

Assessment of Sexual Dysfunction in Female Kidney Transplant Patients Using the Arizona Sexual Experiences Scale

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ABSTRACT

This study aimed to investigate the prevalence of sexual dysfunction (SD) and its subcategories using the Arizona Sexual Experiences Scale (ASEX) in women undergoing kidney transplantation (KTx) and to compare the prevalence of SD before and after KTx. This study included 70 female KTx patients. Patient characteristics, chronic diseases, and medications were obtained from electronic records. ASEX was used to assess SD. The median age of our patients was 39 (23-66) years. Diabetes mellitus was diagnosed in 11.4% of our patients. In total, 97% of patients were receiving prednisolone therapy. Among patients receiving immunosuppressive therapy, 58.6% were receiving mycophenolic acid, 20% mycophenolate mofetil, 18.6% azathioprine, 57.1% tacrolimus, 34.3% cyclosporine, 2.9% sirolimus, and 4.3% everolimus. The SD rate as assessed by the ASEX was 24.3%. No significant difference was found between the current and previous ASEX subgroup and total scores when the scores of our patients were compared. We observed a decrease in the SD rate of 27.4% to 24.3% after KTx in our patients. In our study, sexual dysfunction showed a slight, non-significant decrease following kidney transplantation. In conclusion, kidney transplantation may reduce the incidence of SD and improve patient well-being among renal replacement therapy patients.

Keywords: ASEX. Kidney transplantation. Sexual dysfunction.

Böbrek Nakli Yapılan Kadın Hastalarda Cinsel İşlev Bozukluğu'nun Arizona Cinsel Yaşantılar Ölçeği ile Değerlendirilmesi

ÖZET

Bu çalışma böbrek nakli (KTx) yapılan kadınlarda Arizona Sexual Experiences Scale (ASEX) ile cinsel işlev bozukluğu sıklığı (SD), SD alt başlıklarını araştırmayı ve KTx öncesi ve sonrası SD sıklığını karşılaştırmayı amaçlamıştır. Çalışmaya 70 KTx yapılan kadın hasta dahil edildi. Hastaların karakteristik özellikleri, kronik hastalıkları, kullandıkları ilaçlar elektronik kayıtlardan elde edildi. SD değerlendirilmesi için ASEX kullanıldı. Hastalarımızın median yaş değeri 39 (23-66) yılı. Hastalarımızın %11.4'ünde diabetes mellitus (DM) tanısı vardı. Hastaların %97'si prednisolon tedavisi alıyordu. İmmünespresif tedavi alan hastaların %58.6'ı mikofenolik asit, %20'si mikofenolat mofetil, %18.6'sı azathioprin, %57.1'i takrolimus, %34.3'ü siklosporin, %2.9'u sirolimus, %4.3'ü everolimus tedavisi alıyordu. ASEX ile değerlendirilen SD oranı, %24.3 olarak saptandı. Hastalarımızın güncel ve önceki döneme ait ASEX alt grup skorları karşılaştırıldığında, alt grup skorları ve toplam skorlar arasında anlamlı fark bulunamadı. Hastalarımızda SD oranının KTx sonrası %27.4'den %24.3'e düştüğü gözlemlendi. Çalışmamızda böbrek nakli sonrası cinsel işlev bozukluğunda hafif, anlamlı olmayan bir azalma görüldü. Sonuç olarak böbrek nakli böbrek replasman tedavisi hastalarında SD insidansını azaltabilir ve hastanın iyilik halini artırabilir.

Anahtar Kelimeler: ASEX. Böbrek nakli. Cinsel işlev bozukluğu.

