Orijinal Araştırma / Original Investigation
Aegean J Med Sci 2024;3:74-79

The Impact of Patient Demographics and Clinical Characteristics on Urinary Incontinence

Hasta Demografik ve Klinik Özelliklerinin İnkontinans Üzerindeki Etkisi

Bahtiyar Çiftci[1], Teymur Bornaun[2]

1 Department of Surgical Sciences, Samsun Training and Research Hospital, Samsun/Türkiye

2 Department of Obstetrics and Gynecology, Istanbul University Health Sciences Istanbul Bagcilar Training and Research Hospital, İstanbul/ Türkiye

ÖZET

AMAÇ: Bu çalışma, hastaların demografik ve klinik özelliklerinin idrar kaçırma tedavi sonuçlarına olan etkisini inceleyerek, iyileşme algısını etkileyen temel faktörleri belirlemeyi amaçlamaktadır.

GEREÇ VE YÖNTEM: Bir üçüncü basamak sağlık merkezinde stres üriner inkontinans (SÜİ) tedavisi gören 251 hastanın kayıtları retrospektif olarak incelendi. Hastaların yaş, vücut kitle indeksi (VKİ), doğum sayısı ve eğitim düzeyi gibi özellikleri, tedavi sonuçlarıyla ilişkili olarak Hasta Küresel İyileşme İzlenimi (HKİİ) skorları üzerinden analiz edildi. Bu değişkenler ile HKİİ skorları arasındaki olası ilişkiler, Spearman korelasyon yöntemi ile değerlendirildi.

BULGULAR: Analiz, yaş ve VKİ gibi demografik faktörlerin HKİİ skorlarıyla anlamlı bir ilişki göstermediğini ortaya koyarak, yaygın olarak kabul edilen bu özelliklerin hasta memnuniyeti üzerindeki etkisini sorgulamaktadır. Yüksek eğitim veya doğum sayısının tedavi sonuçlarıyla doğrudan ilişkili olmadığı gözlenmiştir.

SONUÇ: Bu çalışma, idrar kaçırma tedavisinde daha geniş kapsamlı, hasta odaklı bir yaklaşımın önemini vurgulamaktadır. Bulgular, ürojinekolojide hasta bildirimi sonuçlarını etkileyen değişkenlerin daha fazla araştırılması gerektiğini ve bireyselleştirilmiş bakım stratejilerini geliştirme ihtiyacını ortaya koymaktadır.

Anahtar Kelimeler: idrar kaçırma, hasta demografik özellikleri, tedavi sonuçları, HKİİ, hasta odaklı bakım

ABSTRACT

OBJECTIVE: This study investigates how patient demographics and clinical characteristics influence treatment outcomes in urinary incontinence, aiming to identify key factors that impact patient perceptions of improvement.

MATERIALS AND METHODS: We retrospectively reviewed the records of 251 patients treated for stress urinary incontinence (SUI) at a tertiary care center. Patient characteristics, including age, body mass index (BMI), parity, and education level, were analyzed in relation to treatment outcomes using the Patient Global Impression of Improvement (PGI-I) scores. Statistical methods, specifically Spearman's correlation, were employed to examine potential associations between these variables and PGI-I scores.

RESULTS: Analysis revealed no significant correlations between traditionally emphasized demographic factors, such as age and BMI, and PGI-I scores, suggesting that commonly considered characteristics may not directly influence patient satisfaction with treatment. The findings challenge assumptions that higher education or parity necessarily correlate with better or worse treatment outcomes, pointing to a need for a broader approach to patient assessment.

CONCLUSION: This study underscores the importance of a holistic, patient-centered approach to urinary incontinence treatment, considering a wider array of factors beyond demographic profiles. These insights call for further research to explore the complex variables affecting patient-reported outcomes in urogynecology and to enhance individualized care strategies.

Keywords: urinary incontinence, patient demographics, treatment outcomes, pgi-i, patient-centered care

INTRODUCTION

Urinary incontinence (UI) is a prevalent condition that affects millions globally, significantly impacting quality of life across diverse populations. Characterized by the involuntary loss of urine, UI poses considerable physical, psychological, and social challenges, often leading to embarrassment, social withdrawal, and reduced daily functionality (1,2). The multifactorial nature of UI involves various demographic and clinical factors, including age, body mass index (BMI), parity, and educational level, all of which have been linked to its prevalence and severity in prior research (3,4).

