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Assessment of Providers' Perception and Knowledge of Overactive Bladder in Women: A Quality Improvement Project

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ASSESSMENT OF PROVIDERS' PERCEPTION AND KNOWLEDGE OF OVERACTIVE BLADDER IN WOMEN: A QUALITY IMPROVEMENT PROJECT

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DEDICATION

To my dear departed mother, Lucy Wanjiru Mwaniki, I dedicate this project to you. To my father, Gregory Macharia Mwaniki for always encouraging me to strive for excellence. To my dear husband, John Kamau Ngigi, and my lovely children, Amani Ngigi and Njeri Ngigi, your support, encouragement and prayers gave me the strength and determination to complete my studies.

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ABSTRACT

Background: OAB is defined by subjective symptoms, rather than objective measure, the patient's perspective is important in managing OAB (Hung et al., 2013). As such providers need to capture the patient's perspective of their OAB symptoms and their impact on the quality of life. A patient work up helps providers determine the cause of the symptoms as well as the degree of bother to the patient (Barkin, 2016). The diagnosis of OAB is essentially clinical and can be performed through structured questionnaires (Juliato et al., 2016). When conducting a patient history, it is important to determine the onset and severity of the nocturia, and also determine if the nocturia is consistent or intermittent (Barkin, 2016). Healthcare providers should acertain any medical conditions or drugs that may cause nocturia.

Method: A quality improvement study was designed and implemented in a retail health clinic to determine an effective standard OAB screening tool; to determine the knowledge level of providers regarding OAB; and measure provider's perception of the ABSST effectiveness in assessing for OAB in patients. An appraisal of literature published from 2006 through 2016 was conducted to determine if the use of a simple symptom screener in primary care settings, may facilitate discussions between the patient and healthcare

provider regarding OAB, and thereby help to identify women who could benefit from treatment. Over 1000 potential providers were targeted to participate and of those, 153 providers agreed to participate but only 52 providers completed the study including the pre- and post-surveys, the educational module and utilized the ABSST tool with their patients that met the criteria.

Results: The two questions that sought to measure the provider knowledge pre-and post-educational module were not statistically significant. The questions that sought to measure the provider perception of the ABSST effectiveness in assessing for OAB in patients were statistically significant (N= 148; N=145 pre-survey and N=51 and N=52 post-survey). The validated overactive bladder screening tool (ABSST) was found to be statistically significant in highlighting the presence of bladder symptoms consistent with OAB at a 95% confidence interval (-0.8163 - -0.3366) with $p< 0.0001$ (N=148 pre-survey and N=51 post survey). The ABSST was effective in facilitating critical communication between patient and provider, was significant at 95% confidence interval (-0.8787 - -0.3995, $p<0.0001$) (N=145 pre-survey and N=52 post survey). Provider knowledge level for assessing OAB post intervention was statistically significant ($p=0.0004$) (N=153 pre-survey and N=52 post-survey).

Conclusion: Findings indicated that providers' knowledge and awareness of OAB symptoms and screening in adult women were increased following an educational online module. This results suggest that the ABSST is likely to improve patient outcomes for patients who are screened and if criteria met, to initiate treatment early.

Implications: This study created an awareness in the providers who did not routinely screen their patients for OAB symptoms. Further recommendations would include

replicating this project with a larger sample, as well as expanding the content to assess all adults, both male and female.

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CHAPTER 1

BACKGROUND AND SIGNIFICANCE OF THE PROBLEM

Overactive bladder (OAB) is defined by the International Continence Society (ICS) (2005) as "urgency with or without urgency incontinence, usually with frequency and nocturia" (Levkowicz, Whitmore, & Muller, 2011). About 25 percent of young women, 44 to 57 percent of middle-aged and postmenopausal women, and about 75 percent of older women experience some involuntary urine loss (Agency for Healthcare Research and Quality (AHRQ), 2013). The cost of incontinence care in the United States averaged 19.5 billion in 2004 (AHRQ, 2013). The NOBLE study showed the prevalence of OAB in the United States was 16.9 percent in women (Eapen & Radomski, 2016). The NOBLE study found that OAB symptoms were more common in women than in men, younger than 60 years of age (Eapen & Radomski, 2016). The EPIC study, which was one of the largest population based surveys that studied the prevalence of lower urinary tract symptoms and OAB, showed an overall prevalence of lower urinary tract symptoms (LUTS) suggestive of OAB was 12.8 percent in women.

The EpiLUTS survey done in the United States, United Kingdom and Sweden, showed that 43.1 percent of women of 40 years and older reported urgency or urge incontinence 'at least sometimes', and of these women, 67.6 percent and 38.9 percent reported 'somewhat' or 'quite a bit' bother (De Ridder, Roumeguere, & Kaufman, 2013). LUTS severity has been associated with decreased sexual activity and sexual satisfaction (Coyne et al., 2008). According to Levkowicz et al. (2011), nocturia disrupts a woman's

physical health and sense of normalcy and can also affect ones emotional and social circumstances. The rising prevalence of OAB creates a burden for individuals and society and increases the potential for impaired functional status and lower health-related quality of life (Barile et al., 2015).

In terms of screening for OAB, many women believe that some amount of urinary incontinence is inevitable with aging (Hartmann, McPheeters, & Biller, 2009). The majority of women with these symptoms do not talk with their healthcare providers concerning their bladder dysfunction and providers may not systematically inquire (Hartmann, McPheeters, & Biller, 2009). Consequently, very few women obtain adequate treatment for their symptoms.

The purposes of this project were to (1) determine an effective standard OAB screening tool to be used in a retail clinic environment and to (2) determine the knowledge level of providers regarding OAB, and (3) measure the provider's perception of the Actionable Bladder Screening Tool (ABSST) effectiveness in assessing for OAB in patients.

1.1 BACKGROUND

Typical symptoms include urinating more than eight times per day (urinary frequency) and a strong, sudden desire to urinate (urinary urgency) (Van Kerrebroek et al., 2002; Levkowicz et al., 2011). Nocturia is described by the ICS (2005) as "sleep-disturbing voiding" (Levkowicz et al., 2011). The fundamental symptom is urgency, and is considered to be the driver of the urological symptoms (De Ridder, Roumeguere, & Kaufman, 2013). Daytime urinary frequency is hallmark symptom of OAB increasing with age (Levkowicz et al., 2011). OAB is a subset of storage lower urinary tract

symptoms characterized by urinary urgency but commonly occurring with other storage symptoms, including frequency, nocturia, and urgency urinary incontinence (Coyne et al., 2008). OAB is defined as bothersome urgency, usually associated with daytime voiding frequency (more than every 2 hours) and nocturia (more than one episode per night for adults under 65 years of age and three or more episodes for adults aged 65 years or older) with or without urge urinary incontinence and occurring in the absence of pathologic or metabolic conditions that might explain these symptoms (Gray & Moore, 2009, p. 122).

Risk factors for OAB and urge urinary incontinence (UI) include functional deficits such as impaired mobility or dexterity, cognitive difficulties, and female gender (Gray & Moore, 2009). Other risk factors to OAB are Caucasian, insulin-dependent diabetes mellitus, increased body mass index, arthritis, depression, and age greater than 75 (Gomella, 2010). According to Gray and Moore (2009), before age of 60, OAB is more common in women than in men, with women more likely to experience mixed UI with OAB (Gray & Moore, 2009).

Conditions associated with OAB are neurologic disorders such as stroke, hydrocephalus, brain tumors, dementia or parkinsonism; stress urinary incontinence; inflammatory disorders such as urinary tract infection, bladder stones, or tumors; idiopathic factors; and obstruction as a cause of detrusor over activity (Gray & Moore, 2009). Over activity of detrusor muscle may also be due to transient causes such as delirium, infection, atrophic urethritis/ vaginitis, pharmaceutical, psychological, excessive urine output, restricted mobility and stool impaction (Gomella, 2010).

Because OAB is defined by subjective symptoms, rather than objective measures, the patient's perspective is important in managing OAB (Hung et al., 2013). As such

clinicians need to capture the patient's perspective of their OAB symptoms and their impact on the quality of life. A patient work up helps clinicians determine the cause of the symptoms as well as the degree of bother to the patient (Barkin, 2016). The diagnosis of OAB is essentially clinical and can be performed through structured questionnaires (Juliato et al., 2016). When conducting a patient history, it is important to determine the onset and severity of the nocturia, and also determine if the nocturia is consistent or intermittent (Barkin, 2016). Healthcare providers should ascertain any medical conditions or drugs that may cause nocturia. Medications such as diuretics, sedatives, narcotics, antidepressants, antihistamine, calcium channel-blockers and alpha blocker can possibly cause or worsen OAB.

The healthcare provider should order a urinalysis, a urine culture and sensitivity test, and a urine cytology test (if indicated, because of hematuria). The following tests should be ordered if indicated, a serum creatinine test to rule out renal failure, and an abdominal and/or pelvic ultrasound test. It is also important to ensure when the healthcare provider is performing a physical examination, to ensure that the patient is not in retention (palpate supra-pubically) (Barkin, 2016). Other diagnostic procedures for OAB include, urodynamics, uroflowmetry, urethral pressure profilometry, endoscopy/ cystoscopy, voiding and intake diaries, pad test, and post void residuals (Gomella, 2010).

First line treatment is antimuscarinics such as oxybutynin, tolterodine, trospium, solifenacin, hyoscyamine, and fesoterodine (Gomella, 2010). The current pharmacological approach to treating OAB mainly involves antimuscarinic agents, but the use of these agents is limited in some individuals because of the suboptimum efficacy or bothersome adverse events, including dry mouth, blurred vision and constipation

(Yamaguchi et al., 2014). Alternative approaches to managing OAB have focused on beta-adrenoceptors, such as mirabegron, which have a recognized role in mediating the relaxation of bladder smooth muscle (Yamaguchi et al., 2014). Three beta-adrenoceptor subtypes have been identified in the human detrusor, but it is the β^3-adrenoceptor subtype that is responsible for promoting its relaxation and urine storage, and this may also inhibit the activity of the bladder afferent nerves (Yamaguchi et al., 2014).

