

**Implementing a Behavior Therapy Program in Adults with Overactive Bladder to Improve
Quality of Life and Urinary Symptoms Scores**

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Abstract

Overactive bladder syndrome comprises multiple lower urinary tract symptoms. Recommended first-line treatment is behavior therapy; however, drug therapy is often used initially because of the lack of provider time and easily accessible behavior therapy guides. The purpose of this quasi-experimental, pre-post intervention study was to examine the improvement of adult patients' ability to perform behavior therapy and change negative bladder behavior to increase quality of life and improve urinary symptoms of overactive bladder. Eight participants were recruited from a urology outpatient clinic within a not-for-profit health system from August 2020 to March 2021. The evidenced-based practice intervention included a sequentially guided verbal and written instruction on bladder training principles, fluid management, and pelvic floor therapy. A pre-and six-week post Overactive Bladder Questionnaire with initially defining patient urology symptom goals was administered to assess for improvement of urinary symptoms and accomplishment of patient goals. Descriptive statistics were used to analyze the data. Results showed a reduction in Overactive Bladder Questionnaire scores for all eight participants following the intervention. The implication of this study affects nursing, specifically nurse practitioners, by providing explicit instructions on presenting behavior therapy education to patients.

Keywords: Overactive bladder, behavior therapy, quality of life, OAB-q, urinary symptoms

Implementing a Behavior Therapy Program in Adults with Overactive Bladder to Improve Quality of Life and Urinary Symptoms Scores

Overactive bladder is a syndrome which the International Continence Society defines as urinary urgency, and often urinary frequency and nocturia, with or without the presence of urinary incontinence, in the absence of urinary tract infections or other pathology (Azuri et al., 2017; Gormley et al., 2012; Kinsey et al., 2017). Overactive bladder (OAB) syndrome has a significant impact on the economy with an estimated cost of treatment nearing \$82.6 billion by 2020 due to an increase in the aging population and the prevalence of OAB among patients worldwide (Durden et al., 2018; Irwin et al., 2011; Perk et al., 2016). Suggested first-line treatment is behavior therapy (Gormley et al., 2012; Perk et al., 2016; Yates, 2019).

Significance

Overactive bladder affects approximately 11% of the world's adult population, or 455 million people (Xu et al., 2018). Although not life-threatening, OAB (see Appendix A) can negatively affect health, such as depression, low work productivity, poor sleeping habits, issues with intimacy, and a decline in health (Yates, 2019). A British study concluded that 36% of both women and men stated OAB extensively or significantly affected their lives (Truzzi et al., 2016). The cost to treat OAB symptoms negatively affects the health care system because of the high cost burden on payers, with as much as 75% of the cost linked to treatments such as pharmacotherapy and surgery (Yehoshua et al., 2018). Although the professional practice guidelines are clear regarding first-line treatment being behavior therapy (BT), a lack of care coordination likely exists, causing missed opportunities to optimize care for patients with OAB (Yates, 2019).

Local Issue

The severity of OAB and the lack of BT implemented as first-line treatment at the local study setting has been a long-standing issue with urology clinics. Many patients are referred to specialty clinics by primary care providers who have initiated drug therapy before attempting behavior therapy. The assumption within the urology practice was that there are few concise resources for providers that encompass a collection of BT components in one source and many providers lack time to develop a resource for their practice, leading to an overuse of anticholinergic drug therapy. The urology clinic assumed that if such a resource existed and had positive outcomes with treating urinary symptoms, primary care providers would use a BT resource over prescribing drug therapy. The necessity to trial such a resource would be required before deploying education to primary care provider clinics.

Diversity Considerations

The diversity in the demographics for the evidence-based practice (EBP) intervention primarily lies with gender. Although OAB is thought to be prevalent in both genders relatively equal, global studies have shown that women are more likely to report symptoms more often than men (Eapen & Radomski, 2016). In 2018, it was estimated the prevalence of OAB symptoms was 17% in women, and increased to 30% in those over age 65 (Yeh & Chai, 2018). Many women experience OAB symptoms because of poor urethral sphincter development, hormonal changes, and childbirth (Kim et al., 2017) which can lead to urinary incontinence and may be the reason women report symptoms early. Therefore, most participants in this study were female.

Rural areas account for one-fifth of the U.S. population with racial and ethnic minorities representing 20% of these areas (Caldwell et al., 2016). An 80% growth of minorities has been identified among rural areas in the last decade (Caldwell et al., 2016). These findings appear to accurately represent the Southwest Missouri area where the EBP intervention took place. A combination of rural and urban patients is seen within the clinic; however, the majority is rural. Management of rural patients was addressed by requiring two office visits to implement and assess the EBP intervention, which limited the demand for transportation in this patient population.

The patient population at the clinic is primarily Caucasian, with a growing Hispanic, African-American, and Micronesian populace. A personal translator or a language line phone is available through the health system. This resource ensures all non-English speaking patients receive proper education in their native language.

Problem and Purpose

The purpose of this study was to examine the improvement of patient ability to perform BT and change negative bladder behavior through a guided educational intervention to improve quality of life and urinary symptom scores in adults experiencing urinary urgency, frequency, incontinence, and nocturia for greater than one month at a urology outpatient clinic within a not-for-profit health system from August 2020 to March 2021.

The evidenced-based study addressed the following primary problem: overactive bladder syndrome is associated with a negative impact on health-related quality of life and mental status, an increase in psychological distress, and interferes with daily activities and social interactions (Johnston et al., 2019; Lee et al., 2015). A secondary problem was the use of anticholinergic drug therapy to treat OAB symptoms, which has been linked to increased risk for cognitive

impairment, dementia, falls, and bothersome side effects such as dry mouth, constipation, and blurred vision (La Rosa et al., 2019; Rizvi et al., 2018). The third problem addressed was the limited use of BT across disciplines, which has been associated with an increase in time commitment by providers, lack of program development and resources for BT, and patient resistance to behavior therapy (Amodeo et al., 2011; Carmel et al., 2014; Landes et al., 2017).

The current triggers for change to treat OAB is the over use of drug therapy as first-line therapy due to convenience for providers, acceptance from patients, and lack of time and resources for BT intervention. Consistency in using BT over drug therapy is essential. Many disease processes are treated with anticholinergics such as Parkinson's disease, depression, obstructive lung disease, and allergies (Dauphinot et al., 2017; Gray et al., 2015; Ruxton et al., 2015). Prolific anticholinergic use can increase the risk for altered mental status and dementia. Overactive bladder can be treated without anticholinergics, decreasing the risk for harmful side effects and polypharmacy.

Facilitators, Barriers, Sustainability

Facilitators were identified for this study as it relates to supporting systems, stakeholders, and champions. A minimal time commitment was required of the physician or champion, nursing staff, and support staff. The study team leader was the only provider implementing the BT with participants. This allowed for support staff to continue with their daily duties. There was no expense to the health system or the clinic for the EBP intervention. It was estimated that approximately \$3000 was generated for the clinic due to a higher level of billing for each participant's encounter because of the teaching component and lengthy office visit. Additional money was generated for the health system through multiple patient visits to outpatient physical therapy.

A possible barrier for the EBP intervention included an increased time commitment on behalf of the nurse practitioner who was the study team leader. A second barrier was the risk for skepticism from support staff, stakeholders, and patients. The need to foster trusting relationships through clear communication and concise educational material was necessary to minimize this risk. Custom booklets accompanied the guided verbal education and were printed through the clinic printing service at virtually no expense.

Sustainability of the study was considered high if the EBP intervention produced a positive outcome. Educational instructions and materials were replicated with ease by physicians or nurse practitioners. The study team leader, the only nurse practitioner in the clinic, and oversaw the intervention. The study mentor, who was the primary urologist, showed great enthusiasm throughout the course of the study. One factor that could inhibit sustainability was the study team leader's inability to practice in the clinic for lone time. No other providers expressed interest in providing extensive education and stated they would prefer the nurse practitioner perform this education.

Inquiry

In adults, 18 years and older with overactive bladder symptoms, does the use of a nurse practitioner lead behavior therapy program improve urinary symptoms and quality of life within six-weeks at a southwest Missouri urology clinic?

Review of the Evidence

Search Strategies

A review of the literature was conducted to analyze the effects of a behavior therapy program to improve urinary symptoms and quality of life in patients with OAB symptoms. The data bases included PubMed, CINAHL, ERIC, and Cochrane review, and the search engine

Google Scholar. Boolean combinations were applied to the following words and phrases: overactive bladder, behavior therapy, bladder therapy, quality of life, measurement tools, urinary symptoms, urinary incontinence, nocturia, urinary frequency, urinary urgency, and anticholinergics. Inclusion criteria were included articles published between 2010 and 2020 in the English language, but not limited to domestic research.

The search returned 1485 articles with two articles found through ancestral search (see Appendix B). Duplicates were removed using the Zotero reference manager. After reviewing abstracts, 1313 articles were excluded because of full-article limitations, non-English articles, children or pregnant subjects, low levels of evidence, or were deemed out of scope for the review. The remaining 152 articles that met criteria were discarded based on alternative therapies, third-line therapies, perioperative procedures, benign prostatic hyperplasia, research conducted with children, or low levels of evidence.

A critical analysis of the 36 remaining articles was performed and cataloged based on emerging themes. The themes included behavior therapy, patient-reported outcomes for quality of life and urinary symptoms, comorbidities associated with OAB, and side-effects linked to anticholinergic use (see Appendix C).

The articles were evaluated for strength of evidence based on Melnyk's hierarchy (Melnyk & Fineout-Overholt, 2019) and date of publication (see Appendix D). Within the theme of behavior therapy there were five level I articles, five level II, one level IV, and one level VII, with 10 of the 12 articles published within the last five years. Patient-reported outcome tools to assess for quality of life and urinary symptoms had one level II article, two level III, five level IV, and one level VII, with six of the nine articles published within the last five years. Comorbidities associated with OAB had one level II article, three-level IV, and one level, with all

five articles published over the previous five years. Medication side effects had three articles at level I, two at level IV, and one at level VI, with five of the six articles published within the last five years. Patient education returned two level I articles, one level IV, and one level VII, with one article published in the last five years.

Themes

Through the synthesis of evidence, several themes emerged which aligned with the inquiry. Behavior therapy was the primary theme with sub-themes identified as bladder training and control, pelvic floor muscle therapy (PFMT), fluid management, and education. Three additional themes included anticholinergic medications, comorbidities of OAB, and patient-reported outcome measures with sub-themes of quality of life and urinary symptoms.

Behavior Therapy

Behavior therapies for managing OAB symptoms are well supported in the literature (Daily et al., 2019). The evidence-based guidelines to treat OAB symptoms have been provided by the American Urologic Association (AUA) and the Society of Urodynamics, Female Pelvic Medicine and Urogenital Reconstruction (SUFU) based on their systematic review of 151 treatment articles (Gormley et al., 2012). Recommendation for first-line treatment of behavior therapy was given an evidence strength rating of a grade B by the AUA/SUFU and includes bladder training and control strategies, pelvic floor muscle training, and fluid management (Gormley et al., 2012; Lightner et al., 2019). Behavioral interventions should be offered to all patients because it poses virtually no risk and efficacy is equal or superior to drug therapy in the long term (Azuri et al., 2017; Gezginci et al., 2018; Gormley et al., 2012). Implementation of behavior therapy should be considered for three months before moving to second-line therapy (Azuri et al., 2017).

La Rosa et al. (2019) conducted a systematic review of five randomized clinical trials comparing behavioral therapy to drug therapy in individuals with OAB syndrome. The review included 447 participants with 357 participants providing follow-up data. The average treatment duration was 11.2 weeks, and only one study was composed of men. The drug therapies were comprised of oxybutynin 2.5mg to 30mg and tolterodine 4mg. Behavior therapy studies combined pelvic floor muscle training (PFMT). The results found no statistical difference between either group, suggesting that behavior therapy is as effective as drug therapy without the risk of side-effects.

Bladder Training and Control Strategies. The American Urologic Association and the Society of Urodynamic and Female Urology recognize a twofold approach to behavior therapy: bladder training and PFMT (Gormley et al., 2012). Bladder training alters bladder symptoms by changing voiding habits such as delayed voiding or timed voiding, encouraging weight loss, and promoting fluid management with a 25% decrease in fluid intake to control urgency and frequency (Gormley et al., 2012).

Azuri et al. (2017) conducted a randomized controlled trial of 164 women ages 45-75 who experienced three episodes of urge urinary incontinence (UUI) per week and had equally favorable outcomes at the end of 4 years with bladder training therapy compared with other first and second-line treatments. The study compared four intervention groups across a four-year time frame. Group one comprised the drug therapy tolterodine 4mg, while group two implemented bladder training (BT) of three components: patient education on the role of the bladder and continence, increased intervals between voids, and positive feedback by providing psychological support and encouragement. Group three implemented a PFMT protocol consisting of three sets of 8-12 slow maximal pelvic floor contractions sustained for 6-8 seconds, progressing from lying

to sitting to standing position daily and a recorded exercise log. Pelvic floor muscle therapy participants were instructed to complete the contraction of muscles repeatedly to diminish UUI further. The last group was assigned to combined pelvic floor rehabilitation (CPFR) which included BT, PFMT, and behavioral advice such as avoiding constipation, modifying fluid intake, increasing physical activities, and improving posture. All four groups had equally significant improvement in controlling UUI at the end of the four-year study, adding to the literature that OAB symptoms can be equally controlled with behavior therapy alone.

Bladder training, specifically toileting behaviors, has commonly been recognized as a variable that can affect bladder function, although the association between OAB and toileting behavior of women is still being explored (Daily et al., 2019). Unhealthy toileting behaviors such as hovering over the toilet seat prevents relaxation of the pelvic floor muscles, straining to urinate, or waiting too long to void can contribute to bladder symptoms (Daily et al., 2019). Daily et al.'s (2019) cross-sectional study of 209 women with OAB symptoms found that straining with urination, delayed voiding, voided in the absence of urge, or alternative voiding positions experienced more OAB symptoms. One hypothesis was that women who voided in the absence of a urinary urge might sensitize their bladder to smaller volumes, leading to an increase in OAB symptoms. Straining to void could be an adaptive measure to empty bladders faster, but potentiates symptoms. Public avoidance of toileting often prompted negative voiding positions such as hovering over toilets, preventing bladder emptying.

Rizvi et al. (2018) in a randomized controlled trial compared the effects of bladder training with PFMT and biofeedback in female patients with OAB symptoms. The study randomly assigned 147 participants to one of three intervention groups. Arm A intervention was bladder training which included urge suppression techniques, voiding diaries, lifestyle

modifications such as removing bladder irritants from the diet, managing fluid volume, weight control, bowel regimen, smoking cessation, timed voiding, and a bladder habit leaflet. Arm B intervention consisted of PFMT where participants were instructed to perform 6-second contractions five times, with ten fast contractions per session three times per day. These were performed in the lying, sitting, and standing positions. Arm C intervention was a combination of PFMT and biofeedback performed by inserting an intravaginal electromyogram probe twice weekly by a physiotherapist. All three groups showed marked improvement in symptom scores, indicating behavior therapy with or without PFMT improved treatment outcomes in OAB symptoms.

