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## THE RELATIONSHIP BETWEEN URINARY SYMPTOMS REPORTED IN A POSTAL QUESTIONNAIRE AND URODYNAMIC DIAGNOSIS

### Hypothesis / aims of study
To describe the relationship between symptoms reported in a self-completed postal questionnaire and urinary disorders based on urodynamic investigation.

### Study design, materials and methods
The study population was selected from women aged 40 years or over living in the community, who responded to a postal questionnaire on lower urinary tract symptoms. Participants who reported symptoms of any leakage (several times a month or more), frequency of micturition (hourly or more), nocturia (3 times a night or more), very strong or overwhelming urinary urgency several times a day, or lesser symptoms that had an impact on quality of life were invited to take part in a randomised controlled trial that compared the effectiveness of a nurse-led continence service with standard care from the participant's own general practitioner [1]. Following assessment and appropriate conservative interventions, women whose symptoms did not resolve were offered urodynamic investigation. Logistic regression models were used to examine the association between self-reported lower urinary tract symptoms, including storage, voiding and postmicturition symptoms, from the postal questionnaire with a urodynamic diagnosis of (i) detrusor overactivity (DO) and (ii) urodynamic stress incontinence (USI).

### Results
488 women completed urodynamic investigation; 29.1% (142/488) were found to have DO, 33.6% (164/488) USI, 20.7% (101/488) mixed incontinence and 16.6% (81/488) no urodynamic abnormality.
*USI:* In multivariate analysis, both SUI and UUI were significantly associated with a diagnosis of USI, SUI positively and UUI negatively. The reporting of SUI several times a month or more was significantly associated with a diagnosis of USI (OR = 2.00; 95% CI 1.10 to 3.63; p < 0.001). The probability of a diagnosis of USI was found to increase with increasing severity of the symptom of SUI as reported in the postal questionnaire. If UUI was reported several times a week or more, a diagnosis of USI was less likely (OR = 0.36; 95% CI 0.21 to 0.62; p < 0.001).
*DO:* Reporting of very strong or overwhelming urgency (OR = 1.93; 95% CI 1.09 to 3.41; p = 0.02), UUI several times a month or more (OR = 2.69; 95% CI 1.45 to 4.99; p < 0.001), and nocturia at three times a night (OR = 3.07; 95% CI 1.44 to 6.57; p = 0.03) were all significantly associated with diagnosis of DO. In addition, reporting SUI monthly or more often was associated with a reduced risk of being diagnosed with DO (OR = 0.47; 95% CI 0.27 to 0.83; p = 0.001).
The risk score model for USI predicted a diagnosis of USI with an estimated sensitivity of 76.9% and specificity of 56.3%. The model would correctly predict the diagnosis of USI in 67.8% of women (positive predictive value). The model would correctly identify those without USI 65.1% of the time (negative predictive value). For DO, the risk score model predicted a diagnosis of DO with a sensitivity and specificity of 63.1% and 65.1% respectively. This model would correctly predict the diagnosis of DO 63.1% of the time (positive predictive value). The negative predictive value of the model was 67.0%.

### Interpretation of results
We have identified the symptoms that are associated with each urodynamic diagnosis of USI and DO and how accurately these symptoms predict the diagnosis. These results are broadly consistent with those found in other studies [2,3]. This study has advantages over others because it used a postal questionnaire and therefore eliminated some of the bias inherent in traditional history taking. In addition, the study sample was drawn from a general population rather than from a clinic sample and although selected as described, a comparison of symptom distribution in the study sample compared to that in the general population demonstrated a similar profile. The limited accuracy of prediction of our models could be due

to the lack of discrimination between questions, overlapping of symptoms between USI and DO and shortcomings in the diagnostic accuracy.

## Concluding message
Urinary symptoms reported in a postal questionnaire are able to predict urodynamic diagnoses with moderate accuracy. These models may be useful tools with which to categorise urinary disorders for epidemiological study and, with further development, may be useful in primary care to aid decision-making regarding the allocation of conservative treatment.

## References
1. Development, implementation and evaluation of a new nurse-led continence service: a pilot study. J Clin Nurs 2000;9(4):566-73.
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