Additional treatments include behavioral therapy such as bladder retraining, pelvic floor exercises (Kegel), pelvic floor biofeedback, and transvaginal/transrectal electrical stimulation. General prevention is consuming a high fiber diet and limiting consumption of caffeine and alcohol (Gomella, 2010). Caffeine is postulated to cause a mild diuresis, which may result in increased urinary frequency and detrusor relaxation during bladder filling and storage (Wells, et al., 2014). Higher caffeine intakes have been associated with urinary incontinence, and caffeine intake has been associated with OAB (Wells et al., 2014). Other treatment options include (1) intravesical therapies (capsaicin, resinofentoxin), (2) estrogen (topical or oral) to increase growth of vaginal epithelium, increase volume of submucosal plexus, and strengthen pelvic floor musculature (Gomella, 2010). The prognosis varies according to the severity of disorder and compliance of the patient (Gomella, 2010). About 50% to 80% of patients respond to combination of behavioral modification, pelvic floor therapy, and pharmacotherapy (Gomella, 2010).

1.2 SIGNIFICANCE

The condition is highly prevalent and is associated with significant economic burden and lower health-related quality of life (Cardozo et al., 2014). To illustrate, the

EPIC study, was one of the largest population based surveys that studied the prevalence of lower urinary tract symptom(LUTS) and OAB in five countries (Canada, United Kingdom, Germany, Italy and Sweden). This study showed that the prevalence of LUTS suggestive of OAB was 10.8% in men and 12.8% in women (Eapen & Radomski, 2016). In the USA-based NOBLE study, Stewart et al (2003), estimated the prevalence of OAB as 16% among men and 16.9% among women, but did not collect data on the overall prevalence of LUTS (Coyne et al. 2008). Epidemiological studies have demonstrated that the frequency of OAB ranges from 12.4% to 53.1%, depending on the target population and definition of OAB, and the number increases with advancing age (Hung et al., 2013). The total cost in the USA was estimated to be 65.9 billion in 2007, 22.1% of which was accounted for by indirect costs (Cardozo et al., 2014). Indirect costs include impaired work productivity and activity, and statistically higher rates of OAB-related surgery, hospitalizations, physician visits and pad use (Tang et al., 2013; Cardozo et al., 2014).

Urinary incontinence is associated with poorer quality of life, impaired work productivity and activity, and statistically high rates of OAB-related surgery, hospitalizations, provider visits and pad use (Cardozo et al., 2014). Despite the negative impact of OAB on healthcare quality of life, an online survey study conducted across multiple countries showed that a substantial proportion of patients never consulted a provider regarding their bladder symptoms (Cardozo et al., 2014). Moreover, the study found that those patients who did consult a provider waited a number of years before doing so and generally had to initiate the consultation themselves (Cruz, Denys, Signori, & Globe, 2012).

It is suggested that urinary incontinence has the potential to substantially lower ones' health related quality of life (Ng Pooi Yee, Chow Yeow, & Tan Khon, 2011). Despite urinary incontinence being described as a problem, current research has indicated a low proportion of 6-12% of the population sought medical advice and treatment for urinary incontinence (Ng Pooi Yee, Chow Yeow, & Tan Khon, 2011). Given the high prevalence of OAB in women, in conjunction with the fact that many patients fail to mention their problems during clinical consultations, women may benefit from screening for symptoms of OAB, including urinary urge incontinence (Cardozo et al., 2014).

Thus, it is important for healthcare providers to screen patients for OAB. Moreover, providers have an obligation to explore behavioral as well medication therapy in the management of OAB. Healthcare providers in primary care settings are in a position to create a public health education plan to improve patient knowledge about OAB including nocturia and understanding the treatment options available.

1.3 SCOPE OF PROBLEM

According to the Walgreens Healthcare Education department, the clinics do not adequately assess adult women who may potentially present with OAB issues. According to Walgreen data, the average age of most patients who visit the Walgreens clinics are between ages 18-49. The majority of these patients are female. Walgreens Healthcare Clinics do not screen adult women for OAB. However, the clinic providers treat women for urinary tract infections. Many times, some of these women may have normal urinalysis tests, but complain of nocturia and urgency. These women are not likely to divulge this information unless the providers ask them pointedly the critical and simple question: "When you get up at night to void – do you pass a lot of urine each time or just

a small amount?" (Barkin, 2016). Based on literature, many women believe that some amount of incontinence is inevitable with aging and the majority of women with these symptoms do not talk with their health care providers about their concerns with bladder function (Hartmann, McPheeters, & Biller, 2009). As a result, many women with OAB experience delays in treatment (Levkowicz et al., 2011).

1.4 BEST PRACTICES

Several articles on OAB were appraised to provide confidence to implement the project; the evidence was then combined with different aspects within an area of provider utilization and patient acceptance. The study by Sumardi et al. (2012), evaluated the test-retest reliability of OAB Symptom Score (OABSS), which was original developed and validated in Japanese population. The OABSS showed excellent test-retest reliability in Indonesian OAB patients, and the simplicity of the tool made it useful and feasible for clinical practice that had limited time and resources. The results of the study suggest some utility for the OABSS to provide useful information on OAB symptoms which would otherwise have been gained from completion of a voiding diary; as such, solitary or complementary application of OABSS may considerably simplify the management of OAB (Sumardi et al., 2012).

The study by Basra et al. (2012), compared the value of two validated questionnaires: the Bladder Control Self-Assessment Questionnaire (B-SAQ) and the Overactive Bladder Awareness Tool (OAB-V8). Both questionnaires were found to perform well in identifying and screening for OAB symptoms in clinical setting. The OAB-V8 was validated in the USA in a predominantly primary care population; the B-SAQ was validated in the secondary care population (Basra et al., 2012). Both the B-

SAQ and the OAB-V8 performed well in detecting symptoms of OAB and mixed urinary symptoms (Basra et al., 2012). The B-SAQ performed better in detecting symptoms of stress incontinence than the OAB-V8 (Basra et al., 2012). However, the OAB-V8 was unable to screen for hematuria (Basra et al., 2012).

In the study by Coyne et al. (2008), the Center for Epidemiologic Studies Depression Scale (CES-D), the Patient Perception of Bladder Condition (PPBC), and the work productivity related to a specific health problem (WPAI-SHP), were questionnaires used to assess the prevalence and impact of OAB and lower urinary tract symptoms (LUTS). This study was conducted in five countries with a large sample size. The OAB and LUTS classifications used in this study were based entirely on patient-reported symptoms. This study found that the diagnosis and treatment of OAB should be considered in conjunction with LUTS, to maximize treatment options and optimize patient outcomes.

Cardozo et al. (2014) had 100 women complete the Actionable Bladder Symptom Screening Tool (ABSST). The tool was validated in non-neurogenic females and found to be a reliable, valid and sensitive tool for screening women with urinary urge incontinence and OAB (Cardozo et al., 2014).

1.5 STATEMENT OF PURPOSE

The purposes of this project were to (1) determine an effective standard OAB screening tool that could be used in a retail clinic environment and to (2) determine the knowledge level of providers regarding OAB, and (3) measure the provider's perception of the ABSST effectiveness in assessing for OAB in patients.

A substantive integrative review of literature on tools that can assess OAB problems in adult women over age 40 years was conducted to analyze the literature for comparing the different tools and determine the best screening tool that providers could use to assess women who presented in the clinical setting. This tool was used by healthcare providers to screen women who may potentially have OAB and initiate treatment and referral as necessary. The tool would allow healthcare providers to assist patients with the best practice management of non-neurogenic OAB by setting realistic goals with patients for improving symptom control and quality of life.

1.6 PICOT QUESTION

An extensive review and analysis of literature published from 2006 through 2016 was conducted to answer the following PICOT question: Healthcare providers providing primary care in Walgreens clinics (P), does an educational model to teach providers the use of a standard OAB screening tool (ABSST) (I), as compared to the use of no symptom screening tool (C), improve knowledge regarding the use of screening of OAB as measured by (1) the provider's knowledge of OAB pre and post educational intervention, (2) the provider perception of the ABSST effectiveness in assessing for OAB pre and post educational intervention (O), over 3 month's period (T)? Refer to Table 1.1

Table 1.1: Evidence Based Practice Clinical Question

Population	Intervention	Comparison Intervention	Outcome	Time Frame

Healthcare providers providing primary care in Walgreens clinics	Educational model to teach providers the use of a standard OAB screening tool (ABSST)	No use of symptom screening tool	Improved knowledge regarding the use of the screening of OAB as measured by: • The provider's knowledge of OAB pre-and post-educational intervention • The provider's perception of the ABSST effectiveness in assessing for OAB pre-and post-educational intervention	3months

1.7 PICOT DEFINITION AND DESCRIPTIONS

1. Adult women: any female over the age of 40 years.

2. Intervention: An assessment tool that providers utilized to assess women for non-neurogenic OAB symptoms including urinary frequency (both daytime and nighttime) and urgency, with or without urgency incontinence, in the absence of UTI or other obvious pathology that are reported as bothersome (Gormley et al., 2012).
3. Best Practice: The use of interventions that were grounded on Evidence-based research and improve bladder function and quality of life.
4. Healthcare Provider: refers to advance practice registered nurses (APRNs) and physician assistants (PAs) that managed the care of women in Walgreens clinics.
5. Non-neurogenic Overactive Bladder (OAB) is loss of bladder control because the bladder detrusor muscles contract often and at the wrong time ("Pri-med Institute," 2006). This causes the sudden urge to urinate immediately ("Pri-med Institute," 2006). Loss of bladder control is called incontinence, but "overactive bladder" refers specifically to "urge incontinence" ("Pri-med Institute," 2006). The other types of incontinence (stress incontinence and overflow incontinence) are not caused by problems with the detrusor muscle ("Pri-med Institute," 2006).
6. Assessment tools: a review literature for validated short form questionnaires to assess symptoms severity in women with incontinence. The assessment tool was piloted with providers and feedback received from the providers on the effectiveness of the tool in detecting OAB in women over 40 years.
7. OAB: nocturia, frequency, urgency, detrusor muscles overactivity, urge incontinence, bladder control (Gormley et al., 2012). OAB is defined as bothersome urgency, usually associated with daytime voiding frequency (more than every 2 hours) and nocturia (more than one episode per night for adults under 65 years of age and three

or more episodes for adults aged 65 or older) with or without urge urinary incontinence and occurring in the absence of pathologic or metabolic conditions that might explain these symptoms (Gray & Moore, 2009).

