



The Addition of Coaching to Cognitive Strategies: Interventions for Persons With Compromised Urinary Bladder Syndrome

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Compromised urinary bladder syndrome (CUBS) is defined as urinary frequency (UF) and/or urinary incontinence (UI) sufficient to be a problem. This term is an expansion of separate mainstream concepts referring to UF and UI, because the new term entails both phenomena considered at one time. Cognitive strategies (CS) offer one way to enhance the effectiveness and implementation of behavioral interventions directed to assist persons with CUBS. Two hypotheses predicted that persons receiving bladder health information would show less improvement on the outcomes than those receiving CS only or those receiving CS plus coaching after adjusting for type of UI. Secondly, persons receiving CS only would show less improvement on the outcomes than those receiving CS plus coaching. Data were collected at 3 time points, and the outcomes measured were comfort, bladder function, incidents of UF/UI (as recorded by participants in a diary), and perception of health. Neither hypothesis was fully supported. However, persons receiving information and information with CS plus coaching improved on comfort and UI/UF; all groups increased on bladder function; and perception of health did not change in any of the groups. Explanations for the mixed findings are proposed. In general, these findings support the application of conservative, noninvasive cognitive interventions innovatively applied through the use of pamphlets and audiotapes to help persons with CUBS experience increased comfort and improved bladder function. Implications for clinical practice are to provide a two-tiered intervention: education followed by CS with coaching if needed to enhance bladder function. A nursing role (as coaching) to augment specific interventions for CUBS is supported and should be differentiated for persons with symptoms of urgency. (J WOCN 2003;30:90-9.)

For many community-dwelling persons of all ages, management of compromised urinary bladder syndrome (CUBS) is a demanding task that requires constant vigilance. CUBS, defined as urinary frequency (UF) and/or urinary leakage (UI) sufficient to be a problem, causes many uncomfortable disruptions for persons in their daily lives. We have observed that treatment for UF or UI usually results in improvement in both phenomena.

CUBS is an important health concern because it often leads to isolation, lack of confidence, falls, general debility, and eventual placement in dependent care settings.¹ Common physical and psychosocial discomforts associated with CUBS, such as the need for expensive protective pads and leakproof guards, fear of discovery, and skin breakdown, are unrelieved when affected persons believe that CUBS is a normal or inevitable consequence of aging, childbirth, or inherited traits. The goal of this study was to demonstrate improvement in CUBS and related outcomes as operationalized with measures of holistic comfort related to UF and UI, improved bladder function, decreased episodes of UF and UI, and increased perception of health.

For persons seeking help, conservative treatment for CUBS is recommended first.² Prior research has demonstrated that standard bladder health information and behavioral approaches with cognitive strategies were effective for persons dwelling in the community. Behavioral interventions such as urge control, fluid intake monitoring, pelvic floor muscle exercises, and others have been effective for CUBS, but implementation of these helpful behaviors has been highly variable. Combinations of these approaches resulted in fewer UI episodes and decreased urine loss at 6 months.^{3,4} Simply focusing on increasing and/or monitoring fluid intake was helpful for some persons.⁵ Behavioral interventions resulted in anecdotal evidence of improvement in bladder function, but statistically there were no significant differences in the number of UI episodes.⁶ In other studies, behavioral interventions resulted in improvement rates similar to pharmacotherapy in medical practice settings.⁷⁻⁹ Complying with a protocol for pelvic floor muscle exercises over 1 to 2 years led to continued improvement or maintenance of symptoms after treatment with biofeedback and electrical stimulation, yet 34% did

not comply with the protocol.¹⁰ A self-directed home biofeedback system significantly reduced UI episodes and frequency for women 25 to 81 years of age.¹¹ Interestingly, videos and free access phone lines were the primary mode of contact. Although significant improvements were found for all classifications of UI, differences in UI and UF improvements were noted among the 3 types of UI—stress, urge, and mixed.¹¹

Comparisons across these studies revealed that behavioral interventions were beneficial, noninvasive, and cost-effective for community-residing women, with estimates of 15% to 20% achieving complete improvement and 50% to 75% achieving partial improvement.^{12,13} More research was needed to determine a way to reinforce behavioral strategies.¹⁴ Closer follow-up of participants and assessment of motivation for change to improve results from interventions was recommended.⁸ It was also important to present behavioral interventions that individuals could apply to their unique situations¹³ and also to determine if type of UI made a difference in response to treatment.

