



Effects of surgical and medical treatments on stress urinary incontinence

Stres üriner inkontinans üzerine cerrahi ve medikal tedavilerin etkileri

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Abstract

Aim: The aim of this study was to compare how surgical and medical treatments affect the quality of life, depression status and social participation of women with stress urinary incontinence.

Methods: The study included 32 women with diagnoses of stress urinary incontinence.

Among these women, 16 were designated as the medical treatment group, and the other 16 were designated as the surgical treatment group. Before the treatment and 8 weeks after its completion, the patients were evaluated with the International Consultation on Incontinence Questionnaire-Short Form, Incontinence Quality of Life Questionnaire, World Health Organization Quality of Life Instrument - Short Form, Beck Depression Inventory and Social Participation Questionnaire.

Results: The mean age of the subjects was 54.31±11.48 years in medical treatment group and 48.38±10.01 years in surgical treatment group. The mean body mass index values of the groups were respectively 27.56±2.79 and 26.56±2.25 kg/m². Following the treatment, statistically significant improvements were observed in urinary incontinence, depression, social participation and overall and disease-specific quality of life in both groups (p<0.05). Comparative analysis of the post-treatment changes in both groups showed statistically significant differences in the Beck Depression score, the total work activity and household activity scores in the Social Participation Questionnaire and the psychosocial subgroups of both World Health Organization Quality of Life Instrument and Incontinence Quality of Life Questionnaire (p<0.05).

Conclusions: Both treatments proved to be effective and usable to reduce the severity of stress urinary incontinence and depression, prevent social isolation and improve the quality of life.

Keywords: Quality of life, social participation, stress urinary incontinence, women

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Öz

Amaç: Bu çalışmanın amacı, stres üriner inkontinans tanısı alan kadınlarda cerrahi ve medikal tedavilerin yaşam kalitesi, depresyon durumu ve toplumsal katılım üzerindeki etkilerini karşılaştırmaktır.

Yöntemler: Çalışmaya stres üriner inkontinans tanılı 32 kadın dahil edildi. Bu kadınlardan 16'sı medikal tedavi grubu, diğer 16'sı ise cerrahi tedavi grubu olarak belirlendi. Tedavi öncesi ve tedavi bitiminden 8 hafta sonra hastalar Uluslararası İnkontinans Sorgulama Formu - Kısa Formu, İnkontinans Yaşam Kalitesi Ölçeği, Dünya Sağlık Örgütü Yaşam Kalitesi Ölçeği - Kısa Formu, Beck Depresyon Ölçeği ve Toplumsal Katılım Anketi ile değerlendirildi.

Bulgular: Medikal tedavi grubunda olguların yaş ortalaması 54,31±11,48, cerrahi tedavi grubunda 48,38±10,01 idi. Grupların ortalama vücut kitle indeksi değerleri sırasıyla 27,56±2,79 ve 26,56±2,25 kg/m² idi. Tedavi sonrası her iki grupta da idrar kaçırma, depresyon, toplumsal katılım, genel ve hastalığa özgü yaşam kalitesinde istatistiksel olarak anlamlı iyileşmeler görüldü (p<0,05). Her iki gruptaki tedavi sonrası değişikliklerin karşılaştırmalı analizi, Beck Depresyon skorunda, Toplumsal Katılım Anketindeki toplam iş aktivitesi ve ev aktivitesi skorlarında, Dünya Sağlık Örgütü Yaşam Kalitesi Ölçeği ve İnkontinans Yaşam Kalitesi Anketinin psikososyal alt gruplarında istatistiksel olarak anlamlı farklılıklar gösterdi (p<0,05).

Sonuç: Her iki tedavinin de stres üriner inkontinans ve depresyonun şiddetini azaltmada, sosyal izolasyonu önlemede ve yaşam kalitesini iyileştirmede etkili ve kullanılabilir olduğu kanıtlanmıştır.

Anahtar Kelimeler: Yaşam kalitesi, toplumsal katılım, stres üriner inkontinans, kadın

Introduction

According to the definition by the International Continence Society (ICS), Urinary Incontinence (UI) is an objectively demonstrable involuntary leakage of urine that creates social or hygienic problems [1]. Studies show that the prevalence of UI varies between 25 and 45% worldwide [1]. In Turkey, similar studies suggest a prevalence ranging between 23 and 57% [2, 3].