Pelvic Floor Muscle Training. Pelvic floor muscle training is often considered a second-line approach in behavior therapy for urinary incontinence in women and OAB symptoms (Ayeleke et al., 2015; Azuri et al., 2017; Bykoviene et al., 2018). Research indicates PFMT might increase pelvic floor strength allowing for better control of urinary urgency by interfering with urethral-detrusor reflexes, producing inhibitions of detrusor contractions (Bykoviene et al., 2018)

Dumoulin et al.'s (2018) systematic review of 31 randomized or quasi-randomized trials from 14 countries involving 1817 women with stress, urge, or mixed urinary incontinence was reviewed and found that PFMT improved urinary incontinence. One arm of the trial included PFMT, while the second arm used a placebo or no treatment. Data showed high confidence that PFMT improved or cured all types of incontinence. However, Ayeleke et al.'s (2015) systematic review assessed 13 trials with 1,164 women experiencing stress, urge, or mixed urinary incontinence. They compared the addition of PFMT to an active therapy such as vaginal cones, bladder training, pessaries, or drug therapies. Their review found no real advantage of adding

PFMT to active therapy as there was insufficient evidence that PFMT had any additional effects on urinary incontinence. It should be noted that the review consisted of small, single-trial studies.

Fluid Management. Fluid management in terms of amount and type of fluid consumed is a component of behavior therapy and has positively impacted OAB symptoms (Hashim & Abrams, 2008). Bykoviene et al. (2018) studied 61 women with symptoms of OAB including urgency, frequency, nocturia, and/or mixed urinary incontinence and randomly assigned them to three intervention groups. The control group was given written lifestyle change recommendations consisting of weight loss, fluid volume management, decreasing caffeinated and alcoholic beverages, smoking cessation, decreasing artificial sweeteners, increasing fiber, physical activity, and Kegel exercises. Participants were encouraged to follow the recommendations for six weeks. Group two implemented the life-style recommendation sheet and performed PFMT, which included maximally contracting pelvic floor muscles for 6 seconds and repeating seven times with a 4 second rest period after each contraction. Participants were instructed to perform 12 fast contractions a few minutes after finishing their slow contractions, and continue regimen five times per day in various positions such as lying, sitting, and standing with legs together and apart. Participants in group three were provided life-style recommendations, PFMT, and 18 transcutaneous posterior tibial nerve stimulation procedures performed at 30-minute sessions, three times per week, for six weeks. A significant improvement in voiding diary assessments was found across all three groups; however, women in the control group significantly decreased their fluid intake, decreasing their urgency by 25%. Group one decreased urgency by 40%, and group two decreased urgency by 35%. These findings correlate with Hashim and Abrams (2008) recommendation that a 25% fluid reduction alone was associated with improved urinary symptoms.

Imamura et al. (2015) conducted a systematic review of 11 randomized and quasi-randomized studies analyzing lifestyle interventions and their relation to OAB symptoms. Interventions such as weight loss, fluid management, limiting caffeinated, carbonated and alcoholic drinks, smoking cessation, physical activity, dietary changes, and the avoidance of constipation were reviewed in 5974 participants. Four trials compared weight loss with a control intervention, and three trials compared fluid intake. Results from both groups resulted in low-quality evidence and additional reviews of carbonation, caffeine, alcohol, physical activity, and smoking cessation were not used due to lack of existing randomized studies on these variables. Imamura et al. concluded there was insufficient evidence that lifestyle interventions improved OAB symptoms and further research needed to be a priority in all lifestyle areas. However, Wells et al. (2014) conducted a study with 11 participants, showing favorable outcomes for OAB symptoms with the reduction of caffeine intake. Participants replaced caffeinated beverages with decaffeinated beverages for 14 days, which led to a significant alleviation in OAB symptoms.

Education Evidence. Implementing behavioral interventions requires the acquired skill of effective education on behalf of the provider and active participation by the patient (Gezginci et al., 2018). Teaching BT is a skill that often uses educational leaflets, verbal or audiovisual instructions, and clinician-directed training (Gezginci et al., 2018). The AUA and SUFU recommend providing education regarding normal lower urinary tract function, OAB symptoms, the benefit and risks of treatment options, and stressing that multiple therapeutic interventions may need to be applied to reach symptom goals (Gormley et al., 2012; La Rosa et al., 2019). Effective education for the application of BT is essential, yet the most effective training method, specifically for OAB symptoms, has not been widely researched and remains somewhat unclear (Gezginci et al., 2018).

Gezginci et al. (2018), in a randomized controlled trial compared three different teaching methods for women treated with a BT program for OAB symptoms. The study enrolled 60 women diagnosed with OAB symptoms and assigned them to one of three intervention groups or a control group. The control group consisted of care as usual which was composed of verbal instructions regarding continence care from healthcare workers without an outline. Group one intervention received an educational leaflet along with a guided, verbal instruction utilizing an outline from a continence nurse who provided verbal education on bladder training, toileting programs, PFMT, and lifestyle modifications. Group two received only verbal instructions from the continence nurse, and group three received only a leaflet. The study found that structured verbal instructions along with an educational leaflet provided the greatest improvement in urinary symptom severity and improved quality of life scores within an eight-week intervention.

Brosseau et al., (2012) synthesis of evidence reviewed 64 articles for evidence-based clinical practice guidelines concerning the education of patients with rheumatoid arthritis and found that five primary educational offerings existed. Cognitive-behavioral program, education behavioral program, self-instructional education, combined educational program and support group, and combined education program with exercise and medication. The study showed a wide variety of educational offerings healthcare professionals could adopt across multiple disciplines. Of the primary offerings, most utilized a handout, workbook, or leaflet which was given to patients as a reference tool. The review showed that educational offerings led to significant pain reduction in patients when applied for three to 12 weeks. No variability was associated with increased number of sessions or longer session times.

Leaflets have been used in a variety of clinical settings as references for patients learning new behavior therapies. However, the study results are conflicting if leaflets effectively teach

new OAB behavior skills and have suggested that an additional element of verbal instruction may be a necessary component for behavior therapy (Gezginci et al., 2018). The ineffectiveness of leaflets alone could be due to a decrease in literacy among patients. De Silva et al., (2017) concluded from the development of written oral health information for their pilot study that simple, easy-to-understand information written at a reading level for the patient population is critical in health-promoting behaviors.

Understanding rural patient preferences has also been noted as a potential area to consider when educating patients on behavior changes. Scheckel et al. (2012) discovered in their qualitative study of rural patients that the need for self-reliance was high among this patient population. Their study also noted that although patients were grateful for information received through passive learning style, written materials provided patients with the ability to sort, retrieve, read and reread educational material that helped them maintain self-care.

One additional teaching component that can be used during verbal instruction is the *teach-back* method. Dantic (2014) conducted a systematic literature review of nine articles pertaining to teach-back with COPD patients and found that this method was effective for improving outcomes and could be used across a variety of healthcare settings. The teach-back method could provide an additional educational strategy in self-management with patients performing PFST.

Medication

Although anticholinergics are often effective in the reduction of OAB symptoms, they have many adverse effects such as dry mouth, constipation, blurred vision, urinary retention, change in mentation, and altered mental status which often contribute to a lower adherence rate (La Rosa et al., 2019; Rizvi et al., 2018). In another qualitative study, Kinsey et al. (2017)

suggest that many patients taking anticholinergics could have a decrease in the severity of OAB symptoms, but improved symptoms did not translate into an enhanced quality of life score. The reason could be their treatment goals are not being met even with medications. Rai et al. (2012) reviewed 23 trials and determined the use of anticholinergic drugs, when compared with bladder training alone, had a marked improvement in symptoms, but the trials were small and were poor in method quality.

Caution should be applied when prescribing anticholinergics in patients who are already taking medications from this drug class such as tricyclic antidepressants, medication for Parkinsonism or Alzheimer's disease, or certain anti-nausea medications (Gormley et al., 2012). Gray et al. (2015) found high cumulative anticholinergic use was associated with an increased risk of developing dementia. During a mean follow-up of 7.3 years, 23% of the participants developed dementia, and of the 23%, almost 80% had developed Alzheimer's. Dauphinot et al. (2017) found in their study that anticholinergic use was associated with lower functional scores in 437 patients with subjective cognitive decline and neurocognitive disorders. Certain types of anticholinergics, or increased exposure to anticholinergics, have been linked to increased falls and all-cause mortality rates in the elderly. Ruxton et al. (2015) conducting systematic review totaling 124,286 participants and found exposure to medications with anticholinergic effects increased the odds of cognitive impairment and a unit increase in the Anticholinergic Cognitive Burden Scale, which was linked to doubling the odds of all-cause mortality. Additionally, Salahudeen et al. (2015) concluded from their systematic review of anticholinergic risk scales that current scales simplify the complexity of pharmacologic mechanisms, which is especially troubling when assessing geriatric risk in the older population.

Patient-Reported Outcomes on Quality of Life

Quality of Life. Although not life-threatening, OAB can compromise quality of life by increasing the prevalence of depression, anxiety, sleep deprivation, and difficulties with social life (Gormley et al., 2012; La Rosa et al., 2019; Rizvi et al., 2018). Nocturia, the interruption of sleep due to the need to void two or more times per night (Gormley et al., 2012) appears to be a common bothersome symptom of OAB (Andersson et al., 2016). Andersson et al. (2016) noted a strong correlation between the number of voids per night and a decline in quality of life.

Incontinence is an additional symptom that appears to affect the quality of life and is often a component of OAB symptoms, although the diagnosis of OAB is not dependent on the presence of incontinence. Lee et al. (2015) studied 625 Korean patients with OAB and found that the severity of urinary urge incontinence is a key contributor to the disease burden even when considering other OAB symptoms that could impact quality of life. Chiu et al. (2013) found in their study that individuals with incontinence had a significantly worse health-related quality of life score than the control group who did not have OAB symptoms.

Urinary incontinence can affect work, regular activities, and contribute to additional cost on the patient's behalf by increasing the need for incontinence pads. Additionally, Kosilov et al. (2019) note in their study that OAB patients with a bachelor's or master's degree had a higher health-related quality of life, possibly because of their socioeconomic status allowing for more active use of therapy or greater compliance.

Patient-Reported Outcome. Correctly diagnosing, measuring symptom severity, and assessing patient perception of quality of life is necessary for treatment and cultivating positive provider-patient relationships (Sari Motlagh et al., 2015). Patient-reported outcome (PRO) instruments are a common modality to measure health-related quality of life (HRQL) and

severity of symptoms among OAB patients (Johnston et al., 2019). According to Johnston et al. (2019) in a systematic review of 58 studies, the three most widely used PRO instruments are the OAB Questionnaire (OAB-q) with 64% of studies utilizing the tool, followed by King's Health Questionnaire (KHQ) at 31%, and Patient Perception of Bladder Conditions (PCBC) at 21%. An additional PRO instrument is the International Consultation on Incontinence Questionnaire in Overactive Bladder (ICIQ-OAB) which can be applied to general practitioners and secondary clinics for screening (Sari Motlagh et al., 2015). The ICIQ-OAB has been validated in 20 formal languages confirming the growing popularity of the questionnaire (Sari Motlagh et al., 2015).

The OAB-q was developed as a symptom and quality of life measurement tool through focus groups of men and women and screens for OAB symptoms, along with clinician opinions, and a thorough literature review (Coyne et al., 2014). The questionnaire comprises eight items pertaining to symptom bother, and 25 items concerning quality of life which form four subscales including coping, concern, sleep, and social interaction (Shy & Fletcher, 2013). The items are rated on a six-point Likert scale with a total score ranging from 0 to 100 (Shy & Fletcher, 2013). The OAB-q reliability and discriminate validity of bothersome symptoms and HRQL scales were assessed through Coyne et al. (2014) study of 990 patients with OAB symptoms. They concluded the measurement tool was sound. A subscale of the OAB-q is the OAB-v8 consisting of 8 screening questions (Peterson et al., 2018). The OAB-v8 is a strong PRO instrument at assessing symptoms and quality of life, and highly reliable at measuring a wide range of symptom bother (Peterson et al., 2018).

A PRO instrument can be administered through a paper questionnaire or electronic survey. A surge in modern technology within the last decade has increased electronic applications in the clinic setting (Palmer et al., 2019). Integrating electronic questionnaires can

allow for immediate data calculation and transference into electronic health records. Recent studies have shown most patients, including those over 65 years of age, preferred electronic format for the questionnaire to traditional paper (Palmer et al., 2019).

Co-Morbidities Associated with OAB

Overactive bladder left untreated or under-treated can be both physically and psychologically debilitating (Kinsey et al., 2016). Overactive bladder patients often report higher anxiety with severe symptoms than patients whose symptoms are well controlled (Lai et al., 2016). Psychological stress factors are more prevalent among OAB patients (Lai et al., 2015). Kinsey et al. (2016), in a review of 33 studies found depression, anxiety, self-esteem, shame, embarrassment, sleep, impact on relationships, sexual relationships, social life, and quality of life emerged as the top nine phenomena studied concerning overactive bladder. An additional co-morbidity is an increased risk of falls because of urinary urgency. Park et al. (2020) suggest improving control of urinary incontinence can be a strategy to decrease fall risk in the elderly.

Evidence Discussion

Of the 36 articles reviewed for the synthesis of evidence, ten were level I, seven were level II, two were level III, eleven were level IV, one was level V, two was level VI, and three were level VII, making 50% of the articles reviewed at an evidence level of III or higher. Twenty-six were published within the last five years.

The degree of direct evidence strength to support the inquiry is ample. The literature maintains behavior therapy is a more cost-effective option when compared with the expense of medication, and has virtually no side effects unlike anticholinergics which can contribute to cognitive impairment and increased risk for dementia (Gray et al., 2015; Perk et al., 2016).

Behavior therapy is equally effective as drug therapy alone, both in the short and long term (Azuri et al., 2017). Therefore, a well-designed behavior therapy program is needed to properly implement the EBP guidelines in urology practice and primary care practices.

Nurse practitioners customarily involve and support patients in healthy behavioral change interventions through evidence-based practice guidelines (Beighton et al., 2015). However, specific behavior therapy material and educational methods for practice use were not easily located during the synthesis review. A limitation in the research was a lack of finding a concise BT program in an easy-to-understand resource.

A study exploring a specific behavior therapy program was identified, but could not be included in the synthesis of evidence because the study occurred in the preoperative phase of a bladder sling placement (Newman et al., 2018), not meeting inclusion criteria. No similar studies could be located in the search. Additional studies on standardized behavior therapy programs would help promote quick access for providers to educate patients. A nurse practitioner lead program to improve overactive bladder symptoms and quality of life appear to be an excellent option for implementing behavior therapy (Yates, 2019).

A gap exists in the literature that supports evidence for BT and PMFT in the male population with OAB symptoms. Many studies have been conducted on BT with women because of the pelvic floor strengthening component in urinary incontinence. However, few studies have been undertaken regarding BT and men with OAB symptoms and incontinence. Some hypotheses conclude men are primarily experiencing OAB symptoms in association with benign prostatic hypertrophy. Further research is needed for PFMT in the management of OAB symptoms for men.

Theory

Planned Behavior Theory (PBT) attempts to explain behavior and an individual's ability to exert self-control through the key component of behavior intent (Boston University School of Public Health, 2019). The major concepts for the inquiry, which are perception of symptoms, motivation for behavioral change, and improving ability to change, can be linked effectively through Planned Behavior Theory (see Appendix E). Patients often need to see the validity of a prescribed therapy before they will proceed. If patients do not *buy into* the therapy, they most likely will not use the therapy, which will lead to no change in urinary symptoms and no improvement in QOL. Planned Behavior Theory proposes that a person's intent to perform a behavior is predicted by the person's attitude toward the behavior and the subjective norms that surround the person, such as social and environmental settings (Rural Health Promotion and Disease Prevention Hubb, 2019). Planned Behavior Theory was chosen because of the behavior control component, which must be addressed when applying BT as an intervention. Patients must feel they can perform BT which requires behavioral control. The behavior control component will be addressed through the EBP intervention by providing patients with tools and information equipping them with the ability to change behavior.