Cognitive strategies (CS) with coaching offer one way to enhance the effectiveness of behavioral interventions directed to empower persons with CUBS to attain and maintain optimal bladder function. CS enable the replacement of negative thoughts and self-talk with more adaptive and positive thoughts.¹⁵⁻¹⁸ Assessing and analyzing the reality of these beliefs or interpretations and replacing them with factual information help persons to change their feelings and actions. When negative thoughts are replaced, individuals are more internally motivated to implement behaviors that are beneficial for their health. The changed perspective of their situation allows individuals to alter behavior and have a greater sense of control over their actions.¹⁹ CS were successful for children with enuresis,^{17,20,21} for children with persistent urge incontinence,²² and for young adults with excessive urinary urgency.²³ CS provided through cognitive bibliotherapy, which is written information in a pamphlet with minimal support, resulted in decreases in negative thoughts.^{24,25}

In a pilot experimental study, reading a pamphlet with bladder health information and listening to audiotaped CS strategies for 6 weeks resulted in increased comfort and fewer CUBS episodes for 31 women and 9 men.¹⁸ After 6 weeks the information group (N = 19) was given the audiotapes and had results similar to the treatment group (N = 21). Increased comfort and bladder function for some persons meant that they had no more episodes of CUBS. For others it meant that, although there were residual CUBS, they managed their symptoms better and continued to engage in beneficial behavioral techniques. Some members of this latter group also sought medical evaluation of their bladder function if they had not done so previously.


Some persons did not benefit from CS in this early study. It was difficult to untangle whether or not CS were effective or if specialized support for doing them was necessary. In fact, the support we gave to the individuals in our first study might have qualified as coaching, and it was our intent in this present study to distinguish between coaching and normal support involved with usual care. The design of the present study was meant to answer these questions.

Coaching consists of supportive actions by health care professionals for the purpose of empowering clients to participate in the achievement of mutually identified goals.²⁶ Although there are no previous studies about coaching and CUBS, the efficacy of coaching has been shown when used to support families with high-risk pregnancies,²⁷ to help patients with brain injury return to work,²⁸ to teach patients with lung cancer how to report pain,²⁶ and to improve performance in walking.²⁹ In these studies, both a working alliance with health care personnel, such as a coaching relationship, and a repetition of information helped to achieve changes in behavior. However, coaching directed to enhancing interpersonal relationships for women with early stage breast cancer did not help with symptom distress, emotional distress, or functional status.³⁰ This finding suggests that coaching must be directed to all aspects of the condition of concern.


The specific aim of this study was to determine effectiveness of coaching added to CS and bladder health information for independent, community-dwelling persons experiencing CUBS. There were 3 groups: bladder health information (first level), information plus CS (second level), and information, CS, and coaching (third level). The outcomes were comfort, bladder function, episodes of UI/UF, and perception of health. (The higher the level, the more interventions received.) The hypotheses were: hypothesis 1: persons at level 1 will show less improvement on the outcomes than persons at level 2 or level 3, adjusting for type of UI; and hypothesis 2: persons at level 2 will show less improvement on the outcomes than persons at level 3 and increased comfort adjusting for type of UI.¹⁴


CONCEPTUAL FRAMEWORK

Kolcaba³¹ conceptualized comfort as a dynamic outcome of care, and her content domain of comfort³¹ served as a guide for designing both interventions and measurements of comfort. She defined comfort as the immediate state of being strengthened when the needs for relief, ease, and transcendence are met in physical, psychospiritual, social, and environmental contexts of experience.³² Comfort Theory suggests that comfort needs of patients in specific health care situations are interrelated and that interventions are targeted to the complex needs that cannot be met by pa-



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tients or their existing support systems. Enhanced comfort then facilitates engagement in subsequent health-seeking behaviors (HSBs). In this study, subsequent HSBs of interest were improved bladder function, fewer CUBS episodes, and improved perception of health. Dowd's³³ qualitative investigation of CUBS revealed that women (N = 7) who managed CUBS and avoided embarrassing moments were more likely to be comfortable with their lives, whereas those who continued to have problems such as "odor" or "accidents" experienced many ongoing discomforts. These observations are congruent with Comfort Theory, which states that comfort is a necessary condition for engaging in HSBs and after HSBs are practiced, a continual recursive relationship exists between HSBs and comfort. Comfort Theory comes from a holistic perspective and is relevant for persons with CUBS. That is, persons who experience difficulties associated with the whole range of CUBS perceive stimuli related to their problems and possible solutions simultaneously. If they find something that works, they will continue to use that strategy and will experience a rise in confidence that they can manage symptoms, leading to increased comfort and continued engagement in the successful HSBs. In this way, the relationship between comfort and HSBs is recursive.³¹ Moreover, comfort is a consistent predictor of the extent of engagement in HSBs, thereby providing more rationale for nurses to minister to clients' comfort needs prior to expecting them to engage in HSBs.