Among the risk factors for UI are sex, parity, race, menopause, smoking, constipation, obesity and history of gynecological surgery [4]. UI affects all age groups and negatively changes the quality of life through psychological, social and sexual problems. A constant feeling of wetness and irritation may cause emotional problems that can escalate to the point of depression [5].

The prevalence of UI increases with age. Nevertheless, the condition is not to be considered as part of the natural course of aging. As patients in Turkey avoid consulting a physician, the desired success rate is yet to be achieved due to consideration of UI as a normal process in aging, even though most patients are eligible for treatment [6]. Incontinence should be accepted as a health problem at all stages of life and treated with appropriate methods to improve quality of life [7].

The most common type of incontinence in women is Stress Urinary Incontinence (SUI) experienced as a result of actions that increase intra-abdominal pressure, such as coughing, laughing or lifting heavy objects [8]. The ICS defines SUI as leaking of urine resulting from the intravesical pressure exceeding urethral pressure without detrusor overactivity [5, 8].

SUI is not a life-threatening condition and even though it affects the quality of life negatively in individuals of both sexes in all ages, it affects women more often worldwide due to anatomical and hormonal factors [8]. SUI can be treated with surgical and non-surgical methods. Non-surgical methods may be further divided into pharmaceutical treatment and non-pharmaceutical treatment options. The latter group includes behavioral therapy, pelvic floor exercises, biofeedback and electrical stimulation therapy [9]. It is worth remembering that there is no single 'accurate choice' in SUI treatment. The treatment should be customized based on individual characteristics and circumstances such as symptoms, co-morbidities and intra-operative risk factors [10].

Contemporary, with the improved overall quality of life and prolonged life expectancies, increasingly more research is carried out for the diagnosis and treatment of incontinence. Therefore, the aim of this study was to determine how surgical and medical SUI treatments on women affect their quality of life, depression status and social participation and comparatively evaluate the treatment methods in terms of their respective advantages and limitations.

Material and methods

Study Design and Participants

This was a prospective, non-randomized comparative, single-center study. A total of 32 female patients over the age of 18, who were newly diagnosed with SUI and had symptoms ongoing for over 6 months were included in the study. Cases were excluded if the individual had a vaginal or pelvic operation in the last 6 months, an active urinary tract infection or more than 3 urinary tract infections in the past year, a neurological or neuromuscular disease (cerebrovascular accident, Alzheimer's, spinal cord injury or dementia), kidney or liver failure or was

illiterate or in a condition to prevent evaluation or communication. The treatment group (surgical or medical treatment) of patients who meet the inclusion criteria was decided together by the patient and the physician. 16 patients constituted the surgical treatment group and 16 patients constituted the medical treatment group. The sample size was determined with the G-Power 3.1 software (Universität Düsseldorf, Germany) [11]. A review of the literature showed that the effectiveness of medical treatment applied SUI on I-QOL was reported as Cohen's $d = 0.75$ (10.5±14-unit changes) [12]. The number of individuals in the groups was determined by calculation that at least 16 patients should be included in each group in order to detect a similar change within the group with a power of 80% and a confidence interval of 95% for the treatments that were applied. The study was approved in Turkey by the Cukurova University Institute of Health Sciences Non-Interventional Clinical Studies Ethics Committee, in the Meeting no. 70 summoned on November 10, 2017 and under the file no. 29. The study was performed in accordance with the Declaration of Helsinki. Both written and verbal information about the objective of the study and the treatments to be applied were explained to all participants and their written informed consent was requested. Before the start of the study, all permissions were obtained from the Urology department of the hospital where the study was conducted.

Assessments

The 32 female SUI patients considered eligible either for medical (n=16) or surgical (n=16) treatment by their physician and met the inclusion criteria of the study were assessed immediately before the treatment and 8 weeks after their medical/surgical treatment. The subjects in the medical treatment group received medication, while those in the surgical treatment group underwent the Transobturator Tape (TOT) procedure. All patient assessments were performed face to face by the same physiotherapist.

Sociodemographic Assessments: The patients' personal information (name, surname, address, telephone number, occupation, education and smoking status) and clinical characteristics (age, height, weight, body mass index [BMI], systemic disorders, drugs used, number of childbirths and marital status) were recorded on the patient evaluation form.

Assesment of Quality of Life: The patients' quality of life was evaluated by using 2 different scales.

a- Incontinence Quality of Life Questionnaire (I-QOL): The scale was developed by Wagner et al. [13] to determine the quality of life of urinary incontinence patients.