8. Nocturia: According to the International Continence Society (ICS), nocturia is defined as "The complaint that the individual has to wake at night one or more times to void. Each void is preceded and followed by sleep." (Barkin, 2016).
9. Frequency: is defined as of more than eight times per day while urgency is defined as a strong, sudden desire to urinate (Van Kerrebroek et al., 2002; Levkowicz et al., 2011).
10. Detrusor muscles overactivity is defined as the occurrence of an involuntary contraction during the filling phase, which may be spontaneous or provoked (Abrams et al., 2002; Al-Ghazo et al., 2011). The urodynamic characteristics of OAB is detrusor overactivity (Eapen & Radomski, 2016).
11. Urge incontinence(UI) is defined as urine loss associated with a precipitous desire to urinate caused by an overactive detrusor contraction (Gray & Moore, 2009). UI is also defined as urine leakage before one can get to the toilet (Wells et al., 2014)
12. Bladder control is defined as having no nocturia, frequency, urgency, detrusor muscles

    overactivity, or urge incontinence.
13. Outcomes: improved knowledge regarding the use of screening of OAB as measured by (1) the provider's knowledge of OAB pre-and post-educational intervention, (2) the provider's perception of the ABSST effectiveness in assessing for OAB pre-and post-educational intervention.

1.8 ASSUMPTIONS

1. OAB impairs quality of life.
2. Providers will use the OAB tool to assess patients for OAB.
3. Providers will use the data from the assessment tool to manage patients for OAB.
4. Providers knowledge and comfort of managing OAB will increase.

1.9 SUMMARY

This was a quality improvement project to: (1) determine an effective standard OAB screening tool used in a retail clinic environment and to (2) determine the knowledge level of providers regarding OAB, and (3) measure the provider's perception of the ABSST effectiveness in assessing for OAB in patients. The ultimate goal is for providers to conduct a valid diagnostic process and establish treatment goals that maximize symptom control and patient quality of life while minimizing adverse events and patient burden (Gormley et al., 2012). Despite a significant reduction in health-related quality of life in patients suffering from urinary dysfunction, many do not seek medical help, possibly out of embarrassment or because they do not believe that treatment is available, even when seen by a clinician for other conditions (Cardozo et al., 2014). The use of a validated bladder symptom screener tool in women with incontinence due to OAB, presenting at the Healthcare Clinics in Walgreens may facilitate discussions between the provider and patient, and thereby help to identify women who could benefit from treatment (Cardozo et al., 2014).

CHAPTER 2

LITERATURE REVIEW

Currently, the Healthcare Clinics in Walgreens do not adequately assess adult women who may potentially present with overactive bladder (OAB) issues. These women may not likely divulge this information unless the providers ask them pointedly. Many women believe that some amount of incontinence is inevitable with aging and the majority of women with these symptoms do not talk with their health care providers about their concerns with bladder function (Hartmann, McPheeters, & Biller, 2009). As a result, many women with OAB wait longer than needed to seek treatment (Levkowicz, Whitmore, & Muller, 2011).

The purposes of this project were to (1) determine an effective standard OAB screening tool to be used in a retail clinic environment, and to (2) determine the knowledge level of providers regarding OAB, and (3) measure the provider's perception of the ABSST effectiveness in assessing for OAB in patients.

2.1 SEARCH STRATEGY

According to Melnyk & Fineout-Overholt (2015), searching the literature back 5 years is considered by some sufficient, this may not be adequate to discover evidence that can address the clinical issue. An extensive review and analysis of literature published from 2006 through 2016 was conducted to answer the following PICOT question: Healthcare providers providing primary care in Walgreens clinics (P), does an educational model to teach providers the use of a standard OAB screening tool (ABSST)

(I), as compared to the use of no symptom screening tool (C), improve knowledge regarding the use of screening of OAB as measured by (1) the provider's knowledge of OAB pre-and post-educational intervention, (2) the provider's perception of the ABSST effectiveness in assessing for OAB pre-and post-educational intervention (O), over 3 month's period (T)?

The literature search strategy began with a review of library resources, with assistance of the librarian. Peer-reviewed journal articles and textbooks were assessed to try to answer the PICOT question. A systematic search was done on nine databases: Google Scholar, PubMed, National Institutes of Health and Care Excellence, National Guideline Clearinghouse, CINAHL, Web of Science, PsyInfo, EBSCOhost, and Ovid. Searching subject-specific databases that index peer-reviewed research journals was the next step in the research of the literature. Any journal articles that were not available could be accessed through interlibrary loan. Tutorial videos were provided by the librarian for how to use Joanna Briggs Institute, Web of Science, CINAHL, and PubMed; and they were all carefully reviewed and used to assist in the search of the literature.

Only databases that provided mainly full text of many types of documents were utilized. The first strategy was to search the literature using keywords: "nurse practitioner", "provider", "family nurse practitioner" ,"urinary incontinence", "knowledge", "perceptions", "perceptions of OAB by NP", "barriers", "attitudes of APRNs", "knowledge of OAB", "barriers to assess OAB", "overactive bladder", "OAB in women", "OAB assessment tool", "urinary", "nocturia", "urinary frequency", "urinary urgency", "incontinence", "non-neurogenic OAB symptoms", "loss of bladder control", "detrusor muscles", "OAB questionnaires", "assessment tools", and "symptoms severity

in women with incontinence". Searches included searches of titles, abstracts and keywords. The subject headings and abstracts of the articles were reviewed using Medical Subject Headings (MESH). In some cases, truncation with special symbols in combination with words, or word parts to increase the likelihood of finding appropriate studies. Another strategy, utilized was the title search, which used the P, I and O terms in the title so as to help find any citations and studies that were useful. Subject headings, keywords, and Boolean operators AND or OR were used to search databases such as EBSCOhost. The "limit" function to narrow down a large list of citations to the more relevant studies. The inclusion criteria included relevant studies of nurse practitioner or provider knowledge and perceptions, overactive bladder assessment tools, adult women over 40 with non-neurogenic OAB symptoms, articles in English only, urinary incontinence and lower urinary tract symptoms. Articles from other countries were included if they were in English. Articles that included both men and women were also included. The exclusion criteria included studies that had pediatric or men as the primary research and articles older than 10 years. Articles dealing with provider knowledge and perceptions of urinary incontinence, randomized studies comparing OAB medications to placebo were also included. Three randomized clinical trial study articles were found, that did not discuss an assessment tool, but focused on comparison studies of anticholinergic therapy, solifenacin and β3-adrenoceptor agonist mirabegron. These articles did have information about OAB screening tools. Refworks was used to manage the citations. Thirty-one articles were included in this analysis. See the Evidence Table 1.1. Appendix B.

In the next step, research and non-research evidence was appraised for evidence level and quality (Dearholt & Dang, 2012, p. 47). See Appendix A. According to Dearholt & Dang, 2012, the evidence rating is rated from Level I to Level V with a quality rating from A: High, B: Good, and C: Low or Major Flaws. The articles were reviewed for each piece of evidence and quality. Any evidence with a quality rating of low-major flaws was discarded and not used in the evidence table. Most of the articles the researcher found were level II or III. According to Dearholt & Dang, 2012, when appraising individual research studies, three major components come into play: study design, which has been discussed as the level of evidence; study quality, which refers to study method and execution, with particular attention to study limitations, and reflects the appraiser's confidence the estimates of an effect are adequate to support recommendations (Balshem et al., 2011); and directness, or the extent to which subjects, interventions, and outcomes measures are similar to those of interest.

2.2 ANALYSIS OF LITERATURE

After appraising the literature on OAB to provide confidence to implement the project, the evidence was then combined with different aspects within an area of provider utilization and patient acceptance. There were 31 articles whose evidence was appraised. According to Dearholt & Dang (2012), the John Hopkins evidence and quality guide, (see Appendix A), eight articles were found to have evidence level I, six had evidence level II, twelve had evidence level III, and four had evidence level IV and one had evidence level V. All articles were of good and high quality.

2.3 LEVEL ONE

The study by Sumardi et al. (2012), evaluated the test-retest reliability of OAB symptom Score (OABSS), which was originally developed and validated in Japanese population. This test-retest reliability was examined in patients in Indonesia using the internal correlation coefficient and the weighted Kappa coefficients between the first and second applications of the OABSS. Patients age 18 years and older with established OAB completed 3-day micturition diaries and questionnaires, International Prostate Symptom Score (IPSS), and Patient Perception of Bladder Condition (PPBC) on 2 separate visits. It was an observational study that had 50 patients enrolled with a return rate of 100%. T-testing of the instrument was conducted at a level of significance of 0.05 and internal correlation demonstrated a coefficient of 0.83. The test-retest reliability of the Indonesian OABSS was found to be excellent for each of the four individual items of the Indonesian OABSS, the weighted Kappa coefficients were 0.55-0.65, representing moderate to good agreement. The OABSS total score showed a moderate degree of correlation with the IPSS total score (Spearman correlation coefficient = 0.41 at Visit 1 and 0.45 at Visit 2). The OABSS showed excellent reliability with an evidence level I, with good quality, and the simplicity of the tool made it useful and feasible for clinical practice that had limited time and resources. However, the generalizability of the findings from one hospital to another was found to be a potential threat. Moreover, validated tools have demonstrated clinical use with a certain range, but one common shortcoming is they do not evaluate actual symptoms.

In the study by Coyne et al. (2008), the Center for Epidemiologic Studies Depression Scale (CES-D), the Patient Perception of Bladder Condition (PPBC), and the

work productivity related to a specific health problem (WPAI-SHP), were questionnaires used to assess the prevalence and impact of OAB and lower urinary tract symptoms (LUTS). This was a symptom prevalence study (prospective study), that identified 1434 participants. A nested case-control analysis was performed on men and women with (cases) and without (controls) OAB, from the EPIC study. Based on their responses to questions about (LUTS) cases were classified into five groups: continent OAB, OAB with incontinence, OAB + post-micturition, OAB + post-mictirition + voiding. A population based, cross sectional telephone survey of adults age over 18 years, was conducted in five countries (Canada, Germany, Italy, Sweden and the UK). The Center for Epidemiologic Studies Depression Scale (CES-D) had confirmed reliability and validity. The Patient Perception of Bladder Condition (PPBC) was found to have good construct validity, responsiveness to change and test-retest reliability among patients with OAB. The OAB and LUTS classifications used in this study were based entirely on patient-reported symptoms. However, controls were not asked any questions, which limits the case-control comparisons. Another limitation was the OAB and LUTS classifications used were based entirely on patient self-reported symptoms; there was no urodynamic testing to confirm the type of LUTS, nor was there confirmation by a medical professional. This study found that the diagnosis and treatment of OAB should be considered in conjunction with LUTS, to maximize treatment options and optimize patient outcomes. This article was an evidence level I, of good quality.