METHOD

Design

A 3-group longitudinal design was used for this experimental study. The researchers trained and supervised graduate student nurses for consistency in data collection protocols for the 3 groups. The co-principal investigators also collected data, held team meetings, and managed data.

Sample

Study participants were recruited through advertisements in local newspapers. Entry criteria were: men and women older than 21 years, living independently in the community, who had no major hearing problem, were able to read and write English, had CUBS for 6 months or more, had a Mini Mental State Screen (MMSE) score of >20, and had a negative urine screen with Ames Multistix 10 SG Reagent Strips for Urinalysis (to rule out infection, hematuria, or glycosuria). After a random start, participants were alternately assigned to 1 of 3 levels of intervention: (1) those in the first level received bladder health information only; (2) those in the second level received information and CS; and (3) those in the third level received information, CS, and coaching. (The higher the level, the more interventions received.) Enroll-

ment was ongoing until the desired sample size was attained. Based on past studies, we expected no attrition once informed consent was signed. In our previous study, between 10% and 23% of our sample were men and between 10% and 15% were younger than 50 years.

Instruments

Data were collected about demographic variables and bladder health. On the bladder health history, we asked subjective questions about duration of CUBS, frequency of toileting, amount of leakage, and when leakage occurred. For this study, type was categorized into urge (anyone with symptoms of urge) or "other" (all other types of leakage).

Comfort was measured by the Urinary Frequency and Incontinence Questionnaire (UFICQ).¹⁸ The 27-item UFICQ addressed feelings, limitations, and self-concept associated with chronic CUBS. Each item had a 6-response, Likert-type format with anchors ranging from strongly agree to strongly disagree. Higher scores indicated higher comfort. In the previous sample of persons with CUBS (N = 40), Cronbach's alpha was .82, indicating strong reliability and internal consistency. Further, the UFICQ was sensitive to differences between treatment and comparison groups in our previous intervention study.¹⁸ In the present study, the mean standardized Cronbach's alpha across the 3 time points was .82.

Bladder function, defined as the processes by which urine is collected and released, including physiological and cognitive components such as ability to manage urine release effectively, was measured by the Bladder Function Questionnaire (BFQ) (Figure 1). The BFQ had 20 items with the same response format and scoring as the UFICQ. Higher scores indicate higher function. It complemented the UFICQ because it addressed actual bladder function such as bladder emptying and urine flow control and was designed to detect changes in function over time. In an instrumentation study (N = 100) preparatory to our previous experimental study, Cronbach's alpha was .80.³⁴ In the present study, the mean standardized Cronbach's alpha across the 3 time points was .65.

UI episodes and UF, defined respectively as number of incidences of urine leakage and number of toilet trips (frequency), were measured by self-report marks in a voiding diary. Lower scores indicate fewer episodes of UI and UF.

The Short Form Health survey for this study was adapted from the SF-20³⁵ with permission of the author. Minimal adaptations were made in the response set to conform more closely with the format used in the UFICQ and BFQ. Eight subscales measured areas of functioning and well-being. Higher scores indicate higher well-being. Upon development of the survey, Cronbach's alpha was

Bladder Function Questionnaire

Thank you VERY MUCH for helping us in our study about bladder function and leakage of urine. Below are statements that pertain to your bladder condition. Six numbers are provided for each question; please circle the number you think most closely matches your feelings at the moment you are answering the questions.

