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# Effect of Symptom Severity on the Quality of Life in Women with Urinary Incontinence: A Comparative Study

## Üriner İnkontinanslı Kadınlarda Semptom Şiddetinin Yaşam Kalitesine Etkisi: Karşılaştırmalı Bir Çalışma

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## Abstract

**Objective:** This study was conducted to determine the effect of symptom severity on quality of life and urinary incontinence (UI) risk factors affecting quality of life in women with UI.

**Methods:** The study was conducted with a descriptive, cross-sectional, and comparative design. Data were collected using the "description form" and "King's health questionnaire (KHQ)" with 160 women applying to a university hospital's urogynecology polyclinic. The Number Cruncher Statistical System 2007 (Kaysville, Utah, USA) program was used for data analysis. The data were analyzed using numbers, percentages, Mann-Whitney U test, and linear regression analyses. P<0.05 was considered significant.

**Results:** It was found that 45% of women had none/low symptom severity and 55% had medium/high symptom severity. The women's KHQ first part subscale mean score was found to be "general health condition" 41.09±20.48; "incontinence effect" 56.46±28.47; "role limitation" 41.04±33.43; "physical limitation" 46.67±33.01; "social limitation" 31.94±30.26; "personal relationship" 15.94±25.72; "emotions" 43.61±34.82; "sleep energy level" 27.71±27.97; "severity measurements" 38.46±24.56; KHQ second part (symptom severity scale) mean score was 9.56±5.97. It was found that women with medium/high symptom severity had statistically significant higher scores from all subscales of KHQ's quality of life part than women with none/low severity (p<0.01).

**Conclusion:** It was concluded that incontinence in women affected quality of life at a medium level, quality of life decreased as incontinence's symptom severity increased, and many UI risk factors affected quality of life. This study reveals that incontinence symptom severity has a negative effect on women's quality of life.

**Keywords:** Incontinence, lower urinary tract symptoms, quality of life, women

## Öz

**Amaç:** Çalışma, üriner inkontinans (Üİ) tanısı alan kadınların semptom şiddeti ile yaşam kalitesi arasındaki ilişkiyi ve yaşam kalitesini etkileyen faktörleri belirlemek amacıyla yapılmıştır.

**Yöntem:** Araştırma tanımlayıcı, kesitsel ve karşılaştırmalı desende yapılmıştır. Veriler, bir üniversite hastanesinin ürojinekoloji polikliniği'ne başvuran 160 kadın ile "birey tanıtım formu" ve "King sağlık anketi (KHA)" kulanılarak yüzyüze görüşme tekniği ile toplanmıştır. Verilerin analizinde Number Cruncher Statistical System 2007 (Kaysville, Utah, ABD) programı kullanılmıştır. Veriler sayı, yüzde ve Mann-Whitney U testi ve doğrusal regresyon analizleri kullanılarak analiz edilmiştir. Anlamlılık düzeyi p<0,05 olarak kabul edilmiştir.

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## Öz

**Bulgular:** Kadınların %45'inin semptom şiddetinin hiç/düşük, %55'inin orta/yüksek olduğu saptanmıştır. Çalışmaya katılan kadınların KHA birinci bölüm alt boyut puan ortalamaları; "genel sağlık durumu" 41,09±20,48; "inkontinans etkisi" 56,46±28,47; "rol limitasyon" 41,04±33,43; "fizik limitasyon" 46,67±33,01; "sosyal limitasyon" 31,94±30,26; "kişisel ilişki" 15,94±25,72; "emosyonlar" 43,61±34,82 "uyku enerji düzeyi" 27,71±27,97, "ciddiyet ölçümleri" 38,46±24,56; KHA ikinci bölüm (semptom ciddiyet skalası) puan ortalaması 9,56±5,97 olarak saptanmıştır. Semptom ciddiyeti orta ya da çok olan kadınların KHA yaşam kalitesi bölümünün tüm alt boyutlarından aldıkları puanlar, hiç ya da az olan kadınlara göre istatistiksel olarak anlamlı düzeyde yüksek bulunmuştur (p<0,01).

**Sonuç:** Kadınlarda inkontinansın yaşam kalitesini orta düzeyde etkilediği, inkontinansın semptom şiddeti arttıkça yaşam kalitesinin düştüğü ve birçok Üİ risk faktörünün yaşam kalitesini etkilediği sonucuna varılmıştır. Bu çalışma inkontinans semptom şiddetinin kadınların yaşam kalitelerini olumsuz etkilediğini ortaya koymaktadır.