Female sexual dysfunction (SD) is a disorder that results from disruptions to any of the physiological processes involved in desire, arousal, and orgasm during the sexual response cycle. SD develops in

relation to biological, medical, and psychological factors, and is strongly influenced by a woman's psychological and relational status^{1,2}. The prevalence of SD ranges from 26% to 63%³. Chronic kidney disease (CKD) can also affect patients' social, economic, and psychological well-being. Sexual dysfunction has been reported in between 20% and 100% of patients with end-stage kidney disease (ESKD)^{4,5}. Female CKD patients experience decreased libido, difficulty reaching orgasm, a lack of vaginal lubrication, pain during intercourse, and infertility⁶. In female hemodialysis patients, decreased plasma estrogen levels due to hyperprolactinemia, as well as associated atrophic vaginitis and renal anemia,

Date Received: 26.May.2025

Date Accepted: 2.July.2025

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also contribute to sexual dysfunction^{7–12}. Following a successful kidney transplant, the sexual desire of many female patients with ESKD increases significantly alongside an improvement in their serum hormone profile. However, the frequency of sexual activity and sexual satisfaction do not improve as significantly as sexual desire¹³. Many studies have examined the frequency of SD in women receiving renal replacement therapy (RRT) using different scales^{14–21}. Previously, in 115 premenopausal female patients receiving RRT, we observed the lowest SD rate with the Arizona Sexual Experiences Scale (ASEX) in kidney transplant (KTx) patients compared with hemodialysis and peritoneal dialysis patients²². In the current study, we aimed to investigate the frequency of SD with the ASEX and SD subheadings and to compare the frequency of SD before and after RRT in female patients undergoing KTx.

Materials and Methods

This study was conducted on female patients over 18 years of age who underwent KTx between December 2012 and June 2014 at the Nephrology and Kidney Transplantation Clinic—Polyclinic Units of Bursa Uludağ University Faculty of Medicine Hospital, with the approval of the Bursa Uludağ University Faculty of Medicine Ethics Committee, dated 05/10/2012 and numbered 2012-21/10. This study included patients with a history of kidney transplantation for at least three months and no active psychiatric illness. This study was organized in accordance with Good Clinical Practice and the Declaration of Helsinki. Informed consent was obtained from all participants. A total of 135 KTx patients were screened. Of these, 70 women with KTx who met the inclusion criteria and volunteered were included in this study. The following characteristics of the patients were recorded: age, systolic blood pressure, diastolic blood pressure, weight, body mass index, waist circumference, and hip circumference. Medical information, details of chronic diseases and medications, and creatinine values from the last visit were obtained from patient files and electronic records.

Scales

Sexual function was evaluated using the ASEX²³. The ASEX is a brief, five-item Likert-type scale developed to efficiently assess sexual dysfunction in clinical populations. The female version of the scale examines sex drive, psychological arousal, physiological arousal (vaginal lubrication), the capacity to reach orgasm, and satisfaction after orgasm. Low scores indicate a strong and satisfying sexual response, while high scores suggest SD. The total score ranges from 5 to 30, with each question scored from 1 to 6. A total

score of 19 or above, a score of 5 or above for any individual question, or a score of 4 or above for any three individual questions indicates SD. Soykan²⁴ conducted a validity and reliability study of the scale in Türkiye. This study compared the frequency of SD in patients with the ASEX, the subheadings of the ASEX, and the frequency of SD before and after renal transplantation.

Statistical analysis

The analysis was performed using the SPSS 13.0 software package. Continuous variables were expressed as median (minimum–maximum) values, and categorical variables were expressed as frequency and related percentage values. The Shapiro–Wilk test was used to evaluate the normality of the data distribution. The Wilcoxon signed-rank test was used to compare changes in the ASEX and subgroups before and after in the KTx groups. A p-value of less than 0.05 was considered significant.

Findings

Characteristic features of patients

The characteristics of our patients are shown in Table I.

Table I. Demographic and clinical characteristics of KTx patients.

| Variable | KTx (n= 70) Median (minimum–maximum) |
|-------------------------|---|
| Age, years | 39 (23–66) |
| Systolic BP, mmHg | 120 (90–160) |
| Diastolic BP, mmHg | 80 (60–90) |
| Weight, kg | 65 (39–105) |
| BMI, kg/m ² | 26.6 (16.6–39.5) |
| Waist circumference, cm | 89 (63–115) |
| Hip circumference, cm | 103.5 (80–160) |

KTx: kidney transplantation; BP: blood pressure; BMI: body mass index.