	Strongly Agree			Strongly Disagree		
1. I am in charge of my bladder	6	5	4	3	2	1
2. When I sneeze, laugh, cough, lift, etc, I leak urine	6	5	4	3	2	1
3. I go to the toilet very frequently (more often than every 2 hours)	6	5	4	3	2	1
4. My bladder stretches well as it fills with urine	6	5	4	3	2	1
5. I am aware of burning when I urinate	6	5	4	3	2	1
6. I go to the bathroom even if I don't have the urge to urinate	6	5	4	3	2	1
7. I can hold my urine when necessary	6	5	4	3	2	1
8. When I urinate, it is usually a moderate amount (more than _ cup)	6	5	4	3	2	1
9. I have an irritable bladder	6	5	4	3	2	1
10. I can go on long car trips	6	5	4	3	2	1
11. I cannot stop the leakage	6	5	4	3	2	1
12. I can trust my urge to urinate as a way of knowing when to go	6	5	4	3	2	1
13. I can empty my bladder completely	6	5	4	3	2	1
14. I feel like I have to go all the time	6	5	4	3	2	1
15. If I wait until I feel the urge to urinate, it is too late	6	5	4	3	2	1
16. My bladder is functioning well	6	5	4	3	2	1
17. I allow enough time to get to a bathroom	6	5	4	3	2	1
18. My bladder muscles are weak	6	5	4	3	2	1
19. I am on "friendly terms" with my bladder	6	5	4	3	2	1
20. Using some form of protection is necessary	6	5	4	3	2	1
21. My leakage problems are severe	6	5	4	3	2	1
22. My frequency problems are severe	6	5	4	3	2	1

Figure 1. Bladder function questionnaire.

.78 or greater for every scale.³⁵ In the present study, the mean standardized Cronbach's alpha across the 3 time points was .91.

Power Analysis

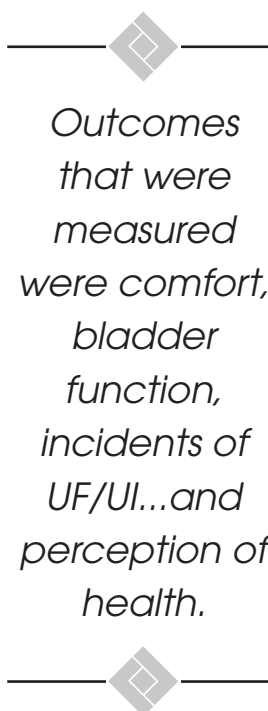
Our power analysis was based on our primary outcome, the UFICQ. This analysis suggested that 18 participants for each of 3 groups would yield a power of 80% for detecting group differences of magnitude 0.25 on the UFICQ. This power calculation incorporated a standard deviation for the UFICQ found in our previous study.¹⁸ Alpha of .10 was deliberately used for the analysis of the outcome measures to guard against type II error, which happens when significant findings are in the data but are not detected. Lipsey³⁶ recommends this strategy for social science-type research, where the intervention has no known harmful effects. We believe that CS and coaching both fit this criterion.

Procedures

Information about bladder health was presented in the form of a pamphlet. It was reviewed

with all participants and left with them. This pamphlet was developed from a synthesis of the literature and clinical experience and had been used successfully in our previous studies.^{18,34} The pamphlet included basic anatomy and physiology of the bladder plus behavioral techniques such as self-monitoring, bladder training, scheduled voiding, pelvic muscle exercises, and fluid and dietary adjustments.

The CS were presented on an audiotape to which participants listened daily for 4 weeks and then once a week until the last data collection at 12 weeks. CS were defined as the identification and modification of common negative and automatic self-talk with permanent replacement of the self-talk by carefully constructed facts that are more adaptive and positive.^{15,16} The CS for this study were preceded by a relaxation routine. The script provided encouragement about being able to be in charge of urine elimination and reinforced the bladder health information provided in the pamphlet such as urge management, fluid intake, and keeping fit.




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Coaching was provided at weekly telephone calls and at the data collection points. The coaching intervention was implemented by the same data collector for any specific participant in the sample. We addressed the interpersonal component of coaching in team meetings, striving to achieve consistency of approach and professional, caring relationships. Coaching was defined as situation-specific working alliances between clients and researcher that helped to identify and mediate barriers to health.^{30,37} Coaching was designed to provide additional support to the participants and consisted of the following review over the phone and in person during data collection: overall well-being; tape-listening adherence; CUBS voiding diary and record-keeping process; management of urine loss incidents; and implementation of participant-selected CS.

