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Original Article

Impact of Urinary Incontinence on Sleep and Quality of Life in Non-obese Premenopausal Women

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ABSTRACT

Objective: Urinary incontinence refers to the involuntary leakage of urine in individuals of any age but is more common in women. Identifying urinary incontinence in premenopausal women and developing effective prevention and management strategies are crucial to improve quality of life and sleep by reducing patients' physical complaints. This study aimed to determine the quality of life and sleep of patients with and without urinary incontinence in a premenopausal, nonobese population.

Methods: This prospective study, included 110 patients (55 study group, 55 control group). The study group consisted of premenopausal women aged 35–50 with urinary incontinence complaints. ICIQ-SF assessed urinary incontinence's impact on quality of life, and the PSQI evaluated sleep quality. Statistical analysis followed data collection.

Results: The study evaluated 110 non-obese premenopausal patients. No statistically significant difference was found between the study and control groups in terms of demographic characteristics. The ICIQ-SF score was 1.58±2.01 in the control group and 12.23±4.90 in the study group, with a statistically significant difference ($p<0.0001$). The PSQI score was 3.58±1.64 in the control group and 6.45±2.89 in the urinary incontinence group, with a significant difference ($p<0.001$)

Conclusion: This study found that urinary incontinence significantly impaired quality of life and sleep in premenopausal women, both obese and nonobese. Raising awareness, informing patients, promoting lifestyle changes, and initiating treatment can improve overall health, quality of life, and sleep in affected individuals.

INTRODUCTION

Urinary incontinence refers to the involuntary leakage of urine in individuals of any age but is more common in women. It is of five types: stress, urge, mixed, overflow, and functional. Women are reluctant to report urinary incontinence, making it difficult to determine the prevalence of this condition. Studies have reported that 12.4% of young women and 45% of middle-aged and postmenopausal women experience urinary incontinence.[1,2] High parity, obesity, smoking, constipation, macrosomic delivery, and caffeine consumption are among the best-known causes of urinary incontinence.[3] Urinary incontinence decreases women's general quality of life by limiting social relations, self-confidence, and daily activities besides its physical effects. An increase in incontinence severity increases the negative impact.[4] Sleep quality is another important condition affected by urinary incontinence. Frequent nocturia and anxiety associated with incontinence attacks disrupt sleep patterns, leading to a decrease in sleep quality. The physical effects of this condition increase the psychological burden and create a vicious cycle of insomnia and persistent poor sleep quality.[5] Studies comparing samples with the general population have reported poor sleep quality.[6] Assessing patients with this condition and determining their quality of life and sleep are vital for correct diagnosis. The International Incontinence Society recommends that quality-of-life measurements be included in clinical practice and that improvement practices be established accordingly.[7] The International Consultation on Incontinence Questionnaire Short Form (ICIQ-SF) is a tool to measure the quality of life of patients with urinary incontinence. The Pittsburgh Sleep Quality Index (PSQI), which comprehensively examines various demographic characteristics of participants, is another tool used to assess sleep quality.

Identifying urinary incontinence in premenopausal women and developing effective prevention and management strategies are crucial to improve quality of life and sleep by reducing patients' physical complaints. The effects of obesity on urinary incontinence are well known. This study aimed to determine the quality of life and sleep of patients with and without urinary incontinence in a premenopausal, nonobese population.

MATERIALS AND METHODS

This prospective study was conducted between September 01, 2023, and September 01, 2024. It was approved by the Biruni University Clinical Research Ethics Committee (Date: 29/03/2023, No: 2023/79-09) and conducted following the principles of the Declaration of Helsinki.

The study was performed with 110 patients, of which 55 were control and the other 55 were study patients. The study group comprised premenopausal women aged 35–50 years and patients with urinary incontinence. The control group consisted of patients without urinary incontinence. Participants were excluded if they were menopausal, had a body mass index (BMI) of 30 or higher, had undergone surgery for urinary incontinence, had pelvic organ prolapse, had comorbid conditions that affected their quality of sleep, or had a history of taking sleep aids. All individuals were provided with detailed verbal and written explanations of the study, and their written informed consent was secured before participation.