Application of Theory

Although PBT has not been used widely with OAB, it has been associated with changing behaviors in urinary incontinence. Wu et al. (2015) applied PBT to their questionnaire based cross-sectional study of 346 women with urinary incontinence to predict help-seeking intention among women with urinary incontinence. Whitford and Jones (2011) used the PBT to investigate the motivation of pregnant women toward the practice of PFST to reduce the risk of incontinence. Their study showed that confidence in the ability to perform PFST directly

correlated with reliability in predicting subsequent practice. They reported that perceived vulnerability to incontinence did not correlate with intent; however, past behavior improved intent.

Methods

IRB Approval, Site Approval

The IRB affiliated with the study site approved the study as exempt research (see Appendix F). The study focused on quality improvement (see Appendix G). The site agreement was approved by the primary urologist in the clinic who served as the preceptor for the study.

Ethical Considerations

Privacy is a top priority with any research or EBP intervention. Participants in the intervention were protected according to the HIPPA protocol. The OAB-q and SAGA questionnaire were conducted by using paper and pen. Questionnaires also asked general demographics such as gender, race, age group, and previous anticholinergic use and behavior therapy. No patient identifiers were associated with the questionnaire. A participation number was assigned to each questionnaire and was stored by the study leader in a locked desk. Scores from the questionnaire were manually recorded into an Excel spreadsheet that was only accessible to the study team leader through a password protected desktop. Demographic data and OAB-q pre-post test scores were analyzed through Statistical Packages for the Social Science (see Appendix H). The SAGA questionnaire was used to assess if urinary goals had been met. The study team leader was also the patient provider and shared no patient information per HIPPA protocol.

There was a conflict of interest in this study because the study team leader was also the sole nurse practitioner in the practice and could not account for bias in the study. Also, no other

practitioners utilized the EBP intervention which created difficulty in assessing patient education, teaching styles, and management of behavior therapy.

Funding

Minimal funding was required for this study, and the cost was paid by the study team leader (see Appendix I). Fifty educational leaflets were printed before the beginning of the study through the clinic at a minimal expense. The leaflets accompanied the structured verbal education, and served as a reference for participants. Additional leaflets can be ordered at the cost of the health system as the intervention is now being instituted as a standard of care in the clinic. The OAB-q pre-posttest was printed at the expense of the office.

Setting & Participants

The study took place at a urology office within a not-for-profit health system in southwest Missouri. The health system is a locally owned organization serving several Missouri, Kansas, Oklahoma, and Arkansas regions. Although the clinic is in a city of approximately 50,000 people, many of the patients seen in the clinic are from rural areas (United States Department of Agriculture, 2019). The clinic consists of one urologist, the collaborating physician for the nurse practitioner, and served as the mentor for the EBP intervention (see Appendix J). The physician is the only full-time urologist employed with the health system. The study team leader also served as the only nurse practitioner in the office. The office staff consists of one licensed practical nurse, two medical assistants, one office manager and three support staff.

Participation was based on the following criteria: adult over the age of 18 who present with a history of urinary frequency, urgency, and nocturia, with or without incontinence for greater than one month. Male and female patients were included unless patients were less than 90

days post-operative or started on an anticholinergic within the last 30 days. Patients taking anticholinergics for longer than 30 days with no improvement in symptoms were also included in the EBP intervention.

Female assessment and inclusion criteria consisted of voided microscopic urinalysis, catheterized post-void residual less than 250mL, urine specimen obtained through straight catheterization, and a pelvic exam for cystocele. Several exclusions ensured participants were treated using practice guidelines. Behavior therapy was not implemented in females with a post-void residual of greater than 250mL due to the possibility of a neurogenic bladder, which warranted a more extensive workup. A positive urine culture was treated with antibiotics based on sensitivity. Symptoms were reassessed and a repeat urine culture was performed to confirm sterility. If the urine culture was sterile and OAB symptoms were still present, behavior therapy was started for the patient. Cystoceles of grade 3 or greater were excluded, and the client was referred to gynecology for evaluations of bladder sling or pessary device.

Male assessment and inclusion criteria consisted of in-house microscopic urinalysis and an in-office ultrasound to assess the post-void residual. The exclusion criteria for males were based on a post-void residual greater than 150mL. This could indicate uncontrolled benign prostatic hyperplasia and should be addressed and treated before initiation of behavior therapy. The need for a urine culture was based on microscopic urinalysis or dysuria.

The study population was adults 18 years and older with OAB symptoms at a Southwest Missouri urology clinic. Judgment was a deciding factor in convenience sampling because of the ability to assess a segment of a population (Perla et al., 2014). The study number of participants was approximately fifty. The COVID pandemic was believed to have reduced the follow-up return rate.

EBP Intervention***Study Intervention***

The behavior therapy consisted of a 20-minute guided verbal instruction on how to perform pelvic floor therapy along with instructions on fluid management, timed voiding, bladder training, and dietary changes. The instructions were provided in a precise order by the study team leader. A leaflet with guiding pictures and written information accompanied the verbal instructions and was sent home with participants for future reference (see Appendix K). The leaflet had been processed through ProWriting tool and was assessed for readability through the ProWriting tool software (*Flyer - ProWritingAid*, n.d.). The printed leaflet received a Flesch Reading Ease score of 74.7, a Flesch-Kincaid Grade of 5.4, a Coleman-Liau score of 8.1 and an Automated Readability Index of 5.2 (*Flyer - ProWritingAid*, n.d.).

Recruitment Content

There was no recruitment process for this study. However, a convenience sampling was used in all patients diagnosed with OAB in the urology clinic between August 2020 and March 2021 (see Appendix L). Participants who meet the criteria for inclusion were provided BT as first-line therapy in the treatment of OAB. Patients were provided the intervention as the standard of care for the EBQI initiative. A brief informational letter reviewing the quality improvement study was provided to all participants (see Appendix M).

Change Process

The organizational process adapted for this study was the Transtheoretical Model of Health Behavior Change (TMHBC). The model was chosen for this study because it provides a framework for behavioral change (Levoy et al., 2019). Although the direct intervention of the study was to change toileting behaviors through education and positive reinforcement, the model

could also be used at an organizational level and change the behavior of leaders. Adapting a new BT program required change on behalf of the urology office. Thus, TMHBC was an ideal model for the organizational concept.

Evidence-Based Practice Models

The EBP model used for the study was the Iowa Model and was chosen because of the usefulness in guiding clinicians who have identified a clinical problem and are implementing a sustainable EPB change (Hanrahan et al., 2019) . Using this model, a clinical leader, study team leader, or EBP mentor can lead a clinical team and answer a clinical practice question (Hanrahan et al., 2019).

Sustainability

The sustainability of the BT program after study completion appeared to be high as all printed and verbal material can be easily replicated. Implementation of the BT program was created with nurse practitioners in mind as it is primarily an educational intervention. Physicians or nurses in many practice settings could also utilize the program.

Study Design

The study design for measuring the impact of the EBP intervention was quasi-experimental, one cohort, and pre- and posttest. The OAB-q scores obtained pre and post intervention were analyzed to examine the BT program effectiveness in reducing urinary symptoms and improving quality of life. An additional measurement tool, which was not part of the data analysis, was the Self-Assessment Goal Achievement (SAGA) questionnaire given pre and post intervention to define patient goals.

Protocol

The behavior therapy program was led by the office nurse practitioner, who was also the study team leader, was implemented with participants between August 2020 and February 2021 (see Appendix N). The initial visit included administering the Overactive Bladder Questionnaire, a urinalysis and physical assessment, and defined participant's urinary symptom goals through the SAGA questionnaire. Once screening, assessment, and goal defining had been completed, the BT program was initiated in the study. A referral to physical therapy was strongly encouraged among participants to assist with pelvic floor strength training. A six-week follow-up was scheduled to reassess with the administration of the OAB-q. If goals were not met and participants attended physical therapy for pelvic floor strength training, a trial of medication such as mirabegron was initiated for treatment.

Validity***Internal Validity***

Special attention was applied throughout the study to maintain internal validity. The OAB-q, has been shown to have strong validity and reliability through several studies. Johnston et al. (2019) assessed 37 studies using the OAB-q and found among bladder specific instruments that the OAB-q was the most widely used PRO tool in clinical trials. Johnston reported that the OAB-q appears to be sufficiently sensitive in identifying dosing adjustments and corresponding symptom responses. Brubaker et al. (2013) conducted a three month study of the SAGA PRO tool in 104 men and women over the age of 18 to assess for validity. Their study concluded the tool was valid in measuring patient goals and goal achievement and suggested the tool could be of value in fostering positive patient-provider relationships and treatment plans.

In addition to maintaining internal validity through sound measurement tools, the administration of the BT program was performed in a precise, sequential manner to ensure internal validity was fostered throughout the study. One independent variable that could have caused a weakness in the internal validity was participants who did not use the BT within the six-week timeframe, skewing results.

External Validity

The external validity of the study was high. The EBP intervention can easily be transferred from the urologic setting to a primary care setting. One of the expected outcomes of the study was to produce a well-developed BT program that could be used in an educational opportunity for primary care clinics.

Outcomes

The primary outcomes for the EBP intervention were to improve urinary symptoms and quality of life scores in OAB patients who applied the BT program over a six-week time frame. Improvement in scores was to achieved without the use of drug therapy. An additional outcome of this study was to develop a sound BT program that could be integrated into primary care practice by nurse practitioners as a treatment option for patients with OAB before referring to specialty clinics.

Measurement Tool

The OAB-q is reliable and valid in many studies (Shy & Fletcher, 2013). Validity content of the OAB-q is high because it is capable of measuring both severities of urinary symptoms and quality of life. The OAB-q is comprised of eight symptom-bother scale items and 25 quality of life items. A second measurement too, the SAGA questionnaire, was used pre-post intervention to define and measure patient goals.

At the participants' initial visit, they were asked to answer six demographic questions (see Appendix O), complete the OAB-q, and set their urinary goals by completing the SAGA questionnaire. Once participants completed the instrument, the score was tabulated and entered into SPSS. This score was compared with the new score obtained at the six-week follow-up visit. Permission for the use of the OAB-q and SAGA instruments were obtained from Pfizer through an email (see Appendix P). Both questionnaires were processed through Prowriting aide and showed a Flesch Reading Ease score of 86.0, Flesch-Kincaid Grade of 3.7, Coleman-Liau score of 6.5, and an Automated Readability Index of 4.2 (*ProWritingAid*, n.d.).

Quality of Data

Methods to promote quality of data included a power analysis calculation conducted by using G*power (Universität Düsseldorf, 2019), showing the need for at least 27 participants using the parameters of 0.8 power, 0.5 effect, and alpha of 0.05. The length of time to collect the baseline data was six months. Chiu et al. (2013) used a similar data analysis with the OAB-q with a sample size of 173 pairs.

Analysis

The OAB-q comprises 33 questions using ordinal data on a Likert scale. A total score is calculated at the end of the questionnaire ranging from 0, which shows less severe symptoms, to 100, which indicates the most severe symptoms. Descriptive statistics were performed using the pre-intervention score compared with the post-intervention score to determine the mean difference (see Appendix Q).

Results

Setting and Participants

The study took place at a urology office within a not-for-profit health system in Southwest Missouri from July 2020 through March 2021. Participation was based on the following criteria: adults over the age of 18 who present with a history of urinary frequency, urgency, and nocturia, with or without incontinence for greater than one month. Male and female patients were included unless patients were less than 90 days post-operative or had been started on an anticholinergic within the last 30 days. Patients who were taking anticholinergics for longer than 30 days with no improvement in symptoms were also included in the EBP intervention. The participants totaled to eight meeting the criteria and returning for follow-up assessment (see Appendix R).

Intervention Course

The BT program was led by the office nurse practitioner, who was also the study team leader. The initial visit included the administration of the OAB-q, a urinalysis and physical assessment, and defined participant's urinary symptom goals through the SAGA questionnaire. Once screening, assessment, and goal defining were completed, the BT program was initiated with the participant. A referral to physical therapy was strongly encouraged among participants to assist with pelvis floor strength training. A total of 15 participants were enrolled in the intervention study. A six-week follow-up was scheduled to reassess with the administration of the OAB-q in the same manner as the initial visit. A total of eight participants returned to their follow-up. If goals were not met, and participants attended physical therapy for pelvic floor strength training, a trial of medication such as mirabegron was initiated for treatment. One out of the eight participants required a trial of medication which was solifenacin.

Outcome Data

Descriptive statistics were performed on the OAB-q scores pre and post-intervention, due to the small participation size with pre and post questionnaire completion (N=8). The OAB-q pre-intervention score mean was 108.13 and median was 97. The OAB-q post-intervention score mean was 79.63 and median was 72.50 (see Appendix STU). Both outcomes were achieved through the project.

Discussion**Successes**

The most important success in the study was the reduction of OAB-q score among returning participants. The reduction in scores suggests that an improvement in urinary symptoms in patients with overactive bladder following a six-week implementation of a behavior therapy program is possible. This strengthens the existing evidence that behavior therapy should be a first line therapy in treating overactive bladder and medication should be implemented after a trial of behavior therapy has been utilized for management. An additional success of the study was the development of a comprehensive behavior therapy manual for the urology clinic which had been needed in the past to execute extensive behavior therapy training. The implementation of the manual is the primary component for sustainability of the intervention.

Study Strengths

Elements in the setting that provided support for the intervention was a high buy-in on behalf of the health system, preceptor, and staff. The preceptor, who was the acting urologist in the clinic, showed enthusiasm with the development of the intervention and referred many patients to the team leader for enrollment into the program. Nursing staff worked closely with the team leader to ensure the questionnaires were completed at the pre and post visits.

Additionally, ancillary staff worked with the team leader to ensure that patients who were

referred by primary care providers for overactive bladder symptoms would be scheduled with the team leader.

Results Compared to Evidence in the Literature

La Rosa et al. (2019), in a systematic review of five randomized clinical trials compared behavioral therapy to drug therapy in individuals with OAB syndrome. The review included 447 participants with 357 participants providing follow-up data. The average treatment duration was 11.2 weeks. The drug therapies included in the review were comprised of oxybutynin 2.5mg to 30mg and tolterodine 4mg. Behavior therapy combined pelvic floor muscle training (PFMT). The results found no statistical difference between either group, suggesting that behavior therapy is as effective as drug therapy without the risk of side-effects. The current EBP study appears to coincide with the 2019 study. Participants of the EBP study had improved OAB-q scores with behavior therapy alone.

Dumoulin et al.'s (2018) systematic review of 31 randomized or quasi-randomized trials involving 1817 women with stress, urge, or mixed urinary incontinence was reviewed and found that PFMT improved urinary incontinence. One arm of the trial included PFMT, while the second arm used a placebo or no treatment. Data showed high confidence that PFMT improved all types of incontinence. The EBP study indicates that PFMT could have been associated with lower OAB-q scores based on data from patients who attended physical therapy. This could support evidence that PFMT is an essential component of a behavior therapy program.

