Sleep disturbance among women with chronic pelvic pain

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A B S T R A C T

Objective: To investigate the effect of chronic pelvic pain (CPP), a debilitating condition, on sleep quality.

Methods: The present case–control study enrolled women older than 18 years attending the Gynecology Clinic of Çanakkale Onsekiz Mart University Hospital, Çanakkale, Turkey, with CPP between August 2011 and August 2012. The control group was selected from women attending the clinic for another complaint. Sleep quality was evaluated via the Pittsburgh Sleep Quality Index, and differences between the groups were compared by t and χ² tests.

Results: During the study period, 157 women were enrolled. Seventy-two had CPP symptoms, and 85 attended the clinic for other complaints. Poor sleep quality was found in 80% (n = 58) of the women with CPP, and 55% (n = 47) of the control group (P < 0.05). Conclusion: Women with CPP were found to have poor sleep quality. Sleep education should be recommended in psychiatry and neurology clinics to increase the awareness of sleeping problems among these women.

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1. Introduction

Chronic pelvic pain (CPP) is a debilitating condition that can impair a woman’s health and quality of life [1]. In this condition, the pain is intermittent or constant, has a duration of at least 6 months, does not occur exclusively with menstruation or intercourse, and is not associated with pregnancy. It is localized to the pelvis, the anterior abdominal wall at or below the umbilicus, the lumbosacral area, or the buttocks, and has sufficient severity to cause functional disability or lead to medical treatment [2]. The prevalence of CPP is estimated to be 3.8% among women aged 15–73 years [3], and 10% among women attending gynecology clinics [4].

Many diagnostic tools are used in the clinical evaluation of women with CPP. Laparoscopy is often used to investigate CPP, and endometriosis (33%), adhesions (24%), and “no pathology” (35%) are typical diagnostic findings [5]. Treatment approaches specifically for CPP have included psychotherapy or counselling, diagnostic laparoscopy, hormonal manipulation using medroxyprogesterone acetate, surgery (such as presacral neurectomy and uterosacral nerve ablation) to interrupt nerve pathways, and hysterectomy with or without bilateral oophorectomy [4].

The quality and quantity of sleep can be markedly affected by internal hormonal changes in a woman’s life during pregnancy, adolescence, the postpartum period, and perimenopause, as well as by external factors such as occupational conditions, childcare responsibilities, and marital issues. The prevalence of insomnia in populations with chronic pain is estimated to be 50%–88% [6]. Studies of populations with chronic pain have included patients with cancer or with pain related to rheumatologic diseases [7].

Disturbed sleep has functional consequences: it has been associated with a poorer quality of life, including an impaired ability to perform work and daily tasks [8]. In the evaluation of sleep disorders, the most frequently used subjective methods in assessing sleep quality are sleep questionnaires. Among these, the Pittsburgh Sleep Quality Index (PSQI) is considered to be the most useful instrument to establish sleep quality [9]. It is a standardized, self-administered questionnaire that assesses sleep quality over the previous month. The aim of the present study was to investigate the effects of CPP on sleep quality via the PSQI.

2. Materials and methods

The present cross-sectional, case–control study examined the sleep quality of women with CPP who were older than 18 years and who attended the Gynecology Clinic of Çanakkale Onsekiz Mart University Hospital, Çanakkale, Turkey, between August 1, 2011, and August 31, 2012. Institutional review board approval was obtained before the study, and all participants provided informed consent.

The study included all women presenting with CPP and control women who attended the gynecology clinic for an unrelated complaint.
such as infectious disease. History and physical examinations were carried out for all women in both groups.

A Turkish version of the questionnaire of the International Pelvic Pain Society [10] was used to obtain study data for all participants. The form collected demographic information; family, medical, obstetric, and gynecologic history; information about the pain; pain rating during the menstrual cycle; pain related with intercourse; treatment options (medical or surgical); and location of the pain.

The form contained questions intended to distinguish among different CPP etiologies. The patients included in the CPP group had non-cyclic pelvic pain that caused functional disability, had induced the women to obtain medical care, and had lasted for more than 6 months.

Sleep quality was evaluated in both groups via the PSQI. Developed by Buysse et al. in 1989 [9], this self-reported questionnaire evaluates sleep quality and disturbances experienced over the previous month. Subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction are evaluated via 19 items. The score for each item of the questionnaire varies between 0 and 3; a total score of more than 5 indicates poor sleep quality [9]. The score has a diagnostic sensitivity of 89.6% and a specificity of 86.5% [9].

The data were analyzed via SPSS version 19 (IBM, Armonk, NY, USA). Means were compared via t tests, and categorical variables were compared via χ² tests. P < 0.05 was considered statistically significant.

3. Results

During the study period, 157 women were enrolled in the study. Seventy-two of the participants had CPP symptoms, and 85 of them attended the gynecology clinic for other complaints. The demographic factors of the study population are given in Table 1. Surgical history (control group, n = 3; CPP group, n = 7) and smoking (control group, n = 5; CPP group, n = 8) were significantly higher among women with CPP (P < 0.05).