The demographic and obstetric data, including age, BMI (calculated by dividing weight in kilograms by the square of height in meters), gravida, and parity, were obtained from the information forms filled out in the clinic. Two sets of questionnaires were used in the study. First, the Turkish version of ICIQ-SF was used to examine the effect of urinary incontinence on life quality. The Turkish validation study of ICIQ-SF was performed by Çetinel et al.[8] The questionnaire includes six questions. The first five questions are scored based on the answers given by the patient. Question 6 inquiries about the patient's subjective complaint. The answers are scored on a numerical scale of 0–10. The total score varies between 0 and 21, with 0 indicating that urinary incontinence affects the person's daily life very little and 10 indicating that it affects it very much. Second, the PSQI questionnaire was used to assess sleep quality. This index was developed by Buysse et al.[9] The reliability study in Turkey was conducted by Ağargün et al.[10] The PSQI includes 24 questions; of these, 19 are answered by the individual themselves and 5 by the individual's spouse or a person with whom the individual lives. Each question is scored between 0 and 3, and the total score varies between 0 and 21. A total score of less than 5 indicates a good sleep quality, while a score of 5 or more indicates a poor sleep quality. Statistical analysis was performed after collecting all study data.

Statistical analyses

To check the distribution of the data, the Shapiro–Wilk test was performed, and homogeneity of variances was verified by Levene's test. Data were reported as mean (standard deviation), median (25th–75th percentile), or number with percentage. Between-group comparisons for categorical data were made using Pearson's chi-square or Fisher's exact test, while continuous variables were assessed with the Student's t test or Z test. In cases where normality assumptions were not met, the Mann–Whitney U test was used. The association between the PSQI and ICIQ-SF scores was evaluated by data analysis. They employed the Spearman correlation test. The p-value, 95% CIs, and correlation coefficient (r) were presented.

All analyses were carried out with SPSS version 18 (http://www.spss.com.hk/statistics/).

RESULTS

The study evaluated 110 non-obese patients with menstrual irregularities and vasomotor symptoms of menopause who were near the end of their reproductive period.

The study group had a mean participant age 46.04±4.09 years, whereas the control group's mean age 45.73±3.33. The mean numbers of gravida were 2.71±1.05 and 2.60±0.93 in the study and control groups, respectively. The study group had a mean BMI of 26.77±3.79, while the control group had a mean BMI of 26.26±2.15. The study and control groups were comparable in terms of demographic characteristics (age, gravida, parity, BMI), with no statistically significant differences. (p=0.665, p=0.566, p=0.547, and p=0.382, respectively) (Table 1).

Table 1. Comparison of Demographic Characteristics and Survey Results between Groups

	Study group (n=55)	Control group (n=55)	p
Age	46.04±4.09	45.73±3.33	0.665
Gravida	2.71±1.05	2.60±0.93	0.566
Parity	2.53±0.88	2.44±0.69	0.547
BMI	26.77±3.79	26.26±2.15	0.382
ICIQ-SF score	12.24±4.91	1.58±2.02	<0.001
PSQI score	6.45±2.89	3.58±1.64	<0.001

BMI: Body mass index; ICIQ-SF: International Consultation on Incontinence. Questionnaire Short Form; PSQI: Pittsburgh Sleep Quality Index.

The ICIQ-SF score was 1.58±2.01 in the control group and 12.23±4.90 in the study group, with a statistically significant difference (p<0.0001). The PSQI score was 3.58±1.64 in the control group and 6.45±2.89 in the urinary incontinence group, with a significant difference (p<0.001) (Table 1).

ICIQ-SF and PSQI scores showed a strong positive connection (r=0.52, p<0.001) when all subjects were assessed. Women without incontinence showed no correlation (r=-0.02, p=0.876), but those with incontinence showed a slight but statistically non-significant link (r=0.17, p=0.215). These results imply that worsening urine incontinence may have an adverse effect on the quality of sleep.