Gezginci et al. (2018), in a randomized controlled trial, compared three different teaching methods for women treated with a BT program for OAB symptoms. The study found that structured verbal instructions along with an educational leaflet provided the greatest improvement in urinary symptom severity and improved quality of life scores within an eight-

week intervention. The EBP study, which was modeled from this study, indicated that this teaching method was favorable at decreasing urinary symptoms.

Limitations

Internal Validity Effects

Possible sources that could have affected the study outcome were imprecision in the delivery of the EBP intervention. The first few participants may have experienced content delivered somewhat differently due to the fluidity of workflow that was created at the time of initiating the program. This variation could have skewed the first participant results. As the study progressed, time management and technique in delivery improved with the participants. An additional factor impacting internal validity could have been data collection. It became apparent at the beginning of the intervention that the OAB-q was more useful in analyzing the effectiveness of the BT program over the SAGA tool. The SAGA questionnaire had a set of questions and scoring pre-intervention with a different set of questions and scoring post intervention, making scores difficult to use in a pre-post analysis.

External Validity Effects

A factor that could affect the transferability of the achieved intended results is the availability of physical therapy at the health system. Although all eight participants had improved scores with the behavior therapy program, five of the eight also attended physical therapy with a pelvic floor specialist. These patients expressed that physical therapy helped them continue with the behavior therapy at home. Currently, there is one pelvic floor specialist for the health system. Limited availability of pelvic floor therapy could be problematic for the behavior therapy program and is likely necessary for the sustainability of the program. The study team leader has recommended that additional pelvic floor specialists be hired, or the urology clinic train their nurse practitioner to provide this service within the office.

Sustainability of Effects and Plans to Maintain Effects

Potential for observed gains to weaken over time could be found in the delivery of behavior therapy. Connecting with patients and fostering a sense of buy-in is necessary to develop motivation for patients to continue with behavior therapy once they leave the clinic. This process requires time on the provider's behalf and could be compromised if the provider's workload increases. The verbal guided portion of the program may require the use of pre-recorded audio teaching that could be accessed without a provider being present. This video resource would allow the provider to continue seeing patients while overactive bladder patients receive behavior therapy instructions.

Efforts to Minimize Limitations

A limitation that was identified early in the development of the study was the possibility of low participation due to the COVID pandemic. This concern may account for the small participant sample size. Although there were only eight people who participated in the study, data indicated that behavior therapy effectively decreased urinary symptom scores.

Interpretation**Expected and Actual Outcomes**

The expected result of the study was a decrease in OAB-q scores among adults with overactive bladder following the implementation of a six-week behavior therapy program. The result was as expected, although, statistical significance analysis for significance was not conducted due to the small sample size. Therefore, limited analysis through descriptive statistics was utilized for analysis. The possible reason for differences between observed and expected sample size was the failure in returning participants, which was felt to be largely due to COVID.

Intervention Effectiveness

Mechanisms that assisted with the intervention effectiveness was likely the behavioral therapy reference guide that served as the sequential guide for the verbal educational intervention. The study leader produced the content based on the following organization guidelines: American Urologic Association, Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction, American Urogynecologic Society, Urology Care Foundation, and Health Monitor Guide to Overactive Bladder. This guide was given to each participant as a reference aid. The guide provided information on urologic anatomy and physiology, fluid management, smoking cessation, dietary changes, prevention for constipation, and instructions on performing pelvic floor strength training. The initial training session is likely to be most effective in a clinic setting; however, behavior therapy training can be performed in the comfort of the patient's home.

Intervention Revision

An intervention modification that could improve the attainment of the outcomes is the ability to offer pelvic floor strength training physical therapy in the office. Currently, patients must attend physical therapy sessions at an outpatient physical therapy clinic external to the health system campus. Should the urology clinic acquire the ability to reproduce the physical therapy sessions in the urology office, it is the opinion of the study team leader that adherence to behavior therapy would increase in patients. Many patients expressed they had difficulty attending physical therapy off campus, and would rather have this service performed in the clinic where they receive their care. The study team leader would like to expand her knowledge field and become a trained pelvic floor specialist to help facilitate this at the urology clinic.

Expected and Actual Impact to Health System, Cost, and Policy

The expected impact of the EBP intervention on the health system was to increase revenue for the office through offering a behavior therapy program to patients with an overactive bladder. The actual impact was the generation of approximately \$3000 in revenue for the office. It is difficult to determine the additional revenue generated for the health system through pelvic floor physical therapy because this is a different entity of the health system. However, it should be noted that five of the eight participants attended at least three physical therapy sessions per patient. The study estimated costs was minimal with the bulk of the cost in the nurse practitioner's time and production of manuals. The behavior therapy program is minimal in expense, and the cost is offset by the additional revenue acquired through office visits and physical therapy charges. The economic sustainability of the intervention should be high given this low cost, high revenue ratio. No other funding was sought for this study due to this factor.

Opportunities

The effect of limited patient return rate had a significant impact on the interpretation of findings given the inability to perform analysis for statistical significance. However, the application of the descriptive statistics indicated a positive effect from the behavior therapy program on overactive bladder symptoms. The manual designed for the study has also shown to be a valuable reference for patients.

The opportunity to disseminate the findings of the study were provided through the Midwest Nursing Research Society at their 45th Annual Research Conference. It is the hope of the study team leader that the study results will also be presented at the national level through the Society of Urologic Nursing's annual conference in October 2021 in St. Louis, Missouri, at the regional level through the Advanced Practice Nurses of the Ozarks annual conference in

November 2021 in Branson, Missouri, and at the state level through the Association of Missouri Nurse Practitioner conference scheduled for the fall of 2021.

Conclusion

Practical Usefulness of Intervention

The EBP intervention of a guided, behavior therapy program for the treatment in OAB symptoms is useful in practice because it implements recommended first-line. Often, BT is not initiated because providers do not have the literature at hand to guide their educational instructions. Providers also feel BT is time consuming in explaining to patients what will involve in improving OAB. The program will provide the written educational piece that appears to be lacking in the literature and will make BT a more accessible form of treatment for OAB symptoms.

Further Study of Intervention

Further implementation and outcome studies of the EBP intervention can expand to primary care clinics once evidence has shown the program can improve symptoms. An additional outcome of the EBP intervention could be that nurse practitioners become empowered as experts in the treatment of OAB symptoms whether they practice in specialized areas such as urology and women's health or as primary care providers. Nursing is known for providing exceptional care through effective and sound patient education. This EBP intervention within the field of nursing can be extended in evidence-based guides and manuals through clear, guided patient education.

Dissemination

The primary method of dissemination for the initiation of the EBP intervention occurs one-on-one by the nurse practitioner or study team leader. Further outcome goals of reaching

larger audiences with the BT program will occur through poster presentations at local and regional conferences. The dissemination of the material could potentially extend to publication in the Society of Urologic Nursing and Associates quarterly journal.

Impact to Healthcare

The impact of OAB symptoms affects millions of people globally and cost billions to treat. Simple changes to everyday behaviors can reduce or resolve symptoms; however, these simple changes are often difficult for providers to implement because there is no clear, standard publication in an easily accessible source to help educate patients. Providers lack time to research this information or provide guided verbal education to patients when a clear format does not exist. This EBP intervention can utilize a nurse practitioner to pilot a BT program, successful in reducing urinary symptoms and increase the quality of life, the BT program could be used across many practice areas.

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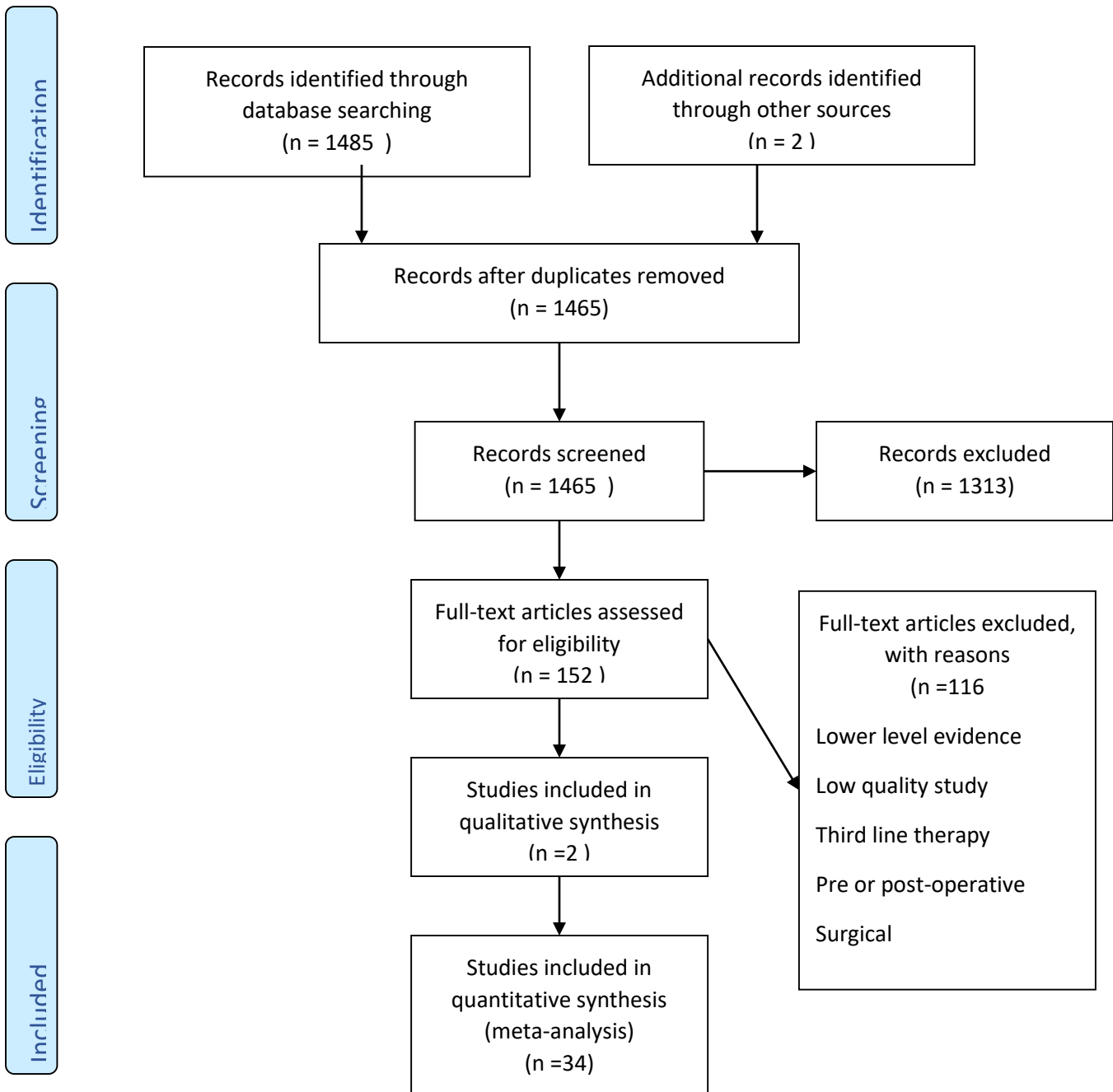
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Appendix A
Definition of Terms

OAB: Overactive Bladder
LUTS: Lower urinary tract symptoms
BPH: Benign Prostatic Hyperplasia
PVR: Post-void residual
BT: Behavior therapy
AUA: American Urologic Association
PFST: Pelvic Floor Strength Training
PFMT: Pelvic Floor Muscle Training
EBP: Evidence Based Practice
OAB-q: Overactive bladder questionnaire
SAGA: Self-Assessment Goal Achievement

**Appendix B
PRISMA Diagram**



**Appendix C
Synthesis of Evidence Table**

In adults (18+) with overactive bladder symptoms, does the use of a nurse practitioner lead behavior therapy program compared with care as usual improve urinary symptoms and quality of life scores within six-week at a Southwest Missouri urology clinic?

First author, Year, Title, Journal	Purpose	Research Design¹, Evidence Level² & Variables³	Sample & Sampling, Setting	Measures & Reliability (if reported)	Results & Analysis Used	Limitations & Usefulness	Support or Fail for project
Behavior Therapy							
Daily, (2019)	To determine if women with OAB report more unhealthy toileting behaviors	Design: Cross sectional study Evidence Level: Level IV Variables: none	inclusion criteria women age 18 or older, able to read English, and access the internet. the final study sample included 6562 women	Toileting behavior subscales had a statistically significant, positive Spearman’s correlation coefficient with increasing ICIQ-OAB scores, of which convenience voiding (r = 0.301, P < .0001) demonstrated the	OAB symptoms were associated with specific toileting behaviors of convenience voiding, delayed voiding, straining to void, and position preference	Limitations: Toileting behaviors increases risk for the development of OAB cannot be drawn from this cross-sectional study. Usefulness: Toileting behaviors has a significant impact on OAB symptoms. If negative behaviors are	Support for the study: Assists in determining which toileting behaviors need to be addressed in patient education to decrease symptoms.

				strongest association		identified, education can help decrease these behaviors and increase QOL for OAB symptoms	
La Rosa (2019)	Systematic review RCT comparing treatment of individuals with OAB syndrome behavior therapy versus drug therapy	Design: Systematic review Evidence Level: Level I	14 article selected, 447 participants, mean treatment was 11.2 weeks,	Inverse-variance weighting, with analysis model in random effect, Cochran q test. P value was ,0.05 and a 95% CI of statistical significance	Both treatments were found to be equal in the reduction of OAB symptoms.	Limitations: Small number of RCT, heterogeneity of the BT protocol, high risk of bias Usefulness: BT is as effective as DT in improving OAB symptoms	Support for the study: Shows that BT is just as effective as DT without the side effects of DT.
Yates, (2019)	Identify clinical practice guidelines, procedures and QOL improvements that are necessary when	Design: Literature review Evidence level: Level VII	36 reviewed articles	Review article from Google scholar, PubMed, Cochrane, Johanna Briggs and Uptodate using	Identified Evaluation and treatment paths, First, second and third line therapies, Implications for a NP lead OAB program.	Limitations: References mainly reviewed all therapies, not in-depth in first line therapies. Usefulness:	Support for the study: Identifies the need for a NP lead PAB program in a urology clinic sufficient evidence for initiative.