**Anahtar Kelimeler:** İnkontinans, alt üriner sistem semptomları, yaşam kalitesi, kadın

## Introduction

In the first standardization report (2002), the International Continence Society (ICS) defined urinary incontinence (UI) as involuntary UI, which can cause social and hygienic problems and can be objectively exhibited[1]. As being a problem that concerns every age group, its frequency increases with increasing age, and it is seen 2-5 times more in women than men[2].

It is estimated that on average, 250 million women suffer from incontinence around the world[3]. Very different numbers were obtained in the studies on UI prevalence in Turkey. In our country, the UI frequency is stated to be 20-25%[4].

Although UI is not a disease that threatens an individual's life, it causes psychosocial problems and deterioration in life quality[2]. UI leads to psychosocial effects such as constant urinary incontinence and fear of smelling bad, feeling insufficient and dirty, decrease in self-esteem, disturbance in body image, stigmatization, shame, unhappiness, anger, stress, anxiety, depression, sleep disorders, skin problems, limitation in physical activity, social isolation, decrease in libido, and avoiding sexual activity and causes a decrease in quality of life[2,5]. In the conducted studies, it was found that the incontinence problem plays an important role in the decrease in the quality of life decrease[6,7]. This decrease affects women not only from the aspect of symptoms but also from social, economic and medical aspects[8,9].

It was found that women spent a long time before applying to a health institution due to reasons such as perceiving UI as a natural result of aging, lacking information, disregarding complaints, being ashamed/afraid of examination, not finding any time for examination[2,5]. This situation disturbs the patient's psychosocial health and increases the treatment cost[2,10]. Although studies have revealed that every aspect of the quality of life is affected in women with UI, a limited number of studies have examined the effect of UI symptom severity on the quality of life[6,7]. For this reason, this studyaimed to examine the effect of symptom severity on quality of life in women with UI and to raise awareness of health professionals and society on this issue. Thus, it is thought that women will start treatment early before their symptoms worsen, control symptoms, and improve their quality of life.

## Materials and Methods

This descriptive, cross-sectional, and comparative study was conducted at the urogynecology polyclinic of a university hospital.

### Participant Selection

The target population of the research consisted of women (n=242), applied to the polyclinic in a year. The sample of study was determined at a 95% confidence interval by using the population known formula, and it was found that 149 women should be included in the sample. One hundred sixty (n=160) women who applied to the polyclinic on the given dates and filled out the data collection forms participated in the study.

### Data Collection

Data were collected using the individual description form and king's health questionnaire (KHQ). The individual description form was created by the researcher according to the literature to determine the women's socio-demographic/obstetric-gynecologic characteristics, health history, and the characteristics related to the complaint of incontinence and had 26 questions[4,11]. The KHQ is a scale developed by Cardozo in 1991 to determine quality of life specifically

regarding urinary incontinence and consists of 32 items and two parts[12]. A Turkish validity and reliability study was conducted by Kaya et al.[12] (Cronbach alpha=0.72-0.89). Determination of the given score high indicates that life quality has deteriorated[12,13]. The Cronbach's alpha value was found to be 0.78-0.95 in the study. In the study, the women who answered "none or low" to the symptom evaluation question of the questionnaire were grouped as the first group (n=72, 45%), and those who answered "medium or high" were grouped as the second group (n=88, 55%), and the relationship between symptom severity and quality of life was compared accordingly.

Before data collection, this study was approved by the Ethics Committee of Ege University Medical Faculty (17-3/9) in accordance with the Declaration of Helsinki Research Principles. To conduct the study, an institutional permit and written informed consent were obtained from each participant. The data were collected using the face-to-face interview method by the researcher in 15-20 minutes. The women who were illiterate, in the lactational period, and had a radiotherapy history and a psychiatric disorder were excluded from the study.

### Statistical Analysis

The Number Cruncher Statistical System 2007 (Kaysville, Utah, USA) program was used for data analysis. Neither scale score had a normal distribution (Kolmogorov-Smirnov and Shapiro-Wilk $p<0.05$). The data were analyzed using numbers, percentages, Mann-Whitney U test, and linear regression analyses. $P<0.05$ was considered significant.

## Results

It was found that the women's average age was 52.78±10.89 (min-max: 22-87 years), 41.9% of them were elementary school graduates, 61.3% of them were housewives, and 82.5% of them said the location where they lived was a province. It was found that 20% of the women had stress incontinence, 13.1% had urge incontinence, 65.0% had mixed incontinence, and 1.9% had nocturnal incontinence.

