Population-level and Individual-level Bother of Lower Urinary Tract Symptoms Among 30- to 80-year-old Men

Antti Pöyhönen, Anssi Auvinen, Jukka T. Häkkinen, Juha Koskimäki, and Teuvo L. J. Tammela

OBJECTIVE To estimate the bother using both population- and individual-level bother of lower urinary tract symptoms (LUTS) across a wide age range among men.

MATERIALS AND METHODS A total of 7470 men aged 30-80 years were approached using a postal questionnaire in 2004. The overall response was 58.7% (4384 respondents). The Danish Prostatic Symptom Score was used to evaluate bother of 12 LUTS. In the population-level analysis, prevalence of bother was calculated by relating the number of men with bother to the population size (instead of only affected men). To evaluate the bother at individual level, its prevalence among the men experiencing the symptom was assessed.

RESULTS In the population-level analysis, postmicturition dribble was the most common cause of bother among 30- and 40-year-old men, as 25% of the men experienced small bother and 4.5% had moderate to major bother. Men aged 70-80 years experienced the most bother from urgency followed closely by nocturia, with about 40% reporting small bother and roughly 20% moderate or major bother. When only symptomatic men were evaluated, incontinence symptoms, especially urge incontinence, were the most bothersome as more than 80% of the men with incontinence reported bother.

CONCLUSION At population level, the most bothersome symptom varied by age. Men aged 30-40 years experienced bother most commonly from postmicturition dribble. With increasing age, urgency and nocturia became the most bothersome symptoms by age 70-80 years. At individual level, incontinence symptoms were the most bothersome LUTS, with less influence by age. UROLOGY 95: 164–170, 2016. © 2016 Elsevier Inc.

Lower urinary tract symptoms (LUTS) constitute a commonly occurring set of partly overlapping conditions.[1,2] LUTS are regarded as a combination of storage, voiding, and postmicturition symptoms that tend to exacerbate with age, occur in a comparable fashion in both sexes, and involve several organs and physiological processes, not only to benign prostatic enlargement among men as previously thought.[3]

Bother of LUTS is much less well established than their prevalence. This is partly due to the fact that the majority of studies on LUTS have used the International Prostatic Symptom Score questionnaire, which does not cover bother of individual LUTS, unlike the Danish Prostatic Symptom Score (DAN-PSS-1) questionnaire. In clinical practice, bother is a more important factor than presence of symptom, when deciding about possible treatment.

We used our population-based Tampere Ageing Male Urological Study cohort to evaluate bother of various LUTS by age. Evaluation of bother was made using both population- and individual-level approach to bother of LUTS. This type of evaluation had been done once earlier in our knowledge, but earlier study used age-standardized approach.[4] We wanted to evaluate different age groups separately as LUTS appeared differently in different aged men.

Financial Disclosure: *Teuvo LJ Tammela is a paid consultant to Astellas, Amgen, and Jansen-Cilag. Anssi Auvinen received lecture fee from MSD and is a paid consultant to Epid Research Inc. The remaining authors declare that they have no relevant financial interests.*

From the Department of Urology, Central Finland Central Hospital, Jyväskylä, Finland; the School of Health Sciences, University of Tampere, Finland; the Hatanpää Hospital, Tampere, Finland; and the Department of Urology, Tampere University Hospital and University of Tampere, Finland

Address correspondence to: Antti Pöyhönen, M.D., Ph.D., Department of Urology, Central Finland Central Hospital, Keskussairaalantie 19, FI-40620 Jyväskylä, Finland. E-mail: antti.j.poyhonen@gmail.com

Submitted: March 12, 2016, accepted (with revisions): June 14, 2016

http://dx.doi.org/10.1016/j.urology.2016.06.023
0090-4295

MATERIALS AND METHODS

This analysis is based on the population-based Tampere Ageing Male Urological Study cohort study data from 2004.[5-7] Briefly, the first survey was conducted in 1994 among men aged 50, 60, or 70 at baseline who lived in Tampere or in 11 small surrounding communities, with the subjects identified from the Population Register Center. The questionnaire survey has thereafter been repeated every 5 years. In 2004, 3 younger cohorts (aged 30, 40, and 50 years at entry) were added.

