

DEVELOPMENT OF THE GERIATRIC SELF-EFFICACY INDEX FOR URINARY INCONTINENCE

Hypothesis / aims of study

Self-efficacy is defined as the confidence a person has in their ability to perform specific behaviours. Increased self-efficacy has been shown to improve outcomes and functional ability for a variety of geriatric conditions, and holds promise for geriatric UI. Yet measures designed to measure change in self-efficacy for controlling UI in the elderly are lacking. Outcome measures that have thus far been developed for UI focus primarily on symptoms or quality of life, and fail to capture older adults' level of confidence for preventing urine loss during activities of daily living and under different sets of circumstances.

This research reports on the development and testing of the *Geriatric Self-Efficacy Index for UI* in older men and women. The primary hypotheses were that the newly developed Geriatric Self-Efficacy Index for UI would 1) correlate with UI severity (frequency and amount of urine loss), such that those with more severe UI would score lower on the Self-Efficacy Index, and 2) correlate with UI impact on everyday life.

Study design, materials and methods

Item generation for the index was completed by an extensive review of the self-efficacy literature and self-efficacy questionnaires developed for stress UI in younger individuals. Twenty-five efficacy expectation items were generated. An expert panel reviewed these items for face validity. Phrasing of the items and response scaling was done in accordance with Bandura's Conceptual Model of Self-Efficacy and his Guide for Constructing Self-Efficacy Scales. Next, the Index was developed in English and translated into French. Content validity and item reduction were established by testing and reviewing the Index with convenience samples of English and French speaking incontinent older community dwelling adults attending public information sessions on UI. The International Consultation on Incontinence Questionnaire (ICI-Q) was simultaneously administered to measure UI severity (frequency and amount), UI impact on everyday life, and type of UI.

An iterative step-wise process was used for item reduction. First, items were eliminated if there were problems in subject comprehension or if there were marked ceiling or floor effects. Second, items were eliminated if there was redundancy with other items as indicated by an inter-item correlation of more than 0.75. Exploratory principal components factor analysis with varimax rotation was used to establish possible content sub-domains among the remaining 15 items. Internal consistency reliability was computed using Cronbach's alpha. Descriptive statistics for the distribution of Index scores were calculated (range 0-150). Linear regression was used to test the extent to which UI severity and UI impact explained significant variations in Index scores among pilot study participants.

Results

Seventy-five incontinent older adults completed the Index (31% male, 69% female, mean age 72 ± 7 years, median age 72, range 54-88). Two-thirds experienced UI at least once per day, and 42% reported moderate to large quantities of urine loss. 32% reported UI on the way to the bathroom, 23% reported stress symptoms and 10% mixed UI.

Internal consistency reliability for the Index was very high (Cronbach's alpha=0.90). Table 1 shows distributional statistics for each of the items and factor loadings from the rotated factor matrix (orthogonal transformation, varimax method). Summated scores of the 15 items (min 0, max 10 points each) ranged from 17-149 (median=83) with a normal distribution. In regression analyses summated scores were significantly associated with UI frequency (beta=-24, p=0.0012, adj. R-squared=.12), amount (beta=-26, p=0.0002, adj. R-squared=.16), and impact on everyday life (beta=-0.5, p<0.0001, adj. R-squared=.25)

Table 1: Descriptive results & factor loadings of the geriatric UI self-efficacy items

Item	Item mean (SD)	% responding "completely confident"	Factor 1	Factor 2	Factor 3
How confident are you that you can hold in your urine:					
1. When you are at home and have to go to the bathroom?	5.9 (2.7)	13%	.72		
2. When you are away from home?	4.8 (2.7)	5%	.79		
3. Long enough to get to the bathroom in time during the night?	5.7 (3.2)	19%	.68		
4. For at least 20 minutes when you feel the urge?	4.0 (3.0)	3%	.70		
5. When coughing?	5.0 (3.5)	20%			.87
6. When sneezing?	5.2 (3.6)	23%			.94
7. When laughing?	5.8 (3.5)	25%			.85
8. During strenuous exercises such as jogging or running?	5.7 (3.4)	20%		.71	
9. When taking long distance trips (plane, train)?	5.8 (3.1)	17%		.76	
10. When you are nervous?	6.1 (3.1)	15%		.87	
11. When you are depressed?	6.7 (3.1)	25%		.81	
How confident are you that you can:					
12. Find ways to distract yourself to overcome the urge to pass urine?	5.4 (3.1)	12%		.52	
13. Space out trips to the bathroom so that you don't go too frequently?	5.5 (3.1)	8%	.69		
14. Visit places where you may have difficulty locating the bathroom?	5.3 (3.1)	9%	.78		
15. Prevent urine loss without relying on pads or protection when you are out?	5.0 (4.3)	30%	.49		
Factor Eigenvalue			6.54	2.10	1.37
Percent of Variance			0.44	0.14	0.09
Cumulative Percent			0.44	0.58	0.67

Interpretation of results

The *Geriatric Self-Efficacy Index for UI* performed well in a sample of older men and women with different types of UI. Three content sub-domains appear to reflect: Impact of severity of symptoms (Factor 1), Psycho-social influence on UI symptoms (Factor 2) and Circumstantial factors (Factor 3). The Index was significantly associated with UI severity and impact on everyday life.

Concluding message

This Index is a promising new assessment for measuring UI in the elderly and monitoring the effects of interventions. Psychometric testing for reproducibility over time and studies to measure responsiveness to interventions are required and are ongoing. Once the Index has been fully validated it could be used clinically for geriatric UI, and also in research studies to examine whether increasing self-efficacy for managing UI is an underlying mechanism through which improvements in UI are achieved.

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