	developing a nurse practitioner lead OAB program within a urology practice.			Boolean combinations		Several articles in reference that will be reviewed for synthesis	
Bykovie (2018)	To compare effects of transcutaneous posterior tibial nerve stimulation (TPTNS) and pelvic floor muscle training (PFMT) in women with overactive bladder syndrome (OAB).	Design: RCT Evidence Level: Level II Variables: Life style recommendation (LSR), LSR and pelvic floor muscle training (PFMT), and LSR, PFMT, and Tibial nerve stimulation	Randomized 67 women \geq 18 years with OAB to three groups: group I (n = 22) received life-style recommendations (LSR) only; group II (n = 24) had LSR + PFMT and group III (n = 21) had LSR + PFMT + TPTNS. Urgency, evaluated by a 3-day voiding diary before treatment and six weeks later, was the main outcome	The reliability of the KHQ was investigated by Cronbach 's coefficient alpha (α) Descriptive analysis performed using frequencies, means, and standard deviations. For comparison between groups, we used chi-Squared or Fisher's exact test if	Women in all groups improved significantly according to the voiding diary assessment. However, only in the control (LSR) group did women significantly decrease the fluid intake by the end of the treatment period. Adding bilateral TPTNS to PFMT most effectively improved participants' quality of life, but results were not superior to the PFMT or LSR alone.	Limitations-small group sizes, despite random allocation we were not able to conceal group assignment during the evaluation procedures. Usefulness: Compares a more extensive treatment option with life style recommendation and found lifestyle is just as important. Nerve	Support for the study: life style recommendations are just as effective alone as tibial nerve stimuli

			measure. The King's College Health Questionnaire was also administered.	an expected chi-value was < 5 for categorical variables.		stimulant requires multiple trips and can be time consuming.	
Dumoulin (2018),	To assess the effects of PFMT in women with urinary incontinence compared to no treatment, placebo, or sham	Design: Systematic Review Evidence level: Level I Variables: PFMT No treatment Placebo treatment Other inactive treatment	31 trials involving 1817 women from 14 countries	Two reviewing authors independently assessing eligibility and bias, processed data in the Cochrane Handbook for Systematic Reviews of Intervention	PFMT does improve symptoms of urinary incontinence and all other types of UI and appears that PFMT is cost effective	Limitation: Limited to women only Usefulness: PFMT is a cost effective as well as effective at improving UI in women	Support for the study: PFMT which is an arm of Behavior therapy appear to work well in RCT in helping decrease UI
Gezginci (2018)	To compare the effect of 3 instructional methods for behavior therapy on lower urinary tract symptoms (LUTS)	Design: RCT Evidence Level: Level II Variables: Structured verbal	Turkey, 11/2012-5/2013 Females with OAB 18+ years, 60 enrolled in study	Control group received usual care, 1 group with only verbal instructions, 1 group with leaflet but not verbal,	Univariate analysis evaluating each outcome before and after education intervention, post-hoc analysis identified that subjects assigned to the verbal and leaflet group had significant greater	Limitations: Not homogenous in that both OAB and urge dominant mixed UI were included. Usefulness:	Support for the study: NP lead BT program will need both verbal and printed material to maximize education opportunity.

	severity and QOL in women with OAB in 6-8 weeks	instruction and leaflet, verbal instructions only, leaflet only		and 1 group with both	improvement in LUTS ($p < .05$)	Provides not only measurement tool for QOL and symptoms assessment but educational leaflet as well.	
Rizvi (2017)	To compare efficacy of 3 types of treatment for OAB symptom reduction and QOL improvement within 12 weeks	Design: RCT Evidence Level: Level II Variables: Bladder training (BT), Pelvic floor muscle training (PFMT), PFMT with biofeedback (BAPFMT)	Single-blinded RCT, Pakistan 1/2014-12/2015, women ages 25-65 with OAB symptoms x 6 months, 150 women total	Pared t test was applied to observe the difference before and after intervention in all 3 arms and for bladder diary variables. P value < 0.05 , did not perform intention to treat analysis for result interpretation.	3 women lost to follow-up, no statistical significance with constipation being present, Arm A saw a significant reduction in micturition frequency arm A compared with B and C	Limitations: Study did not combine pelvic floor muscle therapy into a behavior therapy group, may have improved symptoms even more when combined. Useful: Showed good treatment outcomes with BT	Support for the study: RCT with good sample size with favorable improvement with BT alone. Provides measurement tools for QOL and symptoms.
Azuri (2016)	To investigated 4-year	Design: RCT	164 women aged 45–75 who	Distribution was evaluated	After 4 years of follow-up, the outcome measures	Useful-describes 4 different	Support for the study:

<p>outcomes of three treatments for OAB-WET in Women: pelvic floor physical therapy anticholinergic drug</p>	<p>Evidence level: Level II</p> <p>Variables: Drug therapy, bladder training, PFMT, Combined Pelvic floor rehab with BT, PFMT, and behavioral advice</p>	<p>experienced at least three episodes of UUI/week randomly assigned to 1 of 4 interventions: drug therapy (DT), bladder training (BT), pelvic floor muscle training (PFMT), or combined pelvic floor rehabilitation (CPFR) that includes BT, PFMT, and behavioral advice. Treatment in each group lasted 3 months.</p>	<p>using the Kolmogorov–Smirnov test and a histo-gram. Comparison of baseline characteristics between responders and non-responders were evaluated using the Mann–Whitney test, Chi-Square test, or Fischer’s exact test. Comparison of baseline characteristics and in 4-year follow-up between treatment groups were evaluated using the Kruskal–Wallis test,</p>	<p>saw significant improvement and equally in all four groups.</p>	<p>modalities for treatment of OAB</p> <p>Limitations- Study had a low level of participants within each group</p>	<p>Other therapies besides drug therapy improved OAB Wet</p> <p>Describes in detail a behavior therapy protocol for pelvic therapy</p>
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				Chi-Square test, or Fischer’s exact test.			
Ayeleke, (2015)	Compare pelvic floor muscle training combined with an additional active treatment vs active treatment alone	Design: Systematic Review Evidence Level: Level I Variables: PFMT And active treatment Or active treatment alone	13 trials met inclusion, 585 women with both PFMT and active treatment and 579 women with active treatment alone.	Two authors independently reviewed trials for eligibility and methodical quality, disagreement settled by a third party, processed data in accordance with the Cochrane Handbook for Systematic Reviews of Interventions.	Found insufficient evidence to conclude that PFMT improved symptoms when compared with active treatment alone.	Limitations: Looked at only women Usefulness: Large study looking at PFMT	Support for the study: Did not help build evidence that PFMT improved urinary symptoms.
Imamura, (2015)	Determine effective specific lifestyle interventions (weight loss, dietary	Design: Systematic Review Evidence Level: Level I	Reviewed 11 trials which involved 5974 participants.	Two authors independently reviewed study quality and extracted data.	In general, there was insufficient evidence to recommend in practice.	Limitations Large study with indeterminate results. Not enough	Support for the study: Although this study did not confirm that lifestyle modifications

	changes, fluid intake, reduction in caffeinated, carbonated, and alcoholic beverages avoidance of constipation, smoking cessation, and physical activity improved urinary incontinence.	Variables Previous lifestyle modifications		Assessed using the GRADE approach		evidence to support. Usefulness: Did no confirm that lifestyle modifications were not a viable treatment	can improve incontinence, it did not disprove this assumption either.
Wells (2014)	Investigate the effect of drinking caffeinated vs decaffeinated fluids on OAB symptoms in women	Design: RCT Evidence Level: Level II Variables: Caffeinated Decaffeinated fluids	14 women newly diagnosed with OAB history of caffeine consumption randomly assigned to a group of 14-day caffeinated drink period followed by 14-day decaffeinated drink period or a group with 14-day	Data were analyzed by 2 way repeated measures analysis of variance (ANOVA) and Sign test using Stata (StataCorp LP) and SPSS version 17.0 for Windows	11 participants completed the study. A significant reduction in urgency ($P < .01$) and frequency ($P < .05$) of urinary voids on day 3 of the diary, total ICIQ-OAB score ($P < .01$), a non-significant change for the total ICIQ-OABqol score ($P = .065$) for the period of decaffeinated	Limitations: Very small sample size Useful: Caffeine does appear to play somewhat of a role in OAB symptoms.	Support for the study: Decrease in caffeinated beverages will need to be addressed in BT program.

			decaffeinated rink period followed by 14- day caffeinated rink period) The periods were preceded by a 14-day run-in period and interspersed with a 14-day washout period.	(SPSS Inc., Chicago, Illinois, USA). An intention-to- treat analysis was applied to subjects who completed both arms of the study included (whether they complied or not)	compared to caffeinated drink intake.		
Gormley (2012)	To provide a clinical framework of EBP guidelines for diagnosis and treatment of OAB	Design: EBPG Evidence Level: Level I Variables: None	Systematic review and data extraction conducted as part of the AHQR Evidence Report Assessment	Reviewed 151 evidence based treatment articles form 1966- 2008for first to third line treatment of OAB.	Body of evidence for treatment was assigned strength of rating with A being the highest and C being the lowest	Limitations: written by experts in field Usefulness: Gave behavior therapy as 1 st line therapy a grade B for evidence strength	Support for the study: States literature provides clear support for the effectiveness of bladder and behavior therapy
PRO & QOL							
Johnston (2019)	To identify the most	Design:	58 studies assessed (37	Results were	OAB-q is the most frequently used	Limitations:	Support of the study:

	commonly used outcome instrument for evaluating OAB symptoms and the effects of treatment	Systematic literature review of RCT Evidence Level: Level II	RCT) clinical trials, adults in the USA with OAB, excluding neurogenic OAB, primary stress incontinence, or a known cause of OAB such as pregnancy, spinal injury, or surgery.	organized by instrument and then by study type non-pharm clinical trial, anti-muscular trial, mirabegron clinical trial, Botox clinical trial and observational study.	PRO measure in clinical trials. Using the OAB-q revealed HRQOL and symptom scores. When OAB symptoms treated, social interactions changed slightly	Some articles may not have been included or missed due to requirements of change scores	Helpful in validating the OAB-q is the most utilized PRO measure in urology practice. Also reviewed QOL changes with treatment of OAB
Palmer (2018)	To determine if patients with OAB preferred paper questionnaires to electronic questionnaires on a tablets	Design: Controlled trial without randomization, quasi experimental Evidence Level: Level III	A total of 80 patients 21 to 87 years old were enrolled in the study from November 2015 to August 2016.	2-sided chi-square test was applied to assess whether the intervention effect significantly differed among the demographic subgroups.	The incidence of patients who considered the tablet to be the same or better than paper ranged from 76% to 97% regardless of age, gender and education subgroup as well as in those with any familiarity with the tablet (each $p < 0.001$).	Limitations: Literacy in English was necessary, cost of tablet. Usefulness: Showed that greater than 50% of patients preferred a tablet to paper.	Support for the study: May prove that pre and posttest needs to be administered through tablet rather than paper

Lee, (2017)	To evaluate the impact of overactive bladder on quality of life, resource use, and productivity loss in patients from 6 Korean hospitals	Design: Cross-sectional Evidence Level: Level IV Variable: Number of episodes of urinary incontinence	625 OAB patients were categorized in 4 groups based on number of urinary incontinence episodes (0,1,2-3, >4)	Statistical analysis using STATA, differences were assessed using ANOVA, significance threshold of p,0.01 was utilized.	A significant linear correlation was found with the severity of urinary incontinence and decreased QOL.	Limitations: Limited to hospital patient's only Usefulness: Does show a correlation between an increase in OAB symptoms and a decrease in QOL	Support for the study: Urinary incontinence found in OAB can be a contributing factor to decrease QOL. Therefore it would stand to reason that treating OAB could increase QOL score.
Peterson, (2017)	To determine if the OAB-v8 is valid and can be used for both men and women	Design: Cross sectional Evidence level: Level IV Variables: OAB-v8	1128 patients, 28% female	95% CI, Cronbach's alpha calculated using 5000 bootstrap replicates	The OAB-v8 appears to be highly reliable although questions 5 and 6 may need to be reworded for men versus women, and the 2 points need to be dropped for men	Limitations: Only females Usefulness: the OAB-v8 is a reliable tool, the OAB-q is the original tool, with is 33 questions in all	Support for the study: The OAB-q will be used in the project which is the lengthy version of this tool.
Andersson (2016)	To investigate the relationship between nocturia and health related	Design: Cross sectional Evidence Level: Level IV	8738 patients across US Germany, Spain, France and UK, with LUTS	Mann-Whitney test with Bonferroni correction on adjusted p-value	Greater than 2 voids per night were associated with a declined in QOL	Limitations: Survey asked for comorbidities without stating whether they are pre-	Support for the study: This study utilized the OAB-q measurement tool

	quality of life.					existing or not. Usefulness: Efforts should be made to reduce the number of voids under 2 per night to increase QOL	
Sari (2015)	To translate and validate the International Consultation on Incontinence Questionnaire in Over Active Bladder (ICIQ-OAB) questionnaire	Design: Cross section Evidence level: Level IV Variables Control-symptom free Experimental-LUTS	50 people 16-50, 20 symptom free, 30 with symptoms, equal men and women, in Persian speaking	Kendell correlation coefficient, performing test-retest	ICIQ has been validated in 20 languages, has proper ability to determine the severity of symptoms for OAB,	Usefulness: Has the ability to determine severity of symptoms in OAB patients Limitations: Small sample size of 20	Support to the study: ICIQ may be a measurement tool in place of OAB-q
Coyne, (2014)	To evaluate the OAB-q for both bothersome symptoms and HRQOL component	Design: Quasi experimental Evidence Level: Level III Variables:	The two groups (people with OAB and people without) recruited from community (NOBLE) & urology clinic (DECO), filled	Cronbach's a, concurrent validity was evaluated with Peterson correlation coefficient	The OAB-q was valid in both the NOBLE and DECO group in measuring bothersome symptom and HRQOL	Limitations: Not a RCT Usefulness: Can be used to measure OAB symptoms in patients who have not been	Support for the study: This validates that the OAB-q is a good tool to measure both symptoms and QOL in 1 tool

		People with OAB and people without	out 4 questionnaires: OAB-q, SF-36, MOS-sleep, CES-d	with the SF-36, MOS-sleep, CES-D Discriminant validity was determined with ANOVA		diagnosed with OAB or who have and are evaluating treatment	and works with both previously diagnosed patients as well as a screening tool.
Chiu, (2013)	To measure the validity of the Chinese version of the Kings' Health Questionnaire adapted to Taiwanese setting	Design: Cross-sectional, case control Evidence level: Level IV Variables: Patients with OAB Control, patients without OAB	346 people 173 in each group, recruited from a community health clinic >40 Those with a score of > 2 for urgency and >3 for sum score according to a KHQ questionnaire were considered to have OAB. Women made up 52% of the study.	Independent t-test, Cronbach's alpha was calculated for OABSS and all domains of the KHQ, with a coefficient greater than 0.80 was considered excellent.	This version of the KHQ worked well, high on the subscale (0.943) for emotional problems, severity measures (0.816). The group with OAB, especially OAB wet has significantly worse QOL scores compared with the control.	Limitations: Many in the study had mild OAB, study was not conducted with English speaking patients Usefulness: Recommendation from this study recommended routine screening for OAB due to the impact on HRQOL.	Support for the study: QOL is impacted by OAB. Only 40% of OAB group had discussed their OAB symptoms with their primary provider prior to study
Shy (2013)	To contrast and compare	Design: Review of literature	Overactive Bladder	Review of literature regarding	Highlights the measurement tools available, however	Limitations: No perfect tool identified.	Support for the study:

	<p>various OAB surveys</p>	<p>Evidence Level: Level VII</p>	<p>Questionnaire (OAB-q), Urgency Questionnaire (UQ) Primary OAB Symptom Questionnaire (POSQ), International Consultation on Incontinence Questionnaire (ICIQ) , ICIQ Modular Questionnaires: ICIQ-OAB (derived from ICSmale and BFLUTS), ICIQ-OABqol (quality of life) (derived from OAB-q), American Urological Association Symptom Index (AUASI), Urogenital Distress Inventory (UDI),</p>	<p>each survey utilized with OAB and its validity</p>	<p>one questionnaire does not fit all.</p>	<p>Usefulness: Must address both symptoms and QOL</p>	<p>Determined OAB-q was valid and did look at both symptoms and QOL.</p>
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			Incontinence Impact Questionnaire (IIQ), Bristol Female Lower Urinary Tract Symptoms (BFLUTS)				
Co-morbidities							
Park (2019)	Examine the association between urinary urgency and falls	Design: Cross-sectional Evidence Level: Level IV Variables: Comorbidities and variables	75 men and 248 women >65 in Korea no symptoms of UTI, normal cognition, with urinary urgency and history of falls	2 groups, no falls versus at least one fall, Chi-squared and Fisher's exact test	Urinary urgency was independently associated with falls among older women, association between bladder control and falls	Usefulness Reinforces that urgency can lead to more serious issues such as hip fractures or other complications from falls. Limitations Secondary analysis only showing a causal relationship between urgency and falls.	Support for the study: Treating OAB may decrease risk for falls, fractures, or head injuries.

