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# Evaluation of the Urinary Incontinence Scales© to Measure Change After Experiential Learning: A Pilot Study

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Research

# Evaluation of the Urinary Incontinence Scales© to Measure Change After Experiential Learning: A Pilot Study

**Karen A. Karlowicz**

***Evaluation of the effectiveness of the Urinary Incontinence Scales© to measure change after student participation in a disability-incontinence experiential learning activity was the focus of this pilot study. A comparison between pretest and posttest scores showed a significant increase in Belief and Practice subscale scores after participation in the experience. However, positive correlations between the variables measured could not be established.***


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**Key Words: Urinary Incontinence Scales©, experiential learning, model of experiential learning, Kolb's model, pretest-posttest, urinary incontinence.**

**Introduction**

Nurses continue to use absorbent pads and undergarments as the preferred management strategy for urinary incontinence (UI) despite research supporting the use of behavioral interventions. This approach to continence care prompts the question: Would nurses change their management of UI if they were able to encounter the lived experience of wearing an absorbent incontinence product?

**Objective**

The purpose of this pilot study was to evaluate the effectiveness of the Urinary Incontinence Scales© to measure the impact of an incontinence experiential learning activity.

**Method**

A one-group, pretest-posttest design involving 21 senior baccalaureate nursing students who participated in an incontinence experiential learning activity as part of rehabilitation nursing course was used to conduct this study. Change in Knowledge, Attitude, Belief, and Practice associated with participation in the experience was measured using the Urinary Incontinence Scales.

**Results**

After participation in the incontinence experience, the median Attitude score increased by less than 1%, the median Belief score increased significantly by 3.6%, the median Practice score increased significantly by 47.6%, and the average Knowledge scale score increased by 4.4%. Changes in Attitude, Belief, and Knowledge did not correlate with a change in Practice. Furthermore, Experience did not correlate with a change in Practice, or with the change in Attitude or Belief.

**Conclusions**

The Urinary Incontinence Scales appears to be an effective instrument for measuring nurses' Knowledge, Attitude, Belief, and Practice related to UI, and the incontinence experiential learning activity appears to have an impact on students' self-reported nursing care practices related to UI. This study should be repeated with larger and more powerful sample size, and at various time intervals after participation in an incontinence experiential learning activity to better determine the impact on practice.

**Level of Evidence – VI**

A large body of research offers evidence on the effectiveness of behavioral strategies to manage urinary incontinence (UI) (Wyman & Bliss, 2004; Wyman et al., 2004). However, the intergenerational transmission of nurses' attitudes, beliefs, and practice patterns about UI compel them to use absorbent pads and undergarments as the preferred management strategy (Mason, Newman, & Palmer, 2003). There are a variety of reasons why nurses rely on containment measures rather than behavioral interventions to manage UI, including perceived convenience and nursing staff shortages (Palmer, 1995). This approach to continence care, however, prompts the following question: Would nurses change their management of UI if they were able to encounter the "lived experience" of wearing absorbent incontinence products?

This project is based on an innovative experiential learning

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activity that has been an integral component of a rehabilitation nursing course for baccalaureate (BSN) nursing students at Old Dominion University (ODU) for more than 12 years (Karlowicz & Palmer, 2006). Students participating in the experience are required to wear an adult disposable incontinence product throughout the 6-hour time period that they are confined to a wheelchair and assume the role of a disabled person. They are instructed to wear the product "dry" for 5$^1/_2$ hours of the experience, followed by being encouraged to encounter the "lived experience" of being incontinent by wearing the product "wet" after pouring 150 cc of warm tap water into it or wetting it naturally (voluntarily urinating into the product) during the last 30 minutes. Thus, the purpose of this pilot study was to determine the effectiveness of the Urinary Incontinence Knowledge, Attitude, Belief, and Practice Scales© (UI Scales©) (Henderson & Kaska, 1999) to measure change after nursing students' participation in the disability-incontinence experiential learning activity.

