excluded from the study. Patients with mental, psychological, neurological, or cardiac disorders (history taken from the medical records) and those using sedatives or hypnotics within two months before hospitalization were also excluded. The patients had no known previous risk factors for sleep disturbance, and all underwent elective surgery. None of the patients were taking any medications before surgery. All patients had American Society of Anesthesiologists scores of 1-2.

The Pittsburgh Sleep Quality Index (PSQI) was used to evaluate the patients' subjective sleep quality over the prior month. Anxiety and depression symptoms were evaluated using the Beck Anxiety Inventory (BAI) and the Beck Depression Inventory (BDI), respectively. Total PSQI, BAI, and BDI scores were compared in myomectomy and hysterectomy groups.

The patients were classified into two groups according to sleep quality, i.e., a group without sleep disturbances (PSQI ≤ 5) and a group with sleep disturbances (PSQI > 5). Age, BMI, initial complaint, operation type (hysterectomy or myomectomy), and BAI and BDI scores were compared between the two groups.

The PSQI is a standardized self-administered questionnaire used to assess subjective sleep quality. The PSQI was designed by Buysee et al. and consists of 19 self-rated questions measuring seven components, including sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbance, use of sleep medication, and daytime functioning (12).

Each item of the questionnaire was scored from 0 to 3, and the scores were summed to give a total score of 0 to 21. A total PSQI score of 5 or higher indicated poor sleep, whereas a score below 5 indicated good sleep quality.

The PSQI was validated for Turkish people in 1997 by Agargun et al. (13).

The BAI is a short 21-item questionnaire that assesses the severity of anxiety. The total score ranges from 0 to 63 (0-9 points, normal; 10-18 points, slight to moderate anxiety; 19-29 points, moderate to severe anxiety; and 30-63 points, very severe anxiety). The scale was first developed by Beck. (14). The validity and reliability of BAI in the Turkish population were assessed by Ulusoy et al. (15).

The BDI is a 21-item questionnaire evaluating the presence and severity of depression. A higher score indicates more severe depression (0-9 points, minimal depression; 10-18 points, slight depression; 19-29 points, moderate depression; 30-63 points, severe depression).

Statistical analysis

Statistical analysis was performed using SPSS for Windows, version 21.0 (SPSS Inc., Chicago, IL, USA). The Kolmogorov-Smirnov test was used to determine whether continuous variables were normally distributed. Where applicable, continuous variables are expressed as mean ± standard deviation or median (range). Categorical variables are expressed as numbers (percentages). The chi-square test and Student's t-test were used to evaluate the associations between the categorical and continuous variables.

Multivariate logistic regression analysis was performed to evaluate the effect of various risk factors on sleep quality. The variables used in the regression included patient age, BMI, type of operation (myomectomy vs. hysterectomy), and BAI and BDI scores. P-values<0.05 were considered statistically significant for all tests.

RESULTS

A total of 220 patients were hospitalized for myomectomy or hysterectomy during the study period. Of these, 30 with medical or psychological problems and 18 who refused or were unable to complete the questionnaires were excluded from the study. Of the remaining 172 patients, myomectomy was planned in 67 (39%) and abdominal hysterectomy in 105 (61%). The mean age of the patients was 43.78 ± 7.55 years, and the mean BMI was 28.36 kg/m2.

The total PSQI score, BAI score, subjective sleep quality, sleep latency, sleep duration, sleep disturbances, and use of sleeping medication of the patients undergoing hysterectomy were significantly higher than those undergoing myomectomy ($p < 0.05$). There was no significant difference in the BDI score between the two groups (**Table 1**).

Overall, 43.6% of the patients reported that their sleep was unaffected; however, 56.4% reported poor sleep quality with a PSQI score > 5. Comparative results of patients without a sleep disturbance (PSQI ≤ 5) and patients with a sleep disturbance (PSQI > 5) are given in Table 2. The mean ages of the patients without and those with a sleep disturbance were 44.2 ± 5.1 years and 48.1 ± 5.8 years, respectively ($p < 0.001$). The PSQI score increased with age.

