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## Project Implementation Paper

## Mind over bladder: Women, aging, and bladder health

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## ABSTRACT

The purpose of this study was to explore the efficacy and acceptability of an innovative, electronically delivered self-management intervention for urinary incontinence (UI) that included daily mindfulness practice, completion of sequential bladder diaries, and bladder health education to improve UI in older women living independently in a retirement community. A mixed methods pilot study was conducted over ten weeks using a custom website or CD. Ten women were recruited and 8 completed the study; 5 of those (71%) experienced fewer daily UI episodes post intervention ( $p = 0.055$ ). The women also reported a statistically significant decrease in the impact UI had on their everyday life ( $p = 0.04$ ). Seventy-one percent ( $N = 5$ ) reported subjective improvement in UI, and high acceptability scores also were achieved. The intervention was both effective in helping older women self-manage UI and acceptable to the population group. Further research is needed with a larger and diverse population of older women.

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## Introduction

Despite the high prevalence of urinary incontinence (UI) in older women, the significant costs of its management and treatment, and its impact on quality of life, women affected often do not receive timely and effective care. UI affects an estimated 26% of women, with estimates of 37% in women aged 65 and older.<sup>1–4</sup> By 2020 the United States' healthcare system will spend more than USD 82 billion on the treatment of urinary incontinence.<sup>4</sup> Additionally, UI is linked to significant medical, psychological, and social distress and has a more negative influence on quality of life than diabetes, cancer, or arthritis.<sup>1,3</sup> Despite the significant personal and socio-economic burdens associated with UI, this condition is under-recognized and undertreated by clinicians; in fact, fewer than 15% of women with UI seek treatment and less than 25% of women who do seek treatment think that it is adequately addressed.<sup>1,5,7,8</sup>

Urgency urinary incontinence (UUI) and mixed urinary incontinence (MUI), which were specifically addressed in this study due

to their prevalence in older women, are associated with decreased quality of life in older women.<sup>9</sup> The International Continence Society (ICS) definition for UUI is, “the complaint of involuntary loss of urine associated with urgency.”<sup>6</sup> MUI is “the complaint of involuntary loss of urine associated with urgency and also with effort or physical exertion or on sneezing or coughing.”<sup>10</sup>

Professional urologic associations recommend the use of effective non-pharmacologic self-management treatments of UI as first-line therapies.<sup>11</sup> Three examples of these strategies include continence promotion, a bladder diary, and mindfulness practice. Continence promotion, which includes bladder health education regarding therapeutic and non-therapeutic behaviors for women to engage in to reduce bothersome symptoms, and the use of a bladder diary are long-standing effective components of self-management strategies.<sup>11</sup> Mindfulness practice is a novel, non-pharmacologic strategy that has been shown to significantly reduce prevalence of UI episodes in women and subsequently improve quality of life related to UI.<sup>12</sup> Pelvic floor muscle exercises (PFME) are another long-standing self-management strategy often recommended clinically. PFME were not included in this study for two reasons: 1) they are especially helpful for stress urinary incontinence (SUI), and this study focused on UUI and MUI, and 2) this study focused on strategies that specifically addressed cognitive structures, or brain-bladder connection, associated with continence management.

The pathophysiology of UI is, in part, a functional disorder due to cognitive dysfunction rather than exclusively neurogenic or organ dysfunction.<sup>2,12–14</sup> Mindfulness practice, unlike previous UI

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therapies such as PFME, dietary adjustments, or surgical interventions, addresses the brain-bladder connection through its focus on changing the cognitive response to bladder filling and sensations of urgency.<sup>2,12</sup> These strategies are rooted in the work of Jon Kabat-Zinn who developed Mindfulness Based Stress Reduction therapy in the 1970s to address psychological stress by encouraging people to pay purposeful attention in the present moment without judgment or reactivity.<sup>15</sup> This strategy does not require specific awareness or attention to the bladder, and it is not associated with promoting urinary urge inhibition.

Despite the availability of self-management strategies, these therapies are often not encouraged by healthcare providers due to the time intensity to teach, perform, and evaluate outcomes.<sup>16</sup> As a consequence, many women continue to suffer from UI and its side effects. Disseminating self-management practices directly to women affected by UI via electronic delivery (website or CD) reduces the teaching burden on healthcare providers and it may result in increased use of the self-management intervention and a reduction in UI symptoms.

This pilot project included development, implementation, and evaluation of an electronically delivered UI self-management intervention for older women who live independently in a retirement community. One objective of the project was to determine if a multi-component electronically-delivered self-management intervention was effective on three outcomes: number of daily UI episodes as recorded on bladder diaries, improvement of quality of life related to UI as determined by symptom ratings on bother scales; and, subjective improvement of UI post-intervention. The second objective was to determine if the self-management intervention and electronic delivery was acceptable to this population group based on a post intervention acceptability survey and interview.