Kosilov (2019)	To study the socioeconomic status on quality of life in people with OAB	Design: RCT Evidence Level: Level II Variable: Age, Income, Education, Field of activity, awareness of treat option, comorbidities	1893 men & women with OAB aged 35-85	SAS, p,0.05, ANOVA	Strong connection between the professional field and the level of QOL in OAB patients	Usefulness OAB not only influences depression and anxiety, it has been associated with education level, field of work and education level Limitations: Study was based on the sample of people seeking medical assistance for OAB coming from a boarding facility (nursing home)	Support for the study: Looking at these factors when assessing for treatment options taking into account socioeconomic factors
Kinsley (2016)	To provide an overview of the research that has been	Design: Systematic review of qualitative and	32 papers out of 3699 possible articles were reviewed. All studies	The quality of all studies was assessed using a	People with OAB tended to have greater levels of	Limitations Since OAB does not have a specific diagnosis	Support for the study: Diagnosis of OAB has a significant

	conducted on psychological effects of OAB	quantitative studies Evidence Level: Level V	were cross-sectional with 8 being case-control studies, 3 were qualitative.	version of the Downs and Black (1998) checklist which includes 15 yes or no answers (10 for qualitative studies), with a possible score of 15 for quantitative studies and 10 for qualitative studies.	depression, anxiety, embarrassment/shame, impacted their social life, sleep and sexual relationships; as well as a lower QOL than people without OAB. People with OAB with incontinence reported more difficulties than people without incontinence. Family members were also found to have a lower OQL	code, some relevant studies may have been overlooked due to not meeting search criteria. Examples of this would be excluding urgency, frequency, nocturia, incontinence Usefulness: OAB affects not only patients psychological wellbeing, but can extend to the family as well.	psychological effect
Lai (2016)	To determine if a relationship between anxiety and OAB or UI symptoms in	Design: Cross sectional Evidence Level: Level IV	51 OAB patients 30 control No significant difference in age or sex	Linear regression models, continuous variables Spearman's correlation was used for	Half of the OAB patients had anxiety, one quarter had moderate to severe, and had higher anxiety compared with	Limitations: Single institute with a small sample size Assessment of anxiety was	Support of the study: Treating OAB symptoms may decrease patient anxiety.

	the clinical population	Variables: OAB symptoms Control with no symptoms		correlation analyses. P<.05	control, OAB with anxiety reported more severe symptoms, worse QOL, strong correlation b/w severity of anxiety and OAB UI symptoms.	based on self-reporting. Usefulness: OAB symptoms may increase anxiety, however, one question could be does anxiety increase the perception of OAB symptoms	
Lai (2015)	To determine if severity of OAB correlates with increased levels of stress	Design: Case control Evidence Level: Level IV Variables: OAB IC/BPS Control	51 OAB patients 27 Interstitial cystitis/bladder pain syndrome 30 healthy control	Wilcoxon rank sum test, p,0.05, Spearman's correlation performed to examine the relationship b/w perceived stress levels and self-reported OAB symptoms	1) OAB patients reported psychological stress levels as high as IC patients and significantly higher than the control 2) OAB patients significant correlation between psychological stress level perceived by patients and the severity of UI	Limitations: Case control design did not prove causation or directionality Did not compare OAB wet and OAB dry Usefulness: OAB patients are at an increased risk for stress	Support for the study: Treating OAB may help decrease psychological stress level, especially when treating OAB wet

Medications & Side Effects							
Dauphino t, (2017)	To assess the relationship between the anticholinergic burden and functional, global cognitive performance and behavior disturbance among elderly patients.	Design: Cross Sectional Study Evidence level: Level IV Variables: Relationship was the dependent variable,	473 patients included in the study conducted in a memory clinic with outpatients living at home	Crude regression coefficient 95% CI, multiple linear regressions performed, all tests were two-tailed	In the patient population with subjective cognitive decline or neurocognitive decline, the exposure to anticholinergics is associated with functional impairment. The greater the exposure the greater the impairment.	Limitations: Difficult to make an association between AC exposure and higher risk for adverse health conditions. Useful: Shows the increased potential for SE with use of anticholinergics	Support for the study: Behavior therapy has a no risk of side effect making it a good treatment therapy for elderly patients with cognitive impairment.
Kinsey (2017)	Examine patient's experiences with anticholinergics and the psychological impact of OAB symptoms and treatment	Design: Qualitative study Evidence Level: VI	6 participants from a secondary care outpatient urology clinic, 18+ in age, OAB symptoms, solifenacin for less than 3 months,	Recorded and transcribed, analyzed using thematic analysis as outline in Braun and Clark by three authors	Even after positive changes from the treatment of with medication, participants they were "better". Complete cure may not be possible. Fear exists about incontinence.	Limitations: Small group, only women Usefulness: A more holistic approach may be needed to achieve patient satisfaction.	Support of the study: Even if symptoms improve with medication, patients may not be satisfied with treatment. A combination of BT and Drug therapy

							is often necessary.
Gray (2015)	To examine a link between higher anticholinergics and an increased risk for dementia	Design: Cohort Evidence Level: Level IV Variable:	65 years or older randomized from a health facility in the northwest U.S. Participants with dementia were excluded, 10 year cumulative exposure to anticholinergics	Cox proportional hazard regression models with 95% CI, second analysis to estimate separate hazard ratios for anticholinergic exposures,	Found that higher cumulative use of anticholinergics is associated with an increased risk for dementia and Alzheimer's disease.	Limitations: No single criterion standard for estimating anticholinergic burden. Usefulness: Anticholinergics have their place for the treatment of OAB, but should be used sparingly especially if patients are already taking other anticholinergic medications.	Support for the study: Since OAB symptoms are not life threatening, treating with behavior therapy is prudent considering that the cumulative use of anticholinergics could put patients at an increased risk for dementia.
Ruxton (2015)	Investigate the association between anticholinergics and cognitive impairment and falls	Design Meta-analysis Evidence level: Level I Variables: Falls	11 RCT, case-control, cohort study	Meta-analysis with 95% CI on each of the 3 variables.	Anticholinergic use was associated with increased risk for falls in 3 studies, ACB scale showed a significant association with all-cause mortality	Usefulness: Anticholinergic use can increase falls, cognition, mortality Limitations:	Support for the study: Behavior therapy does not impact falls, cognition and mortality

		Cognitive Impairment All-cause mortality			and anticholinergic use.	Quantifies the effects of anticholinergics; evidence of increased risk on all 3 variables	
Salahudeen, (2015)	Compare anticholinergics to burden with the risk scale to quantify adverse outcomes in older people.	Design: Systematic review Evidence level: Level I Variables Anticholinergic burden Anticholinergic risk Cognitive outcome	7 studies out of an initial search of 1250	Two reviewers for data extraction, using the USPSTF criteria,	Only two RCT showed an association with higher anticholinergic burden and adverse outcomes	Useful: Recognizes the need for a better risk assessment scoring system for the geriatric population Limitations: Small review	Support to the study: Current anticholinergic risk scales tend to simplify the complex pharmacologic mechanisms therefore skewing geriatric risk
Rai (2012)	Compare effects of anticholinergic drugs with non-pharmacologic therapies for overactive bladder	Design: Systematic Review Evidence Level: Level I Variables: Use of anticholinergics	Twenty-three RCT trials with a total of 3685 participants, the duration of follow up varied from two to 52 weeks.	Symptomatic improvement was more common among participants on anticholinergic drugs compared	During treatment there was more symptomatic improvement with anticholinergics were compared with bladder training alone, and when anticholinergics combined with	Limitations: The trials were small poor methodological quality Usefulness: Anticholinergics had well recognized side effects,	Failed to support the study: Does not support that bladder training alone can sufficiently improve OAB symptoms

	syndrome in adults.	es compared with at least one management arm that was a non-drug therapy		with bladder training in seven small trials (73/174, 42% versus 98/172, 57% not improved: risk ratio 0.74, 95% confidence interval 0.61 to 0.91). Whether combining behavioral modification strategies with anticholinergic was better than the anticholinergic alone was scanty and inconclusive	bladder training were compared with bladder training alone.	such as dry mouth.	without the combination of an anticholinergic
Education							
De Silva, (2017)	To identify or adapt	Design:	Identified existing	Review of literature	4 or the 10 written oral health	Limitation:	Support for study:

	literature and pilot a tool to determine appropriateness for oral health use with high oral health needs and low level of literacy	Review of literature Evidence Level: Level VII	readability tools through electronic search for oral health used in Australia for refugees and asylum seekers	found no single tool was identified. Therefore two existing tools were integrated into one tool and adapted for pilot study	resources were appropriate reading levels for low literacy individuals.	Small literature review, pilot study Usefulness: Addressed the concept that health information must be readable at high and low levels of literacy	Identifies some key areas that need to be addressed on BT leaflet such as verbiage that is easily read at all literacy levels. Short, simple wording without altering the meaning
Dantic, (2014)	To discuss the evidence behind the teach-back method and its effectiveness .	Design: Systematic review Evidence Level: Level I	9 articles reviewed regarding teach-back method utilized with COPD patients learning how to properly use an inhaler.	Physiotherapy Evidence Database and Evidence-Based Library and Information Practice	Most studies showed a statistical significance in positive effects from the teach-back method	Limitations: Only 9 articles were reviewed Usefulness: Teach-back method improved inhaler behavior when utilized with COPD patients	Support for study: Teach-back method may be an area of verbal instruction that would be beneficial in the BT program with PMST to improve symptoms

Scheckel, (2012)	To determine what type of teaching strategies work best with patients in a rural setting.	Research Design: Qualitative study Evidence level: Level VI	15 patients from 4 rural hospitals were interviewed on their experience of patient education upon discharge from a rural hospital	Interview with 15 patients on their experience with patient education	Results: The theme which emerged: self-reliance	Limitations: Qualitative study Usefulness: Details patients compliments and complaints of patients education in their own words	Support for study: A large portion of the EBP intervention will be from a rural setting. The findings from this study will help form the BT program to better serve the rural healthcare patient's needs
Brosseau, (2011)	To created guidelines for education interventions in the management of patients with RA	Research Design: EBCPG Evidence Level: I	Cochrane Collaboration methods. Expert opinion was formed with grading the strength of the evidence and recommendations.	Two independent reviewers, where unable to decide a senior analysis was brought in to assist	64 positive recommendations, 35 with a grade A, 29 with a C+ were developed for patient education.	Limitations: Lack of study correlation among programs Usefulness: Grading of how to effectively implement BT changes although this applies to RA,	Support to study: Detailed information on proper teaching strategies to possibly incorporate within the BT program

						could be used with OAB	
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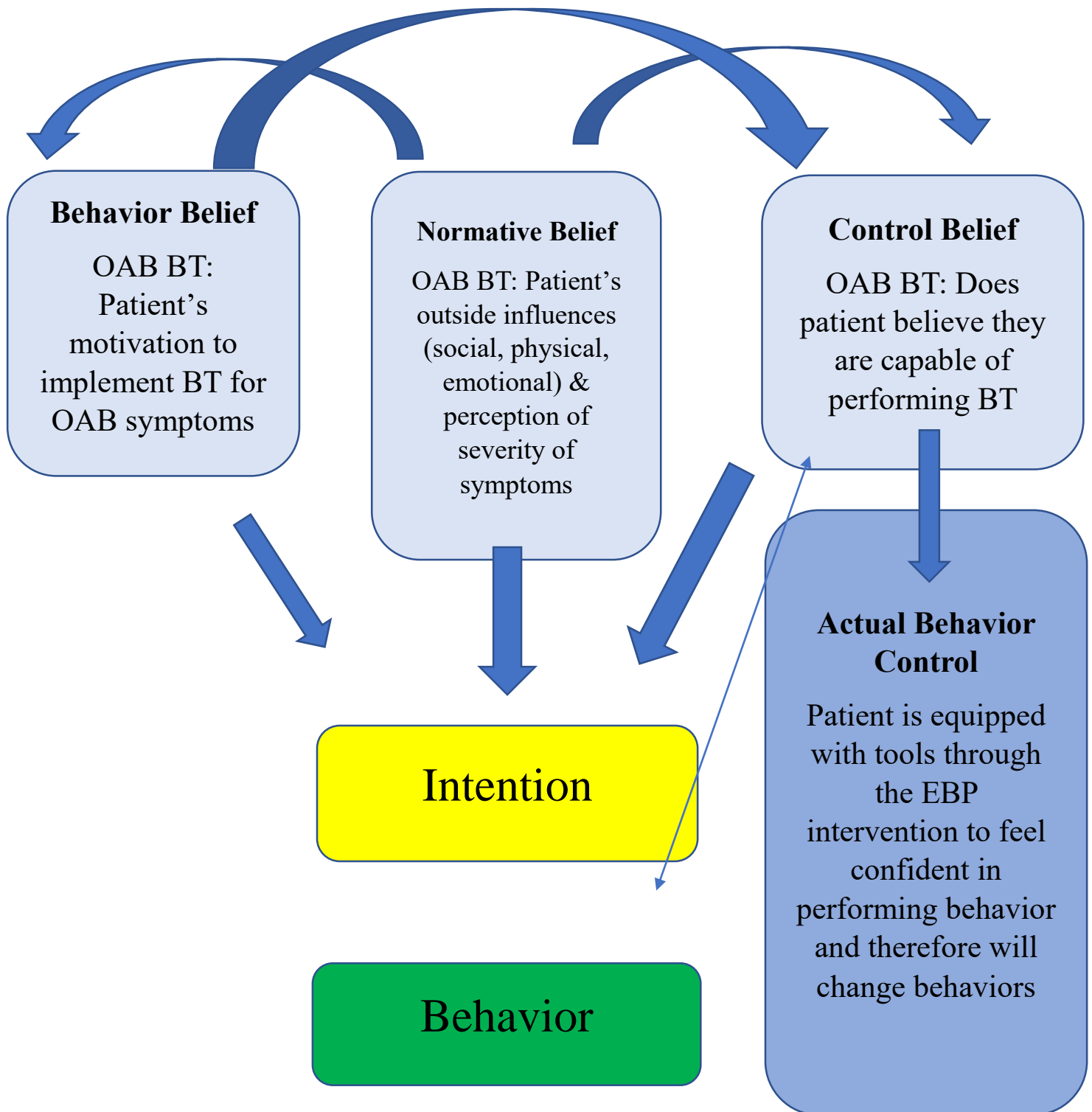
**Appendix D
Evidence Grid**

Article (last name of first author, date)	Co-Morbidities (5)	Measurement Tools & QOL (9)	Medications (6)	Behavior Therapy (12)	Education (4)
Andersson (2016)		X			
Ayeleke (2015)				X	
Azuri (2016)				X	
Brosseau (2011)					X
Bykoviene (2018)				X	
Chiu (2013)		X			
Coyne (2014)		X			
Daily (2019)				X	
Dantic (2014)					X
Dauphinot (2017)			X		
Dumoulin (2018)				X	
Gezginci (2018)				X	
Gormley (2012)				X	
Gray (2015)			X		

Article (last name of first author, date)	Co-Morbidities (5)	Measurement Tools & QOL (9)	Medications (6)	Behavior Therapy (12)	Education (4)
Imamura (2015)				X	
Johnston (2019)		X			
Kinsey (2017)			X		
Kinsey (2016)	X				
Kosilov (2019)	X				
LaRosa (2019)				X	
Lai (2016)	X				
Lai (2015)	X				
Lee (2015)		X			
Palmer (2018)		X			
Park (2020)	X				
Peterson (2017)		X			
Rai (2012)			X		
Rizvi (2017)				X	

Article (last name of first author, date)	Co-Morbidities (5)	Measurement Tools & QOL (9)	Medications (6)	Behavior Therapy (12)	Education (4)
Ruxton (2015)			X		
Salahudeen (2015)			X		
Sari (2015)		X			
Schekel (2012)					X
Shy (2013)		X			
De Silva (2017)					X
Wells (2014)				X	
Yates (2019)				X	

Appendix E
Theory of Application Diagram



Appendix F
IRB Approval Letter

Protocol: Evidence-based practice quality improvement project: Nurse practitioner led behavioral therapy program as first-line treatment of non-neurogenic overactive bladder in adult patients

Dear Ms. Ashley Southern-DeVoe:

The Freeman Health System IRB received the request for the review and approval of the above titled protocol on July 27, 2020.

