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Prevalence of Lower Urinary Tract Symptoms in Men Over 40 Years: A Cross-Sectional Study in Samsun

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Aim: Lower urinary tract symptoms (LUTS) are a common problem in ageing men. The aim of this study was to estimate the prevalence of LUTS, as measured by the International Prostate Symptom Score (IPSS), and to establish the relationship between the IPSS and quality of life (QoL) in different age groups of men over 40 years old living in Samsun city center in northern Turkey.

Materials and Methods: In all, 1860 men aged over 40 years were included in this cross-sectional study. The Turkish version of the IPSS was applied to all participants using face-to-face interview.

Results: The median IPSS and QoL were 3 (1-9) and 1 (0-3), and increased from 1.0 (0-4) and 0.0 (0-1) in the fifth decade to 18.0 (12-26.5) and 4.0 (3-5) in those over 80, respectively. There were statistically significant differences between the age groups in both IPSS and QoL ($P < 0.01$). Of the participants, 81.3% had at least one symptom, the most prevalent of which was nocturia (71.7%). Of the respondents, 29.6% had moderate-to-severe LUTS as measured by the IPSS, and the increase in the prevalence of moderate-to-severe symptoms with age was statistically important ($P < 0.001$). Nocturia was found to be the strongest predictor of QoL ($r^2 = 0.50$, $P < 0.001$).

Conclusions: The prevalence of LUTS in Turkish elderly men is fairly high and increases with age. This finding must be considered when resources are planned for medical care. On the other hand, it seems that increased public awareness is needed to combat the adverse effects of LUTS on QoL.

Key Words: Ageing men, IPSS, LUTS

Kırk Yaş Üstü Erkeklerde Alt Üriner Sistem Semptom Sıklığı: Samsun'da Kesitsel Bir Çalışma

Amacı: Alt üriner sistem semptomları (AÜSS) yaşlı erkeklerde sık görülen sorunlardır. Bu çalışmanın amacı Uluslararası Prostat Semptom Skoru (IPSS)'ni kullanarak, Türkiye'nin kuzey illerinden Samsun'da yaşayan 40 yaş üstü erkeklerdeki AÜSS sıklığını saptamak ve IPSS ile yaşam kalitesi (QoL) arasındaki ilişkiyi belirlemektir.

Yöntem ve Gereç: Kesitsel tipteki bu çalışmaya 40 yaş üstünde 1860 erkek katılmış ve katılımcılara IPSS'nun Türkçe formu yüz yüze anket yöntemiyle uygulanmıştır.

Bulgular: IPSS ve yaşam kalitesi ölçeklerinin skor ortancaları tüm grupta sırasıyla 3 (1-9) ve 1 (0-3) bulunmuştur. Her iki ölçekten alınan skor ortancaları 40-49 yaş grubunda sırasıyla 1.0 (0-4) ve 0.0 (0-1) iken, 80 yaş ve üzerindeki katılımcılarda 18.0 (12-26.5) ve 4.0 (3-5)'e yükselmiştir. Yaş grupları arasında IPSS ve QoL skorları açısından istatistiksel olarak anlamlı fark bulunmuştur ($P < 0.01$). Katılımcıların %81.3'ünün en az bir semptomu olduğu ve en sık bildirilen semptomun da noktüri olduğu saptanmıştır (%71.7). IPSS skoruna göre değerlendirildiğinde katılımcıların %29.6'sının orta derecede ya da şiddetli AÜSS'unun olduğu ve bu semptomların sıklığının yaşla birlikte istatistiksel olarak anlamlı şekilde arttığı bulunmuştur. ($P < 0.001$). Noktüri yaşam kalitesinin en güçlü göstergesi olarak bulunmuştur ($r^2 = 0.50$, $P < 0.001$).

Sonuç: Bu çalışmada AÜSS'lerinin yaşlı Türk erkeklerindeki sıklığının oldukça yüksek olduğu ve yaşla birlikte arttığı bulunmuştur. Sonuç olarak sağlık hizmetleri kaynak planlaması yapılırken bu bulguların göz önünde bulundurulmasının, AÜSS'lerinin yaşam kalitesine olan olumsuz etkileriyle mücadele edebilmek için toplumun farkındalığının artırılmasının gerektiği düşünülmektedir.