Ten-page questionnaires were mailed to the men with a prepaid return envelope. After 3 months, a reminder was sent to nonresponders. For the 3 youngest age groups (30, 40, and 50 years at entry), a second reminder was used.

LUTS were evaluated using the DAN-PSS-1 questionnaire instrument in Finnish, validated by back-translation. It contains questions on 12 LUTS: hesitancy, straining, weak stream, and dysuria (voiding symptoms); increased daytime frequency, nocturia, urgency, urge incontinence, stress incontinence, and other incontinence (storage symptoms); feeling of incomplete emptying and postmicturition dribble (postmicturition symptoms). Occurrence of the symptoms was scaled to 4 options: never, rarely, often, or always. If a man reported a certain symptom, the bother it caused was evaluated using 4 response options: none, small, moderate, or major. The study questionnaire also elicited demographic and socioeconomic factors, as well as information concerning general health, medications, illnesses, and previous operations.

In population-level analysis, the proportion of men reporting bother caused by different LUTS was calculated, including also men without the symptom in the denominator. Thus, frequency of bother was presented as the proportion of men reporting bother in the entire study population. For determining the individual-level bother, the proportion of those reporting bother among symptomatic was calculated. In other words, asymptomatic men were excluded from the individual-level analysis. To simplify the presentation of results, 6 age groups were combined into young (30 and 40 years), middle-aged (50 and 60 years), and retired (70 and 80 years) men groups.

Statistical significance was assessed using a 2-sided chi-square test and a linear-by-linear test in SPSS (Statistical Package for Social Sciences) version 22.0.

The Tampere University Hospital Committee of Research Ethics approved the study protocol (tracking number #99050).

RESULTS

The overall response was 58.7% (4384 out of 7470 approached men returned the questionnaire). The lowest response was in the 30-year-olds, as 804 men (45.4%) responded. As the oldest age group had naturally diminished over the preceding 10 years, the size of the target population of 80-year-old men was only 432. However, participation was as high as 75.9% (328 men responding). Participation of the other age groups ranged 48.2%-78.2%. There were no statistically significant differences in demographic characteristics or LUTS between the questionnaire rounds (before and after reminders). Younger men were more educated and had fewer diseases than older men (Table 1).

Of the 12 urinary symptoms, urgency showed the highest overall prevalence (66%), followed by postmicturition

Table 1. Prevalence (%) of some demographic characteristics

	Age (Years)		
Characteristics	30 and 40	50 and 60	70 and 80
Education ($P < .001$)			
Elementary school	6.4	24.8	51.6
Intermediate stage	40.1	40.5	29.5
Collage	23.9	20.9	10.6
University	29.6	13.8	8.3
Occupational status ($P < .001$)			
White-collar worker	43.8	26.4	0.3
Blue-collar worker	38.7	31.6	0.9
Self-employed	7.5	7.6	0.4
Unemployed	7.4	9.7	0
Retired	1.8	24.7	98.4
Student	0.8	0	0
Marital status ($P < .001$)			
Married or cohabitant	69.9	74.0	75.5
Bachelor, divorced or widowed	30.1	26.0	24.5
Change of overall health in the past 5 years ($P < .001$)			
Worse	24.3	46.3	64.5
Same	66.5	48.2	31.3
Better	9.2	5.5	4.2
Previously diagnosed medical conditions and surgical procedures			
Coronary artery disease	0.1	4.5	22.8
Depression	9.5	10.2	6.2
Diabetes	1.7	7.3	13.8
Elevated blood pressure	11.5	34.4	45.0
Pulmonary disease	4.0	7.3	15.1
Radical prostatectomy	0	0.8	2.3
Surgery for benign prostatic hyperplasia	0	0.7	8.0