Appropriate Institutional Review Boards approved this study. At intake and after informed consent, screens with the reagent strips for urinalysis and the MMSE were conducted. Questionnaires were administered and persons were instructed in completing the 3-day voiding diary for baseline observations. One week later (T1), the information pamphlet was reviewed with everyone and depending on group assignment, instructions on how to use the CS tape and tape player were given. Three-day baseline diaries were collected and reviewed with participants at this time. At weeks 4 (T2) and 12 (T3) after the intervention was introduced, 3-day diaries and questionnaires were again completed. To answer questions about the intervention and to assess adherence to protocols, weekly phone calls were made to all participants. These were made during the 4-week intervention phase and then at 2-week intervals until the study was complete. During these phone calls, the coaching group received specified unique and additional attention consistent with coaching guidelines.^{30,37} At the end of the study, all participants were given a choice of receiving the tape player and tape or \$20 to show appreciation for their efforts in the study.

Statistical Methods

Descriptive statistics were computed for the 3 levels. Demographic variables were compared across the levels using one-way analysis of variance for age and chi-square tests of homogeneity for categorical variables. Analyses of changes on the outcomes over time and among the 3 levels were accomplished using repeated measures analysis of variance (RM MANOVA) with the type of incontinence (urge or "other") as one grouping factor, level (level 1 = information; level 2 = information plus CS; level 3 = information plus CS plus coaching) as a second grouping factor, and time as a repeated factor (time = T1, T2, T3). A separate MANOVA was done for each of our outcome variables: comfort,

bladder function, incidents of UF/UI (as recorded by participants in a diary), and perception of health.

RESULTS

Sample

Of the 55 women and 3 men who met the entry criteria, 6 did not complete the study because of illness (4) or a family crisis (2). Data from one participant were deleted from the study during data analysis because her scores were widely variable and inconsistent with the rest of the sample (we considered her to be an outlier). Descriptive characteristics of the sample are summarized in Table 1.

The number of participants who supplied useable data was 51. However, the number of participants with complete data at all 3 time points varied from 38 to 41, depending on the measure. The average N was 39. Thirty-five participants had complete data for all 5 outcome measures at all 3 times. Thus, our desired sample size of 54 evaluable participants was not attained because of higher attrition than we expected after consent was signed for reasons previously mentioned. Also, recruitment of persons who met the inclusion criteria and agreed to our protocols was time consuming and required considerable expenditure of funds for advertisements. Our funding agency had a time limit for dispersing funds, and we could no longer advertise after 1 year.

Hypothesis Testing

At time 1, the differences between the 3 groups were not significant on baseline measurements of comfort, bladder function, incidents of UF/UI, or health status. The groups were also compared on the demographic variables and type of incontinence (see Table 1).

The first hypothesis, that persons at level 1 (information) would show less improvement on comfort than persons at level 2 or 3, was not supported fully. However, time by group interaction was significant ($F = 3.07, P = .059$), indicating that persons at level 1 and level 3 showed modest gains over time, whereas persons at level 2 did not improve. There was a significant interaction for group by type of UI ($F = 3.61, P = .037$), indicating that persons at level 1 and level 3 with urge had more improvement on comfort than those with stress or "other" type of UI. Again, persons at level 2 did not show this difference.

For bladder function, there was a significant change for all levels ($F = 13.31, P = .0001$). These data indicated that persons at all levels of intervention were significantly more able to manage CUBS over the duration of the study. However, there were no significant interaction effects found: time by group ($F = 2.01, P = .149$), time by type of UI ($F = .26, P = .77$), and time by group by urge ($F = .91, P = .41$). Interestingly, there was a significant main effect for urge, that is, scores were higher

Table 1. Group comparisons of demographic and other descriptive data

Characteristic	1 (Information)	2 (CS)	3 (Coaching)
Age ($P = .03$)	57.1 (n = 14)	59.6 (n = 17)	68.7 (n = 16)
Gender ($P = .54$)*			
Female	13	18	17
Male	1 (n = 14)	0 (n = 18)	1 (n = 18)
Living ($P = .10$)*			
Alone	25%	16.7%	50%
With others	75% (n = 12)	83.3% (n = 18)	50% (n = 16)
Employment ($P = .10$)*			
Employed-PT/FT	30.8%	58.8%	16.7%
Not employed	38.5%	5.9%	11.1%
Retired	30.8% (n = 13)	35.3% (n = 17)	72.2% (n = 18)
Income ($P = .54$)*			
<10,000	28.6%	18.75%	23.5%
10,000-29,999	14.3%	18.75%	41.2%
>30,000	57.1% (n = 14)	62.5% (n = 16)	35.3% (n = 17)
Education ($P = .53$)*			
≤High school	35.7%	22.2%	38.9%
>High school	64.3% (n = 14)	77.8% (n = 16)	61.1% (n = 17)
Type of UI ($P = .91$)*			
Urge	26.7%	31.6%	33.3%
Stress and mixed	73.3% (n = 9)	68.4% (n = 15)	66.7% (n = 11)

Some frequencies may not add up to the total because of missing data, that is, participants did not answer the questions.