Anahtar Sözcükler: Yaşlı erkek, IPSS, Alt üriner sistem semptomları

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Introduction

Lower urinary tract symptoms (LUTS), such as urinary frequency and nocturia, are a common problem in ageing men, and with the increasing mean age of the general population, the number of individuals with LUTS is likely to increase. The term benign prostatic hyperplasia (BPH) has traditionally been used to describe a constellation of obstructive and irritative voiding symptoms that occur in men as they age. Such symptoms may result from various causes, including prostatic enlargement, and thus the term LUTS has replaced BPH to describe this symptom complex (1). The International Prostate Symptom Score (IPSS) is a recommended method to estimate the prevalence and severity of LUTS (2).

Estimates of the prevalence of LUTS in the male population vary considerably depending upon the definitions and criteria adopted by investigators. According to two recent multinational population-based studies, the prevalence of LUTS and/or BPH is 3-10% in men aged 40-49 years, rising to 24--29% in those aged 70-80 years (3,4). There is only one reported community-based prevalence study of LUTS in Turkey, in which the prevalence of moderate-to-severe LUTS was found as 24.9% in men aged over 40 years (5).

The aim of this study was to estimate the prevalence of LUTS, as measured by the IPSS, and to establish the relationship between the IPSS and quality of life (QoL) in different age groups of men 40-89 years old living in Samsun city center in northern Turkey.

Materials and Methods

A cross-sectional study was conducted between 1 February and 31 March 2005, and the database of the Health Directorate of Samsun province was used. According to the database, ~76000 persons aged ≥ 40 years were living throughout the city center. From this database, an age-stratified sample of 2326 men was randomly selected and a total of 1860 (79.9%) men participated in the study.

Together with a questionnaire including questions pertaining to the respondents' demographic

characteristics, the Turkish version of the IPSS validated by the Turkish Urological Association was applied to all participants by face-to-face interview. The IPSS comprises seven LUTS questions (incomplete emptying, frequency, intermittency, urgency, poor flow, hesitancy and nocturia) and one QoL question. Each symptom was scored as a value of 0-5 (0, not at all; 1, less than one time in five; 2, less than half the time; 3, about half the time; 4, more than half the time; and 5, almost always during the preceding month). A symptom score of 0-35 was calculated by adding the scores the patient gave to each of the seven symptoms. An irritative symptom score was obtained by adding the frequency, urgency and nocturia values, while an obstructive score was calculated by adding the scores of incomplete emptying, intermittency, weak stream and straining symptoms. The symptom scores were then categorized into four levels of severity from 'none' to 'severe' (0, none; 1-7, mild; 8-19, moderate; and 20-35, severe).

The QoL question was utilized to score the overall discomfort to patients caused by their current urinary symptoms, from 0 to 6 (0, delighted; 1, pleased; 2, mostly satisfied; 3, mixed [equally satisfied and dissatisfied]; 4, mostly dissatisfied; 5, unhappy; and 6, terrible).

The relationship between the IPSS and age was modelled with linear regression analysis. For the non-linear relation between age and the QoL score, since it is an ordinal variable, and between IPSS and QoL score, the Spearman's non-parametric test was used. Stepwise multiple regression analysis was used to determine which symptom was the strongest predictor of QoL. For the values not normally distributed, the difference in IPSS and QoL between the age groups was investigated by using Kruskal Wallis analyses of variance followed by Bonferroni adjusted Mann-Whitney U test. Chi-square for trend analysis was used for the difference in frequency of symptoms between the age groups. Statistical significance was defined as a probability of less than 0.05 except for the Bonferroni adjusted Mann-Whitney U test, where a value <0.01 was used for significance.

Results

The mean age of the respondents was 53.8 ± 10.0 years (range 40-89). The median IPSS and QoL were 3 (1-9) and 1 (0-3), and increased from 1.0 (0-4) and 0.0 (0-1) in the fifth decade to 18.0 (12-26.5) and 4.0 (3-5) in those over 80, respectively. There were statistically significant differences in both IPSS and QoL between the age groups ($P < 0.01$). There were statistically significant differences between the age groups, except between the 70-79 and ≥ 80 age groups, in severity score for all of the symptoms, and the severity of all symptoms significantly increased with age ($P < 0.001$). The only statistically significant difference between the 70-79 and ≥ 80 age groups was found in the severity score of nocturia ($P < 0.01$) (Table 1).