DISCUSSION

Women who experience urinary incontinence prior to menopause suffer from physical and emotional health issues. Identifying these premenopausal patients and developing effective prevention and management strategies are crucial to reduce their physical complaints and improve their quality of life and sleep. Obesity has an impact on urinary incontinence and has been less examined in nonobese patients. Therefore, this study investigated the quality of life and sleep of patients with and without urinary incontinence in a premenopausal, nonobese population. Using the ICIQ-SF is recommended because it is an easily applicable and comprehensible questionnaire form for evaluating urinary incontinence and its effect on life quality, with proven reliability and validity.[11] The PSQI has a sensitivity of 89.6% and a specificity of 86.5% in detecting sleep disorders.[12] In this study, the results obtained using the ICIQ-SF were statistically significant while comparing the control and study groups (p<0.0001). A statistically significant difference was also observed in the PSQI score between the control and study groups (p<0.001). The quality of life and sleep quality were significantly decreased in the study group compared to the control group. Urinary incontinence may affect sleep quality through emotional and behavioral impacts in addition to physical symptoms, as indicated by the high association seen in the entire group. The subgroup analyses' lack of significance suggests that other factors, like age, BMI, and comorbidities, may potentially have an impact on sleep quality in addition to the occurrence of incontinence.

The prevalence of urinary incontinence demonstrates an age-related increase, with earlier studies reporting rates of 7% among women aged 20–39 years, 17% in the 40–59 age group, and 23% among women aged 60–79 years.[13] The most comprehensive epidemiologic study conducted in Norway involving 27,936 women reported that 54% of the patients were in the premenopausal period.[14] The risk factors include increased BMI, multiparity, excessive caffeine consumption, constipation, and sedentary lifestyle.[15,16] Although urinary incontinence is not a lethal disease, it affects the individual in every aspect. Premenopausal patients are actively involved in life; however, the complaints of urinary incontinence can lead to emotional problems such as loss of self-esteem, feelings of inadequacy, and depression.[17,18] A decrease in quality of life is observed in patients, including obsession with bladder emptying, a feeling of restriction when leaving the house, severe restriction of fluid intake, and avoidance of activities that may pose a risk of urinary incontinence.[19,20] In a study conducted among women aged 20-64 years with urinary incontinence, it was found that health related quality of life decreased remarkably in the group with urinary incontinence. Another study revealed that the physical and social activities of patients with urinary incontinence were negatively affected, and these negative effects increased significantly with increasing severity of incontinence.[21] Yorgancı et al.[22] found that women in the reproductive period with incontinence complaints without pelvic organ prolapse had substantially lower quality of life and sexual life. In the literature, studies have shown that menopause is associated with decline in quality of life and an increase in social anxiety among women with inconitenence.[23-25] In this study, ICIQ-SF score was found to be statistically significantly higher in the study group. The ICIQ-SF scoring system has shown a decrease in the wellbeing of patients as the severity of incontinence increases. The data we have revealed in this study support other similar studies in the literature. The study results showed that urinary incontinence affected not only physical health but also psychosocial health. This indicated that patients should be approached holistically by providing psychological support and symptomatic treatment while treating them.

A study conducted on pregnant women with urinary incontinence observed lower sleep quality.[26] In a multicenter, double-blind, randomized controlled study, antimuscarinic treatment was initiated for 12 weeks in patients with incontinence, and a decrease in incontinence complaints and an increase in sleep quality were observed after treatment.[27] Another study conducted on patients with type 2 diabetes mellitus and urinary incontinence reported that women with increased severity of urinary incontinence had lower sleep quality.[28] Ge et al.[29] demonstrated a significant correlation between age, sex, and frequency of going to the restroom at night and sleep quality in middle-aged adults with overactive bladder.[29] Similarly, Winkelman et al.[30] found a significant correlation between poor sleep quality and the severity of urinary incontinence. The present study revealed lower sleep quality in premenopausal women with urinary incontinence, as reported by relatively fewer studies conducted on women in the premenopausal period compared with the postmenopausal period. The negative effect of urinary incontinence on sleep quality could be explained by the need to urinate at night, interruption of sleep due to fear of urinary incontinence, and difficulty transitioning to rapid eye movement sleep. Longitudinal studies show a two-way relationship: nocturia can lead to new-onset sleep problems, and poor sleep can increase the risk of developing nocturia, especially in women and younger adults.[31,32] The results of this study suggested that the decrease in sleep quality reinforced the decrease in quality of life.