* P value for chi-square test may not be accurate because of small sample sizes.

at all time points on bladder function for persons with urge.

Significant differences were found among the groups on UF recorded in diaries. The MANOVA indicated a significant time by group interaction for UF ($F = 4.19, P = .023$). Persons at level 2 stayed the same, but persons at level 1 and level 3 improved at similar rates on number of voids per day. Also, a significant main effect for type of UI was found ($F = 4.19, P = .023$), that is, those with urge had higher frequency scores than those with other types of UI across the 3 levels. However, there was no interaction of time by type of UI ($F = .67, P = .51$) or time by group by type of UI ($F = 1.79, P = .18$).

On number of incontinent episodes, RM MANOVA exhibited a significant time by group interaction ($F = 6.48, P = .004$). Persons at level 1 and level 3 had fewer UI episodes at T3, but persons at level 2 showed no change. There was a three-way interaction (time by group by urge) ($F = 5.53, P = .009$), indicating that persons at levels 1 and 3 were different on changes in number of UI episodes for type of UI. That is, more improvement was found for those with "other" type in level 1 and for urge in level 3.

For perception of health, there were no significant differences on group by type of UI ($F = 2.33, P = .136$), time by group ($F = 1.54, P = .229$), or time by type ($F = .71, P = .495$). The 3 groups showed little change in perception of health, even when adjusting for type of UI.

The second hypothesis, that persons at level 2 would show less improvement on the outcomes than persons at level 3, was supported for comfort, incontinence episodes, and frequency because persons at level 2 did not perform as well as persons at level 3. The hypothesis was not supported for bladder function or perception of health because persons at both levels 2 and 3 improved on bladder function but neither showed significant differences on perception of health.

To test the conceptual framework, the immediate outcome—comfort—was compared with each of the 4 subsequent outcomes—bladder function, perception of health, incontinence episodes, and frequency (Table 2). The averages of the correlations between comfort and specific outcomes at 3 time points were as follows: bladder function ($r = .52$); urinary frequency ($r = -.40$); UI episodes ($r = -.21$); and perception of health ($r = .40$). This is interpreted, for all levels, that as comfort increases, UF and UI decrease (although this relationship is not as strong as the ones for bladder function) and perception of health increases. These findings support the theoretic recursive relationship between comfort and HSBs.

DISCUSSION

Comfort Theory proposed that an increase in comfort would increase the likelihood of engagement in HSBs. This proposition was supported

Table 2. Correlations of comfort with subsequent outcomes (BFQ, SFHS, and CUBS)

Outcome	Time 1	P value	Time 2	P value	Time 3	P value
BFQ	.58	.0000	.51	.0002	.46	.001
SFHS	.47	.0005	.46	.0009	.26	.10
UI episodes	-.25	.02	-.25	.02	-.14	.22
UF	-.46	.0005	-.42	.003	-.33	.03

when an increase in our participants' comfort was associated with improvements in bladder function and episodes of UF and UI. The ability of comfort to predict successful outcomes associated with bladder health and perception of health was moderate. If persons were comfortable they were more confident about their abilities to manage CUBS and they reported a higher perception of health. Further support for the Comfort Theory was realized in the analysis of the differences in comfort related to type of UI. The variable of comfort was sensitive to differences in responses for persons with UI due to urgency. The concept differentiated among the 3 groups on degree of comfort for those with urge and nonurge, showing more improvement for those with urge UI. Participants in the information group (level 1) performed as well as the group receiving information and CS with coaching (level 3). Generally, the CS group (level 2) did not perform as well. Participants in levels 1 and 3 had increased comfort and decreased CUBS, indicating that information with or without CS and coaching was helpful to all participants. These results are in contrast to our previous study, in which results were significantly better with the CS than with information only.¹⁸

One of the objectives of this study was to determine if coaching along with CS would make it more likely that comfort increased and CUBS improved. In our previous study, we did not separate coaching and CS but offered them as a unit.¹⁸ In the present study, we delineated the 2 interventions to further understand their unique actions and effectiveness. In other words, we coached everyone in implementing strategies on the audiotape. By contrast, in the present study, persons who received CS without coaching simply received the tape with instructions on how often to listen to it but with little interpretation or help with application of the strategies. These persons did not show an increase in comfort. Also, the CS group did not demonstrate improvement in CUBS, a surprising outcome because they did show consistent improvement in their knowledge and ability about how to manage bladder function.