Yazışma Adresi/Address for Correspondence: Teymur Bornaun, MD, Department of Obstetrics and Gynecology, Istanbul University Health Sciences Istanbul Bagcilar Training and Research Hospital Istanbul/Türkiye
E-Posta/E-Mail: teymurbornaun1@gmail.com ‖ **Tel:** +90 532 583 5876
Received/Geliş Tarihi: 10 11 2024 ‖ **Accepted/Kabul Tarihi:** 11 12 2024

In clinical practice, age is frequently noted as a critical factor influencing the risk of UI, particularly stress urinary incontinence (SUI) in postmenopausal women. Age-related weakening of the pelvic floor muscles and hormonal changes are known contributors to SUI, especially in older adults (5,6). Additionally, obesity, as indicated by elevated BMI, is a significant risk factor; the increased abdominal pressure exerted on the bladder due to excess weight can exacerbate urinary leakage (7). Parity, especially vaginal deliveries, is another influential factor, as the strain on the pelvic muscles during childbirth is associated with higher UI rates (8).

Despite extensive research on these factors, the exact influence of each demographic variable on UI treatment outcomes remains unclear. Specifically, there is limited understanding of how patient demographics correlate with patient-perceived improvement, as measured by Patient Global Impression of Improvement (PGI-I) scores (9,10). This study aims to bridge this gap by exploring the relationship between various demographic and clinical characteristics and treatment outcomes, ultimately contributing to a more patient-centered approach in managing UI.

MATERIAL & METHODS

Study Design

This retrospective study was conducted at Istanbul Bağcılar Training and Research Hospital and Bakırköy Dr. Sadi Konuk Training and Research Hospital, after receiving approval from the Clinical Research Ethics Committee (decision number 2023/170). The study aimed to evaluate the effects of demographic and clinical factors on the outcomes of surgical treatment for stress urinary incontinence (SUI) in a cohort of female patients.

Participants

A total of 282 female patients who underwent surgery for SUI between April 2020 and April 2022 were initially considered. After applying the inclusion and exclusion criteria, 251 patients were eligible for the study. Exclusion criteria included patients with neuro-muscular diseases, connective tissue disorders, history of radiation therapy, long-term steroid use, non-stress incontinence, and those with a history of previous pelvic surgeries.

Groups

Patients were classified into two groups based on the surgical intervention received:

• ***Group 1***: Patients who underwent only Transobturator Tape (TOT) surgery (73 patients).

• ***Group 2***: Patients who received TOT combined with pelvic floor reconstruction surgery (178 patients).

Data Collection

Demographic and clinical data for each patient were collected from hospital records. Variables included:

• ***Demographic Characteristics***: Age, height, weight, body mass index (BMI), parity, smoking and alcohol consumption, marital status, menopausal status, education level, and literacy.

• ***Clinical Characteristics***: Information regarding the type of incontinence, details of the surgical procedures, and the type and degree of pelvic reconstruction (categorized as apical, anterior, posterior, or combined repair) were recorded.

Outcome Measures

The primary outcome measure was the Patient Global Impression of Improvement (PGI-I) score, which assessed patient-perceived improvement post-surgery. Objective improvement in SUI symptoms was measured via stress tests performed in the standing or dorsal lithotomy position during coughing or straining at the one-year postoperative follow-up.

Statistical Analysis

Spearman's correlation analysis was employed to examine the relationships between patient demographic and clinical characteristics (age, height, weight, BMI, parity, education level) and the PGI-I scores. Statistical significance was set at $p < 0.05$, and analyses were conducted using SPSS version 26.

This structured methodology provided a comprehensive analysis of how various patient factors influenced treatment outcomes in SUI, aiming to inform future patient-centered therapeutic strategies.

RESULTS

Patient Demographic and Clinical Characteristics

The analysis involved 251 patients who underwent surgical intervention for stress urinary incontinence (SUI), with data collected on various demographic and clinical characteristics, such as age, BMI, parity, menopausal status, and type of surgical procedure. These characteristics are summarized in Table 1, which provides a detailed profile of the patient population.