Seventy female kidney transplant patients participated in this study. The median age of our patients was 39 years^{23–66}. Patients with KTx and a median CKD history of 156 months had a pre-transplant hemodialysis duration of 30 (1–240) months, a peritoneal dialysis (PD) duration of 42 (6–138) months, and a post-transplant follow-up duration of 33.5 (4–180) months.

Eight patients (11.4%) had diabetes mellitus (DM), ten patients (7%) had hyperlipidemia, and forty-four patients (62.9%) had hypertension (HT). The median creatinine value at the last visit was 1.1 (0.69–3.7) mg/dL.

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A total of 68 patients (97.1%) were receiving prednisolone treatment. Of the immunosuppressive drugs, 41 (58.6%) received mycophenolic acid, 14 (20%) received mycophenolate mofetil, 13 (18.6%) received azathioprine, 1 (1.4%) received cyclophosphamide, 40 (57.1%) received tacrolimus, 24 (34.3%) received cyclosporine, 2 (2.9%) received sirolimus, and 3 (4.3%) received everolimus. Patients with HT and DM received appropriate antihypertensive and antidiabetic treatments (51 patients received antihypertensive treatment, and 7 patients received antidiabetic treatment).

ASEX results for the current and previous periods

SD was detected in 17 (24.3%) of our patients with ASEX-current. The subgroup scores for our patients in the current period are provided in Table II. SD was detected in 17 (27.4%) of our patients with ASEX-previous. The subgroup scores of our patients belonging to the previous period are noted in Table II.

Comparison of ASEX results for the current and previous periods

Although the SD rate decreased from 27.4% to 24.3% in our patients, this decrease was not statistically significant ($p > 0.05$).

We compared the current and previous ASEX subgroup scores of our patients. No statistically significant differences were observed in ASEX subscale scores before and after transplantation. (Table II).

Discussion and Conclusion

We evaluated the frequency of SD in KTx patients using the ASEX scale. Subgroup scores on the ASEX scale were determined, and current scores were compared with those in the pre-KTx period. The SD rate assessed by ASEX was found to be 24.3% in our patients. While not statistically significant, we observed a decrease in the SD rate from 27.4% to 24.3% after KTx.

A successful kidney transplant may reduce the incidence of sexual dysfunction in female patients with CKD by improving the effects on the

hypothalamic-pituitary axis.²⁵⁻²⁷. In a study by Kurdoğlu et al., in which SD was evaluated using the ASEX in female patients undergoing hemodialysis (HD) or predialysis (PreD), it was shown that the total ASEX scores and scores indicating the capacity to reach orgasm were significantly higher in the PreD and HD groups than in the control group²⁰. A previous study conducted at our center reported an SD rate of 18.2% in the KTx group when evaluated using the ASEX; this rate was found to be lower than in HD and PD patients²². In a study conducted by Vranjes et al. employing another scale used to assess SD, the Female Sexual Function Index (FSFI), the SD rate was found to be 44.4% in the KTx group²⁸. Another study by Pyrgidis et al., also using the FSFI, reported an SD frequency of 63% in KTx patients and 80% in HD patients. Additionally, KTx patients were found to have increased their total FSFI scores by 7.5 points²⁹. Higher scores on the FSFI scale indicate better sexual function and a decreased risk of sexual dysfunction³⁰. That study emphasized that advanced age and menopause are factors associated with SD; consequently, it was concluded that SD is prevalent among women with end-stage renal disease (ESRD) and that sexual function improves in patients who have undergone kidney transplantation²⁹. In a study by Kurtulus et al. involving 23 KTx patients, the SD rate was reported as 73.9%. The same study showed that FSFI scores improved significantly in the KTx group, suggesting that successful KTx can have a positive effect on the sexual lives of women with chronic renal failure. In our study, the SD rate, as determined using the ASEX, was found to be 24.3%. No significant differences were found when comparing the current and previous ASEX subgroup scores of our patients in terms of sexual drive, psychological arousal, physiological arousal, capacity to reach orgasm, satisfaction scores, and total scores. However, the SD rate was found to decrease from 27.4% to 24.3% after KTx. SD showed a slight, non-significant decrease following kidney transplantation.