The increase with age was statistically significant and there were moderate correlations between IPSS and age ($r = 0.54$, $r^2 = 0.29$, $P < 0.001$) and between QoL and age ($r_s = 0.48$, $P < 0.001$). There was also a strong correlation between the IPSS and QoL scores ($r_s = 0.82$, $P < 0.001$).

Of the participants, 81.3% had at least one symptom. The frequency of having at least one symptom increased from 68.6% in the fifth decade to 100.0% in those over 80. The frequency was significantly lower in the fifth decade than in the others ($X^2 = 145.1$, $df = 1$, $P < 0.001$). The most prevalent symptom was nocturia (71.7%), followed by urination frequency (50.8%), incomplete emptying of the bladder (44.3%), hesitancy of urination (41.7%), poor urine flow (41.6%), intermittency of urination (37.5%) and urgency of urination (27.8%).

All symptoms were moderately correlated with each other ($r_s = 0.51$ - 0.69), except urgency and nocturia. Among the seven symptoms in the IPSS, the correlation with QoL was better with incomplete emptying ($r_s = 0.70$), followed by poor flow ($r_s = 0.69$) (Table 2).

Stepwise multiple regression analysis of the seven symptoms in the IPSS showed nocturia to be the strongest predictor of QoL ($R^2 = 0.50$, $P < 0.001$).

If a total score of ≥ 8 is regarded as symptomatic(6), 551 (29.6%) of the respondents had moderate-to-severe

Table 1. The severity scores of each symptom in the IPSS per age group [median (25-75%)].

| Age Group (Years) | Incomplete Emptying | Frequency | Intermittency | Urgency | Poor Flow | Hesitancy | Nocturia | Total | QoL |
|-------------------|---------------------|-----------|---------------|-----------|-----------|-------------|----------|--------------|---------|
| 40-49 | 0 (0-1) | 0 (0-1) | 0 (0-0) | 0 (0-0) | 0 (0-0) | 0 (0-1) | 1 (0-1) | 1 (1-4) | 0 (0-1) |
| 50-59 | 0 (0-1) | 1 (0-1) | 0 (0-1) | 0 (0-1) | 0 (0-1) | 0 (0-1) | 1 (1-2) | 4 (1-8) | 1 (0-3) |
| 60-69 | 1 (0-2) | 1 (0-2) | 1 (0-2) | 0 (0-2) | 1 (0-2) | 1 (0-2) | 2 (1-2) | 8 (4-14) | 2 (1-4) |
| 70-79 | 2 (0-3.25) | 2 (1-4) | 2 (0-3) | 1 (0-3) | 2 (1-3) | 1 (0-3) | 2 (2-3) | 13 (7-21) | 3 (2-4) |
| ≥ 80 | 3 (2-4.5) | 3 (1.5-5) | 3 (2-4) | 2 (0.5-4) | 3 (1-5) | 3 (0.5-4.5) | 3 (2-4) | 18 (12-26.5) | 4 (3-5) |
| P | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

Table 2. Spearman correlations between LUTS and QoL in the study group.

| | Incomplete Emptying | Frequency | Intermittency | Urgency | Poor Flow | Hesitancy | Nocturia | QoL |
|---------------------|---------------------|-----------|---------------|---------|-----------|-----------|----------|------|
| Incomplete Emptying | 1.00 | 0.69 | 0.62 | 0.54 | 0.65 | 0.63 | 0.54 | 0.70 |
| Frequency | | 1.00 | 0.60 | 0.53 | 0.62 | 0.57 | 0.57 | 0.68 |
| Intermittency | | | 1.00 | 0.60 | 0.67 | 0.63 | 0.51 | 0.64 |
| Urgency | | | | 1.00 | 0.58 | 0.57 | 0.48 | 0.58 |
| Poor Flow | | | | | 1.00 | 0.67 | 0.52 | 0.69 |
| Hesitancy | | | | | | 1.00 | 0.51 | 0.68 |
| Nocturia | | | | | | | 1.00 | 0.65 |

LUTS as measured by the IPSS and the increase in the prevalence of moderate-to-severe symptoms with age was statistically important ($\chi^2 = 405.8$, $df = 1$, $P < 0.001$) (Table 3).