When the risk factors related to incontinence that the women had been taken into consideration, it was determined that 36.9-45.0% of them were overweight and obese, and 70.6% of them consumed caffeinated and acidic drinks. It was found that 97.5% of the women had given birth, and more than 89.1% of the birth-giving women had more than one, while 74.4% of them had vaginal delivery, 21.2% of them had given birth to a baby at four kilograms and above, and 66.9% of them were in menopause. The other risk factors are given in Table 1.

The first subscale mean score of the first part of the KHQ is given in Table 2. When all of the subscales were examined, it was found that the life qualities of the women suffering from UI were affected at the medium level.

The second group of women (having medium/high symptom severity), compared to the first group of women (having none/low symptom severity), had higher scores in all subscales, and the difference between them was found to be statistically significant. Accordingly, it was found that the higher the incontinence symptom severity, the more negative the quality of life was affected (Table 3).

In the linear regression analysis, made to determine the factors affecting KHQ subscales, while KHQ subscale scores were included in the study as dependent variables, the UI risk factors, questioned in the individual description form, were included as independent variables. The model was created using the backward elimination method. The statistical significance of the obtained model and the percentages of the variables included in the model for the variance belonging to the result variable are given in Table 4.

In this study, it was found that normal BMI and not having a chronic cough increased general health perception positively and having had three childbirths and advanced age decreased this perception.

While having had a lower abdominal operation and consuming caffeinated drinks increased the effect of UI-related incontinence, having a C-section as the delivery method decreased the effect of incontinence. The existence of a chronic disease and an active lifestyle increased the role limitation. Having three childbirths, the existence of a chronic disease, and an active lifestyle increased physical limitations due to incontinence; frequently not lifting heavy objects and not having a chronic cough decreased the incontinence-related physical limitations.

The women who had a vaginal delivery, a lower abdominal operation, and an active lifestyle experienced more social limitations.

The personal relationships were affected more in those who had more and above number of childbirths, a chronic cough, and an active lifestyle; emotions were affected negatively in those who had three childbirths, a lower abdominal operation, and a chronic disease; and having a

| Table 1. Distribution of incidence-related risk factors in women | | |
|---|---|---|
| **Incontinence-related risk factors** | **Number (n)** | **Percentage (%)** |
| **BMI (kg/m²)** | | |
| Normal | 29 | 18.1 |
| Overweight | 59 | 36.9 |
| Obese | 72 | 45.0 |
| **BMI mean ± SD (min-max)** | 29.36±5.29 (15.84-60.55) | |
| **Caffeinated, acidic drink consumption** | | |
| Has | 113 | 70.6 |
| Does not have | 47 | 29.4 |
| **Having childbirth** | | |
| No | 4 | 2.5 |
| Yes | 156 | 97.5 |
| **Amount of childbirth (n=156)** | | |
| One | 17 | 10.9 |
| Two | 70 | 44.9 |
| Three | 28 | 17.9 |
| Four and above | 41 | 26.3 |
| **The type of childbirth (n=156)** | | |
| Vaginal | 116 | 74.4 |
| C-section | 18 | 11.5 |
| Vaginal and C-section | 22 | 14.1 |
| **Delivering an overweighted newborn (>4 kg) (n=156)** | | |
| Did | 33 | 21.2 |
| Did not | 123 | 78.8 |
| **Menopause status** | | |
| Entered | 107 | 66.9 |
| Not entered | 53 | 33.1 |
| **Lower abdominal operation** | | |
| Had | 76 | 47.5 |
| Did not have | 84 | 52.5 |
| **Frequently lifting and pushing heavy objects** | | |
| Yes | 110 | 68.8 |
| No | 50 | 31.3 |
| **Constipation** | | |
| Has | 75 | 46.9 |
| Does not have | 85 | 53.1 |
| **Chronic disease** | | |
| Has | 97 | 60.6 |
| Does not have | 63 | 39.4 |
| **Chronic cough** | | |
| Has | 23 | 14.4 |
| Does not have | 137 | 85.6 |
| **Sedentary lifestyle** | | |
| Has | 38 | 23.8 |
| Does not have | 122 | 76.3 |
| **Total** | 160 | 100 |