## Background

### Continence Care Education

It has been over 12 years since the Agency for Health Care Policy and Research, now the Agency for Healthcare Research and Quality, a division of the U.S. Department of Health and Human Services, released an update of the clinical practice guidelines for management of acute and chronic UI in adults (Fantl et al., 1996). In two summits convened to examine the advances and future directions for UI practice and research, leading researchers and practitioners acknowledged that the guidelines have not improved management of UI as anticipated (Newman & Palmer, 2003; Wyman & Bliss, 2004). Moreover, health care providers have been slow, even resistant, to incorporate research-supported interventions for UI into clinical practice (Wyman et al., 2004).

A study of nurses directly engaged in continence care showed that 76% reported that their knowledge of UI was obtained primarily through informal education (Jacobs, Wyman, Rowell, & Smith, 1998). Informal education is delivered in many ways, including professional meetings, institutional in-services, training programs, workshops, publications, or independent study (Campbell, Knight, Benson, & Colling, 1991; Hancock, Bender, Dayhoff, & Nyhuis, 1996; Palmer, 1995). Informal education permits clinical information and research findings to be widely disseminated to the nursing community. However, these efforts do not seem to influence nurses' attitudes or change how they approach practice regarding UI, even though attempts to increase knowledge create the expectation of a change in practice (Campbell et al., 1991; Hancock et al., 1996). Furthermore, a cognitive dissonance between informal education and nursing care practices for patients with UI has been identified (Henderson & Kashka, 2000).

A survey of undergraduate nursing programs revealed that 90% of curricula offered an average of 2.14 total hours of content related to UI (Morishita, Uman, & Pierson, 1994). Basic continence care is often presented in fundamental courses; group lecture and textbook readings are the teaching methods typically used (Powers, Lowman, & Williams, 1995). In response to calls for greater emphasis on UI in nursing education programs, schools have enhanced their curricula with more specific content based upon continence care competencies identified by a multi-specialty task force (Jirovec, Wyman, & Wells, 1998). However, the amount of time faculty is able to devote to continence care remains insufficient to educate nurses to focus on the use of behavioral strategies through nursing best practices rather than containment for assessment and management (Newman & Palmer, 2003; Wyman, 2003). Even when provided with this information, the traditional strategies used to teach students often leave them unprepared to effectively care for incontinent clients, mainly because the instruction they have received affords no opportunity to acquire personal insight or an appreciation of the psychosocial impact UI has on the individual (Karlowicz & Palmer, 2006). Thus, alternative, creative teaching strategies must be explored that emphasize affective behaviors, such as emotions and feelings, associated with continence care (Hancock et al., 1996; Henderson & Kashka, 2000; Roe et al., 2004).

### Experiential Learning

An alternative to traditional teaching methods is the use of experiential learning activities. Experiential learning is an instructional strategy that engages the individual in a situation or encounter that is designed to promote the acquisition of knowledge through active involvement and reflective observation (Kolb, 1984). Studies by Bassett and Pickard (2005); Goddard and Jordon (1998); and Van Boxtel, Napholz, and Gnewikow (1995) examined the impact of wheelchair experiences on nursing students' understanding of persons with disabilities. While qualitative findings in these studies suggest that the experiences are successful in heightening awareness and positively influencing nursing students' opinions regarding persons with disabilities, measures used to document changes in attitude following participation in the experiences did not produce statistically significant results. Conversely, Varkey, Chutka, and Lesnick (2006) reported a statistically significant improvement in attitude and empathy toward older adults in a pre and post-intervention study of medical students who participated in a modified aging game as part of a experiential learning activity. More importantly, 61.5% of participants indicated a significant increase, and 37.7% indicated a moderate increase in their knowledge and skills specific to elder care after participation in this experience (Varkey et al., 2006).