Discussion

The present study provides a general picture of the symptomatology profile of men over 40 years old in Samsun.

In our study, while 18.7% of the participants were asymptomatic, the rest (81.3%) had at least one symptom. In the previous studies, the frequency of asymptomatic participants varied between 9 and 18.8 (5,7-11). Andersson et al. (12) reported a ratio of 83% with at least one symptom.

With respect to the frequency of symptoms, the three most frequent symptoms were nocturia (71.7%), urination frequency (50.8%) and incomplete emptying of the bladder (44.3%). While Perrin (13) reported weak urinary stream, frequency and nocturia as the three most frequent symptoms, Eckhardt (14) reported weak urinary stream, frequency and urgency. On the other hand, Aki et al. (5) reported similar results with our study for the three most frequent symptoms. The prevalence of nocturia was similar in almost all of the series (5,7,15-18).

In this study, incomplete emptying ($r_s = 0.70$) was found to be the best correlated with the QoL. Arvind et al. (18) reported that weak stream ($r = 0.52$) was the best correlated symptom with QoL in the IPSS. This difference may be attributed to the differences in

perception of symptoms and evaluation of their effects on the QoL among the participants of the two studies.

The prevalence of moderate-to-severe symptoms (IPSS ≥ 8) found in this study (29.6%) was in the range of prevalence (14-56%) found in different countries(12,19,20) and similar with the prevalence found in a previous study conducted in Turkey (24.9%) (5). The prevalence of moderate-to-severe LUTS according to age group is in accordance with the literature for the 50-59 age group (28.2%), but was higher in the 60-69 (52.9%) and 70-79 (72.4%) age groups (10,11,15,16). The higher symptom prevalence in the present study group may be a result of a low tendency to seek treatment or may just reflect the racial differences in IPSS.

Although a high prevalence of men with moderate-to-severe LUTS and high correlation between the QoL and total IPSS were found in the present study, only 43.7% of symptomatic participants (IPSS ≥ 8) expressed dissatisfaction (fairly bad, very bad or terrible perception) about spending the rest of their lives with their current urinary condition. This finding may be a reflection of cultural habits of Turkish elders who regard LUTS as a part of normal ageing.

In conclusion, the results of this survey showed that the prevalence of LUTS in Turkish elderly men is fairly high, increases with age and has an impact on QoL that is not negligible. The increasing prevalence of LUTS must be considered when resources are planned for medical care and, as LUTS adversely affect QoL, increased public awareness is needed to combat a problem facing the growing number of elderly men in the population.

Table 3. Overall and age-specific prevalence of LUTS.

| Age Group (Years) | None | | Mild | | Moderate | | Severe | | TOTAL | |
|-------------------|------|------|------|------|----------|------|--------|------|-------|-------|
| | n | %* | n | %* | n | %* | n | %* | n | %** |
| 40-49 | 244 | 31.4 | 453 | 58.4 | 72 | 9.3 | 7 | 0.9 | 776 | 41.7 |
| 50-59 | 80 | 14.2 | 325 | 57.6 | 137 | 24.3 | 22 | 3.9 | 564 | 30.3 |
| 60-69 | 20 | 5.6 | 148 | 41.5 | 140 | 39.2 | 49 | 13.7 | 357 | 19.2 |
| 70-79 | 3 | 2.2 | 34 | 25.4 | 61 | 45.5 | 36 | 26.9 | 134 | 7.2 |
| ≥ 80 | - | - | 2 | 6.9 | 14 | 48.3 | 13 | 44.8 | 29 | 1.6 |
| TOTAL | 347 | 18.7 | 962 | 51.7 | 424 | 22.8 | 127 | 6.8 | 1860 | 100.0 |

*Row percent

**Column percent

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