A possible explanation for the mixed performance of the CS group in this study is that without significant and specialized support for making a cognitive shift, the process is incomplete and leads to no change or worse outcomes. Furthermore, the

tape may have confused them, because they did not know how to integrate the CS with the behavioral information. Implementation of new health-seeking behaviors involving a cognitive shift requires sufficient and timely support.¹⁵ In essence, what the CS-alone group might have received was bibliotherapy without support, an approach that leads to mixed results.²⁴ They were not empowered to make the changes needed to achieve the goals.²⁶ This study supported the necessity of coaching for at least some persons in our sample.

All levels improved significantly on their ability to manage CUBS, indicating that the information was useful and was readily learned. The application of the information, however, was variable and reflected the need for nursing support to facilitate positive outcomes.

Moreover, whereas comfort increased over time for persons in levels 1 and 3, it was higher for those with urge at the end of the study. Urge is known to be more distressing than the other types of UI, and perhaps the achievement of some control is more satisfying for these persons. The increased comfort clearly reflects the delight with the achievement. The recursive nature of comfort and HSBs should prompt consistent effort to manage CUBS with the subsequent outcome of increasing continence.

It was interesting to note all persons receiving CS (levels 2 and 3) had lower comfort scores at T2, whereas the information group (level 1) increased in comfort over the 3 time points. A possible explanation is that adapting to the new ways of thinking, as embodied in CS, took time and persons not receiving coaching were uncomfortable with those changes at T2. Kim³⁸ found that it took up to 12 weeks to obtain results in a continence intervention program and only then were participants satisfied with the outcome. Therefore, we followed participants for 12 weeks to determine if this finding held, which it did. We concluded that it is important to provide a comprehensive ongoing intervention and to maintain continued support for an extended period.

With regard to the lack of change in health status, it is possible that CUBS is an inconvenience but not interpreted as affecting one's health status. It seems that this attitude was prevalent among our participants and also among their physicians, because our participants did not know the basic in-

Box 1

A brief summary of the bladder health program

1. Review the basic anatomy of the urinary elimination system.
 2. Overview of problems with the urinary elimination: for example, infections, anxiety, structural problems.
 3. Use of cognitive strategies to manage urge and toileting habits.
 4. Use voiding diary to better assess patterns.
 5. Fluid intake: water, bladder friendly drinks such as cranberry juice. Fluids to avoid such as coffee and alcohol.
 6. Toileting habits such as scheduling every 2 hours.
 7. Empty the bladder well.
 8. Prevent constipation.
 9. Pelvic floor muscle exercises.
 10. Seek help if this information does not help.
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formation about bladder health that can improve its function. It is surprising that general information about how to keep one's bladder functioning efficiently is not better offered, known, and/or understood, because disseminating this simple but important information can contribute to significant increases in well-being (see the Box for a brief summary of the bladder health information—a combination of the basic CS with bladder management strategies).

At this juncture, one might ask the question, "Why bother with cognitive interventions at all?" After all, the information group improved consistently without any additional support. Our response is that we believe CS facilitate and increase the likelihood of making a permanent change in attitudes, thoughts, and behaviors. It cannot be determined from this 12-week study if changes fostered by CS continued longer than those reported by persons in level 1. There is evidence that CS may not be more beneficial than information only in the short run but may prevent relapse over time.³⁹

LIMITATIONS

Despite the high attrition after consent in this study, we did find significance, but it is very possible that a larger sample size may have revealed significant findings for all 3 levels on all outcomes. Recruitment difficulties and time constraints of the funding agency made it difficult to collect the number of participants we wanted. Intervention studies with community-dwelling persons are complex and resource intensive. In a number of cases it was difficult to locate participants when conducting the weekly telephone calls. Several were hospitalized, went on vacation, were too tired, or were working irregular schedules and thus were not able to fully engage in the interventions, talk to us on the phone, or keep appointments.

The daily tape-listening schedule may have posed some problems for our participants. Despite reminders and encouragement, adherence to tape-

listening protocols was variable as reported to us by our participants. For many persons it was difficult to fit the tape into their time schedule. Several stated that the tape was helpful but that a daily schedule of tape listening for 20 minutes was too frequent and too long.