All items are evaluated on a Likert-type scale and converted to a value between 0 and 100. The scale makes it possible to evaluate 3 dimensions: restricting behavior, psychological impact and restricting social life. High scores indicate a better quality of life as opposed to low scores which indicate a poorer quality of life.

b- World Health Organization Quality of Life Instrument-Short Form (WHOQOL-BREF): The health-related quality of life scale was developed by the World Health Organization. The scale consists of 26 questions to measure physical, mental, social and environmental well-being. Each area is calculated with a score from 4 to 20. Higher scores indicate increased quality of life [14].

Evaluation of the Incontinence Status: The International Consultation on Incontinence Questionnaire - Short Form (ICIQ-SF) consisting of 6 questions was used to assess the severity, frequency, type of incontinence and its implications on quality of life. The possible scores on the scale are between 0 and 21. A score of eight is the cutoff point representing the beginning of uncomfortable to disruptive UI. As the score increases, the quality of life deteriorates [15]. The increasing score indicates the worsening in quality of life.

Evaluation of Depression

The depression status of the subjects was assessed with the Beck Depression Inventory (BDI). The purpose of using the scale in this study was not to diagnose depression, we aimed to determine the risk of depression and measure the severity of depressive symptoms. Developed by Beck [16], the scale consists of 21 self-assessment statements and provides 4-point Likert-type measurements. Each item is rated on a scale of 0 to 3 and the total score is obtained by adding the scores of all items together. The higher the score, the more severe is the depression.

Evaluation of Community Participation

The Social Participation Questionnaire was preferred to assess the extent the subjects actively took part in life activities and how active they were [17]. The Social Participation Questionnaire consists of 15 items. It is used to evaluate individuals' home and family life, as well as their social and work activities. Most of these 15 items range on a scale from 0 to 2. A score of 2 indicates more independence and integrity.

In previous studies, 3 sub-scores were obtained with a breakdown of 10 points for home activities, 12 points for social activities and 7 points for work activities. The total score is calculated in a range of 0 to 29.

Statistical Analysis

Statistical analyses of the study were performed with the 'Statistical Package for the Social Sciences' (SPSS) Version IBM Statistic 21.0 (SPSS Inc., Chicago, IL, USA). It was determined with the 'One Sample Kolmogorov-Smirnov' test that the variables were not normally distributed. "Wilcoxon Signed-Rank Test" was used to compare the data before and after the treatment of the groups and the contrast between the groups was performed with "Mann-Whitney U" test. The comparison of the categorical data was carried out using 'Chi-squared' test. The parametric variables are expressed as mean ± standard deviation (X±SD), whereas the descriptive variables are expressed in terms of percentage. The significance level was accepted as p<0.05 in all tests.

Results

The demographic and clinical characteristics of the cases and the comparison between the groups are shown in Table 1. While no statistically significant difference was found between the groups in terms of BMI and age (p>0.05), it was seen that the mean number of childbirths in the medical treatment group was significantly higher than that of the surgical treatment group (p<0.05, p=0.02).

Table 1: Comparison of groups in terms of demographic and clinical characteristics

	Medical Treatment Group (n=16)	Surgical Treatment Group (n=16)	P
Age (years) †, ‡	54.31±11.482 57 (34-73)	48.38±10.006 49.5 (28-66)	0.130
BMI (kg/m ²) †, ‡	27.56±2.79 27 (22.6-32)	26.56±2.25 26.5 (23-31)	0.227
Number of childbirths †, ‡	3.13±1.025 3 (2-5)	2.25±0.931 2 (0-4)	0.017

†: mean±standard deviation, ‡: median (min-max).

BMI: Body Mass Index.

Table 2 shows a comparison of the groups in terms of their baseline quality of life, UI and social participation scores. In the comparison of the groups, statistically considerable differences were observed except for the score of the general subgroup of WHOQOL-BREF (p<0.05). Moreover, there was a statistically significant difference between the baseline depression

states (p<0.05). A comparative assessment of the baseline scores in the Social Participation Questionnaire showed that there was no statistically appreciable contrast between the subgroups of home activities and social activities in this regard (p>0.05).

However, p value was found to be significant between work activities and total scores (p<0.05). The baseline values of ICIQ-SF and I-QOL were similar across the groups (p>0.05) (Table 2).

Table 2: Comparison of the patients receiving medical and surgical treatment in terms of baseline values of quality of life, incontinence and social participation.