Poor sleep quality was found among 80% (n = 58) of the women with CPP. The patients with CPP and 55% (n = 47) of the control group (P < 0.05). The scores for the components of the PSQI are shown in Table 2. Although most of the participants reported that they had sleep disturbances, only 12 women from the groups admitted to taking medicine to help them sleep. Subjective sleep quality, habitual sleep efficiency, and sleep disturbances were the major components determining the total PSQI score (Table 2).

4. Discussion

In the present study, a high proportion of women with CPP reported poor sleep quality, and several explanations may underlie the poor sleep quality of these women. CPP is a debilitating disease that can considerably affect a woman’s health and quality of life [1].

Both psychological and emotional factors play a role in the etiology of CPP; for example, the pain may cause depression and/or anxiety, and this depression may manifest itself as somatization. In addition, depression has been related to many problems affecting sleep quality, including sleep disturbances, sleep latency, and early morning awakening [11]. Dysfunctions in the γ-aminobutyric acid (GABA) system and serotonin receptors have been associated with depression and sleep quality [12].

Thus, multidirectional mechanisms among CPP, anxiety and/or depression, and sleep quality might contribute to the current findings. There is a vicious cycle between CPP, poor sleep quality, and depression and anxiety. Although the relationship between CPP and sleep quality was evaluated in the present study, there were no data on the psychological status of the women. The lack of depression and anxiety parameters among the study population represents a limitation of the present study.

In addition to depression, chronic pain can affect sleep quality by different neurologic mechanisms. It is associated with functional changes in raphé magnus cells in the brain, which modulate both pain and arousal [13], and pain contributes to long-term poor sleep quality and increased sleep disturbances [6]. Analgesic medications including narcotics can increase daytime sleep and produce night-time adverse effects. Another limitation of the present study was that the pain level was not measured; thus, the degree of pain could not be correlated with sleep quality.

Surgical history is sometimes used in explaining the differential diagnoses of CPP and can result in CPP. For example, surgical procedures for urinary incontinence or cervical surgery for dysplasia might cause CPP with localization to the symphysis pubis due to osteitis or osteomyelitis pubis, or to cervical stenosis and endometriosis, respectively [14]. Laparoscopy is an important diagnostic tool in the evaluation of CPP and is used in more than 40% of the indications for gynecologic diagnostic procedures [14]. In the present study, the number of women with surgical history was significantly higher in the CPP group than in the control group, which was compatible with this knowledge.

Smoking and passive smoking have been associated with an increased risk of pelvic pain [15]. Smoking is related to infertility, and the incidence of smoking is higher among individuals with depression [16]. In addition, the smoking rate was higher in the present study group with CPP. Endometriosis is one of the main causes of CPP, and mild and moderate endometriosis is related to unexplained infertility. These explanations may support the idea that multidirectional mechanisms underlie the current findings of poor sleep quality among women with CPP.

In conclusion, CPP can have a significant impact on the physical and mental components of quality of life [17]. Women with CPP also have poor sleep quality. Sleep education should be recommended in psychiatric and neurology clinics to increase the awareness of sleeping problems among these women. Further large studies are needed to evaluate risk factors, and to correlate the degree of pain and sleep quality among women with CPP.

**Conflict of interest**

The authors have no conflicts of interest.

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### Table 1
Demographic characteristics of the study population.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>CPP group (n = 72)</th>
<th>Control group (n = 85)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y</td>
<td>31.4 ± 6.3</td>
<td>32.1 ± 6.2</td>
<td>0.089</td>
</tr>
<tr>
<td>BMI</td>
<td></td>
<td></td>
<td>1.121</td>
</tr>
<tr>
<td>Underweight</td>
<td>2 (2.7)</td>
<td>3 (3.5)</td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>28 (38.9)</td>
<td>32 (37.6)</td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td>30 (41.7)</td>
<td>36 (42.4)</td>
<td></td>
</tr>
<tr>
<td>Obese</td>
<td>12 (16.7)</td>
<td>14 (16.5)</td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
<td>0.041</td>
</tr>
<tr>
<td>Nulliparous</td>
<td>40 (55.6)</td>
<td>40 (47.1)</td>
<td></td>
</tr>
<tr>
<td>Multiparous</td>
<td>32 (44.4)</td>
<td>45 (52.9)</td>
<td></td>
</tr>
<tr>
<td>Operation history</td>
<td>7 (9.7)</td>
<td>3 (3.5)</td>
<td>0.031</td>
</tr>
<tr>
<td>Smoking</td>
<td>8 (11.1)</td>
<td>5 (5.9)</td>
<td>0.042</td>
</tr>
<tr>
<td>Occupation</td>
<td>25 (34.7)</td>
<td>27 (31.8)</td>
<td>0.072</td>
</tr>
<tr>
<td>PSQI score &gt; 5</td>
<td>58 (80.5)</td>
<td>47 (55.3)</td>
<td>0.033</td>
</tr>
</tbody>
</table>

**Abbreviations:** BMI, body mass index (calculated as weight in kilograms divided by the square of height in meters).

**P** values are given as mean ± SD or number (percentage) unless otherwise indicated.
References