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While 74 (76.3%) of the patients who underwent hysterectomy had a PSQI score > 5, only 23 (23.7%) of the patients who underwent myomectomy had a PSQI score > 5 (p = 0.001). Patients who were hospitalized for hysterectomy had worse sleep quality than those hospitalized for myomectomy. Anxiety also adversely affected sleep quality (p = 0.001) (**Table 2**).

A logistic regression analysis was performed to evaluate the risk factors for sleep quality.

Table 3 summarizes the outcomes of the logistic regression analysis. Age (odds ratio [OR] = 1.082; 95% confidence interval [CI], 1.012–1.157; p = 0.021), operation type (OR = 1.071; 95% CI, 1.015–1.149; p = 0.035), and BAI score (OR = 1.097; 95% CI, 1.073–1.294; p = 0.001) were significantly associated with poor sleep quality. As the BAI score increased, the PSQI score increased, and sleep quality decreased. According to logistic regression, age, anxiety, and the surgical procedure were important predictors of poor sleep.

Table 1. Comparison of sleep quality, anxiety and depression of patients between the myomectomy and hysterectomy groups

Characteristic	Myomectomy N=67 (%)	Hysterectomy N=105 (%)	*P value*
PSQI			
Total score	4.9±2.3	7.2±2.9	0.001
Subjective sleep quality	0.7±0.7	1.3±0.9	0.001
Sleep latency	1.1±0.7	1.6±0.8	0.001
Duration of sleep	0.4±0.6	0.8±0.7	0.001
Habitual sleep efficiency	0.4±0.8	0.6±0.8	0.112
Sleep disturbances	1.3±0.5	1.9±0.7	0.001
Use of sleeping medication	0.1±0.4	0.3±0.5	0.006
Daytime dysfunction	0.6±0.9	0.8±0.7	0.105
PSQI			
≤ 5 (without sleep disturbance)	44 (65.7)	31 (29.5)	0.001
> 5 (with sleep disturbance)	23 (34.3)	74 (70.5)	
Total BAI score	10.1±6.2	13.2±5.3	0.001
Total BDI score	12.6±7.2	11.3±5.7	0.190

PSQI:Pittsburgh Sleep Quality Index; BAI:BECK Anxiety Inventory; BDI:BECK Depression Inventory; Data presented as frequency (percentage) or mean±standart deviation (SD); p <.05 is considered statistically significant.

Table 2. Sleep disturbances according to age, BMI, symptom category, type of operation, anxiety and depression

Variable	PSQI ≤ 5 N=75 (%)	PSQI > 5 N=97 (%)	*P value*
Age (years)	44.2±5.1	48.1±5.8	0.001
BMI	29.4±4.5	28.3±3.7	0.080
Symptom category			
Bleeding	43 (57.3)	56 (57.7)	0.958
Pain	32 (42.7)	41 (42.3)	
Operation type			
Myomectomy	44 (58.7)	23 (23.7)	0.001
Hysterectomy	31 (41.3)	74 (76.3)	
BAI score	9.47±6.1	13.69±5.3	0.001
BDI score	10.6±7.2	11.7±5.7	0.265

BMI:body mass index; PSQI:Pittsburgh Sleep Quality Index; BAI:BECK Anxiety Inventory; BDI: BECK Depression Inventory; Data presented as frequency (percentage) or mean±standart deviation (SD); p < 0.05 is considered statistically significant.

Table 3. Logistic regression analysis of risk factors for poor sleep quality

Variables	OR	CI 95%	*P value*
Age (years)	1.082	1.012-1.157	0.021
BMI (kg/m^2)	0.953	0.879-1.033	0.244
Symptom category	1.622	0.597-4.407	0.643
Operation type	1.071	1.015-1.149	0.035
BAI score	1.097	1.073-1.294	0.001
BDI score	0.448	0.341-1.428	0.175

BMI: Body Mass Index; BAI: BECK Anxiety Inventory; OR: odds ratio; CI: confidence interval; p < 0.05 is considered statistically significant.

