

## PSYCHOMETRIC EVALUATION OF AN ONLINE VS PAPER ACCIDENTAL BOWEL LEAKAGE QUESTIONNAIRE: THE ICIQ-BS

### Hypothesis / aims of study

Further evaluation of a psychometrically robust patient-reported questionnaire for accidental bowel leakage (ABL) was needed to improve assessment of treatment outcomes.[1] This study evaluated the psychometric properties of an online vs paper US-English version of the International Consultation on Incontinence Questionnaire-Bowel Symptoms (ICIQ-BS).

### Study design, materials and methods

Sites included outpatient clinics within a VA medical center and university affiliate. Participants included community-dwelling adults (n=65) with at least monthly ABL. Participants were randomized to complete either an online or paper version of the ICIQ-BS at baseline, 2-weeks, and 3-months after nonsurgical ABL treatments per usual care. We assessed the internal consistency, test-retest reliability, concurrent validity, and sensitivity to change of the 3 ICIQ-BS domains. The ICIQ-BS has 17 items under 3 domains: Bowel Pattern (BP, 5 items), Bowel Control (BC, 7 items), and Quality-of-Life (QOL, 5 items).[1] Most items are rated on a 5-point Likert-type scale, with some variation in rating scales. Cronbach's alpha method was used to assess internal consistency. To assess short-term reproducibility (test-retest reliability), we calculated Pearson correlations between the ICIQ-BS scale scores from the baseline and 2-week visits. The difference between baseline and post-treatment (3-month) ICIQ-BS scale scores was used to measure sensitivity to change. Convergent validity was assessed by computing Pearson correlations between the ICIQ-BS scale scores and the Bristol Stool Form Scale (BSFS), Vaizey/St. Mark's severity scale, and the MOS SF-12.[2,3]

### Results

Participant mean age was 58.0 ±11.9; 36% Veterans, 52% women, 27% African-Americans. At baseline, 2-weeks, and 3-months, we found no differences in the paper vs online ICIQ-BS scores for the domains for the BC and QOL domains. Overall, the BP domain had better internal consistency for the paper than the online version at 2-weeks (p<0.05) and 3-months (p<0.01) with no difference at baseline. Finding no differences in ICIQ-BS scale scores for the online vs paper versions, data in the Table are presented in aggregate for reliability and sensitivity to change. The ICIQ-BS demonstrated fair to good internal consistency (Cronbach's  $\alpha = 0.39-0.87$ ), very good retest reliability ( $r \geq 0.70$ ,  $p < 0.001$ ), and a reasonable response to change in the BP ( $P < 0.01$ ), BC ( $p < 0.05$ ) and QOL domains ( $p < 0.001$ ) following usual care non-surgical treatments. The BP had adequate concurrent validity with the BSFS ( $p < 0.05$ ). BC and QOL domains had good concurrent validity with the Vaizey ( $p \leq 0.001$ ); whereas only the QOL domain had concurrent validity with the SF-12 ( $p < 0.05$ ).

### Descriptive Statistics and Psychometric Properties of the Online and Paper ICIQ-BS

ICIQ-BS Domain	N	Baseline mean score (±SD)	Internal consistency, Cronbach $\alpha$	Test-retest reliability (Baseline to 2-weeks)	Sensitivity to change, mean score (±SD) (Baseline to 3-months)
Bowel pattern, range 1-21					
Online	35	12.6 (3.0)	0.38	$r = 0.77^{***}$ N = 47	11.4 (3.5)** N=38
Paper	29	12.6 (3.2)	0.50		
Bowel control, range 0-28					
Online	35	23.3 (6.0)	0.85	$r = 0.70^{***}$ N = 50	22.0 (7.0)* N=37
Paper	29	24.1 (5.5)	0.79		
Quality of life, range 0-26					
Online	35	22.1 (6.7)	0.83	$r = 0.84^{***}$ N = 51	19.5 (7.3)** N=36
Paper	30	22.4 (6.8)	0.82		

Note: \*p values >0.05; \*\*p values <0.01; \*\*\*p-values <0.001

### Interpretation of results

Both online and paper versions of the patient-reported outcome measure, the ICIQ-BS, have robust psychometric data for use among men and women, including veterans.

### Concluding message

With this further validation, clinicians could use paper or online versions of the ICIQ-BS for accidental bowel leakage outcomes in research and clinical care.

### References

1. Cotterill, N., Norton, C., Avery, K. N., Abrams, P., & Donovan, J. L. (2011). Psychometric evaluation of a new patient-completed questionnaire for evaluating anal incontinence symptoms and impact on quality of life: the ICIQ-B. *Diseases of the Colon & Rectum*, 54, 1235-1250.

2. Vaizey, C. J., Carapeti, E., Cahill, J. A., & Kamm, M. A, (1999). Prospective comparison of fecal incontinence grading systems. *Gut*, 44, 77-80.
3. Lewis, S.J. & Heaton, K. W. (1997). Stool form scale as a useful guide to intestinal transit time. *Scandinavian Journal of Gastroenterology*, 32(9), 920-924.

Disclosures

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**Ethics Committee:** Birmingham VA Medical Center Institutional Review Board **Helsinki:** Yes **Informed Consent:** Yes