

Uroflowmetry Parameters and Curve Patterns in Female Volunteers from the Community and Clinical Practice Varied by Age, LUTS, & Perception of Bladder Health

The existing literature on uroflowmetry lacks reliable normative parameters and curve patterns in women

Hypothesis: Normative uroflow parameters and curve patterns in women will differ from established parameters in men, given differences in anatomy and the impact of childbirth (in some women)

Methods:

- The Validation of Bladder Health Instrument for Evaluation in Women (VIEW) study included community and clinical practice volunteers who completed self-reported LUTS and bladder health questionnaires and underwent non-invasive uroflowmetry
- Participants were excluded if they were pregnant, had a recent urinary tract infection, used an indwelling or intermittent catheter, had a neurogenic bladder, or had a uroflow voided volume of less than 50 mL
- Participants completed: The King's Health Questionnaire (KHQ), the Pelvic Floor Distress Inventory (PFDI), the Bristol Female Lower Urinary Tract Symptoms (BFLUTS), and the Global Bladder Health Scale.
- Quantitative uroflow parameters were extracted from printed reports after confirmation of accuracy.
- Qualitative curve patterns (continuous vs. intermittent flow; parabolic vs. skewed shape; fluctuating vs. smooth pattern; end-of-void dribble) were coded independently by two experts in uroflowmetry

Results:

- In 285 participants, older age was associated with lower Qmax and Qave, a right-skewed uroflow shape, and end-of-void dribbling (Figure 1, example uroflow curve patterns).

- Continuous, parabolic, and smooth uroflow curve patterns were more common with better bladder health
- Qmax and Qave were also lower in participants with storage LUTS (Qmax 26.8 vs. 36.9 mL/s, Qave 13.7 vs. 18.8 mL/s; $p < 0.05$) and both voiding and storage LUTS (Qmax 26.3 vs. 36.9 mL/s, Qave 12.6 vs. 18.8 mL/s; $p < 0.05$) compared to participants without LUTS (Table 1).
- Participants with both voiding and storage LUTS and poorer bladder health were more likely to have an interrupted flow pattern and a right-skewed uroflow shape ($p < 0.06$), and poorer bladder health was associated with more end-of-void dribbling ($p < 0.05$).

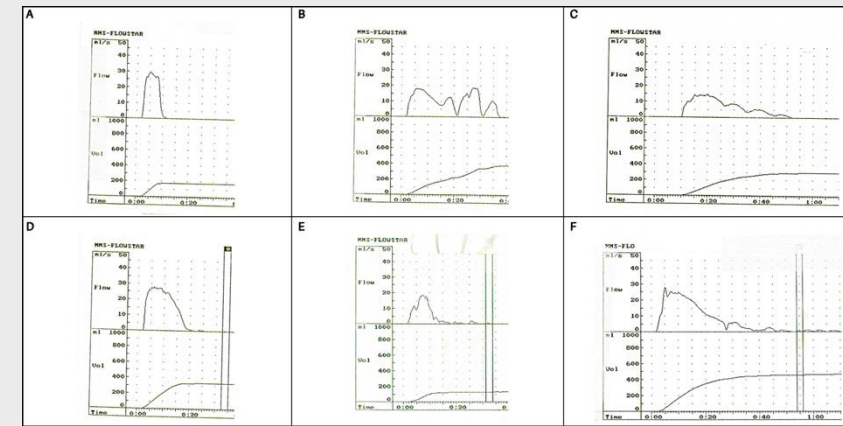


Figure 1 A-F: Uroflow graphical curve pattern examples; A. continuous flow, parabolic shape, smooth flow pattern, no end of void dribble; B. intermittent flow; C. continuous flow, skewed right shape, smooth flow pattern, no end-of-void dribble; D. continuous flow, right skewed shape, smooth flow pattern, end of void dribble; E. continuous flow, parabolic shape, fluctuating flow pattern, end of void dribble; F. continuous flow, right skewed shape, fluctuating flow pattern, end of void dribble. The small drop and rise in flow rate near the vertex of a curve do not meet criteria for fluctuation, as they only drop and rise approximately 1 mL/sec. The flow rate drops to zero and then rises above zero, qualifying d, e, and f as having an end-of-void dribble.

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