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# FREQUENCY VOLUME CHARTS AS TOOL TO STUDY SENSATION OF BLADDER FILLING.

## Hypothesis / aims of study

There is a general tendency to focus on accurately studying sensations of bladder filling during daily life in patients with an overactive bladder syndrome, as urgency is considered the most bothersome symptom in such patients. Traditionally, filling sensations have been studied during conventional cystometry, but the agreement with symptoms experienced during everyday life is often limited. Therefore frequency-volume charts (fv charts) are of interest as they evaluate bladder behaviour in more natural circumstances. However the use of fv charts to study filling sensations is still largely undocumented. In a selected group of healthy young female students, fv charts could be used to study sensations of bladder filling during daily activities (1). The actual study evaluates whether the more complicated sensation-related fv charts can also be used in an unselected group of healthy female volunteers around 50 years of age and presents normative data on sensation of bladder filling obtained from such fv charts.

## Study design, materials and methods

Through advertisement, an unselected group of 30 healthy female volunteers from different intellectual and social background, between 40 and 60 years old and without urological history were recruited. They were asked to fill out fv charts during normal daily activities for 3 days. They noted time and volume of each micturition and at these occasions scored the grade of perception of bladder fullness according to predefined grades (table 1). The instructions on the use of the fv charts were given orally and were also printed on the back of the charts.

Table 1

| | |
|---|---|
| 0 | No bladder sensation |
| 1 | Voiding can easily be delayed for more than 30-60 minutes |
| 2 | Voiding can only be delayed for 30 minutes |
| 3 | Voiding can only be delayed for 5 minutes |
| 4 | Immediate voiding is mandatory and/or fear of leakage |

## Results

Mean age of the women included was 48±6 years. All but one of the volunteers filled out the fv charts correctly. All other volunteers found the fv charts easy to use. During the 3 day study period, 595 voids were made by 29 volunteers (= 6.8 voids/24 hour). Further data are shown in table 2.

| Table 2 | | |
|---|---|---|
| Bladder Fullness | Volume voided (ml) Mean±SD | Number (%) |
| 0 | 141 ± 79 | 18.7 |
| 1 | 265 ± 126 | 48.2 |
| 2 | 346 ± 207 | 30.0 |
| 3 | 552 ± 224 | 3.1 |
| 4 | / | / |

The volume voided was positively correlated with the grade of bladder fullness ($p<0.001$), and was significantly different between different grades of bladder fullness ($p<0.001$). Grade 4, which resembles urgency was not reported by any of the healthy female volunteers.

**Interpretation of results**

Fv charts are a non-invasive tool to study bladder behaviour during daily life. Although the sensation-related charts used in this study are more complicated than conventional fv charts, they are easy to use by persons from different social and intellectual backgrounds. Furthermore by using these charts, sensations of bladder filling can be studied during normal daily activities, without the need for catheterization. In our group of healthy women, almost 80% of the voids are made based on filling sensations, which shows the importance of lower urinary tract sensation for normal bladder behaviour. It is interesting to note that none of the healthy volunteers perceived grade 4 (immediate voiding is mandatory and/or fear of leakage) during the 3 day study period. As grade 4 resembles urgency, this indicates that the sensation of urgency is an abnormal sensation.

**Concluding message**

Fv charts can be used as to uninvasively study sensations of bladder filling during daily life in persons from different social and intellectual backgrounds. Therefore they provide a valuable tool to evaluate bladder behaviour and sensory symptoms in patients. The data presented in this study can be used as normative data for studies that focus on female patients with lower urinary tract dysfunction between 40 and 60 years of age.

(1) Neurourol Urodyn (2003): 22(5), 409.