A systematic review (evidence level I and good quality) done by Kinsey et al. (2016), generated 3699 electronic searches, of which 32 articles on psychological impact of OAB were included in the review. The electronic databases searched were: Web of

Knowledge, PsycINFO, MEDLINE, and CINAHL. All the studies were cross-sectional. Most studies in this review were assessed using self-report questionnaire, which may sometimes lead to participants being included or excluded from OAB group on the basis of different individual views of "urgency" skewing the results. The research suggests that there is disagreement among physicians in the way OAB should be defined. The lack of clarity about the definition of OAB may also create difficulties in researching the condition, particularly as OAB's key symptoms, urgency, cannot be assessed objectively. According to Kinsey et al. (2016), this review provides an overview of the current research on the psychological impact of OAB. Psychological health should be considered an important aspect of managing OAB, and further research is required to determine how to best provide psychological care and support in this area (Kinsey et al., 2016).

Another systematic review (evidence level I), was conducted by Gormley et al. (2015). The article discusses the 2014 amendments to the American Urological Association/Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction (AUA/SUFU) guidelines. Data extraction was conducted as part of the Agency for Healthcare Research and Quality Evidence Report/Technology Assessment Number 187 titled Treatment of Overactive Bladder in Women (2009). The report searched the following databases: PubMed, MEDLINE, EMBASE, and CINAHL for English language studies published from January 1966 to October 2008. The AUA conducted additional literature searches to capture populations and treatments not covered in detail by the AHRQ report and relevant articles published through December 2011. The review yielded 151 treatment articles after application of inclusion/exclusion criteria. An additional systematic review conducted in February 2014 identified 72

additional articles relevant to treatment and made up the basis for the 2014 amendment. The amendment focused on four topic areas: mirabegron, peripheral tibial nerve stimulation (PTNS), sacral neuromodulation and botulinum toxin A (BTX-A). The additional literature provided the basis for an update of current guidelines statements as well as the incorporation of new guideline statements related to the overall management of adults with OAB symptoms. The treatments guidelines were divided in into first-, second-, and third-line groups. First line treatments discussed behavioral therapies may be combined with pharmacologic management. Second-line treatments discussed that clinicians should offer oral anti-muscarinics or oral β3-adrenoceptor agonists. If a patient experiences inadequate symptom control and/or unacceptable adverse drug events with one anti-muscarinic medication, then a dose modification, or a different anti-muscarinic medication, or a β3-adrenoceptor agonist may be tried. Clinicians should use caution in prescribing these second-line treatments in the frail OAB patient. Patients who are refractory to behavioral and pharmacologic therapy should be evaluated by an appropriate specialist if they desire additional therapy. Third-line treatment, such as intradetrusor onabotulinumtoxin A, PTNS, and sacral neuromodulation, required careful patient selection and appropriate patient counseling. The expert opinion further discussed that if the therapies that do not demonstrate efficacy after then adequate trial should be ceased. New evidence-based statements and expert opinion supplemented the original guidelines published in 2012, which provided guidance for the diagnosis and overall management of OAB in adults.

The FINNO study by Tikkinen et al. (2009), was a case control study with prevalence sampling, where the authors explored the correlates for nocturia and their

population-level impact. Tikkinen et al. (2009), randomly identified 6000 subjects (ages 18-79) from the Finnish Population Register (62.4% participated, 53.7% were female). They answered questionnaires assessing nocturia and quality of life. The factors with the greatest impact at the population level were (urinary) urgency (attributable number(AN)/1000 subjects (AN=24), benign prostatic hyperplasia (AN=19), and snoring (AN=16) for men and overweight and obesity (AN=40), urgency (AN=24), and snoring (AN=17) for women. This attributable number study generalizability was limited as it was done in a Finnish population and the impact measures generally are context specific. Alcohol consumption reporting was incomplete, yet nocturia prevalence did not vary by alcohol consumption among those reporting this information Although several correlates were identified, none accounted for a substantial proportion of the population burden, highlighting the multifactorial etiology of nocturia (Tikkinen et al., 2009). The questionnaire mailing round did not affect correlate prevalence. However, four exceptions emerged (age adjusted). First-round responders reported more nocturia and urgency than responders in subsequent rounds (P for trend = 0.04), and first-round female responders were slightly less obese than those in subsequent rounds (P for trend = 0.05). However, the odds ratio estimates for these factors were similar for each round, suggesting absence or systematic error. This study was an evidence level I and of high quality.

A double-blind randomized, crossover study with evidence level I and with good quality was done to study the effects of newly diagnosed women with OAB with a history of caffeine consumption (Wells et al., 2014). The women were randomly assigned to two groups, each group taking decaffeinated and caffeinated drinks for 14 days. The

periods were preceded by a 14-days run-in period and interspersed with a 14-days washout period. The primary outcomes were episodes of urgency, frequency, volume per void, and incontinence obtained each period on 3-day bladder diaries. Secondary outcomes measures were OAB symptoms severity and health-related quality of life (QOL) recorded each period using International Consultation on Incontinence-Overactive Bladder Module (ICIQ-OAB-Quality of Life (ICIQ-OABqol) tools. Effects of caffeine reduction were measured each day using visual analogue scales. The sample size was small with only 11 participants completing the study. A significant reduction in urgency ($p<0.01$) and frequency ($p< 0.05$) of urinary voids on day 3 of the diary, total ICIQ-OAB score ($p<0.01$), and a non-significant directional change for the total ICIQ-OABqol score ($P=0.065$) was found using sign tests for the period of decaffeinated compared to caffeinated drink intake. No significant differences were found for any caffeine withdrawal measures. The small sample size was a threat to the validity and reliability as the results could not be generalized. Another limitation was that there were no power calculations undertaken in order to determine sample size. There was also no trial to consider the value of episodic analysis of compliance over the entire treatment period. Nevertheless, the pilot study demonstrated that reducing caffeine intake may alleviate the severity of some symptoms and health-related quality of life factors associated with OAB (Wells et al., 2014).

Jafarabadi et al. (2015), evaluated the response of women over 45 years with OAB and detrusor overactivity to a 12-week course of oxybutynin or tolterodine treatment. This randomized, double-blind, parallel group trial was designed to determine the effectiveness of oxybutynin (5mg immediate release {IR} tablet three times a day)

versus tolterodine (2 mg IR tablet every 12 hours) in a 12-week treatment of OAB in women over 45 years. The study was performed in a women's clinic in Tehran, Iran. There were 410 patients screened and 301 randomized to oxybutynin group (n=151) and tolterodine group (n=151). There was a mean improvement in terms of urgency (P=0.64) and urge incontinence (P=0.75. The study showed that both medications significantly decreased the incidence of frequency, urinary incontinence and urgency. According to the 3-day urinary diaries, after treatment with oxybutynin, the daytime frequency and the nocturia episodes decreased 39.3% (P = <0.001) and 40.1% (P<0.001), respectively. In the tolterodine group, the daytime frequency and the nocturia episodes decreased 36.5% (P = 0.001) and 54.3% (P< 0.001), respectively. The evaluation of urinary urgency showed a significant decrease in both groups. The urinary urgency and nocturnal urinary urgency were decreased by 30.7% (P < 0.001) and 39.7% (P = 0.001), respectively, in the oxybutynin group and 28.2% (P = 0.002) and 41.2% (P < 0.001), respectively, in the tolterodine group. There was a statistically significant decrease in episodes of moderate and severe incontinence with oxybutynin (40.6%; P < 0.001); there was also a significant decrease in patients treated with tolterodine (39.1%; P = 0.009). A limitation of this study was a small sample size, short follow-up duration and subjective nature of the follow-up. This study found both drugs had similar efficacy on daytime symptoms of OAB and similar side effects in perimenopausal patients (Jafarabadi et al., 2015). The study did, however, find that tolterodine was preferred for chief complaint of nocturnal frequency (Jafarabadi et al., 2015). This article was an evidence level I and of good quality.

A randomized, double-blind, placebo-controlled phase III study enrolled 1139 Japanese patients experiencing OAB symptoms for ≥ 24 weeks. The purpose of the study

was to evaluate the efficacy and safety of the β3-adrenoceptor agonist mirabegron, in a Japanese population with OAB. Men or women aged ≥ 20 years, with OAB symptoms for ≥ 24 weeks, entered an initial 2-week, single-blind, placebo run-in period. Key OAB-related exclusion criteria included a diagnosis of genuine stress incontinence, an average total daily urine volume > 3000 ml during the 3-day pre-treatment micturition diary period, and a post-void residual urine volume of at least 100ml when measured before treatment. Patients with ≥ 8 micturitions/24 hours or ≥1 urgency incontinence episode/24 hours were randomized to once daily placebo, mirabegron 50mg or tolterodine 4mg (as an active comparator, without testing for non-inferiority of efficacy and safety) for 12 weeks. The primary endpoint was change in mean number of micturitions/24 hours from baseline to final assessment. The demographic and baseline characteristics were similar for the groups receiving placebo, mirabegron and tolterodine. Mirabegron was found to be significantly superior to placebo in terms of mean (SD) change from baseline in number of micturitions/24 hours (-1.85) [2.555] vs -1.37 [3.191]; P=0.025), incontinence episodes/24 hours (-1.01 [1.338] vs -0.60 [1.745]; P=0.008), and volume voided/ micturition (24.300 [35.4767] vs 9.715 [29.0864] ml; P<0.001). The generalizability of this study to other diverse populations may be a limitation. This study may have some bias as it was sponsored by industry. The incidence of adverse events in mirabegron group was similar to that of the placebo group. Most adverse events were mild and none were severe. Mirabegron 50mg once daily was found to be an effective treatment for OAB symptoms, with low occurrence of side effects (Yamaguchi et al., 2015). This article was an evidence level I and of good quality.