SD: Standard deviation, BMI: Body mass index

**Table 2. Distribution of the king health questionnaire subscale scores**

| King health questionnaire subscales | Number (n) | Mean ± SD | Cronbach's alpha |
|---|---|---|---|
| **General health status** | 160 | 41.09±20.48 | - |
| **Incontinence effect** | | 56.46±28.47 | - |
| **Role limitation** | | 41.04±33.43 | 0.87 |
| **Physical limitation** | | 46.67±33.01 | 0.82 |
| **Social limitation** | | 31.94±30.26 | 0.93 |
| **Personal relationship** | | 15.94±25.72 | 0.86 |
| **Emotions** | | 43.61±34.82 | 0.95 |
| **Sleep energy level** | | 27.71±27.97 | 0.91 |
| **Severity measurements** | | 38.46±24.56 | 0.82 |
| **King quality of life** | | - | 0.95 |
| **King symptom severity scale** | | 9.56±5.97 | 0.78 |

SD: Standard deviation

**Table 3. Relationship between the king health questionnaire subscales and symptom severity**

| King health questionnaire subscales | Incontinence effect | | U | p |
|---|---|---|---|---|
| | 1. Group (n=72) | 2. Group (n=88) | | |
| | Min-max (median) | Min-max (median) | | |
| **General health status** | 25-75 (25) | 0-100 (50) | -3.05 | **0.002** |
| **Incontinence effect** | 0-33.33 (33.33) | 66.67-100 (66.67) | -11.53 | **<0.001** |
| **Role limitation** | 0-83.33 (16.67) | 0-100 (66.67) | -7.18 | **<0.001** |
| **Physical limitation** | 0-100 (33.33) | 0-100 (66.67) | -6.39 | **<0.001** |
| **Social limitation** | 0-100 (0) | 0-100 (44.44) | -7.19 | **<0.001** |
| **Personal relationship** | 0-100 (0) | 0-100 (0) | -2.62 | **0.009** |
| **Emotions** | 0-100 (22.22) | 0-100 (66.67) | -5.60 | **<0.001** |
| **Sleep energy level** | 0-100 (16.67) | 0-100 (33.33) | -4.32 | **<0.001** |
| **Severity measurements** | 0-86.67 (26.67) | 0-100 (40.00) | -5.02 | **<0.001** |
| **Symptom severity** | 2-73 (6) | 1-29 (10.50) | -5.63 | **0.000** |

**Table 4. Risk factors affecting quality of life**

| General health perception | Beta | t | p | F | Model (p) | $R^2$ |
|---|---|---|---|---|---|---|
| **Stable** | 48.62 | 10.78 | <0.001** | F: 6.684 | p<0.001 | 0.128 |
| **Age (40-59)** | 7.96 | 2.42 | 0.016* | | | |
| **BMI (normal)** | -8.81 | -2.15 | 0.033* | | | |
| **Amount of childbirths (3)** | 11.19 | 2.74 | 0.007** | | | |
| **Chronic cough (no)** | -15.34 | -3.41 | 0.001** | | | |
| **Incontinence effect** | | | | | | |
| Stable | 43.72 | 9.83 | <0.001** | 5.600 | P=0.001 | 0.082 |
| The type of childbirth (C-section) | -14.68 | -2.05 | 0.042* | | | |
| Lower abdominal operation (yes) | 13.99 | 3.06 | 0.003** | | | |
| Consumption of a caffeinated drink (yes) | 11.15 | 2.29 | 0.023* | | | |