	Medical Treatment Group †, ‡	Surgical Treatment Group †, ‡	p
ICIQ-SF	16.87±2.47 16.5 (13-21)	17.69±3.01 18 (9-21)	0.20
WHOQOL-BREF			
Overall	27.34±16.59 25 (0-50)	22.66±14.59 18.75 (0-50)	0.36
Physical	40.62±15.36 41.06 (10.71-78.50)	29.46±10.95 30.35 (10.71-50.00)	0.02
Psychosocial	48.89±18.34 47.91(20.83-9.16)	33.98±11.53 33.33 (16.66-56.30)	0.02
Social	42.14±18.31 41.66 (8.33-66.66)	29.68±13.94 25 (16.60-50.00)	0.04
Environment	41.19±20.09 39.06 (6.25-71.83)	25.97±12.17 25 (3.12-40.62)	0.03
Total	40.85±13.52 40.27(16.66-2.03)	29.98±10.29 25.46 (18.50-55.00)	0.02
I-QOL			
Behavior	15.00±4.32 14 (10-23)	14.31±3.48 13 (10-22)	0.79
Psychological	19.06±4.04 19 (13-26)	16.56±3.67 15 (12-23)	0.08
Social	8.25±2.98 7 (5-14)	8.69±2.24 8 (6-14)	0.24
Total	42.25±9.75 39 (31-58)	39.50±8.41 36 (31±55)	0.27
Beck Depression Inventory	23.69±11.83 25 (6-42)	37.19±8.51 38 (18-50)	0.001
Social Participation Questionnaire			
Home activities	5.38±2.70 6 (0-10)	3.62±2.44 3 (0-10)	0.40
Social activities	6.19±2.04 6 (2-9)	4.94±2.26 5 (0-9)	0.12
Work activities	18.56±4.66 18.5 (10-26)	17.50±3.92 17 (13-27)	0.02
Total	14.06±5.39 12 (4-23)	10.00±4.84 10 (3-21)	0.03

†: mean±standard deviation, ‡: median (min-max).

WHOQOL-BREF: World Health Organization Quality of Life Instrument, Short Form, ICIQ-SF: International Consultation on Incontinence Questionnaire-Short Form, I-QOL: Incontinence Quality of Life Questionnaire, SP: Social Participation.

Table 3 shows the intra- and inter-group comparisons of the general and disease-specific quality of life parameters before and after the treatment. After the treatment programs of both groups, there was a substantial change in all parameters of disease-specific I-QOL and WHOQOL-BREF (p<0.05). Following the treatment, a statistically appreciable increase in the psychosocial subgroup of WHOQOL-BREF (p=0.04) and the psychological subgroup of I-QOL (p=0.04) was observed in the surgical treatment group as opposed to the medical treatment group.

Table 3: Intra-group and inter-group comparisons of the pre- and post-treatment overall and disease-specific quality of life parameters