In their review, Pertuz et al. reported that SD affected between 60% and 80% of female patients. Of the patients in the reviewed studies, 40% to 78% reported an improvement in their overall sexual function after KTx. The reviewed literature suggests that there is a significant improvement in sexual function following

Table II. Comparison of ASEX subscale scores between ASEX-current and ASEX-previous assessments.

| KTx/Scores | Sexual Drive | Psychological Arousal | Physiological Arousal | Ability to Reach Orgasm | Satisfaction Feeling | Total Score |
|----------------------------|--------------|-----------------------|-----------------------|-------------------------|----------------------|--------------|
| ASEX-current (n=70) | 3 (1-6)* | 3 (1-6)* | 3 (1-6)* | 3 (1-6)* | 2 (1-6)* | 13 (5-30)* |
| ASEX-previous (n=62) | 3 (1-6)* | 3 (1-6)* | 3 (1-6)* | 3 (1-6)* | 2 (1-6)* | 14 (5-30)* |
| Within-group p-value | p=987 | p=0.388 | p=0.948 | p=0.804 | p=0.855 | p=0.928 |
| Difference (median, range) | 0 ((-4)-4) | 0 ((-4)-5) | 0 ((-4)-5) | 0 ((-4)-5) | 0 ((-5)-5) | 0 ((-16)-24) |

ASEX: Arizona Sexual Experiences Scale; KTx: kidney transplantation; * median (minimum–maximum).

KTx. Kidney transplantation has been reported to have a positive effect on sexual function, particularly by increasing sexual desire and general sexual satisfaction. However, it should be noted that individual factors such as age-related end-stage kidney disease (ESKD), neuroendocrine or metabolic disorders, and immunosuppressive therapies administered after transplantation may affect patients who do not report improvement in sexual function³². In addition, the literature emphasizes that psychosocial variables such as quality of life, treatment compliance, relationship satisfaction, and depression also affect sexual dysfunction after renal transplantation^{33–35}. In a study by Xiao et al. involving 154 female kidney transplant patients, the prevalence of SD measured by the ASEX was found to be 61.6%, which is higher than the rates reported in the literature. The same study emphasized that avoidance of activity due to graft anxiety after transplantation was one of the factors associated with SD. This study also highlighted that sexual health is often overlooked by healthcare professionals, including physicians, nurses, and nephrologists, particularly during the post-transplant period³⁶. Laguerre et al. evaluated SD in female patients undergoing KTx using the FSFI and compared the results with data from the pre-KTx period and at the 6-month, 12-month, and final visits. Although a significant increase in FSFI subgroup scores was reported at six months post-transplant, no significant increase was observed at 12 months post-transplant or at the final visit. This study emphasized that the effect of kidney transplantation on sexual dysfunction was significant in the early period, but that this improvement decreased over time due to confounding factors affecting sexual function, such as age. The median age of our patients was 39 years^{23–66}. DM was diagnosed in 11.4% of our patients. Our patients were receiving prednisolone and immunosuppressive treatments (mycophenolic acid, mycophenolate mofetil, azathioprine, tacrolimus, cyclosporine, sirolimus, and everolimus).

This study was limited to single-center data, which is considered an important limitation, as is the heterogeneity of the patients' transplantation times, which limits the generalizability of the findings.

However, our study is valuable in providing real-life data on SD, a topic that is generally ignored in our society and not discussed by patients or prioritized by physicians.

In this study, the ASEX was used to evaluate the frequency of SD, and the SD rate was determined in our patient group. SD showed a slight, non-significant decrease following kidney transplantation. Kidney transplantation may reduce the incidence of SD and improve patient well-being among RRT patients.

Researcher Contribution Statement:

Idea and design: A.E., N.L.; Data collection and processing: N.L.; Analysis and interpretation of data: A.E., N.L.; Writing of significant parts of the article: N.L., A.E.

Support and Acknowledgement Statement:

This study received no financial support

Conflict of Interest Statement:

The authors of the article have no conflict of interest declarations.

Ethics Committee Approval Information:

Approving Committee: Bursa Uludag University Faculty of Medicine Clinical Research Ethics Committee

Approval Date: 05.10.2012

Decision No: 2012–21/10

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