**Table 4. Continued**

| General health perception | Beta | t | p | F | Model (p) | $R^2$ |
|---|---|---|---|---|---|---|
| **Role limitations** | | | | | | |
| Stable | 17.86 | 2.89 | 0.004** | 8.761 | p<0.001 | 0.091 |
| Chronic disease (yes) | 14.76 | 2.80 | 0.006** | | | |
| Sedentary lifestyle (no) | 19.01 | 3.17 | 0.002** | | | |
| **Physical limitations** | | | | | | |
| Stable | 31.82 | 3.78 | <0.001** | 5.275 | p<0.001 | 0.121 |
| Amount of childbirths (3) | 14.06 | 2.10 | 0.037* | | | |
| Lifting heavy objects (no) | -18.16 | -3.25 | 0.001** | | | |
| Chronic disease (yes) | 11.99 | 2.32 | 0.022* | | | |
| Chronic cough (no) | -16.90 | -2.25 | 0.026* | | | |
| Sedentary lifestyle (no) | 18.04 | 3.00 | 0.003** | | | |
| **Social limitations** | | | | | | |
| Stable | 5.33 | 0.63 | 0.52 | 4.403 | p=0.005 | 0.062 |
| The type of childbirth (vaginal) | 12.61 | 2.06 | 0.04* | | | |
| Lower abdominal operation (yes) | 16.35 | 3.08 | 0.00** | | | |
| Sedentary lifestyle (no) | 12.34 | 2.20 | 0.02* | | | |
| **Personal relationships** | | | | | | |
| Stable | 11.82 | 1.91 | 0.05 | 4.137 | 0.003 | 0.075 |
| Amount of childbirths (3) | 11.63 | 2.12 | 0.03* | | | |
| Amount of childbirths (4 and above) | 11.75 | 2.48 | 0.01* | | | |
| Chronic cough (no) | -11.84 | -2.00 | 0.04* | | | |
| Sedentary lifestyle (no) | 12.16 | 2.55 | 0.01* | | | |
| **Emotions** | | | | | | |
| Stable | 26.71 | 5.70 | <0.00** | 7.525 | p<0.001 | 0.112 |
| Amount of childbirths (3) | 15.75 | 2.25 | 0.02* | | | |
| Lower abdominal operation (yes) | 12.23 | 2.22 | 0.02* | | | |
| Chronic disease (yes) | 14.21 | 2.56 | 0.01* | | | |
| **Sleep/energy level** | | | | | | |
| Stable | 15.56 | 4.09 | <0.00** | 7.563 | 0,001 | 0.078 |
| Lower abdominal operation (yes) | 9.55 | 2.14 | 0.03* | | | |
| Chronic disease (yes) | 12.34 | 2.70 | 0.00** | | | |
| **Severity measurements** | | | | | | |
| Stable | 18.11 | 3.35 | 0.00** | 6.520 | p<0.001 | 0.097 |
| The type of childbirth (vaginal) | 11.35 | 2.36 | 0.01* | | | |
| Lower abdominal operation (yes) | 10.77 | 2.50 | 0.01* | | | |
| Chronic disease (yes) | 10.76 | 2.71 | 0.00** | | | |
| **Symptom severity** | | | | | | |
| Stable | 9.54 | 10.28 | <0.00** | 7.959 | p<0.001 | 0.119 |
| BMI (normal) | -3.13 | -2.60 | 0.01* | | | |
| Constipation (no) | -2.26 | -2.49 | 0.01* | | | |
| Chronic disease (yes) | 2.89 | 3.12 | 0.00** | | | |

BMI: Body mass index

lower abdominal operation and a chronic disease in the past affected UI-related sleep/energy level negatively.

It was found that the incontinence-related symptoms, existing in the women who had a vaginal delivery, a lower abdominal operation, and a chronic disease, were more severe; that keeping BMI in a normal range and not having constipation decreased the UI-related symptom severity, and the existence of a chronic disease affected the UI-related symptom severity.

## Discussion

In this study, which was conducted to determine the relationship between urinary incontinence symptom severity and quality of life and the factors affecting it, it was found that women with medium/high symptom severity had statistically significant higher scores from all subscales of KHQ's quality of life part than women with none/low severity. It was determined that among the UI risk factors, advanced age, BMI, number of childbirths, pelvic surgery history, constipation, chronic diseases, chronic cough, sedentary lifestyle, lifting heavy objects, and consumption of caffeinated drinks decreased quality of life at a significant level. The obtained results are discussed in this section.

### Relationship Between Urinary Incontinence Symptom Severity and Quality of Life

Urinary incontinence symptoms negatively affect the quality of life and cause emotional problems, leading to feelings of insufficiency and depression, even if they do not threaten life[1,14]. In a study examining the relationship between the severity of incontinence and quality of life, it was found that as the severity of symptoms increased, the quality of life decreased[7]. In a study conducted in China[6], it was found that the quality of life of those who had medium or severe urinary inconsistence was lower than those who had lesser inconsistence, and in a study conducted in Malaysia[14], it was found that the quality of life decreased as the incontinence severity increased. Alshammari et al.[9] concluded that the quality of life of women who had urinary incontinence at a higher volume was lower than those who had few incontinences per day. The studies that were conducted on incontinence in our country also show that there is a relationship between incontinence severity and quality of life. Gokkaya et al.[13] applied KHQ to the women, having applied to the urology polyclinic, and found that there is a significant difference in terms of general health, incontinence effect, role limitation, physical limitation, social limitation, emotional status, sleep energy level, and symptom severity. It was found that the quality of life of the group with high symptom severity, was lower. Kocaoz et al.[15], Shah and Rathod[16] and Orhan et al.[4] found that there is a negative relationship between quality of life and UI severity; symptom severity negatively affected quality of life. Demir and Beji[11] found that among women, the quality of life of those who generally and always had urinary incontinence was affected more negatively compared to those who had urinary incontinence from time to time. In studies that were conducted with women in the climacteric period and the advanced age groups, it was found that the increase in UI frequency and incontinence negatively affected quality of life negatively[5,7]. In the study of Karaca and Demir[17], it was found that the mean scores of being affected from urinary complaint and incontinence were the highest in those suffering from severe incontinence, and quality of life decreased as the frequency of incontinence increased. Moreover, it was found that the higher the number of pads that women used for incontinence, the lower their quality of life got[17]. In the conducted studies[18], it was found among women that the quality of life of those using pads because of incontinence was lower compared to those who did not usepads. As the duration of pad usage and incontinence amount increased, quality of life decreased because of the experienced difficulties[18]. The result in our study that the quality of life decreases as the severity of symptoms increases confirms the literature.