The protocol was reviewed by the Freeman Health System Institutional Review Board Steering Committee under EXPEDITED review on July 30, 2020 and approved. You are granted permission to conduct your study immediately without restrictions using the approved documents.

As a condition of your project's approval, the board ask that you present your results to the IRB Committee. If you plan to publish your results, you will need to submit them to the IRB Committee for approval prior to publication. Please send your results to *FreemanIRB@freemanhealth.com*.

Appendix G
Faculty DNP Study Proposal Letter



July 16, 2020

UMKC DNP Student, Ashley Southerm-Devoe

Congratulations. The UMKC Doctor of Nursing Practice (DNP) faculty has approved your DNP project proposal, *Implementing a Behavior Therapy Program in Adults with Overactive Bladder to Improve Quality of Life and Urinary Symptoms*.

You may proceed with IRB application

Sincerely,

A handwritten signature in blue ink that reads "Lyla Lindholm".

Lyla Lindholm, DNP, RN, ACNS-BC
Clinical Assistant Professor, DNP Faculty
MSN-DNP Program Coordinator
UMKC School of Nursing and Health Studies
lindholm1@umkc.edu

A handwritten signature in blue ink that reads "Cheri Barber".

Cheri Barber, DNP, RN, PPCNP-BC, FAANP
Clinical Assistant Professor
DNP Program Director
UMKC School of Nursing and Health Studies
barberch@umkc.edu

DNP Faculty Mentor, Dr. Lindholm, DNP and Dr. Willis-Smith
UMKC School of Nursing and Health Studies

Appendix H Data Collection SPSS

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	ID	Numeric	3	0	Participant ID	None	999	12	Right	Scale
2	Gender	Numeric	8	0	Gender	{0, Male}...	999	12	Right	Nominal
3	Age	Numeric	8	0	Age	None	999	12	Right	Scale
4	Ethnicity	Numeric	8	0	Ethnicity	{0, Caucasi...	999	12	Right	Nominal
5	Bladdermed...	Numeric	8	0	Have you taken bladder medications in the past?	{0, Yes}...	999	12	Right	Nominal
6	LengthofMe...	Numeric	8	0	If yes, how long did you take the bladder medication (in weeks)?	None	999	12	Right	Scale
7	BTInthepast	Numeric	8	0	Have you been offered behavior therapy in the past for your bladder issues?	{0, Yes}...	999	12	Right	Nominal
8	OABq1	Numeric	8	0	OAB-q 1	{1, Not at all...	999	12	Right	Nominal
9	OABq2	Numeric	8	0	OAB-q 2	{1, Not at all...	999	12	Right	Nominal
10	OABq3	Numeric	8	0	OAB-q 3	{1, Not at all...	999	12	Right	Nominal
11	OABq4	Numeric	8	0	OAB-q 4	{1, Not at all...	999	12	Right	Nominal
12	OABq5	Numeric	8	0	OAB-q 5	{1, Not at all...	999	12	Right	Nominal
13	OABq6	Numeric	8	0	OAB-q 6	{1, Not at all...	999	12	Right	Nominal
14	OABq7	Numeric	8	0	OAB-q 7	{1, Not at all...	999	12	Right	Nominal
15	OABq8	Numeric	8	0	OAB-q 8	{1, Not at all...	999	12	Right	Nominal
16	OABq9	Numeric	8	0	OAB-q 9	{1, Not at all...	999	12	Right	Nominal
17	OABq10	Numeric	8	0	OAB-q 10	{1, Not at all...	999	12	Right	Nominal
18	OABq11	Numeric	8	0	OAB-q 11	{1, Not at all...	999	12	Right	Nominal
19	OABq12	Numeric	8	0	OAB-q 12	{1, Not at all...	999	12	Right	Nominal
20	OABq13	Numeric	8	0	OAB-q 13	{1, Not at all...	999	12	Right	Nominal
21	OABq14	Numeric	8	0	OAB-q 14	{1, Not at all...	999	12	Right	Nominal
22	OABq15	Numeric	8	0	OAB-q 15	{1, Not at all...	999	12	Right	Nominal
23	OABq16	Numeric	8	0	OAB-q 16	{1, Not at all...	999	12	Right	Nominal
24	OABq17	Numeric	8	0	OAB-q 17	{1, Not at all...	999	12	Right	Nominal
25	OABq18	Numeric	8	0	OAB-q 18	{1, Not at all...	999	12	Right	Nominal
26	OABq19	Numeric	8	0	OAB-q 19	{1, Not at all...	999	12	Right	Nominal
27	OABq20	Numeric	8	0	OAB-q 20	{1, Not at all...	999	12	Right	Nominal
28	OABq21	Numeric	8	0	OAB-q 21	{1, Not at all...	999	12	Right	Nominal
29	OABq22	Numeric	8	0	OAB-q 22	{1, Not at all...	999	12	Right	Nominal
30	OABq23	Numeric	8	0	OAB-q 23	{1, Not at all...	999	12	Right	Nominal
31	OABq24	Numeric	8	0	OAB-q 24	{1, Not at all...	999	12	Right	Nominal
32	OABq25	Numeric	8	0	OAB-q 25	{1, Not at all...	999	12	Right	Nominal
33	OABq26	Numeric	8	0	OAB-q 26	{1, Not at all...	999	12	Right	Nominal
34	OABq27	Numeric	8	0	OAB-q 27	{1, Not at all...	999	12	Right	Nominal
35	OABq28	Numeric	8	0	OAB-q 28	{1, Not at all...	999	12	Right	Nominal
36	OABq29	Numeric	8	0	OAB-q 29	{1, Not at all...	999	12	Right	Nominal
37	OABq30	Numeric	8	0	OAB-q 30	{1, Not at all...	999	12	Right	Nominal
38	OABq31	Numeric	8	0	OAB-q 31	{1, Not at all...	999	12	Right	Nominal
39	OABq32	Numeric	8	0	OAB-q 32	{1, Not at all...	999	12	Right	Nominal
40	OABq33	Numeric	8	0	OAB-q 33	{1, Not at all...	999	12	Right	Nominal
41	SAGAg1	Numeric	8	0	SAGA-q 1	{0, I do no e...	999	12	Right	Nominal
42	SAGAg2	Numeric	8	0	SAGA-q 2	{0, I do no e...	999	12	Right	Nominal
43	SAGAg3	Numeric	8	0	SAGA-q 3	{0, I do no e...	999	12	Right	Nominal
44	SAGAg4	Numeric	8	0	SAGA-q 4	{0, I do no e...	999	12	Right	Nominal
45	SAGAg5	Numeric	8	0	SAGA-q 5	{0, I do no e...	999	12	Right	Nominal
46	SAGAg6	Numeric	8	0	SAGA-q 6	{0, I do no e...	999	12	Right	Nominal
47	SAGAg7	Numeric	8	0	SAGA-q 7	{0, I do no e...	999	12	Right	Nominal

48	SAGAq8	Numeric	8	0	SAGA-q 8	{0, I do no e...	999	12	Right	Nominal
49	SAGAq9	Numeric	8	0	SAGA-q 9	{0, I do no e...	999	12	Right	Nominal
50	Goal#1	Numeric	8	0	Goal #1	None	999	12	Right	Scale
51	Goal#2	Numeric	8	0	Goal #2	None	999	12	Right	Scale
52	Goal#3	Numeric	8	0	Goal #3	None	999	12	Right	Scale
53	FU	Numeric	8	0	Did patient come to follow-up appt?	{0, Yes}...	999	12	Right	Nominal
54	OABq1_A	Numeric	8	0	OAB-q 1	{1, Not at all...	999	12	Right	Nominal
55	OABq2_A	Numeric	8	0	OAB-q 2	{1, Not at all...	999	12	Right	Nominal
56	OABq3_A	Numeric	8	0	OAB-q 3	{1, Not at all...	999	12	Right	Nominal
57	OABq4_A	Numeric	8	0	OAB-q 4	{1, Not at all...	999	12	Right	Nominal
58	OABq5_A	Numeric	8	0	OAB-q 5	{1, Not at all...	999	12	Right	Nominal
59	OABq6_A	Numeric	8	0	OAB-q 6	{1, Not at all...	999	12	Right	Nominal
60	OABq7_A	Numeric	8	0	OAB-q 7	{1, Not at all...	999	12	Right	Nominal
61	OABq8_A	Numeric	8	0	OAB-q 8	{1, Not at all...	999	12	Right	Nominal
62	OABq9_A	Numeric	8	0	OAB-q 9	{1, Not at all...	999	12	Right	Nominal
63	OABq10_A	Numeric	8	0	OAB-q 10	{1, Not at all...	999	12	Right	Nominal
64	OABq11_A	Numeric	8	0	OAB-q 11	{1, Not at all...	999	12	Right	Nominal
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67	OABq14_A	Numeric	8	0	OAB-q 14	{1, Not at all...	999	12	Right	Nominal
68	OABq15_A	Numeric	8	0	OAB-q 15	{1, Not at all...	999	12	Right	Nominal
69	OABq16_A	Numeric	8	0	OAB-q 16	{1, Not at all...	999	12	Right	Nominal
70	OABq17_A	Numeric	8	0	OAB-q 17	{1, Not at all...	999	12	Right	Nominal
71	OABq18_A	Numeric	8	0	OAB-q 18	{1, Not at all...	999	12	Right	Nominal
72	OABq19_A	Numeric	8	0	OAB-q 19	{1, Not at all...	999	12	Right	Nominal
73	OABq20_A	Numeric	8	0	OAB-q 20	{1, Not at all...	999	12	Right	Nominal
74	OABq21_A	Numeric	8	0	OAB-q 21	{1, Not at all...	999	12	Right	Nominal
75	OABq22_A	Numeric	8	0	OAB-q 22	{1, Not at all...	999	12	Right	Nominal
76	OABq23_A	Numeric	8	0	OAB-q 23	{1, Not at all...	999	12	Right	Nominal
77	OABq24_A	Numeric	8	0	OAB-q 24	{1, Not at all...	999	12	Right	Nominal
78	OABq25_A	Numeric	8	0	OAB-q 25	{1, Not at all...	999	12	Right	Nominal
79	OABq26_A	Numeric	8	0	OAB-q 26	{1, Not at all...	999	12	Right	Nominal
80	OABq27_A	Numeric	8	0	OAB-q 27	{1, Not at all...	999	12	Right	Nominal
81	OABq28_A	Numeric	8	0	OAB-q 28	{1, Not at all...	999	12	Right	Nominal
82	OABq29_A	Numeric	8	0	OAB-q 29	{1, Not at all...	999	12	Right	Nominal
83	OABq30_A	Numeric	8	0	OAB-q 30	{1, Not at all...	999	12	Right	Nominal
84	OABq31_A	Numeric	8	0	OAB-q 31	{1, Not at all...	999	12	Right	Nominal
85	OABq32_A	Numeric	8	0	OAB-q 32	{1, Not at all...	999	12	Right	Nominal
86	OABq33_A	Numeric	8	0	OAB-q 33	{1, Not at all...	999	12	Right	Nominal
87	SAGAq1_A	Numeric	8	0	SAGA-q 1	{1, Much wo...	999	12	Right	Nominal
88	SAGAq2_A	Numeric	8	0	SAGA-q 2	{1, Much wo...	999	12	Right	Nominal
89	SAGAq3_A	Numeric	8	0	SAGA-q 3	{1, Much wo...	999	12	Right	Nominal
90	SAGAq4_A	Numeric	8	0	SAGA-q 4	{1, Much wo...	999	12	Right	Nominal
91	SAGAq5_A	Numeric	8	0	SAGA-q 5	{1, Much wo...	999	12	Right	Nominal
92	SAGAq6_A	Numeric	8	0	SAGA-q 6	{1, Much wo...	999	12	Right	Nominal
93	SAGAq7_A	Numeric	8	0	SAGA-q 7	{1, Much wo...	999	12	Right	Nominal
94	SAGAq8_A	Numeric	8	0	SAGA-q 8	{1, Much wo...	999	12	Right	Nominal

OAB BEHAVIOR THERAPY

95	SAGAg9_A	Numeric	8	0	SAGA-q 9	{1, Much wo...	999	12	☰ Right	🔗 Nominal
96	Goal#1_A	Numeric	8	0	Goal #1 met?	{0, Yes}...	999	12	☰ Right	🔗 Nominal
97	Goal#2_A	Numeric	8	0	Goal #2 met?	{0, Yes}...	999	12	☰ Right	🔗 Nominal
98	Goal#3_A	Numeric	8	0	Goal #3 met?	{0, Yes}...	999	12	☰ Right	🔗 Nominal

**Appendix I
Cost Analysis Table (Budget)**

Item	Item Description	Quantity	Unit Cost	Anticipated Cost
Printing materials for pre/post surveys and educational packet handouts	Surveys pre and post OAB educational material for patients	Initially 50 surveys and packets will be printed. More will be purchased with increase in participation.	Approximately \$1.00/packet	\$50-100
Printed materials for poster presentation	Printing Poster Printing Handouts	1 poster Number of handouts will depend on size of conference	\$25 for poster \$0.50/handout	\$100-200
Travel	Travel to at least one conference	Cost for poster application and conference attendance. Airfare, hotel, food expense.	Poster/Conference \$500 Airfare \$500 Hotel \$500 Food \$150	\$1500-2000
Student Time	Time for assessing, implement teaching, and reevaluating.	This will be determined based on the number of hours that will be required for fall and spring semester	No cost associated with these hours	No cost associated with these hours
Staff Time	No time will be required of the staff	NA	NA	NA
NP time	Time in delivery and cost of the intervention content	Based on number of participants	20-30 minutes extra per office visit. \$25/ half hour	This may be covered by additional billing at office visit.
Total				\$2,300

