

A NEW URINARY CATHETER SELF-MANAGEMENT SCALE (C-SMG)

Hypothesis / aims of study

Self-management is believed to be an important behavioural capacity in people with chronic illness; yet no instrument was found to measure urinary catheter self-management in long-term catheter users, many of whom require a device for years. Therefore, a catheter-related self-management instrument (C-SMG) was developed and tested for psychometrics for use in a randomized trial teaching urinary catheter self-management.

Study design, materials and methods

The RCT involved 202 long-term indwelling urinary catheter users aged 19- 96 (51% males). 56% used a urethral catheter and 44% a suprapubic. Participation in the study lasted 12 months, and 74% completed the full study.

The instrument was evaluated at baseline (Intake face to face interview) with 202 persons, aged 19- 96 (51% males), and with 158 of the same individuals six months later by telephone call interview. The new Urinary Catheter Self-Management Scale (C-SMG) is based on a pilot study's Urine Flow Questionnaire (UFQ)¹ and the same categories of items remain: Awareness (what to notice), Self-monitoring (routine observations and periodic recordings), and Self-management behaviours. The UFQ, with 24 items, had been assessed for content validity: 99% of items were rated as 4, no need for revisions, and it had Cronbach's alphas of 0.64, 0.71, 0.73 for the 8 item-subcales of awareness, self-monitoring and self-management at six months. Additional items were added related to quality of life and catheter pain, for a total of 31 items. The item format was modelled after the Stanford Chronic Disease Self-Management Program (CDSMP)² to identify the frequency of self-management behaviours. These were measured through an ordinal scale with 5 categories: 0= do not do this, 1= monthly or less often, 2 =several times a month, 3=weekly, 4= several times a week, 5=several times a day or daily.

Exploratory factor analysis (EFA) was conducted by a seven-member team in an iterative process which involved several discussion of items both theoretically (appropriateness to most catheter users and quality of life issues) and statistically (cross loadings, stability over time). Means and SDs were used to determine variability of items. Also, subscale alphas were examined after removal of items (deleted variable) with low factor loadings to determine the best fit. Many of the items seemed to be redundant related to overlapping concepts of awareness, self-monitoring and self-management. 18 items were removed, leaving 13 items. To assess construct validity and goodness of fit for model testing, confirmatory factor analysis (CFA) was conducted with the samples at intake and 6 months.

Results

A three factor solution with 13 items worked best for both Intake and 6 months' data. Results of psychometric testing are presented for the Intake data, which is the full sample of 202 prior to randomization and intervention. Table 1 shows the means (SDs), factors (subscales) identified during EFA, reliabilities for each subscale, and correlations of items to subscales and to the full measure. Reliability testing (Cronbach's alpha) was viewed as satisfactory for the full scale at 0.82. Subscales were somewhat lower, ranging from 0.54-0.76. Confirmatory factor analysis tests results were: CFI (comparative fit index) 0.922; TLI (Tucker-Lewis Index) 0.902; RMSEA (root mean square error of approximation) Estimate 0.054, 90 % C.I. = 0.032, 0.073, Probability <= .05 is 0.359; and the SRMR (Standardized root mean square residual) Value = 0.058.

Interpretation of results

EFA and CFA were useful in developing a parsimonious scale for urinary catheter self-management (C-SMG). Psychometric testing suggests that the scale has initial reliability, particularly as a full scale. CFA indicates that construct validity, though not perfect, is adequate. The new measure can be used in future research.

Concluding message

Long-term indwelling urinary catheter users have not been well studied using behavioural interventions which could enhance their own self-care capacity. This new instrument could be useful in studies with long-term indwelling urinary catheter users testing interventions for urinary catheter self-management.

Table 1. Catheter self-management scale (C- SMG) Intake data (N-202)

Items and Cronbach's alpha of subscales (full scale Cronbach's alpha = 0.82)	Means	SD	Item to subscale correlation	Item to full scale correlation
Stem: Do you do this....?				
<i>Intake and Output (Cronbach's alpha = 0.76)</i>				
SMG1: Pay attention to amount of fluids consumed	2.28	0.84	76	0.62
SMG2: Keep track of fluid intake	1.85	0.89	77	0.59
SMG4: Pay attention to types of fluids	2.46	0.77	71	0.53
SMG9: Keep track of information about urine	2.34	0.83	66	0.57
SMG10: Make changes in types and amounts of fluids depending on urine	2.37	0.82	68	0.63
<i>Prevent catheter problems (Cronbach's alpha = 0.64)</i>				

SMG11: Watch to be sure catheter positioned correctly	2.79	0.52	61	0.43
SMG15: Make sure urine bag and tubing are positioned correctly	2.85	0.46	52	0.36
SMG17: Pay attention to early signs of UTI	2.58	0.72	78	0.53
SMG18: Pay attention to early signs catheter blockage	2.40	0.84	82	0.63
<i>Communication (Cronbach's alpha = 0.54)</i>				
SMG20: Ask the healthcare provider to make changes in catheter management	1.95	0.89	63	0.47
SMG25: Plan for going out of the house by knowing where bathrooms are and how to empty the bag.	1.89	0.90	69	0.51
SMG28: Talk with other people to get support when the catheter is causing problems.	1.90	0.89	67	0.45
SMG31: Ask for pain medication after a catheter change if needed.	1.46	0.74	59	0.31

References

1. Wilde, M.H. & Brasch, J. (2008). A pilot study of self-monitoring of urine flow in people with
2. Lorig, K., Stewart, A.L., Ritter, P., Gonzalez, V.M., Laurent, D.D., & Lynch J. (1996). Outcome measures for health education and other health care interventions. Thousand Oaks, CA: Sage

Disclosures

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