# Effects of Age and Urinary Incontinence Severity on Generic SF-36 Quality of Life Measurements in Sakarya, Turkey

## *TÜRK KADINLARINDA ÜRİNER İNKONTİNANS ŞİDDETİ VE YAŞIN JENERİK YAŞAM KALİTESİ SF-36 ÜZERİNE ETKİLERİ*

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## Abstract

**Objective:** The aim of the present study was to explore the association between generic quality of life and age and urinary incontinence (IU) severity among a random sample of adult Turkish women.

**Material and Methods:** In total, 650 patients (mean age 33.2 ± 10.6 years, range 17-65 years) attending six Primary Health Care Centres located in the eastern Marmara Region/Turkey were enrolled in this study. All subjects completed a questionnaire including questions inquiring any kind of urinary leakage, related symptomatology and personal medical history along with SF-36 questionnaire after giving their informed consent

**Results:** One hundred and six women (16.4%) reported UI. Women over the age of 30 years reported more impairment on domain subscale of role physical compared to their "younger" counterparts (83.61 ± 23.54 vs 88.03 ± 21.52). There was a negative correlation between the UI severity index and SF-36 subscale scores (r= -0.27 to -0.37, p< 0.001 for all) except for mental health (r= 0.08, p= 0.06). Advancing age and increasing UI severity were associated with significant impairment on all SF-36 domain subscales (p< 0.001, for all) but with small R squares.

**Conclusion:** Neither age nor UI severity can explain the SF-36 quality of life changes; there are other potential risks to be determined. Despite generic quality of life questionnaire displays differences between incontinent women and controls, it is not solely adequate to determine the changes due to UI. Thus it is better be used along with an incontinence-related quality of life questionnaire.

**Key Words:** Urinary incontinence; quality of life; adult

## Özet

**Amaç:** Bu çalışmanın amacı yetişkin Türk kadını örnekleminde, jenerik yaşam kalitesi ölçeği üzerine yaş ve üriner inkontinans (Üİ) şiddetinin etkilerini araştırmaktır.

**Gereç ve Yöntemler:** Sakarya ilindeki 6 sağlık ocağına herhangi bir neden ile başvuran 650 kadın (ortalama yaş 33.2 ± 10.6 yıl, 17-65 yıl arası) bu çalışmada yer almışlardır. Katılımcıların hepsi aydınlatılmış onamları sözel olarak alındıktan sonra; Üİ varlığı, ilgili şikayetler, kşisel sağlık biligisi ve SF-36 yaşam kalitesi ölçeklerinin yer aldığı anketleri doldurmuşlardır.

**Bulgular:** Çalışmaya katılan kadınların 106 (%16.4)'sı Üİ bildirmiştir. Üİ olan 30 yaş üzerinde kadınlar genç yaş grubundakilere kıyasla "fiziksel rahatsızlık nedeni ile rol kısıtlaması" alt ölçeğinden daha düşük puanlar almışlardır (83.61 ± 23.54 ve 88.03 ± 21.52). Ruhsal sağlık dışındaki SF-36 alt ölçeklerinden alınan puanlar ile Üİ şiddeti arasında negatif korelasyon bulunmuştur (r= -0.27 to -0.37; hepsi için p< 0.001). Yaş artışının da SF-36 alt ölçekleri puanları düşüşü ile zayıf düzeyde ilişkili olduğu bulunmuştur.

**Sonuç:** Ne yaş ne de Üİ şiddeti SF-36 yaşam kalitesi ölçeğindeki değişimleri açıklamamaktadır. İnkontinans şikayeti olan ve olmayan kadınlar arsında bir farklılık göstermesine rağmen, jenerik yaşam kalitesi ölçeği Üİ'ye bağlı değişimleri tespit etmede tek başına yeterli bulunmamıştır. Bu nedenle Üİ'de jenerik yaşam kalitesi ölçeklerinin hastalığa özel yaşam kalitesi ölçeği ile birlikte kullanılması daha uygun olacaktır.