## Methods

### Study design

A mixed methods pilot study was designed to analyze pre- and post-intervention quantitative data and post-intervention subjective questionnaires to assess effectiveness and acceptability of the web-based intervention with older adult women with self-reported UI who lived independently in a retirement community. A website, *Mind Over Bladder*, was created and used to deliver the 8-week intervention, an interval of time consistent with mindfulness-based stress reduction intervention originally created by Kabat-Zinn. An 8-week time interval was also used in studies investigating mindfulness as an intervention for women to manage UI.<sup>2,9</sup>

### Participants and setting

The study participants (N = 10) lived independently in a non-profit retirement community in a small city in the southeastern United States and volunteered to participate in the study. Convenience sampling was used. Approximately 226 older adults live in independent living units within this retirement community and 62.4% are women, thus approximately 141 were potential participants. Participants were recruited through broadcast mail messages, mailed flyers, and through announcements made in the community newsletter and bulletin boards and in life enrichment activities. Participants who completed the study received a \$15 gift card for the retirement community's gift shop. Inclusion criteria included being female, age 65 and older, self-identifying as having urgency or mixed urinary incontinence, and able to speak, read and write English. Exclusion criteria included being male, being under 65 years old, experiencing only stress urinary incontinence, and having a cognitive impairment that prevented their ability to read,

understand, and follow the instructions that guided the intervention. The Mini-Cog, a validated 3-item tool, was used to screen interested participants for cognitive impairment that would preclude participation at the first face to face meeting.<sup>17,18</sup> IRB approval was granted prior to the initiation of the study.

### Data collection/assessment of outcomes

The baseline data collection questionnaire contained six demographic items, six health characteristic items, and two validated instruments. One validated likert-scale instrument was the 18-item Toileting Behaviors: Women's Elimination Behavior's scale (TB-WEB), and it was used to identify toileting behaviors women use such as voiding positions, (i.e., crouching over or sitting on toilet), and delay or strain to void that may be associated with UI. The TB-WEB has demonstrated reliability and validity for assessing women's toileting behaviors.<sup>19,20</sup> Toileting behaviors are important to understand as they likely affect bladder health and can contribute to bladder dysfunction.<sup>20</sup> The second validated instrument was the International Consortium Incontinence Questionnaire-Female Lower Urinary Tract Symptom (ICIQ-FLUTS). The ICIQ-FLUTS is a 12-item questionnaire that measures the quality of life impact of lower urinary tract symptoms in women.<sup>21</sup> The ICIQ-FLUTS measures frequency of bladder leakage, voiding, urgency, and nocturia and include bother scales for each of these symptoms.<sup>21</sup> The bother scales are not included in a total score, but rather they are scored individually to assess quality of life impact of the specific symptoms.<sup>21</sup> For the purposes of this study, bother scales scores for voiding and bladder leakage were used to determine changes in quality of life impact associated with UI.

Bladder diary data were also collected to assess efficacy of the intervention on decreasing daily incontinent episodes. A bladder diary available on the International Continence Society (ICS) website was used to collect specific, objective measurements of voiding episodes. The website was available for a limited period of time following ICS's Bladder Diary Day and is now no longer available. A paper and pencil version of this bladder diary was used to record the time when fluids were consumed, the amount and type of fluids consumed, voids, bladder leaks, pad changes, and urgency associated with voiding episodes.

The Baseline ICIQ-FLUTS bother scales and bladder diary served as quantitative data to evaluate outcomes. While these two measures were used to assess outcome variables, additionally, these tools provided for increased self-awareness of bladder habits as women engaged in the self-management intervention and thus also contributed to therapeutic aspects of the intervention, not solely as data collection.

In addition, an acceptability questionnaire and semi-structured interview script ([Appendix A](#)) were used post-intervention to collect information regarding acceptability and the women's experiences with the study. The acceptability pencil and paper questionnaire was a 6-item likert-scale with responses ranging from strongly disagree to strongly agree rated on a scale of 1–10 and was developed by the primary investigator (JEL) specifically for this study.

The semi-structured script was used by the principal investigator in face to face interviews with each participant. The participants' responses were transcribed during the interview. The transcripts were then analyzed to assess themes and patterns of the responses. The women's perceived effectiveness of the intervention was addressed through the semi-structured interview responses to the question: "Do you think incontinence affects your life less now?"

### Data analysis

Quantitative data were entered into Microsoft Excel spreadsheets. Microsoft Excel was used to store and analyze de-identified data.

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