Experiential learning has also been described as an instructional strategy to promote age sensitivity training among hospital staff (Hatcliffe, 2003), as well as dementia understanding by nursing home caregivers (Ross, 2005). Likewise, simulated experiences have been designed to help medical students (Wilkes, Milgrom, & Hoffman, 2002) and nurses (Hausmann & Sanna, 2003) view the hospitalization experience from the patient's point of view. More recently, however, experiential learning has been employed to assist pediatric residents in understanding the challenges parents face in accessing health care services for children with multiple health problems (Zenni et al., 2006), to facilitate multidisciplinary mass health emergency preparedness training (Silenas, Akins, Parrish, & Edwards, 2008), and to provide a means by which mental health professionals come to understand the psychiatric symptoms experienced by persons with mental health conditions (Ballon, Silver, & Fidler, 2007).

These examples of experiential learning are distinguished from high-fidelity simulations in that the learner does not interact with a patient mannequin and respond to a computerized scenario. Rather, the learner assumes the role of the patient (or family member), and for a short period of time is immersed in the patient's world and walks in the patient's shoes to acquire a personal understanding of the challenges typically encountered. Real-life experiential learning activities such as these often elicit strong feelings and reactions by participants. A change in attitude is often the desired outcome of an experiential learning activity, and qualitative findings in these reports affirm that the experiences do have a positive effect. However, the active involvement of learners in such an experience also appears to promote the development of empathy and compassion (Zenni et al., 2006), critical thinking, self-reflection, and the examination of one's own past and future caregiving practices (Jeffries & Norton, 2005).

## Conceptual Framework

Kolb's model of experiential learning (Kolb, 1984) provides the theoretical basis for this study. The model links philosophical, physiological, and psychological evidence to show the relationship of experience to the learning process; it also demonstrates the ability of knowledge to be transformed by experience (Lewis & Williams, 1994). According to Kolb (1984), experiential learning is a four-stage cycle that has distinct adaptive learning modes: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Participation in an experience as well as a transformation or application of the information gleaned from the activity must occur for learning to take place (Kolb, 1984). The grasping-transforming process is fundamental to experiential learning; it facilitates the acquisition and development of knowledge and skills that are critical for the individual to perform effectively in the professional role. The dynamic nature of the grasping-transforming process promotes human development with new ideas and stimulating experiences that enhance cognitive and psychomotor skills but also influence fundamental values and global perceptions of the individual (Sheckley & Allen, 1991).

## Methods

### Design and Sample

A one-group, pretest-posttest design was used to conduct this pilot study. Study participants were a convenience sample of senior BSN students enrolled in a semester-long rehabilitation nursing course, requiring each student to complete a 6-hour disability-incontinence experiential learning activity as a course assignment. Incentives were offered to encourage participation, and subjects who completed both the pretest and posttest received 10 extra credit points in the course that counted as a quiz grade as well as a $5 Starbuck's gift card. Of the 32 students enrolled in the course, 21 chose to voluntarily participate in the study. An initial survey question at the start of the pretest and posttest asked subjects to reaffirm their willingness participate in the study with completion of the entire survey constituting informed consent to act as a subject in this research.

### Measurement/Instrument

The UI Scales (Henderson & Kaska, 1999), which contain a total of 135 items, were used to conduct this study. The instrument consists of four subscales that have undergone both expert and face validity to establish content validity, as well as concept analysis involving a review of literature to establish construct validity. The Belief scale is combined with the Attitude scale, and consists of 43 positive and negative statements regarding UI and uses a 6-point Likert scale with responses ranging from strongly agree to strongly disagree. The Practice scale consists of 25 statements regarding nursing actions specific to UI and uses a 4-point Likert scale to capture responses, including always, usually, sometimes, or never. The Knowledge scale consists of 27 items that require a yes or no response, and 11 items that require participants to match statements with the type of UI. Reliability was previously established using Cronbach's alpha coefficient and is reported as: Knowledge scale 0.67, Attitude scale 0.86, Belief scale 0.85, and Practice scale 0.89 (Henderson & Kaska, 1999).