The SUNRISE study was a randomized, double-blind, 16-week, placebo-controlled, rising dose trial conducted to examine the effects of the antimuscarinic agent solifenacin on urinary urgency. There were 863 patients in the study that was conducted 105 centers in 14 European countries and was conducted in accordance with the principles of Declaration of Helsinki (1996 version) and the International Conference on Harmonization Guidelines for Good Clinical Practice (Cardozo et al., 2008). The primary efficacy variable was the change from baseline to endpoint in the number of episodes of severe urgency with or without urgency incontinence per 24 hours, as measured using the Patient Perception of Intensity of Urgency Scale, grade 3+4. The secondary efficacy variables included patient-reported outcomes for bladder condition, urgency bother and treatment satisfaction. A 3-day voiding diary was used to record micturition frequency and episodes of urgency and incontinence. A 7-day diary was used to assess speed of onset of effect. Solifenacin 5/10mg was significantly more effective than placebo in reducing the mean number of episodes of severe urgency with or without incontinence per 24 hours from baseline to endpoint (-2.6 vs 1.8, $P<0.001$). There were statistically significant differences in favor of solifenacin 5/10mg over placebo for all secondary variables measured at endpoint, including patient-reported outcomes. There was a significant improvement in urgency as early as day 3 of treatment. Treatment-emergent adverse events with solifenacin 5/10 mg were mainly mild or moderate in severity, and only led to discontinuation in 3.6% of patients. The study was found to have potential bias as it was supported by industry. The study found that Solifenacin 5/10 mg significantly reduced the number of urgency episodes and the extent of urgency bother (Cardozo et al., 2008). Solifenacin was well tolerated and was found to be effective as

early as day 3 of treatment (Cardozo et al., 2008). This article was an evidence level I and of good quality.

2.4 LEVEL TWO

Juliato et al. (2016), performed a descriptive, exploratory, cross-sectional study to assess OAB symptoms on quality of life in Brazilian women. The dependent variable was OAB and the independent variables were socio-demographic data, health related habits and problems with self-perception of health, and gynecological background. It was a simple random sample of 749 participants ages 45 to 60 years and who resided in the metropolitan region of Campinas. The mean age was 52.5 and with regard to menopausal, 16% were premenopausal, 16% perimenopausal, and 68% postmenopausal. The prevalence of OAB was 7.8% with the vast majority of women having only urinary urgency. Only two women who responded to the interview reported urge incontinence. In the final statistical model, vaginal dryness (Poisson Regression 2.21; 95% CI 1.11-4.40; p=0.025) were associated with greater prevalence of OAB. However, the reliability of some variables such as genital prolapse, the presence of bacteriuria and complains of LUTS may have been a threat to the study. Moreover, some women may have minimized urinary symptoms with in-person interview. As such, the results may have been incongruent as they were based on self-reporting. The study showed that health professionals should adopt proactive behavior in surgically menopausal women and those with a history of genital atrophy to identify and treat OAB, thus contributing to an improved quality of life and healthier aging. The study had evidence level II and good quality.

Qian-Sheng & Hann-Chorng (2010), conducted a prospective study on Chinese patients that showed a strong correlation between the Overactive Bladder Symptom Score (OABSS) and Urinary Severity Score (USS) questionnaires based on a voiding diary noted in patients with OAB. The changes in these two measures were similar after solifenacin 5mg daily for one month was given to participants. The OABSS questionnaire was linguistically validated. There were 170 patients recruited, 98 men and 72 women. A high OABSS total score was significantly associated with a high grade of USS. There was a significant correlation between the two scores (R^2=0.5520, $p<0.0001$). The main contributions of the OABSS in patients with low USS were daytime frequency and nighttime frequency. The contribution of urgency and urgency urinary incontinence became significant in patients with high urgency grades. The changes in the USS and OABSS were significant at 1 month. The change in frequency was significant in the daytime as well as at nighttime. A limitation of the study was that the OABSS and the Urogenital Distress Inventory short form, measures the frequency and urgency episodes during a given period, but the severity of urgency is not assessed as a quantitative measure of reflecting real life conditions. The findings from these articles were evidence level II and good quality.

Hung et al. (2011), performed a randomized clinical trial on 60 patients with OAB who visited different hospitals in Taiwan. These patients were tested using the Chinese OABSS. Patients were randomized either incontinent (OAB wet, n=31) or continent (OAB dry, n=29). The test-retest reliability of the Chinese OABSS was moderate to good, with weighted kappa coefficients of 0.515-0.721 for each symptom score and 0.610 for the total symptom score. Each symptom score correlated positively

with the total OABSS (Spearman's rho 0.365-0.793) and was internally consistent (Cronbach's alpha 0.674). The distribution of the OABSS showed clear separation between OAB wet (average 11.4, range 7-15) and OAB dry (average 7.97, range 4-10) subgroups (Wilcoxon exact test, $p<0.05$). In addition, the OABSS items correlated positively with the corresponding bladder diary variables (Spearman's rho 0.504-0.879) and the degrees of agreement improved with study visits except for nighttime frequency. The Chinese OABSS tended to underestimate the frequency of nighttime voiding. The Chinese OABSS was developed and validated as a reliable instrument for assessing OAB symptoms. OABSS can be an alternative to, but not a replacement for, 3-day bladder diary for assessing patients. This was an evidence level II and of high quality.

Cardozo et al. (2014), had 100 women complete the Actionable Bladder Symptom Screening Tool (ABSST). The ABSST was initially developed to identify patients with multiple sclerosis (MS) who could benefit from lower urinary tract assessment and treatment. This was a prospective, observational study performed in 6 gynecological clinics located in the USA. The women completed the ABSST, OAB Questionnaire Short Form (OAB-q SF), and the patient global impression of severity (PGI-S) scale. Half of the sample had urinary urgency incontinence (UUI), while the other half did not. Descriptive statistics, reliability, and validity were examined, as was sensitivity and specificity of the previous cut-off score established in patients with multiple sclerosis. Fifty-three women with UUI/OAB and 47 controls took part (71% Caucasian). Patients with UUI/OAB were older (54.6 vs 40.4years), had a higher body mass index (31.1 vs 26.4 kg/m^2), and more comorbid conditions. The Cronbach's alpha reliability of ABSST was 0.90. High correlations with OAB-q SF Symptom Bother and Health Related Quality

of Life (r=0.83 and -0.81 respectively) supported concurrent validity. Using the PGI-S severity scores as a reference, the ABSST was able to distinguish patients with differing severity levels (known-group validity). The study found that a score of 3 on ABSST may highlight the presence of bladder symptoms consistent with OAB and facilitate critical communication between the patient and their healthcare provider and further evaluation when warranted. The tool was validated in non-neurogenic females and found to be a reliable, valid and sensitive tool for screening women with urinary urge incontinence and OAB (Cardozo et al., 2014). The results from this study demonstrated that a cut-off ABSST score of 3 distinguished between patients who should be treated for urge urinary incontinence or OAB vs those who did not require treatment. This article was evidence level II and of good quality.

A mixed-method qualitative/quantitative needs assessment of patients with overactive bladder and/or urinary symptoms was conducted by Filipetto et al. (2014). Primary care providers may lack training in OAB or lack clinical awareness of effective evaluation and management strategies. Inadequate communication between patients and providers has limited successful diagnosis, treatment, and management of OAB. Another barrier to effective management of OAB is poor patient adherence or persistence to treatment. The causes of non-adherence are multifactorial and may include unclear or unrealistic treatment goals, side effects or inconvenience of therapy, cost, or simply forgetting to follow the treatment regimen. A sample of 194 interviewees were prescreened for a history of OAB and/or urinary incontinence. The data analyses for survey responses was conducted using SPSS. Descriptive statistics such as mean and frequencies were provided. Differences in knowledge scores for respondent gender,

respondents age (41-60 and ≥ 61 years), provider gender, and provider specialty were determined using analysis of covariance (ANCOVA) to control for the lag time between the respondents first noticed symptoms and when he/she talked with a provider about their symptoms. Analysis of variance (ANOVA) was used to determine the difference in knowledge score with frequency of communication between the patient and provider and type of educational material utilized. On average, respondents had experienced urinary and bladder symptoms for 9 years (SD=9.3) while only being under a provider's care for these symptoms for 5.8 (SD=6.0) years, resulting in an average time gap of 3.5 years between symptom onset and treatment initiation. The survey results showed that only 14% of survey participants reported that 'my provider asked me about urinary or bladder symptoms'. Interviewees reported that they felt providers were quick to prescribe medication even when the patient did not necessarily think it was needed. Only 29% and 31% of surveyed participants reported being provided bladder training and pelvic floor exercises, respectively. Interviewees reported overall dissatisfaction with clinicians' frequency and quality of communication regarding OAB. Forty-one percent said they discussed urinary or bladder symptoms 'occasionally', while 32% reported discussions 'nearly every visit'. These findings were similar to interview responses where follow-up conversations initiated by either patient or provider after initial diagnosis and treatment rarely occurred. Patients preferred regular discussions on OAB with their provider, with 75% of those surveyed rating this issue as 'very important'. Limitations to this study was the survey was not pilot tested and was not validated. The responses were developed using responses from the qualitative interviews. Participants were also recruited using a company that compiles panels of participants. This study may have limited

generalizability due to selection bias of participants. This study was an evidence level II and of good quality.

