

RELIABILITY AND VALIDITY OF TWO MEASURES OF TOILETING SKILLS IN FRAIL OLDER WOMEN WITHOUT DEMENTIA

Hypothesis / aims of study

For frail community-dwelling older people, remaining continent often depends on the ability to toilet oneself. Consequently, efforts to improve urinary incontinence (UI) in this population should include interventions to improve the physical functions necessary for toileting [1]. However, standardized measures of toileting skills are not available to evaluate the effectiveness of treatment or prevention efforts in this population. Therefore, the purpose of this study was to determine the reliability and concurrent validity of two measures of toileting skills with frailty, physical function, UI severity, UI-related quality of life (UI-QOL), and UI-related self-efficacy (UI-self efficacy).

Study design, materials and methods

This was a cross-sectional study of 24 frail older women without dementia living in senior housing buildings with independent and assisted living apartments. The authors in consultation with a gerontological occupational therapist developed a 5-item Toileting Skills Questionnaire (TSQ) assessing the degree of difficulty completing toileting tasks. The Performance Oriented Timed Toileting Instrument (POTTI) was used as a performance based measure of toileting skills [2]. One of two data collectors was randomly selected to instruct participants during data collection. Two data collectors timed participants during two trials of the POTTI. The Short Physical Performance Battery measured physical function. Questionnaires were interviewer administered and included: the Vulnerable Elders Survey (measured frailty), International Consultation on Incontinence Questionnaire (measured UI-severity), Incontinence Impact Questionnaire (measured UI-QOL), Urogenital Distress Inventory (measured UI-QOL), and Geriatric Self-Efficacy Index for Urinary Incontinence (UI-self efficacy). The study complies with ethical standards for research and received institutional IRB approval. Participants were enrolled after providing informed consent.

Inter-rater reliability of the POTTI was assessed using the intra class correlation coefficient. Concurrent validity was assessed with Spearman correlation coefficients to accommodate the small sample size and skewed distribution of the POTTI and TSQ. Internal consistency reliability of the TSQ was measured with Cronbach's alpha. All statistical tests were 2-tailed, and a p-value of <.05 was considered statistically significant. Analyses were performed using Stata version IC 13.1. An a priori power calculation indicated a sample size of 24 would detect a difference of 0.2 correlations (e.g., a difference of 0.9 and 0.7) between the raters' repeated measures with 80% power and two-sided alpha equal to 0.5.

Results

Participants were physically frail white females free of dementia with a mean age of 87±5 years. Most participants lived alone (83%) in independent apartments (79%), for an average of 27±20 months. The mean and standard deviation for the study variables are reported in the Table.

The POTTI and TSQ were moderately correlated ($r = .41$). The POTTI demonstrated strong inter-rater reliability (ICC = .97), and concurrent validity with frailty, physical function, UI-related quality of life, and self-efficacy (see Table). The TSQ demonstrated excellent internal consistency with Cronbach's alpha =.81 and concurrent validity with frailty, UI-related quality of life, and UI-related self-efficacy (see Table). The TSQ was only correlated with physical function related to gait. Neither measure was correlated with UI severity.

Summary Statistics of Study Variables and Correlations with Toileting Skills Measures

Variable	Mean ± SD	Correlation with	
		TSQ	POTTI
Toileting Skills Questionnaire (TSQ) (range: 0-20)	2.5 ± 2.9	-	.41*
Performance Oriented Timed Toileting Instrument (POTTI)	34.8 ± 19.1	.41*	-
Short Physical Performance Battery Total Score (range: 0-12)	7.0 ± 2.9	-.28	-.81*
Balance Score (range: 0-4)	2.3 ± 1.0	-.30	-.46*
Gait Speed Score (range: 0-4)	2.9 ± 1.1	-.48*	-.82*
Chair Stand Test Score (range: 0-4)	1.7 ± 1.4	-.11	-.79*
Vulnerable Elderly Survey Score (range: 0-10)	5.3 ± 2.6	.51*	.47*
International Consultation on Incontinence Questionnaire (range: 0-21)	9.5 ± 4.0	.24	.24
Incontinence Impact Questionnaire (range: 0-100)	18.2 ± 18.7	.67*	.53*
Urogenital Distress Inventory (range: 0-100)	22.9 ± 21.1	.52*	.20
Geriatric Self-Efficacy Index for Urinary Incontinence (range: 0-120)	68.9 ± 30.3	-.49*	-.49*

*p<.05, Note: Spearman Rank Correlation Coefficients reported

Interpretation of results

Both instruments demonstrated good psychometric properties and show promise as an outcome measure for use in clinical trials investigating the effect of improving toileting skills to improve UI. There were two minor differences in concurrent validity between the two measures. First, the TSQ only had a significant correlation with gait speed, not with balance and chair rising ability. Second, the POTTI did not have a significant correlation with one of the UI-QOL measures. Neither instrument had a significant association with UI severity. Even though these relationships were not statistically significant, the correlations indicate that worse

toileting skills were associated with worse balance, chair stands, UI-QOL, and UI severity. Most likely the lack of statistical significance is due to the small sample size, that was powered to detect differences in inter-rater reliability of the POTTI. Limitations of the study include a small convenience sample of older women that limits generalizability.

Concluding message

In this sample of physically frail older women the POTTI was a reliable and valid performance based measure of toileting skills and the TSQ was a reliable and valid interviewer administered measure of toileting skills. Further work is needed to confirm these findings in larger more representative samples and to establish their responsiveness to change and minimum clinically important change values.

References

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Disclosures

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