

A NEW URINARY CATHETER SELF-EFFICACY SCALE (C-SE)

Hypothesis / aims of study

Self-efficacy, measuring confidence to perform specific behaviours, has been well studied and is known to be a powerful predictor of behavioural change.[1] However, there were no known measures of urinary catheter self-efficacy for persons who use the device long-term or indefinitely. Therefore, a catheter-related self-efficacy instrument (C-SE) 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, and with 158 of the same individuals six months later by telephone call interview. The new Urinary Catheter Self-Efficacy Scale (C-SE) was based on an adaptation of the Self-Efficacy Chronic Disease measure from Stanford.[2] Scoring for C-SE uses the Stanford 10 point Likert-type scale, with 1 not at all confident and 10 totally confident; higher scores indicate more self-efficacy.

Exploratory factor analysis (EFA) was conducted by a seven-member team in an iterative process which involved several discussions of the 15 items in the scale, 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, Cronbach's alphas were examined after removal of items (deleted variables) with low factor loadings to determine the best fit. Two items were removed: "Pay attention to the urine throughout the day (color, clarity, sediment, etc.)" and "Do the different tasks and activities needed to manage your catheter to reduce your need to see a doctor or nurse," leaving 13 items. To assess construct validity and goodness of fit for model testing, confirmatory factor analysis (CFA) was conducted.

Results

A four factor solution worked best for both Intake and 6 months' data. Results presented are 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. All of the reliabilities were viewed as satisfactory. The Cronbach's alpha for the 13 item scale was 0.89, and factors ranged from 0.76-0.88. Related to CFA, the following results suggest that, though not perfect, construct validity is adequate for the measure. Confirmatory factor analysis tests included: CFI (comparative fit index) 0.9338; TLI (Tucker-Lewis Index) 0.941; RMSEA (root mean square error of approximation) Estimate 0.0710; 90 % C.I.= 0.0520, 0.0897, Probability <= .05 is 0.033; and the SRMR (Standardized root mean square residual) Value = 0.0539.

Interpretation of results

The new measure for Urinary Catheter Self-efficacy (C-SE) performed adequately and with stability during the testing at intake (baseline) and 6 months later. Reliabilities (alphas) and model testing with CFA suggest that the measure can be used in research with long-term indwelling urinary catheter users.

Concluding message

Self-efficacy is needed to develop adequate self-care capacity for urinary catheter self-management. Researchers conducting research with a behavioural component in long-term indwelling urinary catheter users could use this new measure to determine whether the study subjects had adequate confidence related to: communication with others about their catheter, preventing catheter related interference with daily activities, preventing accidental catheter dislodgement and drinking adequate fluids.

Table 1. Catheter Self-efficacy Scale (C- SE) for intake data (N=202)

| Items and Cronbach's alpha of subscales (full scale Cronbach's alpha = 0.89) | Means | SD | Item to sub scale <i>r</i> | Item to full scale <i>r</i> |
|--|-------|------|----------------------------------|--------------------------------|
| Stem: How confident are you to ... ? | | | | |
| <i>Communication (Cronbach's alpha=0.83)</i> | | | | |
| SE8: Ask your doctor or nurse things about your catheter that concern you | 8.93 | 1.99 | 0.79 | 0.60 |
| SE9: Discuss openly with your doctor or nurse any personal problems that may be related to your catheter | 9.15 | 1.76 | 0.88 | 0.67 |
| SE10: Work out differences with your doctor or nurse when they arise | 8.96 | 1.86 | 0.84 | 0.68 |
| SE15: Judge when the changes in your catheter mean you should contact a doctor or nurse | 8.86 | 1.91 | 0.75 | 0.59 |
| <i>Prevent Interference with Daily Activities (Cronbach's alpha=0.88)</i> | | | | |
| SE11: Keep any physical discomfort or pain related to the catheter from interfering with the things you want to do | 7.86 | 2.42 | 0.90 | 0.72 |

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|---|------|------|------|------|
| SE12: Keep the emotional distress caused by your catheter from interfering with the things you want to do | 7.97 | 2.38 | 0.91 | 0.68 |
| SE13: Keep catheter-related symptoms or problems (such as leakage, blockage or UTI) from interfering with what you want | 7.65 | 2.36 | 0.89 | 0.66 |
| <i>Prevent Catheter Dislodgement (Cronbach's alpha=0.85)</i> | | | | |
| SE5: Keep the catheter secured or tied down so that it does not get pulled | 8.42 | 2.33 | 0.84 | 0.70 |
| SE6: When transferring, keep the catheter from becoming caught onto something and being pulled out | 8.50 | 2.13 | 0.91 | 0.71 |
| SE7: Keep the catheter and tubing from having kinks or twists in it | 8.43 | 2.15 | 0.89 | 0.72 |
| <i>Fluids (Cronbach's alpha=0.76)</i> | | | | |
| SE1: Drink adequate fluids throughout the day | 8.57 | 1.91 | 0.84 | 0.62 |
| SE2: Make changes in fluids related to activity, temperature and travel | 8.15 | 2.22 | 0.84 | 0.61 |
| SE3: Keep intake of water and caffeine to a level that's good | 8.45 | 2.05 | 0.78 | 0.62 |

Note: r = Pearson correlation co-efficient.

References

1. Bandura, A. (1997). Self-Efficacy: The Exercise of Control. New York: W. H. Freeman.
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

Funding: NIH (USA)/National Institute of Nursing Research. #R01 NR01553 **Clinical Trial:** Yes **Registration Number:** <https://register.clinicaltrials.gov/>; R01-NR-008455-01 **RCT:** Yes **Subjects:** HUMAN **Ethics Committee:** University of Rochester (Rochester, NY, USA) and Visiting Nurse Service of New York (NY, NY, USA) **Helsinki:** Yes **Informed Consent:** Yes