For this study, the UI Scales were adapted with permission for the posttest to include an additional section containing 9 questions specific to the disability-incontinence experience (hereafter referred to as the Experience scale) that used a 6-point Likert scale with responses ranging from strongly agree to strongly disagree. One open-ended question was also included, allowing subjects to provide personal state-

ments regarding their participation in the disability-incontinence experience. Reliability testing of the Experience scale was a component of this pilot study. Finally, the section regarding personal characteristics consists of 19 items and included questions that were added to allow for more detailed description of study participants.

### Procedures

Following approval of the study by the University Institutional Review Board, participants were recruited and asked to complete the pretest survey. The pretest survey was administered using the original version of the UI Scales in an online format via the Inquisite® Survey System. Participants completed the pretest survey during the first week of the semester, prior to the class session on urinary elimination and before starting their rehabilitation clinical rotation or participation in the disability-incontinence experiential learning activity. Subsequent participation in the disability-incontinence experiential learning activity occurred according to course guidelines. Posttest surveys involved the use of the adapted version of the UI Scales and were completed in an online format after the class session on urinary elimination and at the conclusion of the clinical rotation, during which participation in the experiential learning activity occurred. The online surveys were managed by the ODU Social Sciences Research Center; this allowed participants to remain anonymous to the researcher. At the conclusion of the study, a list of participants was provided to the course faculty (not the researcher) to facilitate delivery of incentive awards; in addition, survey responses were de-identified by survey managers before data files were delivered to the researcher for analysis.

### Analysis

The SAS v9.1 (Cary, NC) statistical software program was used for all data manipulation and analysis. Level of significance was set at 0.05. Descriptive analysis was conducted of all demographic and scaled outcomes on three bases: prior to the experiential learning activity (pre), post-activity (post), and change (post-pre). UI Knowledge, Attitude, Belief, and Practice subscale scores were tested for normality using the Kolmogorov-Smirnov test. All subscale scores were analyzed using the median with the 25th and 75th percentiles (IQR), and normally distributed scores were additionally analyzed with means and 95% confidence intervals (CI). Discrete and categorical data were analyzed using frequencies with relative frequencies. Change in UI Knowledge, Attitude, Belief, and Practice subscale scores were tested for significant changes using either the Wilcoxon Rank-Sum test (where change in score was non-normally distributed), or *t*-test (where normally distributed).

To determine the effectiveness of the UI Scales to measure the impact of the incontinence experiential learning activity, regression models were fit individually of the change in Attitude, Belief, Knowledge, and Experience against the change in Practice score. Additionally, a regression model was fit of the Experience scale score against the change in Attitude and Belief scores.

Cronbach's alpha (standardized) was used to determine reliability of the Experience scale. Item correlations with total scale were examined for direction to determine whether the item should be reversed and its impact on the total scale. Items with correlations with total of less than 0.40 were identified and recommended for removal.

## Results

All participants were senior nursing students enrolled in a rehabilitation nursing course that is offered in the last semester of a BSN program. Completion of the incontinence experiential learning activity occurred during the rehabilitation clinical rotation that includes a 3-week experience at an in-patient rehabilitation facility followed by 3 weeks of outpatient rehabilitation experiences, including cardiac rehabilitation, brain injury camp, and prosthesis clinics. Most participants (67%) were between the ages of 20 to 25, with none over the age of 40. Twenty of the 21 participants were female, and 50% were Caucasian, 30% Black or African American, and 20% other ethnicities.

### Pretest Results

The median Attitude score was 70 of 120 points (58% of maximum), which indicated a moderately positive attitude about care for UI. The median Belief score was 93 of 138 points (68% of maximum), which indicated a positive belief about UI. The median Practice score was 40 of 75 points (51%), which indicated that this group of participants performs continence-related practice behaviors about half of the time. An average score of 80% correct on UI Knowledge Scale suggested a slightly better-than-average awareness of information related to the topic UI (see Table 1).