	Medical Treatment Group (n=16)				Surgical Treatment Group (n=16)				Inter-group difference (Δ) p
	Pre-treatment mean±SD Median (Min-Max)	Post-treatment mean±SD Median (Min-Max)	Intra-group change (Δ) mean±SD Median (Min-Max)	p	Pre-treatment mean±SD Median (Min-Max)	Post-treatment mean±SD Median (Min-Max)	Intra-group change (Δ) mean±SD Median (Min-Max)	p	
WHOQOL-BREF									
Overall	27.34±16.59 25 (0-50)	61.72±17.95 68.75 (25-87.5)	34.37±18.54 7.5 (0-75)	0.001	22.66±14.59 18.75 (0-50)	69.53±16.43 75 (37.5-87.5)	46.88±21.65 50 (0-75)	0.001	0.07
Physical	40.62±15.36 41.06 (10.71-64.28) 78.5)	64.62±10.88 (46.42-21.43 (7.14-46.43) 87.5)	24.00±12.19 3 (0-75)	0.001	29.46±10.95 30.35 (10.71-50)	61.88±15.87 66.07 (15.00-82.14)	32.42±16.32 33.93 (0.72-71.43)	<0.001	0.17
Psychosocial	48.89±18.34 47.91 (20.83-62.5 (37.5-100) 79.16)	66.14±16.23 (41.66-21.43 (7.14-46.43) 87.5)	17.26±14.08 12.50 ((-4.16)- 54.17)	0.001	33.98±11.53 33.33 (16.66-56.30)	62.75±12.77 62.50 (33.33-83.33)	28.77±17.01 25.03 (0-62.5)	0.001	0.04
Social	42.14±18.31 41.66 (8.33-58.33 (41.66- 66.66)	62.49±13.26 (41.66-21.43 (7.14-46.43) 87.5)	2.50±2.28 3 ((-3)-7)	0.001	29.68±13.94 25 (16.60-50.00)	62.49±17.21 66.63 (16.66-91.66)	3.06±1.84 3 ((-1)-7.00)	0.001	0.55
Environment	41.19±20.09 39.06 (6.25-59.37 (40.62- 71.83)	60.55±12.17 (40.62-21.43 (7.14-46.43) 87.5)	19.35±14.95 15.63 (3.12-46.95)	0.001	25.97±12.17 25 (3.12-40.62)	53.32±19.35 51.56 (15.62-87.50)	27.34±21.72 23.45 ((-9.38)- 62.50)	<0.001	0.24
Total	40.85±13.52 40.27 (16.66-62.96 (49.07- 62.03)	61.74±9.72 (49.07-21.43 (7.14-46.43) 87.5)	20.88±11.24 17.14 (4.63-38.89)	0.001	29.98±10.29 25.46 (18.50-55.00)	58.63±13.18 59.69 (29.25-77.77)	28.65±13.47 30.09 (7.4-55.55)	<0.001	0.11
I-QOL									
Behavior	15.00±4.32 14 (10-23)	33.50±5.34 34.5 (18-39)	18.50±8.37 21 ((-2)-29.00)	0.001	14.31±3.48 13 (10-22)	35.31±2.79 35.50 (31-40)	21.00±4.73 23 (12-27)	<0.001	0.48
Psychological	19.06±4.04 19 (13-26)	38.4375±5.253 17 40.5 (25-43)	19.38±7.42 20 (0-27)	0.001	16.56±3.67 15 (12-23)	40.69±2.98 42 (34-44)	24.13±6.05 26 (12-31)	<0.001	0.04
Social	8.25±2.98 7 (5-14)	21.56±3.83 23 (11-25)	13.32±6.15 (-2-20)	0.001	8.69±2.24 8 (6-14)	20.94±3.94 23 (8-25)	12.25±4.18 14 (0-17)	<0.001	0.57
Total	42.25±9.75 39 (31-58)	93.50±13.65 98 (54-107)	51.25±20.42 57 ((-4)-74)	0.001	39.50±8.41 36 (31-55)	98.06±6.33 99.50 (87-106)	58.56±12.59 64.5 (35-74)	0.001	0.34

WHOQOL-BREF: World Health Organization Quality of Life Instrument -Short Form, I-QOL: Incontinence Quality of Life Questionnaire, SD: Standard Deviation, min: minimum, max: maximum.

Discussion

Table 4 shows the intra and inter-group comparisons based on the ICIQ-SF, Beck Depression Inventory and Social Participation Questionnaire scores before and after the exercise training. After the treatment, a considerable decrease was observed in the ICIQ-SF values in both groups ($p < 0.05$) but the comparison of changes across the groups were insignificant ($p > 0.05$). The Beck Depression Inventory score decreased notable after both treatments, with the decrease in the surgical treatment group being remarkably higher than that of the medical treatment group. As for the assessment of Social Participation, the group that received medical treatment displayed a notable increase in the social activity and total scores, whereas the surgical treatment group showed a considerable increase in the home activity, social activity and total scores ($p < 0.05$). Moreover, the comparisons between the groups showed a distinct improvement in the home activity, work activity and total scores.

In this study, we performed a comparative assessment of female UI patients in terms of their severity of urinary incontinence, depression status, quality of life and social participation following 8-week surgical and medical treatments. It was found that the women who underwent surgical treatment significantly improved in the psychological parameters of depression, social participation and quality of life scores in comparison to the women in the medical treatment group.