2.5 LEVEL THREE

The study by Basra et al. (2012), compared the value of two validated questionnaires: Bladder Control Self-Assessment Questionnaire (B-SAQ) and the Overactive Bladder Awareness Tool (OAB-V8). This was a comparison study whose aim was to compare the value of two validated questionnaires: Bladder Control Self-Assessment Questionnaire (B-SAQ) and the Overactive Bladder Awareness Tool (OAB-V8). Two hundred and twenty-three women were recruited on the basis of their presenting symptoms. The mean age of the women was 49 years (range 19-84). Only fully completed questionnaires were used for statistical analysis and 219 responses were used for data analysis. The receiver operating curve (ROC) identifying stress incontinence was 0.85 and 0.68 for the B-SAQ and OAB-V8, respectively, which shows that the B-SAQ is a good test and the AOB-V8 is poor test for stress incontinence. Cohen's Kappa calculations in patients with a clinical diagnosis of OAB showed values of 0.2 for both B-SAQ and OAB-V8 questionnaires (P=.01); indicating fair agreement between both questionnaires and the clinical diagnosis. The B-SAQ lower urinary tract screening questionnaire was found to be a better test for stress and mixed urinary incontinence identification than OAB-V8. The study was found to have some selection bias as all patients were from general gynecology and urology clinics and not primary care settings. Limitation of the study were only English-speaking patients were included; and OAB-V8 was found to be a poor test for stress incontinence and a fair test for mixed incontinence; and OAB-V8 was too specific and may lead to exclusion of a large affected

population. The study had an evidence level III and good quality. Both questionnaires were found to perform well in identifying and screening for OAB symptoms in clinical setting.

A Belgian study done by de Ridder et al. (2013), used the validated Bladder Control Self-Assessment Questionnaire (B-SAQ) and complemented with a question on stress urinary incontinence (SUI) and bladder bother to assess the prevalence of OAB. This epidemiological study had general practitioners collect data on OAB and SUI prospectively on women 40 years and older during a regular visit for any reason. The presence of mild bladder control symptoms (BCS) was defined as an overall B-SAQ symptom score (OSS) ≥ 4 and an overall bother score (OBS) ≥ 1. The data was collected on 7193 women, with a mean (SD) age of 61.0 (12.6) years. About 33.9% had mild BCS. Most women reported overall mild OAB symptoms (46.9) and 34.9% had moderate-to-very severe symptoms. The prevalence of moderate-severe urgency, frequency or nocturia was higher than that of moderate-severe incontinence. Urgency and nocturia were considered the most bothersome symptoms. Moderate-severe stress urinary incontinence affected 17.7% of women. About 16.4% of women reported to be moderately-severely bothered by their bladder in everyday life. The risk of severe symptoms and bother increased with age. About 10% of women had clinically significant BCS (OSS ≥ 7 and OBS ≥ 4). A limitation of the study was some women may have felt hindered or embarrassed to indicate their problems in the presence of the provider, causing underreporting. The B-SAQ is not a diagnostic questionnaire and does not assess whether the symptoms experienced are actually caused by OAB or whether other pelvic disorders are present. The study found that a significant proportion of women aged 40

years and older do not only have OAB symptoms, but also consider these bothersome in daily life. This article was evidence level III with good quality.

Fujimura et al. (2011), had 318 Japanese female patients, ages ranging from 15-91 years complete three questionnaires: Core lower urinary tract symptoms (CLSS); International Prostate Symptom Score (IPSS); and OABSS. The quality of life (QOL) was determined as per IPSS quality of life index. The clinical diagnoses were OAB, mixed incontinence, pelvic organ prolapse, interstitial cystitis, bacterial cystitis, underactive bladder and other. All symptoms scores were significantly increased in symptomatic women. The CLSS described the symptom profile of patients with distinct conditions. The scores of corresponding symptoms on the three questionnaires were significantly correlated ($r=0.51$-0.85; all $p < 0.0001$). Multivariate logistic regression modeling proved five CLSS symptoms (daytime frequency, nocturia, urgency incontinence, straining, and urethral pain) as independent predictors of poor QOL, with hazard ratios ranging from 2.0 to 4.2. The IPSS included only two (urgency and straining) significant symptoms. The IPSS was designed for men with BPH and may have limited ability to illustrate female LUTS, such as incontinence symptoms. The IPSS alone was found not to fully evaluate female LUTS, with a possible negative impact on quality of life. Using the CLSS questionnaire was found to enable simple and comprehensive assessment of female LUTS. This comparative study was found to have evidence level III with good quality.

Jongen et al. (2015), had 141 multiple sclerosis (MS) patients (ages ranging from 24 to 73 years), complete the ABSST. This observational non-interventional web based study, assessed retest reliability and concurrent validity of a Dutch version of the English

ABSST. The test compared the test performance of the simplified scoring with a cut-off point 3, with that of a cut-off point 2, using cut-off point 6 as the gold standard. A total score of ≥ 3 showed sensitivity of 0.79 and a specificity of 0.98 with respect to the clinician-based assessment of whether or not treatment was needed. Their findings suggest that in MS patients the simplified ABSST scoring is more accurate with cut-off point 2 than with cut-off point 3, especially by substantially reducing false negative outcomes; and that in MS the original ABSST scoring seemed preferable (Jongen et al., 2015).However, in a study on women with incontinence due to OAB, it was demonstrated that the use of the ABSST with a cut-off score 3 strongly distinguishes between patients who should be treated versus those who do not require treatment. This article was evidence level III and of high quality. However, in a study in women with incontinence due to OAB, it was demonstrated that the use of the ABSST with cut-off score 3 strongly distinguishes between patients who should be treated versus those who do not require treatment (Cardozo et al., 2014).

Lekskulchal et al. (2008), retrospectively reviewed records of a largely Caucasian female population, who had undergone an interview, clinical examination, multichannel urodynamic studies and translabial ultrasound examination. The detrusor wall thickness measurements were taken at the bladder dome, after bladder emptying. The receiver-operator characteristics(ROC) analysis was used to identify the optimal cut-off of detrusor wall thickness in predicting detrusor overactivity. The researchers reviewed 686 records of women who had attended a tertiary urodynamic center. They found that the average detrusor wall thickness in the detrusor overactivity group was 4.7+/- 1.9 mm (mean +/- SD), compared with 4.1 +/- 1.6 mm in the non-detrusor overactivity group (p<

0.001). Using a cut-off of detrusor wall thickness of 5.0 mm gave a sensitivity of 37% and a specificity of 79% for diagnosing detrusor overactivity. The ROC analysis revealed an area under the curve (AUC) of 0.606 (95% CI 0.56-0.65). This diagnostic method did not yield high specificity or sensitivity. The researchers did not use a transvaginal ultrasound and only measured the dome. Lekskulchal et al. (2008), found that measurement of detrusor wall thickness should not be used as a diagnostic parameter for detrusor over-activity in women.

Palma et al. (2013), performed an epidemiological study to verify the presence of OAB symptoms in premenopausal women and related them with child-bearing data. There were 1052 women of child-bearing age (20-45 years) in Brazil, who were asked to complete the International Consultation on Incontinence Questionnaire- Overactive Bladder (ICIQ-OAB) questionnaire. A validated ICIQ-OAB Portuguese version, with specific questionnaire for the specific demographics was utilized. Multiparous and primiparous women showed significantly higher scores in the ICIQ-OAB questionnaire than nulliparous women. Multiparous women presented more frequency than nulliparous women ($P < 0.0001$). No significant difference was found in urgency ($P = 0.0682$), and multiparous women presented more urgency incontinence than nulliparous ones ($P= 0.0313$). The study was performed in mostly public places and as such made it impossible to perform physical assessments in participants. Their study found that nulliparous women presented with less OAB symptoms than primiparous women; while multiparous women symptoms were more than the other two groups (Palma et al.,2013). There were no significant differences ($P = 0.0743$), between the mode of delivery (cesarean or vaginal) (Palma et al., 2013). This was an evidence level III and of good quality.

A retrospective study was done to evaluate the relationship between urodynamic detrusor overactivity (DO) and OAB symptoms in men and women by Al-Ghazo et al., 2011. Two hundred and nine patients' records (117 men and 92 women) in a tertiary referral center in Jordan were reviewed for urodynamic evaluation of OAB syndrome symptoms with the presence or absence of DO. Incidence of DO was 76.1% and 58.7% in male and female OAB patients, respectively. Of men 63% and 61% of women with urgency (OAB dry) had DO, while 93% of men and 69.8% of women with urgency and urgency urinary incontinence (OAB wet) had DO. Of men, 58% who were OAB wet had stress urinary incontinence symptom with 26.4% having urodynamic stress incontinence. While 6% of men and 6.5% of women with OAB symptoms had urodynamic diagnosis of voiding difficulties with post-void residual greater than 100ml. Combination of symptoms is more accurate in predicting DO in OAB patients. The multivariate disease model for males included urge urinary incontinence (UUI) and urgency while for females it included UUI and nocturia. The results were statistically evaluated using Mann-Whitney and Fisher's exact probability tests for comparison of the findings between DO and no DO patients, and for comparison between symptoms and urodynamic findings. The results showed that there was a better correlation between OAB symptoms and the urodynamic diagnosis of detrusor overactivity in men than in women, more so in OAB wet than in OAB dry (Al-Ghazo et al., 2011). Limitations to the study compared subjective symptoms with objective parameters; follow-up data was lacking in some patients; and there was not adequate information regarding whether or not urodynamic findings altered management for these patients. This was an evidence level III and of good quality.

Reynolds et al. (2015), performed a systematic review and meta-analysis of the original research on community dwelling women with non-neurogenic OAB undergoing pharmacotherapy with medication available in the USA. They reviewed randomized controlled trial for meta-analysis and cohort, case-control, and case series for harms data. Five data sources were reviewed, and they included MEDLINE, EMBASE, Cumulative Index of Nursing and Allied Health Literature, and ClinicalTrials.gov. The objective of the review was to summarize evidence about reduction in voiding and resolution of urine loss in OAB comparing data from the active drug arms with the placebo arms of randomized trials (Reynolds et al., 2015). Multiple team members performed data extraction independently with secondary review of data entry to ensure quality and validity. This article was an evidence level III and of good quality. No individual medication demonstrated superiority over another and anticholinergic management for OAB showed modest and rarely full resolution of symptoms (Reynolds et al., 2015).