**Anahtar Kelimeler:** Üriner inkontinans; yaşam kalitesi; yetişkin

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UI is a widespread health problem affecting the physical, psychological, social and economic well-being of individuals and their families.[1-13] Prevalence of female UI in Turkey was reported as 25.8%, 23.9% and 20.8%.[14-16]

Fear of lack of control and social embarrassment associated with the involuntary excretion of urine causes disruption to social and physical functioning (PF) of women.[3,14,15,17-19] Although it is not always possible to be aware of the extent of disruption UI may cause in a patient's daily life, self-perceived disease severity influences quality of life.[20]

The aim of the present study was to explore the association between quality of life measurements, presence of UI symptoms and UI severity among a random sample of adult Turkish women. We hypothesized that the quality of life was poorer for women with more severe UI, defined by self-reported UI episodes and amount of urine loss.

## Material and Methods

The total number of primary health care centers (PHCs) in the city center of Sakarya is 34 and in the peripheral suburbs 56, where a total of 122.360 women over the age of 20 years are registered. Out of these PHCs, three central and three peripherals were randomly selected for the study. In these selected PHCs there were a total of 32.632 registered women over the age of 20 years (15.070 central, 17.562 peripheral). According to these numbers, a representative sample size of 597 women was calculated with a 5% significance level and 2% deviation. A predicted drop-out rate of 10% was added and finally 650 women took part in the study after their verbal informed consent.

The participants received a comprehensive questionnaire consisting of two parts, with the first part investigating health aspects, and the second part including specific questions on incontinence. In this section general functional status and well-being were assessed using the Medical Outcomes Study Short-Form 36 (SF-36) Health Status Survey, Turkish version. The SF-36 is a generic instrument to measure quality of life. It consists of 36 questions focusing on eight domains: PF, role physical (RP), bodily pain (BP) general health (GH), vitality (VT), social functioning (SF), role emotional (RE) and mental health (MH). Each domain then are linearly transformed into a subscale from 0 to 100, with higher scores representing better quality of health status or functioning.[21] The validity and reliability of Turkish version were analyzed and the scale is used in many studies.[22-28]

The participants completed the second part, if they affirmatively answered the question about any kind of involuntary loss of urine. UI was defined as any leakage of urine. Frequency of leakage (1= Less than once a month, 2= One or several times a month, 3= One or several times a week, 4= Every day and/or night), amount of leakage each time (1= Drops or little, 2= More), and circumstance of leakage (coughing, sneezing, laughing, on effort/physical exertion, during sexual intercourse, washing hands, with a sudden and strong urge to void) were categorized.

A severity index developed by Sandvick et al. was used to characterize the degree of incontinence.[29] The index is calculated by multiplying the reported frequency by the amount of leakage. The resulting index value (0 to 8) is further categorized into dry (0), slight (1 and 2), moderate (3 and 4), and severe (6 to 8). The severity index was validated against a 48 hour "pad weighing" test, and it was also validated by Hanley et al. [30,31]

If the woman declared complaint of involuntary excretion of urine on effort or exertion, or on sneezing or coughing without urge to go to the toilet, stress incontinence was defined. Urge incontinence was defined as the complaint of involuntary leakage of urine accompanied by or immediately preceded by urgency. If both complaints were answered affirmatively, mixed incontinence was defined.[32]

Statistical analysis

The potential relationship of each factor with UI was analysed. Descriptive data were expressed as mean (median, standard deviation (SD)) or percent. Non-parametric data were estimated using the chi-square test and parametric data with t-test or ANOVA. A p value of $<0.05$ was considered to be statistically significant. Multiple regression analysis was used to study the relationships between age, UI severity and SF-36 quality of life domain subscale scores.

The population was classified into those aged ≤30 and >30 years, this threshold being the median age of the study population.

## Results

The mean (median, SD) age of the study population was 33.2 (30.0, 10.6) years. A total of 106 (16.4%) women reported UI symptoms (Stress UI 20.8% (n= 22), Urge UI 17.9% (n= 19), mixed UI 61.3% (n= 65)).