The women with SUI often tend to deny their condition rather than seeking ways to solve their problem of incontinence. According to studies in Turkey, an average of 65% of women suffering from UI symptoms avoided physicians. The reasons for this may be listed as feelings of shame, negligence and not accepting the situation as a “health problem” [18]. When symptoms affect patients’ quality of life to a moderate or high degree, they consult a physician and prefer conservative or medical treatment. Surgical treatment is considered only after all

Table 4: Intra-group and inter-group comparisons of the pre- and post-treatment parameters for ICIQ-SF, Beck Depression Inventory and Social Participation Questionnaire

	Medical Treatment Group (n=16)				Surgical Treatment Group (n=16)				Inter-group difference
	Pre-treatment mean±SD Median (Min-Max)	Post-treatment mean±SD Median (Min-Max)	Intra-group change mean±SD Median (Min-Max)		Pre-treatment mean±SD Median (Min-Max)	Post-treatment mean±SD Median (Min-Max)	Intra-group change mean±SD Median (Min-Max)		
ICIQ-SF	16.87±2.47 16.5 (13-21)	1.81±2.07 1 (0-5)	-15.06±3.06 -15 (-20-(-11))	<0.001	17.69±3.01 18 (9-21)	1.13±1.54 1 (0-6)	-16.56±3.24 -17 (-21-(-8))	<0.001	0.09
Beck Depression Inventory	23.69±11.83 25 (6-42)	7.13±8.72 3.5 (0-28)	-16.56±9.40 -15.5 (-40-(-6))	0.001	37.19±8.51 8 (18-50)	9.00±3.08 8.5 (5-14)	-28.19±9.52 -29.50 ((-41)-(-5))	<0.001	0.00
Social Participation Questionnaire									
Home activities	5.38±2.70 6 (0-10)	6.88±1.67 7 (3-10)	1.50±2.63 0.5 (-2-6)	0.057	3.62±2.44 3 (0-10)	7.44±2.39 7.5 (3-10)	3.81±1.91 4 (0-6)	0.001	0.02
Social activities	6.19±2.04 6 (2-9)	8.69±2.67 10 (2-12)	2.50±2.28 3 (-3-7)	0.004	4.94±2.26 5 (0-9)	8.00±1.75 8 (5-12)	3.06±1.84 3 ((-1)-7)	0.001	0.55
Work activities	18.56±4.66 18.5 (10-26)	3.00±2.06 2 (1-7)	4.50±3.37 4.5 (-2-10)	0.083	17.50±3.92 17 (13-27)	1.94±1.24 2 (1-6)	7.50±3.54 8 (0-14)	0.067	0.03
Total	14.06±5.39 12 (4-23)	18.56±4.66 18.5 (10-26)	4.50±3.36 4.5 ((-2)-(-10))	<0.001	10.00±4.84424 10 (3-21)	17.5±3.92 17 (13-27)	7.5±3.54024 8 (0-14)	<0.001	0.02

ICIQ-SF: International Consultation on Incontinence Questionnaire-Short Form, SD: Standard Deviation, min: minimum, max: maximum

these potential solutions are exhausted [19]. When the baseline characteristics of the groups were examined in this study, it was seen that the quality of life, depression and social participation levels of those who preferred surgical treatment were lower than the levels of those in the medical treatment group, although there was no difference based on urinary incontinence. This suggested that patients endure SUI symptoms for a long time only to resort to surgical treatment as a final option.

UI is a high-prevalence condition in Turkey and in the world, affecting women's lives negatively in all areas and reducing their quality of life. Leroy et al. [20] evaluated the quality of life of in patients with and without incontinence using SF-36 and reported that incontinence decreased the quality of life in areas such as physical function, social function, pain, general health, energy status and mental status and cognitive function. Melville et al. [21] found that incontinent women were 3 times more likely to be affected by major depression, and the severity of incontinence was positively correlated with major depression and negatively correlated with quality of life. In another study with women who received an 8-week training course of pelvic floor exercises in addition to surgical treatment, better improvements were observed as per quality of life, as well as anxiety and depression levels [22]. In a study [23] evaluating the quality of life in women with SUI before surgical treatment and 6 weeks to 1 year after the treatment, significant improvements were found in both measurements after the treatment in comparison to the pre-treatment levels. It was also stated in the study that the long-term results were more significant than the short-term results. In our study, the women who were observed to have a very low quality of life before the treatment underwent medical or surgical procedures, and it was found that the urinary incontinence levels decreased to very low levels, and quality of life was improved in terms of both overall and disease-specific scores. It was noted, however, that the improvement rates were higher in the group that received surgical treatment. Our opinion is that elimination of incontinence as a health problem affecting people psychologically, physically and socially helps reduce its negative effects on women and improves their quality

of life, regardless of whether it is achieved by medical or surgical treatment.