### Discussion of Incontinence Risk Factors and Subscales

Because UI is a problem affecting women's family and social lives from physical and psychological aspects at a significant rate, it is a problem that needs to be approached with care[3]. It was found that the general health status of the women participating in the study was affected at a medium level and showed similarity to the results of the study that were made inside[12] and outside our country[19,20]. It was found that advanced age, increased BMI, having had three childbirths, and existence of chronic cough negatively affected the general health status negatively, and it was suggested in the literature that these variables increased the frequency of UI, and this situation affected general health negatively[21,22].

In the study, it was found that the incontinence effect was high, and it was seen that the results complied with other study findings[23]. Baykus and Yenal[24] stated that more than half of the women felt discomfort due to incontinence. Due to the damage that it causes to the pelvic fascia support, having

a vaginal delivery and a lower abdominal operation increases the impact of incontinence on the patient[24]. In addition, as a result of caffeine's diuresis effect, stimulation of the central nervous system, and contractions in the smooth muscles in the lower urinary system, it increases the negative effects on incontinence[25,26].

It was found that women's role limitation, physical limitation, and social limitations were affected at the medium level, and it was determined that role limitation had a similar exposure to Oh and Hyeon Ku's[27] and Oz and Altay[23] and studies and that the exposure was higher compared to the studies of Bakarman and Al-Ghamdi[28] and Tien et al.[29]. The fact that the study results show differences suggests that the factors that affect role limitation must be studied in a more detailed manner. It is thought that chronic disease existence negatively affects performing the roles, and with the addition of incontinence, difficulties in performing these roles were experienced. It was found that physical limitations were similar to those of Uemura and Homma[20] study, while being higher according to some others[19,28]. It is believed that the difference between the physical limitation points originated from the study groups' incontinence types and age differences. The incontinence problem negatively affects physical activities (running, swimming, doing exercise, traveling) negatively, and for this reason, it limits women's physical movements. It was found that social limitations were affected similarly to the studies of Kaya et al.[12] and Uemura and Homma[20]. However, there are also studies in which social limitations were experienced less[25,29,30].

It was observed that the personal relationships of the women participating in the study were affected more compared to other studies[19,20,23]. It can be thought that women's self-reflexive negative emotions due to incontinence reflect on their personal relationships. Women who cannot control their urinary functions may limit their personal relationships by seeing themselves as faulty and insufficient, and their sexual lives and relations with their partners may be affected negatively by thinking that they have lost their attractiveness and sexuality[8].

It was found that the women were affected at a medium level from the emotional aspect. Pereira et al.[8] suggested that there is less exposure from the emotional aspect. In the study, it was observed that there were more women at the end of their reproductive periods and in the postmenopausal period, and these results were in compliance with the literature. Women with UI may feel worthless, bad, uneasy, depressive and angry[11]. When it is considered that urinary incontinence is also a chronic disease, it is of the essence that women must be protected from UI from the aspect of psychological health and that symptom management must be made effectively.

In the study, it was found that the sleep/energy level was affected at a similar level with the study of Bakarman and Al-Ghamdi[28] and was affected less compared with the studies of Kaya et al.[12], Oz and Altay[23], and Uemura and Homma[20]. It can be said that the study results underline that women's waking up due to the necessity of frequently going to the toilet negatively affects their sleep/energy levels, and it is important to teach women effective coping methods (e.g., restricting liquid intake an hour before sleeping).