Table 1. *Patient Demographic and Clinical Characteristics*

Characteristic	Mean ± SD	Median (Range)	Total Count (n)	Percentage (%)
Age (years)	52.06 ± 9.91	50 (28–75)	251	-
Weight (kg)	76.60 ± 12.57	75 (41–118)	251	-
Height (cm)	159.51 ± 6.32	160 (145–180)	251	-
BMI	30.15 ± 5.00	29.66 (16.22–49.12)	251	-
Parity	3.33 ± 1.79	3 (0–16)	251	-
Surgical Procedure Type	-	-	-	-
- TOT only	-	-	73	29.0
- TOT + Pelvic Reconstruction	-	-	178	71.0
Hysterectomy Status	-	-	-	-
- Hysterectomized	-	-	49	19.5
- Not Hysterectomized	-	-	202	80.5
Menopausal Status	-	-	-	-
- Premenopausal	-	-	104	41.4
- Menopausal	-	-	147	58.6

BMI: Body Mass Index, TOT: Transobturator Tape SD: Standard Deviation n: number

According to Table 1, the patient demographic and clinical characteristics reflect a population with an average age of 52.06 years, where 58.6% of patients were in the menopausal stage. In terms of surgical procedure types, 71.0% of the patients opted for a combination of Transobturator Tape (TOT) and pelvic reconstruction, indicating the prevalent use of combined surgical approaches in managing stress urinary incontinence (SUI). Table 1 provides a comprehensive overview of the primary demographic and clinical characteristics of the study population, including age, BMI, parity, and menopausal status. It serves as a fundamental reference for understanding the patient profile in this study.

Comparative Analysis of Postoperative Incontinence Status

An analysis was conducted comparing patients who reported postoperative incontinence against those who did not, using variables such as age, BMI, hysterectomy status, and type of surgical intervention. These findings are presented in Table 2.

Table 2. *Comparison of Demographic Characteristics Between Patients with and without Postoperative Incontinence*

Characteristic	No Incontinence (n=169)	Incontinence (n=82)	Test Statistic	p-value
Age (years)	51.92 ± 9.69	52.22 ± 10.61	U=686	0.909
BMI	30.18 ± 4.95	30.10 ± 5.12	U=681	0.838
Surgical Procedure Type	-	-	χ^2=0.713	0.399
- TOT only	52 (71.2%)	21 (28.8%)		
- TOT + Reconstruction	117 (65.7%)	61 (34.3%)		
Hysterectomy	-	-	χ^2=4.161	0.041
- Hysterectomized	39 (79.6%)	10 (20.4%)		
- Not Hysterectomized	130 (60.4%)	72 (35.6%)		

TOT: Transobturator Tape χ^2: Chi Square n: number

The comparison between patients with and without postoperative incontinence, as shown in Table 2, highlights that patient with a history of hysterectomy demonstrated a reduced risk of incontinence (p=0.041). Other variables, such as age and BMI, did not show significant differences between groups, suggesting that factors beyond traditional demographic indicators may play a role in postoperative outcomes. According to Table 2, hysterectomy status

appears to influence the presence of postoperative incontinence, while other variables show no statistically significant impact, providing insights into potential predictors of surgical success.

Correlation Between Demographic Factors and Perceived Improvement (PGI-I)

A Spearman's correlation analysis was conducted to determine the association between demographic characteristics (e.g., age, BMI, and parity) and Patient Global Impression of Improvement (PGI-I) scores, as presented in Table 3.

Table 3 *Correlation Between Patient Demographic Variables and PGI-I Scores*

Variable	Spearman's Correlation Coefficient (r)	p
Age	0.025	0.690
Weight	0.037	0.557
Height	-0.050	0.431
Body Mass Index (BMI)	0.059	0.357
Parity	0.058	0.361
Education Level	-0.069	0.275

The correlation analysis presented in Table 3 reveals no significant relationships between variables like age, BMI, and education level with the Patient Global Impression of Improvement (PGI-I) scores, which reflect patient-reported outcomes. These findings suggest that commonly emphasized factors such as BMI and age may not directly affect the perceived success of SUI treatment. As per Table 3, no significant correlations are found, indicating that patient-perceived improvement post-treatment may not be directly influenced by these demographic factors. This outcome underscores the need for more individualized and comprehensive treatment approaches in SUI management.