### Posttest Results

The median Attitude score after the experience was 70 of 120 points (58% of maximum), which represented an increase in the median score by less than 1% ($t = 0.03$, $p = 0.80$). The median Belief score was 97 of 138 points (70% of maximum), which represented a significant increase of 3.6% ($t = 2.67$, $p = 0.01$). The median Practice score was 53 of 75 points (64% of maximum), which indicated a significant increase of 47.6% ($t = 2.18$, $p = 0.04$). The median posttest score on the Knowledge scale was 85.7%, which represented an increase of 4.4% ($t = 1.26$, $p = 0.22$). Additionally, a median score of 46% on the Experience scale indicated that participants viewed the disability-incontinence experiential learning activity as a positive experience (see Tables 2 and 3).

Regression analysis suggests that a change in Attitude does not significantly correlate with change in Practice (95%CI: -0.99

**Table 1.**
**Pre-Experience Scale Score Summary**

| Scale | Median | 25th Percentile | 75th Percentile | Mean | Lower 35% CI for Mean | Upper 35% CI for Mean |
|---|---|---|---|---|---|---|
| Attitude | 70 | 65 | 74 | 69.07 | 66.89 | 72.44 |
| Belief | 93 | 89 | 96 | 93.90 | 90.60 | 97.21 |
| Practice | 40 | 21 | 50 | 37.95 | 28.76 | 47.14 |
| Knowledge (% correct) | 80 | 77.1 | 85.7 | 80.95 | 77.48 | 84.43 |

**Table 2.**
**Posttest Scale Score Summary**

| Scale | Median | 25th Percentile | 75th Percentile | Mean | Lower 35% CI for Mean | Upper 35% CI for Mean |
|---|---|---|---|---|---|---|
| Attitude | 70 | 66 | 71 | 70.00 | 67.57 | 72.43 |
| Belief | 97 | 92 | 102 | 97.10 | 93.88 | 100.31 |
| Practice | 53 | 36 | 60 | 48.24 | 39.87 | 56.60 |
| Knowledge (%) | 85.7 | 80 | 91.43 | 84.08 | 78.77 | 89.39 |
| Experience | 46 | 43 | 48 | 45.10 | 42.37 | 47.82 |

**Table 3.**
**Change (Post-Pre) Scale Score Summary**

| Scale | Median | 25th Percentile | 75th Percentile | Average % Increase |
|---|---|---|---|---|
| Attitude | 0 | 1 | 3 | 0.90% |
| Belief* | 4 | 3 | 6 | 3.59% |
| Practice** | 13 | 15 | 10 | 47.62% |
| Knowledge (%) | 5.7 | 2.9 | 5.73 | 4.36% |

*Change in Attitude and Practice scale scores was not normally distributed.
**Significant change from baseline score at the 0.05 level.

to 1.57, $p = 0.64$). Likewise, the change in Knowledge does not appear to correlate with a change in Practice (95%CI: -0.66 to 0.37, $p = 0.56$). While there was a significant increase in Belief following the experiential learning activity, the change in Belief does not significantly correlate with change in Practice (95%CI: -0.78 to 1.39, $p = 0.57$). There was also a significant increase in Practice following the experiential learning activity; however, in this study, Experience does not significantly correlate with the change in Practice (95%CI: -1.41 to 0.54, $p = 0.36$).

An examination of the impact of Experience on Attitude suggests that the Experience scale score does not significantly correlate with a change in Attitude (95% CI: -0.48 to 0.28, $p = 0.59$). While there was a significant difference in Belief following the experiential learning activity, it appears that the Experience scale score does not significantly correlate with change in Belief (95% CI: -0.56 to 0.34, $p = 0.60$).