The distribution of SF-36 subscale scores of women with UI symptoms and otherwise normal women are summarized in Table 1.

Women over the age of 30 years reported more impairment on domain subscale of RP compared to their "younger" counterparts (83.61 ± 23.54 vs 88.03 ± 21.52). The differences of means of the other domain subscales by age groups were not significant. Analysis displayed correlation between age and all SF-36 domain subscale scores, except for MH (Table 2).

There was a negative correlation between the UI severity index and all SF-36 subscale scores (r between -0.27 and -0.37, p< 0.001 for all) except for MH (r= -0.08, p= 0.06). The effects of severity on SF-36 subscale scores are displayed in Table 3.

Advanced age and increasing UI severity were associated with significant impairment on all SF-36 domain subscales (p< 0.001, for all) (Table 4).

## Discussion

The overall prevalence of UI in the present study was 16.4%. Community based studies report prevalence rates ranging from 4.8% to 58.4%.[10] Melville et al., in a study of 6.000 women aged 30-90 years, reported a prevalence of 42%, 28% for the youngest decade and 55% for the oldest decade.[33] Turkish population based studies reported female UI prevalence as 20.8%, 23.9%, and 25.8%.[14-16]

A relationship between aging and quality of life measurements was demonstrated in this study, except for MH domain. This relationship, due to

**Table 1.** Distribution of Short-Form 36 quality of life questionnaire mean domain subscale scores by presence of urinary incontinence symptoms.

| | Urinary Incontinence Symptom | | |
|---|---|---|---|
| **SF-36 domain subscales** | **Positive (n= 106)** | **Negative (n= 544)** | **p value** |
| Physical functioning | 73.77 (22.92) | 91.52 (16.02) | < 0.001 |
| Role physical | 66.67 (26.05) | 89.41 (20.00) | < 0.001 |
| Bodily pain | 55.71 (26.82) | 75.85 (23.23) | < 0.001 |
| General health | 46.20 (18.40) | 57.17 (14.56) | < 0.001 |
| Vitality | 49.52 (17.52) | 58.48 (14.22) | < 0.001 |
| Social functioning | 70.09 (24.06) | 77.29 (19.50) | 0.004 |
| Role emotional | 75.93 (22.64) | 93.63 (15.49) | < 0.001 |
| Mental health | 64.11 (15.57) | 66.51 (13.96) | 0.112 |

Results are expressed as mean (standard deviation).

**Table 2.** Short-Form 36 quality of life questionnaire mean domain scores by urinary incontinence severity index.

| | | **Physical functioning** | **Role physical** | **Role emotional** | **Social functioning** | **Mental health** | **Energy vitality** | **Pain** |
|---|---|---|---|---|---|---|---|---|
| AGE | Pearson correlation | -.192** | -.185** | -.116** | -.077* | .030 | -.105** | -.086* |
| | p value | < 0.001 | < 0.001 | < 0.001 | 0.048 | 0.45 | < 0.001 | 0.03 |

*Correlation is significant at the 0.05 level (2-tailed),
**Correlation is significant at the 0.01 level (2-taile).