DISCUSSION

In this cross-sectional study, we evaluated preoperative subjective sleep quality in patients who underwent myomectomy and hysterectomy and the factors that influenced it. Important associations were observed between preoperative sleep quality and age, anxiety, and the type of surgery. It was previously unknown whether sleep disturbances before gynecologic surgery were affected by the type of surgery. Our prospective design allowed us to examine the relationship between sleep quality during the preoperative period and the type of surgical procedure. Few studies on preoperative sleep quality are available in the gynecological surgery literature (11,16). The most notable finding of our study was that patients undergoing hysterectomy had worse preoperative sleep quality than those undergoing myomectomy. The age of the patients and the BAI score also were significant predictors of poor sleep quality.

This study showed that sleep quality was severely affected before surgery in 56.4% of patients who were operated on for benign uterine surgery. The prevalence of poor sleep quality was compatible with previous studies; Wang et al. reported that 51% of breast cancer patients scheduled for breast surgery were affected by poor sleep before surgery (17). Orbach-Zinger et al. reported poor sleep quality in 68% of women before a cesarean operation (18). Sleep disturbances are frequently reported by hospitalized patients. Jolfaei et al. evaluated sleep quality in such patients (19). The mean PSQI score was 8.8 ± 4.8, and 70.8% of the patients were poor sleepers (PSQI > 5) in their study, which was higher than in our study.

In the present study, we subjectively evaluated the sleep quality of the patients during the previous month using the PSQI. The PSQI was significantly higher in patients undergoing hysterectomy procedures than those who underwent myomectomy procedures. During this one month, the decision for surgery, the method of surgery, and detailed information thereon may have affected sleep quality. Knowledge of an impending operation may be a risk factor for sleep disturbance. The higher rates of sleep disturbance in patients undergoing hysterectomy compared with myomectomy may be explained by fertility or organ loss. Concerns about organ loss and sterility due to surgery may be an important factor explaining poor preoperative sleep quality. Sheizaf et al. evaluated preoperative sleep patterns in women undergoing gynecologic endoscopic surgery for benign conditions (16). Although age and stress level before sleep were significant predictors of poor sleep, the type of planned surgery did not affect the quality of sleep in that study.

No consensus has been reached on whether patient age is a risk factor for sleep disturbance before surgery. In our study, sleep quality decreased as the patient age increased. These results are similar to findings reported by Sheizaf et al. (16). However, age was not cited as a risk factor for sleep quality in previous studies (7,9,17).

Anxiety is one of the most frequently observed psychological reactions among patients awaiting surgery (20,21).

Preoperative anxiety and stress are frequently observed in studies of patients undergoing elective surgery. In a study that investigated the effectiveness of the preoperative sleeping period on the preoperative anxiety level, fewer sleeping hours increased the level of anxiety (22). Here, we determined that preoperative anxiety status was significantly correlated with poor sleep quality; as the BAI increased, the PSQI score also increased.

Study Limitations

There are several limitations of our study. First, there are many factors that affect patient sleep quality, including hormone levels and nutritional status, as well as cultural, physical, psychological, and ethnic factors. In this study, we investigated only a subset of these factors. Second, the PSQI assessment was subjective. Preoperative sleep quality was not evaluated using objective methods such as polysomnography and actigraphy. Third, we did not evaluate sleep quality during the postoperative period because we aimed to evaluate sleep quality exclusively during the preoperative period.

CONCLUSION

The preoperative sleep quality of patients is significantly associated with the surgical procedure, patient age, and patient anxiety. Preoperative sleep quality of patients who underwent hysterectomy was worse than those who underwent myomectomy. Patients scheduled for hysterectomy should be evaluated in terms of sleep quality and anxiety using preoperative assessment scales.

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Ethical approval: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by Local Ethical Committee. All procedures performed in studies with human participants met the ethical standards of the Institutional Research Commission and the 1964 Declaration of Helsinki and its subsequent amendments or comparable ethical standards. This study was approved by the Ethics Committee of the Zekai Tahir Burak Women's Health Education and Research Hospital, Ankara (ethics committee no: 37/2018).

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