Limitations

This study had some limitations. First, it had a small sample size, which might have influenced the results, and we did not perform a power analysis for this study. Second, socioeconomic factors and psychological variables affecting quality of life were not addressed comprehensively in this study. Instead of using questionnaires to measure sleep quality, objective sleep measurement (e.g., polysomnography, actigraphy) may help in obtaining more objective results.

Conclusion

This research indicated that, in premenopausal women, urinary incontinence was associated with a marked deterioration in both sleep quality and overall quality of life, independent of obesity. Promoting awareness about the risk factors of this disease negatively affecting the quality of life outcomes and sleep of people with its physical, social, economic, and psychological effects, informing patients, encouraging changes in lifestyles, and initiating treatment, when necessary, can increase the general health levels, quality of life, and sleep of these individuals.

Ethics Committee Approval

This study was conducted between September 01, 2023, and September 01, 2024. It was approved by the Biruni University Clinical Research Ethics Committee (Date: 29.03.2023, Decision No: 2023/79-09).

Informed Consent

Retrospective study.

Peer-review

Externally peer-reviewed.

Authorship Contributions

Concept: B.N.A.H.; Design: B.N.A.H.; Materials: B.N.A.H.; Analysis and/or interpretation: M.M.K., B.N.A.H.; Literature search: B.N.A.H., H.S.T., M.M.K.; Writing: B.N.A.H., M.M.K.; Critical review: B.N.A.H.

Conflict of Interest

None declared.

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Obez Olmayan Premenopozal Hastalarda Üriner İnkontinansın Uyku ve Yaşam Kalitesi Üzerine Etkisinin Değerlendirilmesi

Amaç: Üriner inkontinans, her yaştan bireyde görülebilen istemsiz idrar kaçırma durumudur, ancak kadınlarda daha yaygındır. Premenopozal kadınlarda üriner inkontinansın tespiti ve etkili önleme ve yönetim stratejilerinin geliştirilmesi, hastaların fiziksel şikayetlerini azaltarak yaşam kalitesini ve uyku düzenini iyileştirmek açısından büyük önem taşır. Bu çalışma, premenopozal ve obez olmayan bir popülasyonda üriner inkontinans varlığına göre hastaların yaşam kalitesi ve uyku durumunu değerlendirmeyi amaçlamıştır.

Gereç ve Yöntem: Bu prospektif çalışmaya 110 hasta dahil edilmiştir (55 çalışma grubu, 55 kontrol grubu). Çalışma grubunu, 35–50 yaş arası, üriner inkontinans şikayeti olan premenopozal kadınlar oluşturmuştur. Üriner inkontinansın yaşam kalitesi üzerindeki etkisi ICIQ-SF ile, uyku kalitesi ise PSQI ile değerlendirilmiştir.

Bulgular: Çalışmada, obez olmayan 110 premenopozal hasta değerlendirilmiştir. Çalışma ve kontrol grupları arasında demografik özellikler açısından istatistiksel olarak anlamlı bir fark bulunmamıştır. ICIQ-SF skoru kontrol grubunda 1.58±2.01, çalışma grubunda ise 12.23±4.90 olarak bulunmuş ve bu fark istatistiksel olarak anlamlıdır ($p<0.0001$). PSQI skoru kontrol grubunda 3.58±1.64, üriner inkontinans grubunda ise 6.45±2.89 olarak saptanmış olup aradaki fark anlamlıdır ($p<0.001$).

Sonuç: Bu çalışma, üriner inkontinansın premenopozal kadınlarda –obez olsun ya da olmasın– yaşam kalitesi ve uyku üzerinde önemli ölçüde olumsuz etkiler yarattığını ortaya koymuştur. Farkındalık yaratmak, hastaları bilgilendirmek, yaşam tarzı değişikliklerini teşvik etmek ve tedaviye başlamak, etkilenen bireylerin genel sağlık durumunu, yaşam kalitesini ve uyku düzenini iyileştirebilir.

Anahtar Sözcükler: Uyku kalitesi; üriner inkontinans; yaşam kalitesi.