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A PILOT STUDY OF SELF-MONITORING URINE FLOW IN LONG-TERM URINARY CATHETER USERS

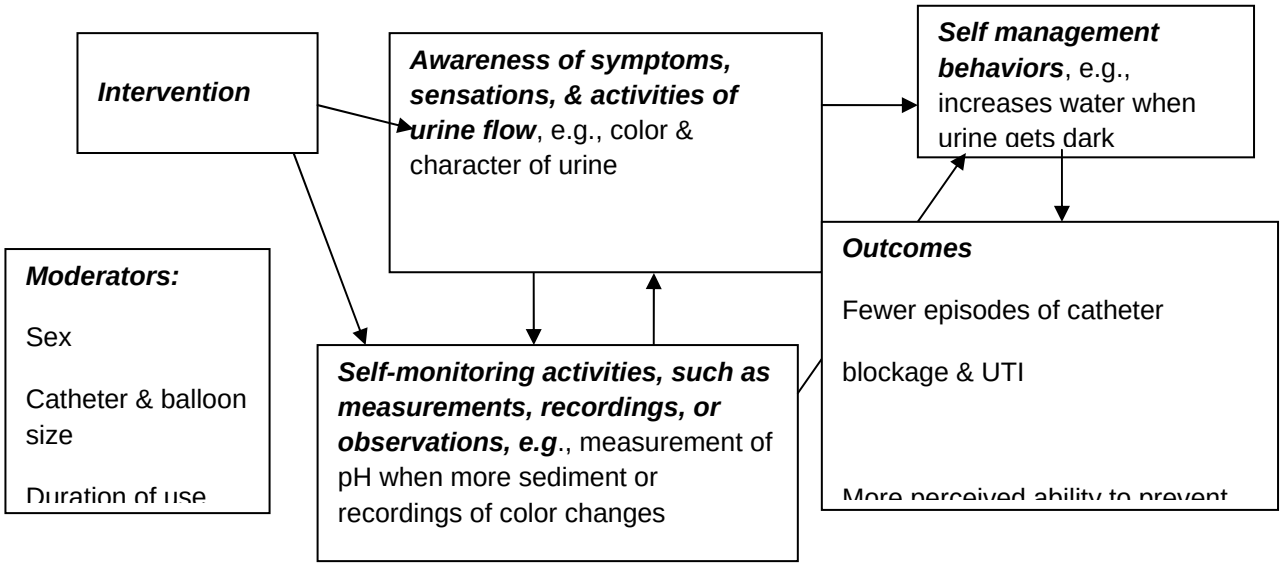
Hypothesis / aims of study

1) Assess the effect size of the outcome measures of the intervention in preventing indwelling urinary catheter blockage and urinary tract infection (UTI) and in improving quality of life (QOL), (preliminary data); 2) Explore new measures of awareness, self-monitoring, and self-management of urine flow variables as mediators of the impact of the intervention on outcomes; and 3) Explore sex, catheter size, duration of catheter use, and blocker status as moderators of the intervention.

Study design, materials and methods

A single group intervention study was conducted with 11 individuals to pilot test whether teaching self-monitoring of urine flow could prevent or minimize catheter-related problems. After completing a 3-day urinary diary and review of problems recalled from the previous six months, participants were instructed in the use of an educational booklet of strategies to manage typical catheter problems. Each participant was followed for 6-months after the intervention was delivered. Inclusion criteria involved anticipated use of the indwelling urinary catheter (urethral or suprapublic) for the next 6 months and being able to communicate with the investigator. Fig. 1 represents the model used for the study and developed by the PI.

Fig.1. Conceptual model of intervention and expected results in long-term catheter users



Results

The ages of this sample resemble other studies in similar populations, with ages distributed from 28-70: mean age 48.64 (SD 14.92), median 53. Of the 11 enrolled, 7 were white, not Hispanic; 1 black/Hispanic; 1 black/white; 1 American Indian/white; and 1 Asian/Hawaiian/Pacific Island. Major outcomes for the study included catheter related problems, associated healthcare costs, and quality of life. In comparison with recall for the six months' prior to the study, the number of UTI events went up slightly over the six months of the study (21 vs. 25 UTIs); however, the numbers of UTIs slowed from 12 during the first two-month period, to 7 at four months, and 6 at six months after the intervention. The number of blockages also decreased from 12 events in the six months prior the study to 7 during the study period. Overall, the most common UTI symptoms were foul urine odor, malaise, and weakness.

Associated healthcare costs for UTIs were believed to have been lower because hospitalizations decreased from 4 to 1 event, and emergency department visits decreased from 4 to 2 events. Extra nurse home or clinic visits for catheter complications decreased over the course of the study from 5 at 2 months, 2 at 4 months, and none at 6 months.

Quality of life scores did not improve over the six months of the study.

Awareness, self-monitoring, and self-management of urine flow are believed to mediate or influence the extent and severity of catheter-related problems. The awareness scores for the 8 dichotomous items (aware or not aware) were not significantly different over time, but changed in the expected direction from 6.51 (out of 8) (SD 1.192) to 6.86 (SD .973) ($t = -.767$ $p = .461$) at 6 months. Mean scores for the self-monitoring (scale 1-5) showed a trend toward increasing from baseline 3.85 (SD.47) to 4.15 (SD.68) at exit from the study at 6 months ($t = -1.933$, $p=.082$). Self-management scores were 4.07 (SD .69) at baseline and 4.39 (SD .55) at 6 months ($t =1.486$ $p=.168$), and although this change was not significant, it was in the expected direction.

Interpretation of results

Recall of the number of UTIs for 6 months prior to the study may have been under-reported in comparison with catheter complications which were recorded in their journal as they occurred during the study. The present study found

that foul odor accompanied by generalized symptoms were the most common symptoms, and these may be the key symptoms of UTI in catheterized patients. These findings are consistent with the literature in which fever is not always present in people with long-term catheters, especially elderly (Nicolle, 1999).

While encouraging, results related to the mediating effects of self-monitoring may be due to positive reactivity, regression to the mean, and measurement error due to the small sample size. Nevertheless, the pilot study showed that patients can be taught to self-monitor and most stated that this study helped them feel more capable about managing the catheter.

Initial results show that there can be cost savings if people are able to prevent catheter associated problems and prevent hospitalizations and emergency room visits. Cost of catheter related problems need to be investigated with full cost analysis methods.

Quality of life was investigated in this study, and a new measure specifically related to living with a catheter was field tested. Further validation of this new measure will ensue.

Concluding message

Nurses and physicians need to know how to teach their patients to self-monitor urine flow as a component of catheter self-management. The next study will be a large scale randomized trial to test this new intervention fully.

References

Nicolle, L. E. (1999). Urinary infections in the elderly: Symptomatic or asymptomatic? *International Journal of Antimicrobial Agents, 11*, 265-268.

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CLINICAL TRIAL REGISTRATION: This clinical trial has not yet been registered in a public clinical trials registry.

HUMAN SUBJECTS: This study was approved by the The University of Rochester Research Subjects Review Board and followed the Declaration of Helsinki Informed consent was obtained from the patients.