It is reported that, in Turkey, the rate of depression in patients with SUI is 24%, and the frequency of depression is higher in individuals with SUI [24]. Lack of control on urinary functions and the possibility that this can be noticed from the outside may lead to a loss of confidence in women. It was shown that the frequency of UI in middle-aged and elderly women is strongly associated with depression, and the severity of increased urinary incontinence is associated with increased depression and anxiety [25]. A review of the literature suggested that there is a plethora of studies on the prevalence of depression or the effects of depression in women with SUI but studies examining the effects of different treatment methods on depression in these women are inadequate in numbers. In a similar study [22], the effects of surgical treatment and pelvic floor exercises on women with SUI were examined. Evaluation of the patient groups before and 8 weeks after the treatment showed that the group which received surgical treatment experienced a superior improvement in terms of their anxiety and depression levels. In another study evaluating the 12-month results of surgical treatment in women with SUI with or without major depression, it was shown that, in the 12th post-operative month, 83% of the women with initial major depression completely recovered from it [26]. A limited number of studies on the effectiveness of treatment on depression showed that alleviation of incontinence severity in individuals with stress incontinence has a positive psychological effect and eliminates or decreases depression. Our study also showed significant improvements in the patients' depression status after both surgical and medical treatments, and a comparison of these two groups showed that the improvement in depression was more significant in the surgical treatment group. We are of the opinion that surgical treatment has a more positive effect on the psychosocial aspects, because treatment with medication and exercise requires a certain time to pass to show its effects.

Since incontinence is a condition that may cause feelings of shame, uncleanliness and inadequacy, it involves fear of being stigmatized. The perception of stigmatization has a negative effect

on the healing process as it leads to isolation and may drive the person to avoid social company, experience difficulties with friendships, thus resulting in poor social support [27]. In a study [28] which compared the effects of pelvic floor muscle training with and without the use of a resistance device in women suffering from UI, a decrease in the severity of incontinence and involuntary leakage of urine was found in both groups, as well as significant improvements in social participation. In our study, we evaluated social integration through a social participation questionnaire and found that participation in social life increased after treatment in both groups. Incontinence restricts individuals' lives in many areas, including social participation; therefore, its treatment is highly important to secure continued social participation.

Our study had certain limitations. As no long-term follow-up was conducted with the patients, we do not have information on the longevity of these short-term improvements. The diverse baseline values of the patients presented another limitation. However, since the evaluations were used before and after the treatment in intra- and inter-group changes (delta value) and comparisons, the results were not affected by the baseline values.

In conclusion, in the women with SUI, medical and surgical treatment improved the severity of urinary incontinence, quality of life, depression and social participation. The women who chose surgical treatment were in a poorer psychosocial condition before the treatment in comparison to the women who preferred medical treatment, but the former achieved a higher degree of improvement after the treatment. Both treatments proved to be effective and usable to reduce the severity of SUI and depression, prevent social isolation and improve quality of life. However, extensive research is required on the effects of SUI treatment methods on larger patient groups.