A cross-sectional, descriptive, correlational design was used to study to examine the level of knowledge and the attitudes and perceptions of APRNs regarding urinary incontinence in older adult women by Keilman & Dunn, (2010). Eligible participants had completed a master's degree in nursing from an accredited university, had achieved national certification as a nurse practitioner, clinical nurse specialist, or midwife, and worked with older adult women. The study sample was 54 or 75% response rate, with initially 72 APRNs initially agreeing to participate. Approximately 57% (n=31) of the APRNs reported they diagnose UI in their clinical practice. Of the APRNs who diagnose UI, 60% also treat, manage, educate, and counsel patients regarding with condition. Approximately 54% (n=29) of the APRNs answered they were taught about UI in their

graduate program. Only 48% felt their education on the topic was adequate. This group of APRNs reported learning more about UI through attending conferences where UI was offered as a topic (n=30, 72.2%), consulting a UI specialist (n=21, 38.9%), or acquiring specific information through professional journals (n=48, 88.9%). UI guidelines were used regularly in practice by only 24.1% (n=13) of the APRNs. Most of the participants understood that UI is not a normal part of the aging process (M=1.87, SD=1.03). All participants (N=54) strongly agreed that UI was an important health concern that should be handled by APRNs. Thirty-eight of the APRNs (70.3%) reported they always asked about UI when performing a health assessment. However, the participants did not necessarily feel confident in their assessment/diagnostic skills related to UI (M=3.50, SD=0.95) and in managing and/or treating UI independently (M=3.06, SD=1.05). The respondents also knew education was a crucial component in the management of UI (M=4.61, SD=0.50). Most of the APRNs (M=4.02, SD=0.63) recognized that prompted voided improves symptoms of urge and mixed UI and can be recommended as a noninvasive treatment. Respondents were not sure of the pharmacologic effects on symptoms of detrusor overactivity in women (M=3.41, SD=0.81) and were not aware of the pharmaceutical classifications of drugs that could potentially cause UI (M=2.94, SD=1.05). Participants also reported not feeling comfortable assessing older women's motivation for learning (M=3.87, SD=0.78). Providing anticipatory guidance and/or counseling for women with UI was not strong with this group of APRNs (M=3.28, SD=1.10). An education index (EI) was computed that reflected the type of education of the APRNs reported receiving on UI. A statistically positive correlation was found between EI and age (r=0.47). APRNs that were older reported higher levels of education

regarding women with UI than younger APRNs. In addition, a statistically significant correlation was found between the total scale score and EI (r=0.40), the knowledge subscale score and EI (r=0.27), and the Attitudes/Perceptions subscale score and EI (r=0.51). APRNs who reported a higher level of education regarding UI had more accurate perceptions, more positive attitudes, and more knowledge regarding older adult women with UI than those who reported lesser level of education. The reliability of the KAPUIOW scale was estimated by Cronbach's alpha. Total scale estimate was α= 0.86, with α=0.81 for the Attitudes/Perception subscale, and α=0.77 for the knowledge subscale. Limitations to this study was it was self-reported data, lengthy questionnaire that took approximately 1-2 hours to complete and the small sample size that was not randomly sampled. According to Keilman & Dunn (2010), the single most important action that APRNs can take is to ask every older adult about UI and then follow with the basic approaches to evaluation and management of UI.

Nguyen et al. (2016), investigated family physicians' knowledge of, attitudes towards, and understanding of UI, as well as their perceptions of barriers to continence care, as a foundation for designing interventions to improve service provision for those in northern Alberta who suffer from UI. A descriptive survey using a standardized instrument was used. The survey instrument was complete either by telephone interview or a paper copy faxed back to the researcher. Hundred and fifty-eight participants in Alberta, Canada, were randomly selected from the publicly available directory published by the College of Physicians and Surgeons of Alberta using a computer-generated random-number list. UI was thought to affect quality of life to some extent or a great extent by 85.5% of physicians, ranking behind depression, arthritis, and chronic pain.

Among the 158 participants, 53.8% (85 of 158) indicated that they proactively discussed incontinence with most or all of the patients they suspected had incontinence problems; 29.7% (47of 158) indicated that they proactively discussed incontinence with some of their patients, and 15.2% (24 of 158) indicated that did not discuss incontinence with anyone unless the patients raised the issue themselves. After initial management, such as providing lifestyle advice, prescribing medication, recommending incontinence products, or providing referral to specialist, 78.5% (124 of 158) of physicians sometimes, if not always, arranged follow-up appointments specifically to deal with the incontinence; 21.5% (34 of 158) rarely if ever arranged follow-up. Reasons for lack of confidence in management included concerns about the level of training, drug side effects, a lack of support services in the area, and the general embarrassment around UI. In total, 70.9% (112 of 158) of family physicians reported that improving the treatment and management of patients with incontinence was a fairly high if not a high priority to them personally, with 25.9% (41 of 158) reporting it to be either a fairly low or a low priority. Limitations to the study was the response rate of the physicians was low and the researchers finding may not be generalizable. This article was an evidence level III and of good quality.

Another study by Duralde et al. (2016), sought to conduct an observational cohort study to identify clinical and sociodemographic determinants of patient-provider discussion and treatment of incontinence among ethnically diverse, community-dwelling women. The women were aged 40-80 years enrolled in Kaiser Permanente Northern California. Clinical severity, type, treatment, and discussion of incontinence were assessed by structured questionnaires. Mean age of the participants was 59.9 years and 55% were racial/ethnic minorities (171 black, 233 Latina, 133 Asian or Native

American). Fifty-five percent reported discussing their incontinence with a health care provider, 36% within 1 year of symptom onset, and with only 3% indicating that their provider initiated the discussion. More than half (52%) reported being at least moderately bothered by their incontinence. Of these women, 324 (65%) discussed their incontinence with a clinician, with 200 (40%) doing so within 1 year of symptom onset. In a multivariate analysis, women were less likely to have discussed their incontinence if they had a household income <$30,000 vs ≥ 120,000/year (adjusted odds ratio [AOR], 0.49, 95% confidence interval (CI), 0.28-0.86) or were diabetic (AOR, 0.71, 95% CI, 0.51-0.99). They were more likely to have discussed incontinence if they had clinically severe incontinence (AOR, 3.09, 95% CI, 1.89-5.07), depression (AOR, 1.71, 95% CI, 1.20-2.44), pelvic organ prolapse (AOR, 1.98, 95% CI,1.13-3.46), or arthritis (AOR, 1.44, 95% CI, 1.06-1.95). Among the subset of women reporting at least moderate subjective bother from incontinence, black race (AOR, 0.45 95% CI, 0.25-0.82, vs white race) and income < $30000/ year (AOR, 0.37, 95% CI 0.17-0.81, vs ≥ $120000/year) were associated with a reduced likelihood of discussing incontinence. Those with clinically severe incontinence (AOR, 2.93, 95% CI, 1.53-5.61, vs low to moderate incontinence by the Sandvik scale) were more likely to discuss it with a clinician. A limitation of the study was that it relied on participant report for incontinence status. The study did not include women who had previously suffered from incontinence, underwent evaluation, and were successfully treated or those with less frequent incontinence. The study findings suggest that even among women with frequent incontinence and streamline and affordable access to primary care and specialist services, the rates of patient-provider discussion of incontinence remain low, and rates of provider initiated

screening for incontinence are even lower. This was an evidence level III and of good quality.

Teunissen et al. (2015), conducted an observational study to determine the effectiveness of introducing a nurse practitioner in UI care and to explore women's reasons for not completing treatment. Sixteen nurse practitioners working with a GP's office in the Netherlands, undertook a training program in which they learned how to manage female patients with UI. All patients were examined and referred by the General Practitioner (GP) to the NP working in the same practice. At baseline the severity of the UI (Sandvik-score), the impact of the quality of life (IIQ) and the impressed severity (PGIS) was measured and repeated after three months. Differences were tested by the paired t and the NcNemar test. Reasons for not completing treatment were documented by the nurse practitioner and differences between the group that completed treatment and the drop-out group were tested. Hundred and three women were included, mean age 55 years (SD 12.6). The Sandvik severity categories improved signinficantly ($P<0.001$), as did the impact on daily life (2.54 points, $P=0.012$). Among the IIQ score the impact on daily activities increased 0.73 points ($P=0.032$), on social functioning 0.60 points ($P=0.030$) and on emotional well-being 0.63 points ($P=0.031$). The PGIS -score improved in 41.3% of the patients. The most important reasons for not completing the treatment were lack of improvement of the UI and difficulties in performing the exercises. Women who withdrew from guidance by the nurse practitioner perceived more impact on daily life ($P=0.036$), in particular on the scores for social functioning ($P=0.015$) and emotional well-being ($P=0.015$). Limitations to the study were dropout rate in this study was 32% which is considered high; no control group was involved as a RCT which received care

by the GP and the training program for patients with UI is time consuming, and not always easy to sustain and difficult to implement in daily life. Treatment by a trained NP seems to have a small positive affect the severity of the UI and the impact on the quality of life. NPs involved in the care of patients generally leads to an improvement of health outcomes and patient satisfaction. Women who did not complete treatment suffer from more impact on quality of life, experience not enough improvement and mention difficulties in performing exercises. This was an evidence level III and of good quality.

2.6 LEVEL FOUR

Barkin (2016), discusses the pervasiveness of nocturia in men and women who present with LUTS. Barkin (2016) article is an evidence level IV and of good quality. Dr. Barkin gives his expert opinion in this article, exploring the different causes and types of nocturia, then describes how to diagnose different types of nocturia (including use of frequency-volume charts), and discusses different approaches to managing nocturia (including the use of desmopressin), depending on the type and cause. The article discusses the importance of taking a patient's history to determine the onset and severity of nocturia, and also find out if nocturia is consistent or intermittent. Clinicians should rule out the other medical and non-medical causes of LUTS. All appropriate tests – urinalysis, urine culture and sensitivity test, urine cytology test (if indicated), serum creatinine test to rule out renal failure (if indicated), abdominal/or pelvic ultrasound (if indicated), and frequency-volume charts. Barkin (2016), finds that nocturia is pervasive in both genders who present with LUTS. Once it is determined that a patient has nocturnal polyuria based on the frequency-volume chart, clinicians can then safely offer a

new, low-dose, effective synthetic oral disintegrating tablet of desmopressin (Nocdurna), which has few side effects (Barkin, 2016).