**Appendix J
Logic Model**

Inputs	Intervention (s)		Outcomes -- Impact		
	Activities	Participation	Short	Medium	Long
<p>Evidence, sub-topics</p> <ol style="list-style-type: none"> 1) Behavior therapy 2) PRO and QOL 3) Medications 4) Comorbidities <p>Major Facilitators</p> <ol style="list-style-type: none"> 1) No expense to health system of clinic 2) Minimal amount of time on behalf of physician, nurses, or other staff 3) Highly sustainable if proven to be effective <p>Major Barriers</p> <ol style="list-style-type: none"> 1) Time consuming for NP (Study team leader) while in clinic 2) Expense for Study team leader to purchase tablet for administering OAB-q 3) Skepticism on behalf of nursing and patients 	<p>The EBP intervention which is supported by the evidence in the Input column</p> <p>Behavior therapy program lead by the nurse practitioner implemented with patients between August and February in the clinic who meet criteria</p> <p>Major steps of the intervention</p> <p>Initial visit will include screening using the OAB-q, assessment, creating patient goals, and education (if criteria is met).</p> <p>Guided education with specific points that will be addressed verbally in a sequential order when reviewing printed material with patient</p> <p>Printed material to be given to patient during verbal instructions and can be used as a reference at home in-between visits.</p>	<p>The participants</p> <p>Adults 18+ who meet the following criterion:</p> <ol style="list-style-type: none"> 1) In male participants a) BPH effectively treated based on PVR < 150mL b) UTI treated based on initial urine culture 2) In female participants <ol style="list-style-type: none"> a) physical assessment performed b) assess for cystocele greater than grade 3 would prompt referral to GYN for sling or pessary consultation c) UTI treated based on initial urine culture <p>prior to implementation of BT program</p> <p>Site</p>	<p>Outcome(s) to be measured</p> <p>Quality of life and urinary symptoms pre and post BT intervention</p> <p>Reliable measurement tool (s)</p> <p>OAB-q measurement tool assessing pre-post intervention</p> <p>Statistical analysis to be used.</p> <p>Descriptive statistics if participation is <30</p>	<p>Outcomes to be measured</p> <ol style="list-style-type: none"> 1) QOL and urinary symptoms across several clinics 2) A randomized controlled trial of the intervention 	<p>Outcomes that are potentials</p> <ol style="list-style-type: none"> 1) Less reliance on anticholinergic therapy 2) Educational opportunities including teaching materials to be provided to PCP offices for further implementation 3) Publication of educational material to be utilized nationally

	<p>Follow-up at phone call with verbal instructions at 3, and 9 weeks</p> <p>Second follow-up with voiding diary at 6 weeks, if patient not at goal, Pelvic floor therapy will be ordered.</p> <p>12-week final assessment with OAB-q administered.</p>	<p>Urology clinic in southwest Missouri</p> <p>Time Frame</p> <p>Implementation of EBP intervention begins mid-August- ends mid-February</p> <p>Consent Needed</p> <p>No consent will be needed for this EBP intervention, however, an informational letter will be given to all participants explaining EBP intervention.</p> <p>Person collecting data</p> <p>Study team leader</p> <p>Others directly involved.</p> <p>Collaborating Physician/Mentor</p> <p>Nursing staff</p> <p>Front office personnel</p>			
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PICOT Question: In adults (18+) with overactive bladder symptoms, does the use of a nurse practitioner lead behavior therapy program, compared with care, as usual, improve urinary symptoms and quality of life scores within 6-weeks at a Southwest Missouri urology clinic?

Appendix K Intervention Materials-Sample Leaflets

PRESENTATION VIEWS MINISLIDE VIEWS SHOW ZOOM COLOR/Grayscale WINDOW HIDE/SHOW

1 Your Guide to Overactive Bladder & Bladder Control

2 What is Overactive Bladder?

3 4 Symptoms of OAB

4 What causes OAB?

5 Who gets OAB?

6 Common Myths About OAB & Bladder Leaking

7 Common Myths About OAB & Bladder Leaking

8 How does the urinary tract work?

9 How does the urinary tract work?

10 How does the urinary tract work?

11 How does the urinary tract work?

12 How does the urinary tract work?

13 Pelvic Floor Muscles

14 How does the urinary tract work?

15 How does the urinary tract work?

16 How does the urinary tract work?

17 Stress Urge Incontinence

18 Your OAB/Bladder Leaking Treatment Path

19 Treatment for OAB: Lifestyle Changes 2 Parts

20 Treatment for OAB: Lifestyle Changes Bladder Training

21 Fluid Management

22 Fluid Management

23 Fluid Management

24 How do I know if I am drinking enough fluid throughout the day?

25 Diet

26 Weight Control

27 Smoking Cessation

28 Bowel Function

29 Proper Voiding Technique

30 Proper Voiding Technique

31 Bladder Retraining

32 Urinary Urge Wave

33 Urinary Urge Wave

34 Strategies to Reduce Urgency

35 Strategies to Reduce Urgency

36 Delayed Voiding

37 Delayed Voiding

38 Delayed Voiding

39 Double Voiding

40 Timed Voiding

41 Timed Voiding

42 Treatment for OAB: Lifestyle Changes Pelvic Floor Muscle Training

Appendix L

Intervention Flow Diagram

Step # 1

No recruitment will be held as all participants will be provided with BT intervention. The site standard of care will be replaced with the EBQI initiative



Step # 2

Patients will be assessed per criteria (sterile UA, PVR less than 150-250 mL, no cystocele, no recent diagnosis of BPH, no new anticholinergic therapy initiated in the last 30 days) OAB-q and SAGA questionnaire will be obtained



Step # 3

Participant will be guided through BT with an accompanying booklet for future reference



Step # 4

Reassess with OAB-q and SAGA questionnaire in 6 weeks

**Appendix M
IRB Informational Letter**

Freeman Letter Head

NOTICE TO PATIENTS

**Your Doctor is Participating in Quality Improvement Study
to Better Serve Your Urinary Symptom Needs**

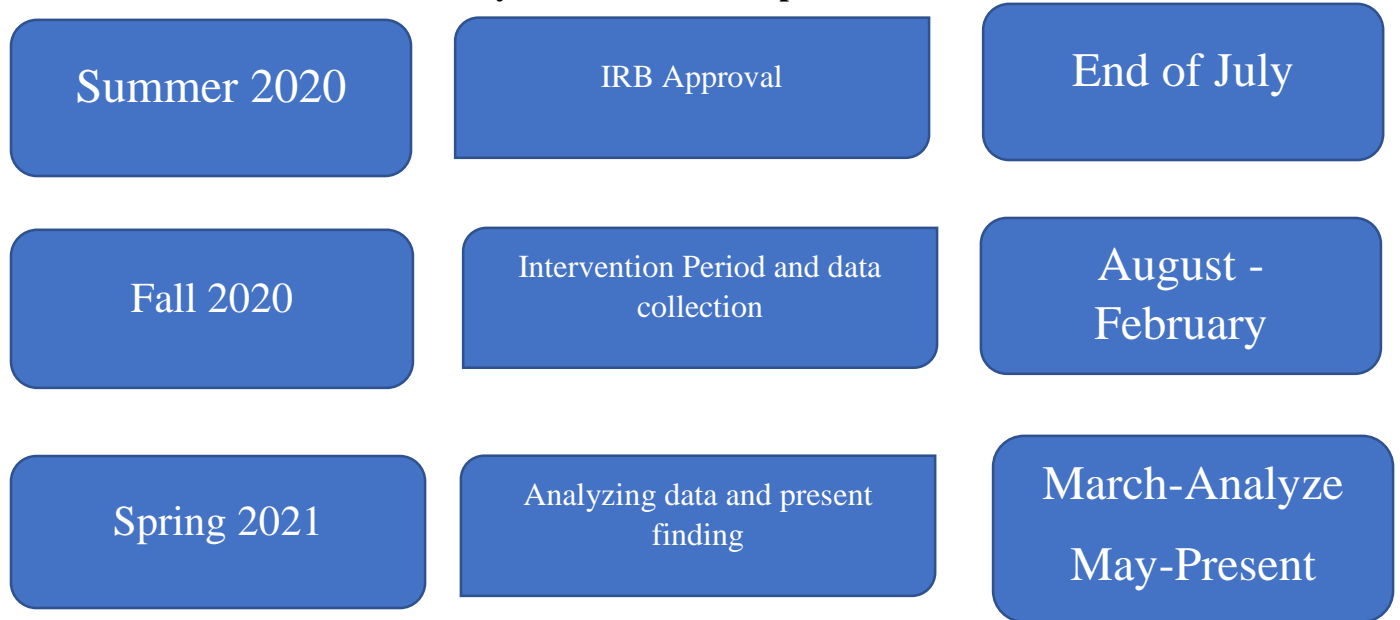
Dear Patient,

The purpose of this letter is to provide you with information about the Bladder Training Initiative for patients with overactive bladder and incontinence taking place in this office from August 2020 through May 2021. This initiative has been created to better serve patient and their urinary symptom. We are working to improve your care in the area of overactive bladder and incontinence. The Bladder Training Initiative includes information on bladder function, fluid management, dietary modifications, voiding techniques, pelvic floor muscle strengthening. This effort has been put into place in an effort to provide high-quality care with bladder symptom patients.

Thank you,

Freeman Urology Associates

Appendix N
Study Timeline Flow Graphic



Appendix O
Data Collection Table

Demographics	Collected at initial visit	Collected at 6-week F/U
Gender	X	
Age	X	
Ethnicity	X	
Prior Anticholinergic use	X	
Length of medication use in weeks.	X	
Has BT been offered in the past	X	

Appendix P Permission for OAB/SAGA

Pfizer Patient Reported Outcomes

Getting too much email? [Unsubscribe](#)



noreply@pfizer.com
Thu 4/23/2020 3:34 PM
Southern-Devoe, Ashley (UMKC-Student) ▾



2 attachments (156 KB) Download all Save all to OneDrive - University of Missouri

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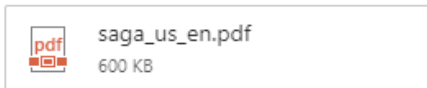
Attached you will find the files you requested. Please be advised you now have permission to use the files per the agreed terms of use unless otherwise stated.

Please use the measure as it has been validated.

Pfizer Patient Reported Outcomes



noreply@pfizer.com
Tue 6/16/2020 4:38 PM
To: Southern-Devoe, Ashley (UMKC-Student)



2 attachments (724 KB) Download all Save all to OneDrive - University of Missouri

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Attached you will find the files you requested. Please be advised you now have permission to use the files per the agreed terms of use unless otherwise stated.

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**Appendix Q
Statistical Analysis Table**

	State	Measurement Instrument Name	Tool validity and reliability	Permission Need	Statistical Analysis
Primary Outcome	Improve urinary symptoms & quality of life in OAB patients with the use of behavior therapy.	OAB-q Shown to have strong validity and reliability through Johnston et al., (2019) assessed 37 studies using the OAB-q and found among bladder specific instruments, the OAB-q was the most widely used PRO tool among clinical trials and was sufficiently sensitive in identifying dosing adjustments and corresponding symptom responses. SAGA-q Brubaker et al., (2013) study of the SAGA PRO tool in 104 men and women over the age of 18 to assess for validity and concluded the tool was valid in measuring patient goals		Yes, Pfizer	

		and goal achievement.			
Secondary Outcome	Develop a well-designed behavior therapy program to be utilized in primary care clinics by physicians, but more specifically nurse practitioners.	This will be determined once primary outcome results have been analyzed.	NA	NA	NA
Demographics	<ol style="list-style-type: none"> 1) Gender 2) Age 3) Ethnicity 4) Prior anticholinergic use. 5) If so, how long in weeks. 6) Has your PCP spoke with you about behavior therapy 	Not applicable	Not applicable	Not Applicable	Descriptive Statistics for each groups.
<p>Participant Completion of the Measurement Tool (Procedure): At participants' initial visit, they will be asked to answer four demographic questions and the OAB-q through the Redcap program using a Chromebook device. Once participants have completed the instrument, the score will be tabulated and entered into their medical chart. This score will be used to compare with their new score that will be obtained at the 6-week follow-up visit. This will be used in the statistical analysis.</p>					

Appendix R**Table 1.***Participation Data*

Patient	Gender	Age
1	F	34
2	F	39
3	F	70
4	F	78
5	M	73
6	M	80
7	F	58
8	F	74

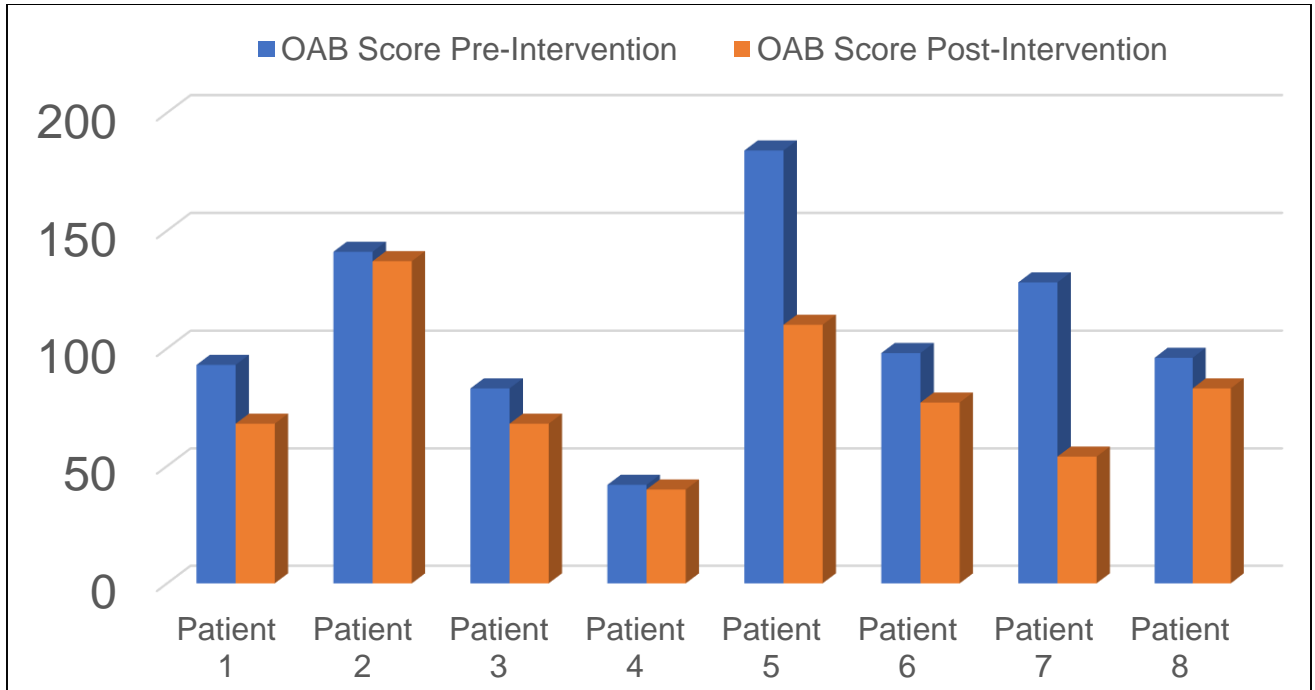
Appendix S**Table 2.***Demographics and OAB-q Scores Pre and Post-intervention*

Patient	Gender	Age	OAB Score Pre-Intervention	OAB Score Post-Intervention	Difference in Score	Attended PT
1	F	34	93	68	25	No
2	F	39	141	137	4	No
3	F	70	83	68	15	Yes
4	F	78	42	40	2	Yes
5	M	73	184	110	74	Yes
6	M	80	98	77	21	Yes
7	F	58	128	54	74	Yes
8	F	74	95	83	12	No

Appendix T

Figure 1.

OAB-q Scores Pre and Post-intervention



Appendix U

Figure 2.

OAB-q Scores with Physical Therapy