References

- Milsom I, Gyhagen M. The prevalence of urinary incontinence. *Climacteric*. 2019; 22:217-22.
- Kasikci M, Kılıc D, Avsar G, Sirin M. Prevalence of urinary incontinence in older Turkish women, risk factors, and effect on activities of daily living. *Archives of Gerontology and Geriatrics*. 2015;61:217-23.
- Zumrutbas AE, Bozkurt AI, Tas E, Acar CI, Alkis O, Coban K, et al. Prevalence of lower urinary tract symptoms, overactive bladder and urinary incontinence in western Turkey: Results of a population-based survey. *International Journal of Urology*. 2014;21:1027-33.
- Moore K, Dumoulin C, Bradley C, Burgio K, Chambers T, Hagen S, et al. Adult conservative management. *Incontinence*. 2013;5:1101-228.
- Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, 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.
- Aydur E, Goktas S. Stres inkontinansın teşhisi. *Türkiye Klinikleri J Urology-Special topics*. 2009;2:20-34.
- Karan A, Aksac B, Ayyıldız H, Isikoglu M, Yalcin O, Eskiyurt N. Üriner inkontinanslı hastalarda yaşam kalitesi ve objektif değerlendirme parametreleri ile ilişkisi. *Geriatrici*. 2000;3:102-6.
- Haylen BT, De Ridder D, Freeman RM, Swift SE, Berghmans B, Lee J, et al. An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction. *Neurourology and Urodynamics: Official Journal of the International Continence Society*. 2010;29:4-20.
- Nambiar AK, Lemack GE, Chapple CR, Burkhard FC. The role of urodynamics in the evaluation of urinary incontinence: the European Association of Urology recommendations in 2016. *Eur Urol*. 2017;71:501-3.
- Wu YM, Welk B. Revisiting current treatment options for stress urinary incontinence and pelvic organ prolapse: a contemporary literature review. *Research and Reports in Urology*. 2019;11:179.
- Faul F, Erdfelder E, Lang AG, Buchner A. G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav Res Methods*. 2007;39:175-91.
- Yalcin I, Patrick DL, Summers K, Kinchen K, Bump RC. Minimal clinically important differences in Incontinence Quality of Life scores in stress urinary incontinence. *Urology*. 2006;67:1304-8.
- Wagner TH, Patrick DL, Bavendam TG, Martin ML, Buesching DE. Quality of life of persons with urinary incontinence: development of a new measure. *Urology*. 1996;47:67-71.
- Whoqol Group. The World Health Organization quality of life assessment (WHOQOL): position paper from the World Health Organization. *Social Science & Medicine*. 1995;41:1403-9.
- Avery K, Donovan J, Peters TJ, Shaw C, Gotoh M, Abrams P. ICIQ: a brief and robust measure for evaluating the symptoms and impact of urinary incontinence. *Neurourology and Urodynamics: Official Journal of the International Continence Society*. 2004;23:322-30.
- Beck AT, Ward C, Mendelson M, Mock J, Erbaugh JJ. Beck depression inventory (BDI). *Arch Gen Psychiatry*. 1961;4:561-71.
- Willer B, Rosenthal M, Kreutzer JS, Gordon WA, Rempel R. Assessment of community integration following rehabilitation for traumatic brain injury. *J Head Trauma Rehabil*. 1993;8:75-87.
- Ozturk GZ, Toprak D, Basa E. Otuzbeş yaş üzeri kadınlarda üriner inkontinans sıklığı ve etkileyen faktörlerin değerlendirilmesi. *Şişli Etfal Hastanesi Tıp Bülteni*. 2012;46:170-6.
- Delarmelindo RD, Parada CM, Rodrigues RA, Bocchi SC. Women's strategies for coping with urinary incontinence. *Revista da Escola de Enfermagem da USP*. 2013;47:296-303.
- Da Silva Leroy L, De Moraes Lopes MH. Urinary incontinence in the puerperium and its impact on the health-related quality of life. *Rev. Latino-Am. Enfermagem*. 2012;20:346-53.
- Melville JL, Delaney K, Newton K, Katon W. Incontinence severity and major depression in incontinent women. *Obstetrics & Gynecology*. 2005;106:585-92.
- Innerkofler PC, Guenther V, Rehder P, Kopp M, Nguyen-Van-Tam DP, Giesinger JM, Holzner B. Improvement of quality of life, anxiety and depression after surgery in patients with stress urinary incontinence: results of a longitudinal short-term follow-up. *Health Qual Life Outcomes*. 2008;6:72.
- Gauruder-Burmester A, Popken G. The MiniArc sling system in the treatment of female stress urinary incontinence. *International Braz J Urol*. 2009;35:334-43.
- Unsal A, Tozun M, Arslantas D. Urinary incontinence, related factors and depression among 20 aged and over women in Beylikova district centre in Eskisehir. *TAF Preventive Medicine Bulletin*. 2013;12:231-42.
- Lim YM, Lee SR, Choi EJ, Jeong K, Chung HW. Urinary incontinence is strongly associated with depression in middle-aged and older Korean women: Data from the Korean longitudinal study of ageing. *Eur J Obstet Gynecol Reprod Biol*. 2018;220:69-73.
- Siff LN, Jelovsek JE, Barber MD. The effect of major depression on quality of life after surgery for stress urinary incontinence: a secondary analysis of the Trial of Midurethral Slings. *Am J Obstet Gynecol*. 2016;215:455.e1-9.
- Boylu I, Daglar G. Kadınlarda üriner inkontinans ve dalgalanma. *Cumhuriyet Üniversitesi Sağlık Bilimleri Enstitüsü Dergisi*. 2019;4:58-63.
- Kashanian M, Ali SS, Nazemi M, Bahasadri S. Evaluation of the effect of pelvic floor muscle training (PFMT or Kegel exercise) and assisted pelvic floor muscle training (APFMT) by a resistance device (Kegelmaster device) on the urinary incontinence in women: a randomized trial. *Eur J Obstet Gynecol Reprod Biol*. 2011;159:218-23.