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EFFECTIVENESS OF A NEW EVIDENCE-BASED SELF-MANAGEMENT TOOL FOR INCONTINENT OLDER WOMEN

Hypothesis / aims of study
More than half of women with urinary incontinence do not seek help from healthcare providers. Self-management strategies that can be used independently by the patient may therefore be the most effective and broad reaching initial step to effectively manage bothersome urinary symptoms. Self-management is a process whereby persons function on their own behalf in health promotion, disease prevention, and/or disease management. Although evidence-based self-management techniques have proven efficacious in improving other chronic diseases, their utility for treating urinary incontinence has never been tested.

The aim of this study was to develop and evaluate an evidence-based self-management urinary incontinence risk factor modification tool designed specifically for older women. We hypothesized that use of this tool by incontinent community-dwelling women would result in a) significant reductions in the frequency of urinary incontinence episodes, and b) increased levels of incontinence-related self-efficacy and quality of life.

Study design, materials and methods
The tool was developed using evidence from a systematic review on risk factor modification for incontinence and input from focus groups of health care experts and incontinent women. Six risk factors were identified that increased the risk of urinary incontinence: weak pelvic floor muscles (odds ratio (OR) 3.48; P<.001)[1], high caffeine intake ((>400mg/d) (OR 2.4; 95% CI 1.1-6.5)[1], high body mass index (OR per unit increase in body mass index 1.05; 95% CI 1.04-1.07)[1], vision and hearing impairment, smoking and constipation. These six risk factors were incorporated into a self-management tool with associated strategies for change and self-monitoring. A prospective cohort study using an interrupted time series design was conducted to evaluate the tool. English and French speaking incontinent women 50 years of age or older who reported experiencing urinary incontinence at least twice a week for a period lasting at least 3 months during the prior 2 years were recruited via community-advertising. Women with a history of hematuria, recurrent urinary tract infections, urinary retention, symptomatic pelvic organ prolapse, previous pelvic surgery or pelvic radiation, or a related neurological condition (e.g. multiple sclerosis or spinal cord injury) were excluded and advised to speak to their physician about their incontinence and the possible need for investigation. Women were screened for cognitive impairment significant enough to potentially impair their ability to independently use the tool as determined by a Mini Mental Status Examination score of less than 24/30 at the time of enrollment.

The study was conducted at the University of Calgary and the Université de Montréal, Canada. Participants were monitored without intervention for 3 months. They were then given the self-management tool and monitored for another 3 months. Data was collected monthly for a total of 3 pre- and 3 post-intervention data points. A bladder diary and questionnaires including the Geriatric Self-efficacy Index for Urinary Incontinence, the Urinary Distress Index -6 (UDI-6) and the Incontinence Impact Questionnaire- 7 (IIQ-7) were completed at each time point. Successful usage of the tool was achieved if a study participant reported having modified or attempted to modify one or more of the risk factors contained within the tool. The
impact of the tool on urinary leakage was assessed based on changes in bladder diaries, self-efficacy based on changes in the Geriatric Self-efficacy Index for Urinary Incontinence and quality of life based on changes in the Urinary Distress Index -6 (UDI-6) and the Incontinence Impact Questionnaire- 7 (IIQ-7) between pre- and post- intervention time points. An explanatory mechanism of how the tool works was explored by examining if changes in self-efficacy explained improvements in quality of life. The impact of the tool on leakage episodes was assessed by examining the confidence interval on the pre-post difference in mean daily leakage episodes. For changes in self-efficacy and quality of life, we conducted linear mixed effects modeling to determine the effect of the tool on changes in the Geriatric Self-Efficacy Index for Urinary Incontinence, UDI-6 and IIQ-7 scores. Self-efficacy change scores were regressed in separate analyses on changes in UDI-6 and IIQ-7 scores, in order to determine if changes in quality of life were explained by changes in self-efficacy.

Results
One hundred and three women enrolled in the trial, and 90 completed the six-month follow-up. Among those who enrolled, the mean age was 63, 93% were white and 66% had post-secondary education. Symptoms of stress incontinence were present among 95 women (92%) and urge symptoms were reported by 75 (73%). The tool was used by 95% (89/94) of women at some point during the study. The most commonly modified risk factor was pelvic floor muscle strength, followed by caffeine intake (Table 1).

Table 1: Risk Factors modified by women using the evidence-based self-management risk factor modification tool for urinary incontinence

Risk Factor	Proportion	Percentage (95% CI)
Pelvic Floor Muscle Strength	84/94	89 (82-94)
Caffeine Intake	49/89	55 (45-65)
Body Weight	22/95	23 (16-33)
Constipation	14/95	15 (9-23)
Vision/Hearing	2/95	2 (1-7)
Smoking	0/95	0

Usage of the tool resulted in a mean reduction of 1.4 urine leakage episodes per day (95% Confidence Interval 1.0-1.8), from a pre-tool mean of 2.8 incontinence episodes per day to 1.3 episodes post-intervention. Women reported significant improvement in self-efficacy following use of the tool (Table 2). There was also an improvement in incontinence-related quality of life following introduction of the tool, as seen by a decrease in both the Urogenital Distress Inventory-6 (UDI-6) and the Incontinence Impact Questionnaire-7 (IIQ-7) scores. A positive relationship between self-efficacy and quality of life was discovered. There was a significant decrease in the IIQ-7 and a non-significant decrease in the UDI-6 with every 1 point increase in the self-efficacy index.

Table 2: Impact of the evidence-based self-management risk factor modification tool for urinary incontinence, on self-efficacy, distress and quality of life

Outcome	Pre-tool mean score (range)	Post-tool mean score (range)	Coefficient (mean change)	95% highest posterior density interval (CI)
Self-Efficacy Index (max score 150)	62-67	70-76	8.7	3.6-13.7
UDI-6 (max score 100)	43-45	32-37	-7.3	-12.3 - -2.1
IIQ-7 (max score 100)	26-29	20-24	-0.5	-5.4-4.9

Interpretation of results
Use of the self-management intervention empowered women to make changes that effectively improved their urinary symptoms. Fifty-percent reductions in incontinence episodes were observed, as well as improvements in self-efficacy and quality of life.

Concluding message
There appears to be a role for the evidence-based self-management urinary incontinence risk factor modification tool in the first-line management of urinary incontinence.

References
1. Holroyd-Leduc JM, Straus SE. Management of urinary incontinence in women: scientific review. JAMA 2004;291(8):986-95.