**Table 3.** Short-Form 36 quality of life questionnaire mean domain scores by urinary incontinence severity index.

| SF-36 domain subscales | Severity | Severity | Mean | Standart deviation | p value |
|---|---|---|---|---|---|
| | | Slight | 76.20 | 22.74 | < 0.001 |
| | Dry | Moderate | 76.67 | 21.41 | < 0.001 |
| | | Severe | 70.11 | 24.13 | < 0.001 |
| Physical Functioning | | Dry | 91.52 | 16.02 | < 0.001 |
| | Slight | Moderate | 76.67 | 21.41 | 0.91 |
| | | Severe | 70.11 | 21.41 | 0.16 |
| | Moderate | Severe | 70.11 | 21.41 | 0.09 |
| | | Slight | 65.33 | 30.96 | < 0.001 |
| | Dry | Moderate | 71.29 | 21.40 | < 0.001 |
| | | Severe | 63.70 | 26.54 | < 0.001 |
| Role Physical | | Dry | 89.41 | 20.00 | < 0.001 |
| | Slight | Moderate | 71.29 | 21.40 | 0.28 |
| | | Severe | 63.70 | 26.54 | 0.76 |
| | Moderate | Severe | 63.70 | 26.54 | 0.11 |
| | | Slight | 85.63 | 17.38 | 0.02 |
| | Dry | Moderate | 72.94 | 24.88 | < 0.001 |
| | | Severe | 72.92 | 22.28 | < 0.001 |
| Role Emotional | | Dry | 93.63 | 15.49 | 0.02 |
| | Slight | Moderate | 72.94 | 24.88 | 0.004 |
| | | Severe | 72.92 | 22.28 | 0.002 |
| | Moderate | Severe | 72.92 | 22.28 | 0.99 |
| | | Slight | 79.56 | 21.19 | 0.58 |
| | Dry | Moderate | 69.14 | 25.49 | 0.02 |
| | | Severe | 65.58 | 23.38 | < .001 |
| Social Functioning | | Dry | 77.29 | 19.50 | 0.58 |
| | Slight | Moderate | 69.14 | 25.49 | 0.05 |
| | | Severe | 65.58 | 23.38 | 0.006 |
| | Moderate | Severe | 65.58 | 23.38 | 0.43 |
| | | Slight | 67.52 | 15.42 | 0.73 |
| | Dry | Moderate | 63.11 | 15.48 | 0.17 |
| | | Severe | 63.02 | 15.79 | 0.11 |
| Mental Health | | Dry | 66.51 | 13.96 | 0.73 |
| | Slight | Moderate | 63.11 | 15.48 | 0.24 |
| | | Severe | 63.02 | 15.79 | 0.21 |
| | Moderate | Severe | 63.02 | 15.79 | 0.99 |
| | | Slight | 53.80 | 14.81 | 0.12 |
| | Dry | Moderate | 50.97 | 14.92 | 0.003 |
| | | Severe | 45.99 | 20.27 | < 0.001 |
| Energy Vitality | | Dry | 58.48 | 14.22 | 0.12 |
| | Slight | Moderate | 50.97 | 14.92 | 0.46 |
| | | Severe | 45.99 | 20.27 | 0.03 |
| | Moderate | Severe | 45.99 | 20.27 | 0.13 |
| | | Slight | 52.89 | 28.19 | < 0.001 |
| | Dry | Moderate | 57.35 | 27.49 | < 0.001 |
| | | Severe | 55.96 | 25.98 | < 0.001 |
| Pain | | Dry | 75.85 | 23.23 | < 0.001 |
| | Slight | Moderate | 57.35 | 27.49 | 0.47 |
| | | Severe | 55.96 | 25.98 | 0.61 |
| | Moderate | Severe | 55.96 | 25.98 | 0.79 |

the correlation coefficients, was negligible and was in accordance with those reported by Hagglund et al.[17]

In all domains of SF-36 (except for MH) women with UI symptoms had lower scores than women without UI symptoms. This was expected

**Table 4.** Multiple regression analysis of the Shot-Form 36 quality of life questionnaire by age and urinary incontinance severity.

| SF-36 domain | Constant | Severity, per score (p value) | Age, per year (p value) | Adjusted $R^2$ |
|---|---|---|---|---|
| Physical Functioning | 95.50 | -2.97 (< 0.001) | -0.14 (< 0.001) | 0.13 |
| Role Physical | 93.81 | -3.56 (< 0.001) | -0.16 (< 0.001) | 0.12 |
| Role Emotional | 92.69 | -3.28 (< 0.001) | 0.02 (< 0.001) | 0.12 |
| Social Functioning | 78.67 | -1.69 (< 0.001) | -0.04 (< 0.001) | 0.03 |
| Mental Health | 63.78 | -0.7 (< 0.001) | 0.09 (0.02) | 0.006 |
| Energy Vitality | 59.57 | -1.72 (< 0.001) | -0.04 (< 0.001) | 0.05 |
| Pain | 74.81 | -3.18 (< 0.001) | 0.004 (< 0.001) | 0.06 |

due to lack of control and social embarrassment and is in keeping with other studies.[19,34-36]

Oh et al. found that quality of life was significantly related to subjectively perceived severity, type of UI, and frequency of UI.[20] In their study, the number of clinical visits was not associated with self-perceived disease severity. The results of the present study demonstrated that there was an association between the UI severity index and quality of life, but this association was low or moderate considering the correlation coefficients.