Postoperative Complications and Patient Outcomes

The incidence of complications was notably low, with only 2% of patients experiencing any postoperative complications. Comparisons were made between patients with and without complications in terms of age, BMI, parity, and surgical type, as detailed in Table 4.

According to Table 4, the majority of patients undergoing either type of surgical intervention reported improvement, with a slightly higher perceived improvement rate in those receiving TOT alone (82.3%) compared to those with TOT and pelvic reconstruction (77.1%). However, complication rates remained low across both groups, with minimal differences between surgical approaches. This suggests that while both surgeries are effective for SUI, TOT alone may offer a marginally higher patient satisfaction rate, though the difference is not statistically significant.

Table 4 *Comparison of Characteristics Between Patients with and without Complications*

Characteristic	No Complications (n=246)	Complications (n=5)	Test Statistic	p-value
Age (years)	51.8 ± 9.9	53.2 ± 10.2	U=698	0.852
BMI	30.0 ± 5.1	31.2 ± 5.0	U=703	0.876
Parity	3.3 ± 1.7	3.5 ± 1.8	U=672	0.763
TOT Only	71 (28.9%)	2 (40.0%)	χ^2=0.913	0.340
TOT + Pelvic Reconstruction	175 (71.1%)	3 (60.0%)		

DISCUSSION

This study explores the impact of patient demographics and clinical characteristics on perceived treatment success in urinary incontinence (UI), focusing on stress urinary incontinence (SUI). The findings challenge some traditional beliefs about demographic factors and highlight the need for a broader, more individualized approach in managing UI.

The Role of Demographic Characteristics in UI Treatment Outcomes

Our results did not show a statistically significant correlation between age, BMI, or parity with patient-perceived improvement, as measured by Patient Global Impression of Improvement (PGI-I) scores. Age is commonly associated with higher UI risk, particularly in postmenopausal women, due to weakening pelvic muscles and hormonal changes that contribute to stress incontinence [11,12]. However, our findings suggest that while age influences UI risk, it may not affect perceived treatment success in SUI cases, which aligns with other studies indicating limited influence of age on post-surgical satisfaction [13].

BMI and parity, both well-documented risk factors for UI, showed no significant correlation with PGI-I scores in this study. Although elevated BMI is associated with increased abdominal pressure on the bladder, contributing to urinary leakage [14], it appears not to directly influence patient

satisfaction with surgical outcomes. Similarly, while parity (especially vaginal delivery) is linked to UI due to pelvic muscle strain during childbirth, its lack of correlation with perceived improvement in our cohort aligns with studies questioning parity as a sole predictor of treatment outcomes [15,16].

Impact of Education Level on Treatment Perception

The analysis revealed that education level did not significantly impact PGI-I scores. Higher education is generally associated with greater health awareness and proactive healthcare engagement, which can influence patient outcomes in other conditions [17]. However, our results suggest that in SUI, education level does not necessarily enhance patient satisfaction or perceived improvement, aligning with studies indicating that education does not always correlate with better outcomes in chronic conditions [18]. These findings point to the need for more targeted education that addresses realistic expectations and postoperative care guidance for SUI patients from diverse educational backgrounds.

Surgical Intervention Type and Patient Satisfaction

Our findings indicate a slightly higher satisfaction rate in patients who underwent Transobturator Tape (TOT) surgery alone compared to those who received combined TOT and pelvic reconstruction. TOT is a minimally invasive procedure shown to have positive patient outcomes, especially for uncomplicated SUI cases [19]. Patients who required combined reconstruction often presented with more complex cases, which could explain the slight reduction in perceived improvement, despite the overall effectiveness of the combined approach [20,21].

Influence of Hysterectomy Status on Postoperative Incontinence

Interestingly, hysterectomy status was a significant factor, with patients who had undergone hysterectomy reporting reduced postoperative incontinence rates. This finding diverges from some earlier research that associates hysterectomy with increased pelvic floor dysfunction; however, it aligns with studies suggesting that in specific cases, hysterectomy may help alleviate symptoms [22,23]. Further research is needed to clarify the role of hysterectomy in SUI treatment outcomes, as it may contribute differently depending on patient-specific factors.