In this study, regarding severity measurements, it was found that the women were affected at a medium level in a manner that confirmed the study of Uemura and Homma[20]. However, there are also studies that indicate that incontinence-related severity situations were affected less[3,28]. In the conducted studies, it was determined that having to change underwear in relation to incontinence, being concerned of having a bad smell, experiencing incontinence to such a rate that requires using a pad, and increasing the number of pads used decrease women's quality of life[17,20].

Similar to the literature, incontinence-related symptom severity in women was affected at a medium rate[12,23]. To provide protection against UI and decrease symptom severity, it is thought that teaching such health protection behaviors as keeping BMI in a normal range, avoiding constipation, and protecting against chronic diseases is important to both lead a healthy life and control the effect of incontinence.

The more the symptom severity of the women diagnosed with UI increases, the more negative the quality of life is affected. Among the incontinence risk factors, advanced age, BMI and several childbirths, having a vaginal delivery, a lower abdominal operation, a chronic disease, constipation, chronic cough, consuming caffeinated drinks, and sedentary lifestyle negatively affect quality of life. To decrease the effect of urinary incontinence on the quality of life, early diagnosis and treatment are important and necessary. In order to increase the quality of life of women diagnosed with incontinence, it is important to provide consultancy about the methods to cope with the symptoms as well as treatment and to integrate these to the treatment/health care and to provide education toward the changeable factors (lifting heavy an object, sedentary lifestyle etc.). This study provides

important data for understanding the effect of urinary incontinence symptom severity on quality of life and the incontinence risk factors affecting quality of life.

### Study Limitations

This study was a single-center study, and for this reason, generalizations cannot be made. The type of treatment that women received and their satisfaction with the treatment were not questioned. The large age difference between the participants also affected the level of being affected by urinary incontinence symptoms experienced during menopause and youth. In addition, the lack of comparison with urinary incontinence types is another limitation.

## Conclusion

Findings of the study showed that the quality of life of women with urinary incontinence affected symptom severity. In addition, the study results show that women's quality of life is influenced by some urinary incontinence risk factors. The results will help raise the awareness of health care workers involved in the care of women about UI and help the design of education programs about the prevention of UI. It can be suggested that this study should be multi-centered with a larger sample in a similar age group.

### Ethics

**Ethics Committee Approval:** Before data collection, this study was approved by the Ethics Committee of Ege University Medical Faculty (17-3/9) in accordance with the Declaration of Helsinki Research Principles.

**Informed Consent:** To conduct the study, an institutional permit and written informed consent were obtained from each participant.

### Authorship Contributions

Concept: F.K., S.E.G., Design: F.K., S.E.G., Data Collection or Processing: F.K., Analysis or Interpretation: F.K., S.E.G., Literature Search: F.K., Writing: F.K., S.E.G.