Unlike our previous research, a number of participants in this study had difficulty with the tape player. Several tape players were replaced because participants complained that the buttons were poorly labeled and hard to use. Also, the tape-player model we used for this study did not have an automatic shutoff and batteries wore down quickly when the machine was not manually turned off after the tape was played. At the end of the study, about 5 persons kept the tape player and tape, and the remainder took the money, possibly indicating the problematic aspects of the tape player.

IMPLICATIONS FOR FUTURE RESEARCH

We did not attempt to assess the impact of differences in education or learning styles across our sample. This might be helpful for future research and for clinical practice where nurses need to target resources involved with coaching to persons who will benefit from them by virtue of their knowledge base and/or learning styles.

We found that coaching was important for the successful integration of CS in some of our participants. In the future, participants who receive coaching could be limited to those who want the additional support. Randomly assigning participants to coaching did not allow for categorization based on type of bladder symptoms or preferences of the person.

Future intervention studies should also extend the duration of data collection past 12 weeks to account for long-term changes in CUBS. Once the work of learning CS and being coached through the change period (about 4 weeks) is accomplished, it would be interesting to determine if the changes in CUBS that we noticed after 12 weeks

KEY POINTS

- Comprehensive bladder health education made a difference. With sufficient information, many persons made changes to improve CUBS.
- Participants continued to improve over 12 weeks.
- Nursing should provide support over an extended period of time to help persons reach maximum improvement.
- Not all strategies worked for everyone but everyone found at least one strategy to be helpful. Many strategies are simple to implement. Nurses can make a difference very easily!
- Comfort increases when CUBS improves and improvement in CUBS causes increased comfort. It is a recursive relationship. Moreover, comfort is a key predictor of improvement in CUBS.¹⁸

persist. Although attrition would be a problem, additional incentives might be offered to participants who complete bladder diaries and other instruments at 6 and 12 months, and ideally at even further intervals.

When designing studies in the future, information should be tried first and CS with coaching should be introduced only after informational and behavioral interventions are understood and learned but prove to be ineffective for whatever reason. Only when these strategies fail should invasive approaches be applied. This two-tiered approach with follow-up should provide persons with CUBS the maximum opportunities for improvement before seeking more invasive and expensive treatment.

Additional larger studies are needed to test the comfort model with path analysis. We have found consistently in this and other populations^{18,34,40} that comfort is a moderate predictor of success with new HSBs. However, our modest sample size in this and our previous study,¹⁸ while enabling us to achieve significant differences in our intervention groups, have not permitted path analysis.

IMPLICATIONS FOR WOCN NURSING

Comfort is increased and continence is promoted when nurses support persons with CUBS. Nurses can provide support for persons through assessment, information, encouragement, and guidance about how to implement the changes. If persons have more comfort, they are strengthened to apply bladder health information and thus are better managers of their bladder function. Better management then leads to increased continence and comfort.

Qualitative comments from participants in all interventions levels indicated that bladder health information was valuable and generally resulted in improved CUBS. For some, the tape was "just

what they needed" to get a new perspective on CUBS. Cognitive strategies can be implemented with or without audiotapes and can be added to all bladder health information (see Box).

Implications for clinical practice are that the provision of behavioral and cognitive strategies to improve CUBS increases comfort, a consistent predictor of willingness to engage in HSBs related to bladder health. However, it is essential that sufficient support be provided for the integration of a cognitive shift in the management of CUBS. This study confirms that if persons with CUBS receive adequate education and support to implement bladder health strategies, significant improvement can occur. Bladder education should include not only physiologic and bladder retraining information but also the cognitive aspects of bladder function, especially changing self-talk to affirm one's ability to manage urinary elimination comfortably and reliably.

CONCLUSION

Results indicated that the information and coaching groups benefited from both the behavioral and cognitive interventions with increased comfort and decreased CUBS. This finding was especially true for persons with urgency who experienced CUBS. Therefore, in future studies, it would be useful to know the type of UI so as to provide additional specific support for persons. This study demonstrated efficacy for simple interventions such as basic bladder health information. Apparently, the time and effort put into coaching (based on random assignment) was not associated with the best outcomes in a 12-week time frame. Coaching should always accompany CS to achieve a shift in behavioral and cognitive patterns.

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