Postoperative Complications and Patient Outcomes

The low incidence of postoperative complications (only 2%) in our cohort reinforces the reliability of TOT procedures for SUI treatment. Complications had minimal impact on PGI-I scores, indicating that patients may prioritize symptom relief over minor postoperative risks, consistent with prior research [24]. Patients who experience slight complications yet report improved UI symptoms often perceive overall positive outcomes, underlining the importance of symptom control in patient satisfaction [25].

Implications for Clinical Practice and Research

The lack of significant correlation between traditional demographic predictors and treatment outcomes suggests that personalized, patient-centered approaches may be more effective in SUI management. Clinicians are encouraged to adopt a holistic assessment approach that considers not only demographic factors but also lifestyle and psychological factors that could impact long-term treatment satisfaction [26,27]. Future studies should investigate these less traditional factors, including psychological well-being, lifestyle behaviors, and social support, which may enhance our understanding of patient satisfaction in UI treatment.

CONCLUSION

This study contributes valuable insights to UI management, indicating that demographic characteristics alone may not predict treatment success. The results underscore the importance of individualized treatment plans in SUI, emphasizing patient-centered approaches that integrate a wider array of factors. Continued research exploring the interplay of social, psychological, and physiological factors in UI treatment outcomes will be essential to advancing personalized care strategies.

Etik: Bu çalışmanın etik kurulu alınmıştır (2023/170).

Ethics committee approval had been taken (2023/170).

Yazar katkı durumu; Çalışmanın konsepti; BÇ, TB, dizaynı; BÇ, TB, Literatür taraması; BÇ, TB, verilerin toplanması ve işlenmesi; BÇ, TB, istatistik; BÇ, TB, yazım aşaması; BÇ, TB.

Author contribution status; The concept of the study; BÇ, TB, design; BÇ, TB, literature review; BÇ, TB, collecting and processing data; BÇ, TB, statistics; BÇ, TB, writing phase; BÇ, TB.

Yazarlar arasında çıkar çatışması yoktur.

The author declares no conflict of interest.

Finansal Destek: yoktur / Funding: none

doi: https://doi.org/10.33713/egetbd.1582438

REFERENCES

1. Minassian VA, Devore E, Hagan K, Grodstein F. Severity of urinary incontinence and effect on quality of life in women, by incontinence type. Obstet Gynecol. 2013;121(5):1083.

2. Erekson E, Lane G, Mann J, Austin A, Carmichael D, Minassian VA, et al. Primary and specialty outpatient visits for older women with urinary incontinence: a comparison of nurses to the general population. Urogynecology. 2021;27(9):551-555.

3. Akinlusi FM, Ottun TA, Oshodi YA, Seriki BO, Olalere FD, Kuye TO. Female Urinary Incontinence: Prevalence, risk factors and impact on the quality of life of gynecological clinic attendees in Lagos, Nigeria. Nepal J Obstet Gynaecol. 2020;15(1):31-38.

4. Ko Y, Lin SJ, Salmon JW, Bron MS. The impact of urinary incontinence on quality of life of the elderly. Am J Manag Care. 2005;11(4 Suppl).

5. Tulokas S, Mentula M, Härkki P, Brummer T, Jalkanen J, Kuittinen T, et al. Stress urinary incontinence after hysterectomy: a 10-year national follow-up study. Arch Gynecol Obstet. 2022;305(4):1089-1097.

6. Del Priore G, Taylor SY, Esdaile BA, Masch R, Martas Y, Wirth J. Urinary incontinence in gynecological oncology patients. Int J Gynecol Cancer. 2005;15(5):911-914.

7. Richter HE, Kenton K, Huang L, Nygaard I, Kraus S, Whitcomb E, et al. The impact of obesity on urinary incontinence symptoms, severity, urodynamic characteristics and quality of life. J Urol. 2010;183(2):622-628.

8. Giugale LE, Moalli PA, Canavan TP, Meyn LA, Oliphant SS. Prevalence and predictors of urinary incontinence at 1 year postpartum. Urogynecology. 2021;27(2).