The Experience scale demonstrated good reliability with a Cronbach's alpha score of 0.84. However, 2 of the 9 items tested in this scale had poor reliability. Statements recommended for removal from the scale included a) "There were no psychological consequences as a result of my participation in the disability-incontinence experience" ($r = 0.17$), and b) "There were no physical consequences as a result of my participation in the disability-incontinence experience" ($r = 0.18$).

Responses to the open-ended question consistently reflected concerns for self-image and a strong sense of self-consciousness while wearing an incontinence undergarment. Feelings of stress, discomfort, and embarrassment were also expressed. As one participant wrote, "The single most important thing that I learned from this experience is that no matter what someone tells you about incontinence, as an individual 'experiencing' incontinence, you will feel embarrassed and uncomfortable."

## Discussion

The literature suggests that improvements in continence care require educational strategies that emphasize the affective behaviors associated with caring for inconti-

nent persons, rather than focusing solely on the acquisition of knowledge related to UI. The pilot study described in this article set out to address this challenge by investigating the effectiveness of the UI Scales to measure change after participation in an experiential learning activity designed affect learners' UI Knowledge, Attitude, Belief, and Practice. The comparative analysis of responses between pretest and posttest surveys did document positive changes in Knowledge, Attitude, Belief, and Practice after participation in the Experience, with the change in Belief and Practice scores being statistically significant. However, this study did not demonstrate a statistically significant correlation between Knowledge, Attitude, Belief, and Experience with Practice; nor did it demonstrate a statistically significant correlation between Experience with Attitude and Belief. The findings are similar to those reported by Henderson and Kashka (2000) in an initial study using the UI Scales, with the exception that Experience was not a factor in that study.

It is encouraging, however, that Practice scores after the experiential learning activity increased by more than 47%. Although the increase in Practice scores reflects participants' self-reported care practices, this significant increase suggests that the experiential learning activity did prompt the students to want to assume a more active role when caring for patients with UI.

Certainly, the results of this pilot study are limited by the fact that the sample was relatively small and consisted of only 21 participants in one school of nursing. Another important limitation is that responses regarding practice are self-reported and could have been influenced by the fact that the researcher taught the class session on bladder rehabilitation; students may have been compelled to select responses seemingly preferred by the instructor. Posttest responses are also solicited at a single point in time and do not take into consideration the assimilation of knowledge or experience after several weeks or months. Likewise, there is no way to account for external influences on UI knowledge, attitude, belief, and practice. Additionally, a variety of different disposable incontinence undergarments were worn by participants; the lack of uniformity in products used was a potentially influencing factor in students' reaction to the experiential activity. Finally, the impact of previous personal or caregiving experiences related UI is not considered. Given that the intent of this pilot study was to gather baseline data regarding the effectiveness of the measurement instrument to detect change with an interactive learning experience, the results may not be generalized.

## Conclusions

According to recent surveys, UI is a problem that affects 38% of all community dwelling adult women (Anger, Saigal, Litwin, & Urologic Diseases of America Project, 2006), and over 50% of nursing home residents in the United States (Anger, Saigal, Pace et al., 2006). These statistics underscore the need for new nursing graduates to enter the workforce prepared to provide basic care to persons with UI in a manner that is empathetic, culturally sensitive, and patient-centered (Lauver, Gross, Ruff, & Wells, 2004). This requires that professional nursing education direct its efforts at not only providing increased information, but also creating learning experiences to aid in the development of an ethos in which evidence-based interventions for UI can be implemented (Wyman, 2003).

The significant increases in Belief and Practice following student participation in the disability-incontinence experiential learning activity provide sufficient justification to repeat this study with a larger and more powerful sample size. In repeating this study, it will be important to strengthen the study design and standardize procedures so that consistent information about UI is provided to all study participants. It will also be critical that all participants wear the same type of disposable incontinence undergarment to ensure that survey responses are based on similar experiences. Finally, it may be valuable to survey subjects at various points in time after the experiential learning activity to determine the long-term impact of this instructional strategy on UI practice patterns. ◙

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