**Conflict of Interest:** No conflict of interest was declared by the authors.

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## References

1. Abrams P, Cardozo L, Fall M, et al. The standardisation of terminology in lower urinary tract function: Report from the standardisation sub-committee of the International Continence Society. Urology 2003;61:37-49.
2. Pizzol D, Demurtas J, Celotto S, et al. Urinary incontinence and quality of life: A systematic review and meta-analysis. Aging Clin Exp Res 2021;33:25-35.
3. Abduldaiem AO, Al Issa H, Selim M, Kofi M. Prevalence and risk factors of urinary incontinence among adult saudi women in Riyadh, Saudi Arabia. Int J Med Health Res 2020;6:56-64.
4. Orhan C, Ozgul S, Baran E, et al. The effect of incontinence severity on symptom distress, quality of life, and pelvic floor muscle function in Turkish women with Urinary Incontinence. Obstet Gynaecol Reprod Med 2020;26:51-7.
5. Karakaya IC, Yenisehir S, Karakaya MG. Nursing home residents' level of knowledge about urinary incontinence. Ann Geriatr Med Res 2019;23:20-6.
6. Qiu Z, Li W, Huang Y, et al. Urinary incontinence and health burden of female patients in China: Subtypes, symptom severity and related factors. Geriatr Gerontol Int 2022;22:219-26.
7. Gomes TA, Faber MdA, Botta B et al. Severity of urinary incontinence is associated with prevalence of sexual dysfunction. Int Urogynecol J 2020;31:1669-74.
8. Pereira MG, Lynch B, Hall-Faul M, Pedras S. Quality of life of women with urinary incontinence in rehabilitation treatment. J Health Psychol 2019;24:254-63.
9. Alshammari S, Alyahya MA, Allhidan RS, et al. Effect of urinary incontinence on the quality of life of older adults in Riyadh: Medical and sociocultural perspectives. Cureus 2020;12:e11599.
10. Aly WW, Sweed HS, Mossad NA, Tolba MF. Prevalence and risk factors of urinary incontinence in frail elderly females. J Aging Res 2020:1-8.
11. Demir S, Beji NK. Quality of life and health seeking behaviors of women with urinary incontinence. F.N. Hem. Derg 2015;23:23-31. (Turkish).
12. Kaya S, Akbayrak T, Celenay ST, Dolgun A, Ekici G, Beksac S. Reliability and validity of the Turkish King's Health Questionnaire in women with urinary incontinence. Int Urogynecol J 2015;1853-9.
13. Gokkaya SC, Demirel HC, Aktas BK, et al. Application of King's Health Questionnaire in urology outpatient clinic. İnönü Üniversitesi Tıp Fakültesi Dergisi 2011;18:96-105. (Turkish).
14. Lim R, Liong ML, Leong WS, Khan NA, Yuen KH. Effect of stress urinary incontinence on the sexual function of couples and the quality of life of patients. J Urol 2016;196:153-8.
15. Kocaoz S, Talas MS, Atabekoğlu CS. Urinary incontinence among Turkish women: An outpatient study of prevalence, risk factors, and quality of life. J Wound Ostomy Continence Nurs 2012;39:431-9.
16. Shah, ZR, Rathod PV. Effect of home-based pelvic floor muscle training based on the severity of incontinence on quality of life in women with stress urinary incontinence. Physiother -J Indian Assoc Physiother 2020;14:80-3.
17. Karaca ŞB, Demir AN. The effects of urinary incontinence on quality of life and emotional state and exercise awareness in female patients. Med J Ankara Tr Res Hosp 2019;52:133-7. (Turkish).
18. Grzybowska ME, Wydra D. 24/7 usage of continence pads and quality of life impairment in women with urinary incontinence. Int J Clin Pract 2019;73:e13267-74.
19. Okamura K, Nojiri Y, Osuga Y. Reliability and validity of the King's Health Questionnaire for lower urinary tract symptoms in both genders. BJUI 2008;103:1673-8.
20. Uemura S, Homma Y. Reliability and validity of King's Health Questionnare in Patients with symptoms of overactive bladder with urge incontinence in Japan. Neurourol Urodyn 2004;94-100.

21. Biswas B, Bhattacharyya A, Dasgupta A, Karmakar A, Mallick N, Sembiah S. Urinary incontinence, its risk factors, and quality of life: A study among women aged 50 years and above in a rural health facility of West Bengal. J Midlife Health 2017;8:130-6.
22. Fernandes S, Carvalho Coutinho E, Carvalho Duarte J, et al. Quality of life in women with urinary incontinence. J Nurs Res 2015;93-9.
23. Oz O, Altay B. Relationships among use of complementary and alternative interventions, urinary incontinence, quality of life, and self-esteem in women with urinary incontinence. J Wound Ostomy Continence Nurs 2018;45:174-8.
24. Baykus N, Yenal K. Prevalence of urinary incontinence in women aged 18 and over and affecting factors. J Women Aging 2019:1-13.
25. Gleason JL, Richter HE, Redden DT, Goode PS, Burgio KL, Markland AD. Caffeine and urinary incontinence in US women. Int Urogynecol J 2013;24:295-302.
26. Wood LN, Anger JT. Urinary incontinence in women. Brit Med J 2014;349:4531-42.
27. Oh SJ, Hyeon Ku J. Comparison of three disease-specific quality-of-life questionnaires (Bristol Female Lower Urinary Tract Symptoms, Incontinence Quality of Life and King's Health Questionnaire) in women with stress urinary incontinence. Scand J Urol 2007;41:66-71.
28. Bakarman MA, Al-Ghamdi SS. The effect of urinary incontinence on quality of life of women at childbearing age in Jeddah, Saudi Arabia. Glob J Health Sci 2016;8:281-7.
29. Tien YW, Hsiao SM, Lee CN, Lin HH. Effects of laser procedure for female urodynamic stress incontinence on pad weight, urodynamics, and sexual function. Int Urogynecol J 2017;28:469-76.
30. Ulrich D, Bjelic-Radisi V, Grabner K, et al. Objective outcome and quality-of-life assessment in women with repeat incontinence surgery. Neurourol Urodyn 2017;36:1543-9.