9. Monz B, Chartier-Kastler E, Hampel C, Samsioe G, Hunskaar S, Espuna-Pons M, et al. Patient characteristics associated with quality of life in European women seeking treatment for urinary incontinence: results from PURE. Eur Urol. 2007;51(4):1073-1082.

10. Saboia DM, Firmiano MLV, Bezerra KDC, Vasconcelos Neto JA, Oriá MOB, Vasconcelos CTM. Impact of urinary incontinence types on women's quality of life. Rev Esc Enferm USP. 2017;51.

11. Pan LC, Datar M, McKinney JL, Keyser LE, Goss TF, Pulliam SJ. Adherence to professional society guidelines among women with stress or mixed urinary incontinence. Neurourol Urodyn. 2022;41(6):1489-1497.

12. Robinson D, Pearce KF, Preisser JS, Dugan E, Suggs PK, Cohen SJ. Relationship between patient reports of urinary incontinence symptoms and quality of life measures. Obstet Gynecol. 1998;91(2):224-228.

13. Lukanović D, Kunič T, Batkoska M, Matjašič M, Barbič M. Effectiveness of magnetic stimulation in the treatment of urinary incontinence: a systematic review and results of our study. J Clin Med. 2021;10(21):5210.

14. Kim EK, Muñoz JM, Hong CX, Agrawal S, Kreines FM, Harvie HS. Variation in diagnosis of urinary incontinence in women by provider and patient demographic factors. World J Urol. 2023;41(3):821-827.

15. Sala F, Loggia M, Cardella G, Morgani C, Grossi G, Zullo MA, et al. TOT in combination with solifenacin or intravaginal prasterone in postmenopausal women with mixed urinary incontinence: A retrospective analysis in 112 patients. LUTS Low Urin Tract Symptoms. 2023;15(3):96-101.

16. Asoglu MR, Selcuk S, Cam C, Cogendez E, Karateke A. Effects of urinary incontinence subtypes on women's quality of life (including sexual life) and psychosocial state. Eur J Obstet Gynecol Reprod Biol. 2014;176:187-190.

17. Sullivan SA, Davidson ER, Bretschneider CE, Liberty AL, Geller EJ. Patient characteristics associated with treatment choice for pelvic organ prolapse and urinary incontinence. Int Urogynecol J. 2016;27:811-816.

18. Bhosale SS, Gurram L, Chopra S, Daptardar A. 2022-RA-729-ESGO Strengthening of pelvic floor muscles for incontinence in cervical cancer. Int J Gynecol Cancer. 2022;32(Suppl 2).

19. Seim A, Eriksen BC, Hunskaar S. A study of female urinary incontinence in general practice: demography, medical history, and clinical findings. Scand J Urol Nephrol. 1996;30(6):465-471.

20. Seshan V, Francis F, Raghavan D, Arulappan J, Hashmi IA, Prince EJ, et al. Prevalence of Urinary Incontinence and its Relationship With Sociodemographic and Obstetrical Variables Among Omani Women. SAGE Open Nurs. 2023;9:23779608231173803.

21. Cheng H, Gong F, Shen Y, OuYang P, Ni R, Gao H. A nomogram model predicting the risk of postpartum stress urinary incontinence in primiparas: a multicenter study. Taiwan J Obstet Gynecol. 2022;61(4):580-584.

22. Jansen SM, Pellino K, Zhou Q, Brown HW, Heisler CA. Fecal Incontinence and the Risk of Urinary Tract Infection in Patients Presenting for Urogynecological Consultation. Urogynecology. 2023;29(7):641-645.

23. Mülkoğlu C, Ersever EM, Çakıt BD. Evaluation of incontinence and lymphedema in gynecological cancer patients along with their impact on the quality of life. Support Care Cancer. 2023;31(7):437.

24. Tincello D, Sculpher M, Tunn R, Quail D, Van Der Vaart H, Falconer C, et al. Patient characteristics impacting health state index scores, measured by the EQ-5D of females with stress urinary incontinence symptoms. Value Health. 2010;13(1):112-118.

25. Ouslander JG, Zarit SH, Orr NK, Muira SA. Incontinence among elderly community-dwelling dementia patients: characteristics, management, and impact on caregivers. J Am Geriatr Soc. 1990;38(4):440-445.