

## THE CORRELATION OF BLADDER DIARY AND PATIENT REPORTED OUTCOMES IN A POPULATION BASED SURVEY OF LOWER URINARY TRACT SYMPTOMS, OVERACTIVE BLADDER AND URINARY INCONTINENCE

### Hypothesis / aims of study

There have been several population based studies to assess the prevalence of lower urinary tract symptoms mostly using validated questionnaires and symptom scores. However none of those studies used the bladder diary as an objective measure. The aim of this study was to assess the associations between bladder diaries and LUTS patient reported outcomes.

### Study design, materials and methods

A population-based survey to assess the prevalence of LUTS, OAB and UI was conducted between May and October 2012 in Denizli, Turkey. A random sample of 2128 women and men aged  $\geq 18$  years was selected. Participants were requested to fill in a questionnaire including validated ICS definitions and ICIQ-SF. Additionally, a one-day bladder diary was given to each individual to fill in for a 24-hours period. The associations between the diary records and the outcomes of the questionnaires were investigated.

### Results

A total of 1555 (74%) individuals agreed to participate in the study and filled out the study questionnaires. Of these participants, 856 (55%) had bladder diaries completed accurately and returned. Among the participants who had thought to urinate frequently, 31% of men and 50.7% of women had pollakuria according to the questionnaires and 46.9% of men and 62.1% of women had pollakuria according to the bladder diary records. In this group, the bladder diary mean frequency was significantly higher than questionnaire frequency ( $8.65 \pm 3.47$  versus  $7.68 \pm 3.23$ ,  $P < 0.001$ ). In this group, also the rate of urinary incontinence recorded in bladder diaries was significantly higher than the infrequently urinating participants (21.4% vs. 10.3%,  $P < 0.001$ ). The bladder diary frequency was significantly correlated with the frequency in the questionnaires for women ( $P < 0.001$ ) however men overestimated their frequency of urinating. The frequency of UI in bladder diaries did not correlate with the responses to the questionnaires however a positive correlation was observed for the quantity of UI. Among the participants who reported to have stress UI, 15.9% recorded stress type and 10.8% recorded urge type leakage, and 73.3% did not record any leakage on the diary. For participants having urge UI according to the questionnaires, bladder diary records revealed 17.8% urge type and 12.1% stress type leakage while 70.1% did not record any leakage.

### Interpretation of results

Bladder diary is a useful tool and it is defined as the simplest form of urodynamics in functional urology (1-3). However, using bladder diaries in daily practice can sometimes be challenging and urologists avoid using bladder diaries frequently. Although participants in our study were trained by the site staff (primary care physicians and nurses) to fill in the diaries correctly, response rate was 55%. The perception of urinary frequency is different for men and women. When only questionnaires are used in clinical practice and investigations, the rate of frequency can be estimated lower than actual. Men tend to overestimate the frequency of urination. The rate and the type of UI reported in the bladder diaries do not correlate well with the responses to the questionnaires. This finding might partially be effected by the duration since the participants were requested to fill in a one-day bladder diary which should ideally include a 3-day period. However, this study was planned as a part of a "prevalence" study rather than a clinical trial.

### Concluding message

To our knowledge, this study is the first large scaled population based prevalence study including a bladder diary in addition to the validated questionnaires. Except a few LUTS and UI parameters, validated questionnaires correlated well with the bladder diaries.

### References

1. Honjo H, Kawauchi A, Ukimura O, Nakao M, Kitakoji H, Miki T. Analysis of bladder diary with urinary perception to assess overactive bladder symptoms in community-dwelling women. *Neurourol Urodyn.* 2009;28(8):982-5.
2. Daan NM, Schweitzer KJ, van der Vaart CH. Associations between subjective overactive bladder symptoms and objective parameters on bladder diary and filling cystometry. *Int Urogynecol J.* 2012 Nov;23(11):1619-24.
3. Bradley CS, Brown JS, Van Den Eeden SK, Schembri M, Ragins A, Thom DH. Urinary incontinence self-report questions: reproducibility and agreement with bladder diary. *Int Urogynecol J.* 2011 Dec;22(12):1565-71.

### Disclosures

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