The results of this study showed that aging and UI severity caused significant deterioration in all aspects of quality of life. The small adjusted R squares in the regression models and small correlation coefficients suggest that a large proportion of the variance in the changes of quality of life score has yet to be accounted for. This implies that other significant but yet undetermined factors must contribute to the quality of life changes in women with UI. Another potential reason might be the lack of sensitivity of generic quality of life questionnaires as they adopt a broad approach assessing quality of life domains they may not distinguish the impact of UI related changes.

In conclusion, we found that aging and UI severity impaired quality of life but left a large proportion to be explained. Generic quality of life questionnaires are not solely enough to determine the changes due to UI, although differences in quality of life between incontinent women and controls were shown; thus, they should better be used along with a disease-specific quality of life questionnaire.

## REFERENCES


1. Ma SS. The prevalence of adult female urinary incontinence in Hong Kong Chinese. Int Urogynecol J Pelvic Floor Dysfunct 1997;8:327-31.
2. Lionis C, Vlachonikolis L, Bathianaki M, Daskalopoulos G, Anifantaki S, Cranidis A. Urinary incontinence, the hidden health problem of Cretan women: Report from a primary care survey in Greece. 1: Women Health 2000;31:59-66.
3. Araki I, Beppu M, Kajiwara M, et al. Prevalence and impact on generic quality of life of urinary incontinence in Japanese working women: Assessment by ICI questionnaire and SF-36 Health Survey.
4. Bortolotti A, Bernardini B, Colli E, et al. Prevalence and risk factors for urinary incontinence in Italy. Eur Urol 2000;37:30-5.
5. Melville JL, Katon W, Delaney K, Newton K. Urinary incontinence in US women: A population-based study. Arch Intern Med 2005;165:537-42.
6. Hagglund D, Olsson H, Leppert J. Urinary incontinence: An unexpected large problem among young females. Results from a population-based study. Fam Pract 1999;16:506-9.
7. Chen GD, Lin TL, Hu SW, Chen YC, Lin LY. Prevalence and correlation of urinary incontinence and overactive bladder in Taiwanese women. Neurourol Urodyn 2003;22:109-17.
8. Avellanet M, Fiter M, Cirera E, Coll M. Prevalence of urinary incontinence in Andorra: Impact on women's health. BMC Womens Health 2003;3:5.
9. Simeonova Z, Milsom I, Kullendorff AM, Molander U, Bengtsson C. The prevalence of urinary incontinence and its influence on the quality of life in women from an urban Swedish population. Acta Obstet Gynecol Scand 1999;78:546-51
10. Minassian VA, Drutz HP, Al-Badr A. Urinary incontinence as a worldwide problem. Int J Gynaecol Obstet 2003;82:327-38.

11. Zhang W, Song Y, He X, et al. Prevalence and risk factors of lower urinary tract symptoms in Fuzhou Chinese women. Eur Urol 2005;48:309-13.
12. Andersson G, Johansson JE, Garpenholt O, Nilsson K. Urinary incontinence--prevalence, impact on daily living and desire for treatment: a population-based study. Scand J Urol Nephrol 2004;38:125-30.
13. Brieger GM, Yip SK, Hin LY, Chung TK. The prevalence of urinary dysfunction in Hong Kong Chinese women. Obstet Gynecol 1996;88:1041-4.
14. Ozerdogan N, Beji NK, Yalcin O. Urinary incontinence: Its prevalence, risk factors and effects on the quality of life of women living in a region of Turkey. Gynecol Obstet Invest 2004;58:145-50.
15. Kocak I, Okyay P, Dundar M, Erol H, Beser E. Female urinary incontinence in the west of Turkey: Prevalence, risk factors and impact on quality of life. Eur Urol 2005;48:634-41.
16. Maral I, Ozkardes H, Peskircioglu L, Bumin MA. Prevalence of stress urinary incontinence in both sexes at or after age 15 years: A cross-sectional study. J Urol 2001;165:408-12.
17. Hagglund D, Walker-Engstrom ML, Larsson G, Leppert J. Quality of life and seeking help in women with urinary incontinence. Acta Obstet Gynecol Scand 2001;80: 1051-5.
18. Lenderking WR, Nackley JF, Anderson RB, Testa MA. A review of the quality-of-life aspects of urinary urge incontinence. Pharmacoeconomics 1996;9:11-23.
19. Bunyavejchevin S. Urinary symptoms and quality of life changes in Thai women with overactive bladder after tolterodine treatment. J Med Assoc Thai 2005;88:1497-501.
20. Oh SJ, Hong SK, Son H, Paick JS, Ku JH. Quality of life and disease severity in Korean women with stress urinary incontinence. Urology 2005;66:69-73.
21. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. Med Care 1992;30:473-83.
22. Pinar R. Sağlık araştırmalarında yeni bir kavram, yaşam kalitesi-bir yaşam kalitesi ölçeğinin kronik hastalarda geçerlik ve güvenirliğinin incelenmesi. Hemşirelik Bülteni 1995;9:85-95.
23. Pinar R. Reliability and construct validity of the SF-36 in Turkish cancer patients. Qual Life Res 2005;14: 259-64.
24. Mumcu G, Inanc N, Ergun T, et al. Oral health related quality of life is affected by disease activity in Behcet's disease. Oral Dis 2006;12:145-51.
25. Acaray A, Pinar R. Quality of life in Turkish haemodialysis patients. Int Urol Nephrol 2005;37:595-602.
26. Eker L, Tuzun EH. An evaluation of quality of life of mothers of children with cerebral palsy. Disabil Rehabil 2004;26:1354-9.
27. Yilmaz B, Goktepe AS, Alaca R, Mohur H, Kayar AH. Comparison of a generic and a disease specific quality of life scale to assess a comprehensive spa therapy program for knee osteoarthritis. Joint Bone Spine 2004;71:563-6.
28. Kocyigit H, Gulseren S, Erol A, Hizli N, Memis A. The reliability and validity of the Turkish version of Quality of Life Questionnaire of the European Foundation for Osteoporosis (QUALEFFO). Clin Rheumatol 2003;22:18-23.
29. Sandvik H, Hunskaar S, Seim A, Hermstad R, Vanvik A, Bratt H. Validation of a severity index in female urinary incontinence and its implementation in an epidemiological survey. J Epidemiol Community Health 1993;47:497-9.
30. Sandvik H, Seim A, Vanvik A, Hunskaar S. A severity index for epidemiological surveys of female urinary incontinence: comparison with 48-hour pad-weighing tests. Neurourol Urodyn 2000;19:137-45.
31. Hanley J, Capewell A, Hagen S. Validity study of the severity index, a simple measure of urinary incontinence in women. BMJ 2001;322:1096-7.
32. Messelink B, Benson T, Berghmans B, et al. Standardization of terminology of pelvic floor muscle function and dysfunction: Report from the pelvic floor clinical assessment group of the International Continence Society. Neurourol Urodyn 2005;24:374-80.
33. Melville JL, Delaney K, Newton K, Katon W. Incontinence severity and major depression in incontinent women. Obstet Gynecol 2005;106:585-92.
34. Hagglund D, Walker-Engstrom ML, Larsson G, Leppert J. Changes in urinary incontinence and quality of life after four years. A population-based study of women aged 22-50 years. Scand J Prim Health Care 2004;22:112-7.
35. Margalith I, Gillon G, Gordon D. Urinary incontinence in women under 65: Quality of life, stress related to incontinence and patterns of seeking health care. Qual Life Res 2004;13:1381-90.
36. 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):S103-11.