An article by Carcio (2014), takes a nurse practitioner perspective on OAB. This article is a level IV and of good quality. OAB is not life threatening, but it is lifestyle threatening. Carcio (2014), discusses the importance APRNs identifying patients using assessment of health history, a focused examination, and office based tests. Fifty percent of women with bladder problems do not mention them at patient visits. The article discusses a survey done by the National Association of Nurse Practitioners in Women's Health that surveyed 300 APRNs, and found that although most respondents could identify common symptoms of OAB and its' adverse effect on quality of life, more than half reported that they lacked confidence in their ability to accurately identify OAB and more than half reported lacking sufficient knowledge to effectively treat OAB. APRNs are ideally suited to educate patients about OAB, as well as diagnose and treat OAB. If the patients are more knowledgeable about OAB, they would recognize it when it arises and understand that treatment is available. With continued emphasis on OAB in academic programs and national conferences, APRNs can educate themselves to face this challenge

Eapen & Radomski (2015), discuss four studies, the EPIC study, the National Overactive Bladder Evaluation(NOBLE) study, the Epidemiology of Lower Urinary Tract Symptoms (EpiLUTS) study, and the MILSOM study, that assess the impact of OAB symptoms, their findings and prevalence and impact on quality of life. According to the EPIC study which was conducted in five countries, showed the prevalence of OAB and its symptoms increases with increasing age in both genders. Looking specifically at urinary incontinence (UI), women had a much higher rate of any UI (urge, mixed, stress

and other) than men (13.1% versus 5.4%). The NOBLE study showed an overall OAB prevalence of approximately 16% with no significant differences between the two sexes (16% in men, 16.9% in women). The study also found an association between OAB with UI and body mass index (BMI)in women but not men. Women with BMI > 30 were 2.2 times more likely to have OAB with UI than women with BMI <24. The EpiLUTS study conducted in the United States, United Kingdom and Sweden, showed the prevalence of OAB symptoms "sometimes" and "often" were 27.2% and 15.8% respectively, whereas in women, the prevalence of OAB symptoms "sometimes" and "often" was 43.1% and 32.6%, respectively. Women had an overall higher prevalence of symptoms such as urgency, UI or both. The MILSOM study conducted in France, Germany, Italy, Spain, Sweden and United Kingdom, found an overall prevalence of OAB symptoms of 16.6%. In the MILSOM study, the overall prevalence of frequency and urgency were comparable irrespective of gender. These studies also found that older patients (over age 65) were more likely to consult a clinician than younger patients with OAB. Treatment for OAB should take on a multidisplinary approach with the implementation of lifestyle modifications, behavioral therapies and pharmacotherapy for the most optimal outcome (Eapen & Radomski, 2015). This article was an evidence level IV and of high quality.

A study by Alber-Heitner et al.(2010), explored the experiences and attitudes of nurse specialists in primary care regarding their role in care for patients with urinary incontinence (UI), thereby identifying facilitators and barriers for wider implementation. This study was a level IV and of good quality. A focus group was conducted with six female nurse practitioner specialists who were trained in caring for patients with UI. The study was carried out from May 2005 until March 2008 in four Dutch regions. These

nurse specialists followed patients in a RCT (n=384) for 12 months. At the end of the intervention period, nurse specialist experiences and attitudes were explored in one focus group study. Prior to the focus group study, a short questionnaire was sent to the participants to collect demographic data, education and nursing experience. To increase dependability and confirmability, the interview was transcribed verbatim. To improve consistency and reliability of the analyses, the external moderator and the researcher analyzed the transcript independently of each other. The findings showed that most nurse specialists main reason to participate was to enhance their professional role, provide more than patient care, develop a new specialty and look for new challenges. Nurse specialists felt that most patients with UI were satisfied and happy with their care and therefore seemed to accept this care by nurse specialists. The trained nurse specialist appeared to feel competent and satisfied to support physicians in care for patients with UI. There were some limitations to this study. The researchers chose only one a qualitative focus group discussion with only six nurse specialist. Because the nurse specialists knew the researchers had an interest in the intervention they may have made socially desirable comments, and as such creating a bias. The limited number of nurse specialists may limit the generalizability of the results to similar situations in the primary care setting in a new context.

2.7 LEVEL FIVE

A descriptive cross-sectional study was performed by Levokowicz et al. (2011), 1111 American women internet users (ages 40-65), were surveyed online. A sample of 611 women in same age bracket with symptoms of OAB was surveyed regarding their experiences and attitudes about treatment. Women with nocturia in the study tended to

prolong seeking treatment. They found women with OAB, including nocturia, were more likely than women with OAB, excluding nocturia, to alter their behavior in social situations, refrain from physical activity and intimacy, and cancel social plans because of their condition. The results of this study showed that women with OAB almost always got up to urinate at night, but 1 in 5 (n=121 of 611 [20%]) respondents typically experienced severe nocturia, necessitating four or more trips to the bathroom during the night. Most women surveyed (n=586 of 611 [96%]) got up at least one time during the night to urinate. Despite their more severe symptoms, respondents with OAB including nocturia, surprisingly were no more likely to consider themselves proactive about seeking treatment for their symptoms than women without nocturia. In fact, nearly 2 in 5 (n=172 of 478 [36%] of women with nocturia surveyed had never sought treatment for symptoms of OAB, whereas 29% (n=39 of 133) of those with OAB but without nocturia reported they had not sought treatment. Interestingly, those who had nocturia, 76% (n=365 of 478) reported that they waited longer than they should to consult a provider versus 65% (n=86 of 133) of women without nocturia. Roughly one-third of women with OAB in the sample survey experienced nocturia regardless of whether or not they were in treatment; 149 of 478 (31%) were in treatment, 157 of 478 (33%) had stopped treatment, and 172 of 478 (36%) had never treated their OAB. Moreover, 63% (n=316 of 500) of nationally representative American women reported that not getting enough sleep throws off their sense of "normalcy." In addition, 60% (n=300 of 500) of women reported that when one aspect of life is thrown off, it disrupts other areas of life. The results of this study suggest how nocturia, in particular, impacts quality of life considerations, and thus, could represent a factor disrupting a person's sense of normalcy. A limitation of this study, is

participants had to have access and knowledge of a computer to answer the survey questions. The generalizability of this survey may be questioned as it may not be representative of the general US population in the target age group and across all desired demographics (Levokowicz et al., 2011). They found more public health education was needed to improve consumer knowledge about OAB including nocturia and understanding of all treatment options for its symptoms. The article evidence level was V and good quality.

2.8 SYNTHESIS OF THE LITERATURE

A review of the literature was conducted and evidence table developed to enable an understanding of the studies and to determine their evidence level and quality per the John Hopkins evidence guidelines (Dearholt & Dang, 2012). After reviewing several articles, a hierarchy of baseline characteristics and outcome measures were developed: nocturia, frequency, urgency, detrusor muscle overactivity, urge incontinence, bladder control, quality of life, urodynamic measures and assessment tools. All articles were reviewed for validity and reliability. The evidence table is presented in its' entirety in Appendix B.

The evidence table was created to support a systematic tabulation and assessment of study characteristics including, (1) a brief reference, type of study and quality rating, (2) methods, (3) threats to validity/reliability, (4) sample, sample size and setting, (5) study findings that help answer the evidence based practice question, (6) limitations, and (7) conclusions. This allowed for identification of common threads in reporting across the articles. The experience of having OAB is a constellation of self-reported events, symptoms, and the impact they have on an individual's life (Hartmann et al., 2009).

Thus, measures of quality of life, interference with daily activities, degree of distress from symptoms, and satisfaction with the outcomes of treatment are also common and helpful metrics in this literature (Hartmann et al., 2009).

2.9 SUMMARY

Despite the evidence showing the impact of OAB on quality of life, many women delay seeking treatment for their symptoms (Eapen & Radomski, 2015; Levokowicz et al., 2011). Four studies, the EPIC study (Coyne et al., 2008), the National Overactive Bladder Evaluation(NOBLE) study, the Epidemiology of Lower Urinary Tract Symptoms (EpiLUTS) study, and the MILSOM study, assessed the impact of OAB symptoms on quality of life (Eapen & Radomski, 2016). The EPIC study showed a prevalence of LUTS suggestive of OAB 10.8% in men and 12.8% in women. The NOBLE study showed a prevalence of 16% in men and women. The EpiLUTS study found an overall higher prevalence of symptoms such as urgency, UI or both in women. The MILSOM study found a prevalence of 15.6% in men and 17.4% in women with OAB symptoms.

Various articles have discussed validated OAB screening tools that have been retested in various countries and populations. Some tools are more specific to OAB symptoms while other tools assess urinary incontinence. The ABSST, OABSS, CES-D, IPBC, PPBC, WPAI-SHP, CLSS, B-SAQ, OAB-V8, IPSS, ICIQ-OAB-Quality of life, are all validated screening tools that have been used in several settings to assess patients with urinary incontinence and OAB symptoms (Basra et al., 2012; Cardozo et al., 2014; Coyne et al., 2008; De Ridder et al., 2013; Fujimara et al.,2011; Hung et al., 2011; Quian-Sheng & Hann-Chorng, 2010; Sumardi et al., 2012).

Wells et al., (2014), pilot study demonstrated that reducing caffeine intake may alleviate the severity of some symptoms. Juliato et al. (2016), study showed that when clinicians are assessing women who are menopausal, premenopausal, peri-menopausal or post-menopausal; they should adopt a proactive behavior in surgically menopausal women and those with a history of genital atrophy to identify and treat OAB symptoms. Palmas et al. (2013), found that there was no significant difference (P=0.0743) in OAB symptoms, between mode of delivery (cesarean or vaginal). Lekskulchai & Dietz (2008), found that when evaluating detrusor overactivity, the measurement of detrusor wall thickness should not be used as a diagnostic parameter. Al-Ghazo et al. (2011), did however find a better correlation in detrusor overactivity between OAB symptoms and the urodynamic diagnosis of detrusor overactivity in men than in women, more in OAB wet than in OAB dry.

Oral antimuscarinics agent, such as tolterodine, and solifenacin were not found to demonstrate superiority over another in the systematic review done, and anticholinergic agents showed modest and rarely full resolution of symptoms (Reynolds et al., 2015). The efficacy of a β_3-adrenoceptor agonist mirabegron 50mg was found to be effective in treatment of OAB symptoms, with a low occurrence of side effects in a Japanese population (Yamaguchi et al, 2014).

The National Association of Nurse Practitioners in Women's Health (NPWH) surveyed 300 NPs to ascertain their own level of recognition and treatment of OAB in their practice, and found most respondents could identify common symptoms of OAB and its adverse effects on quality of life (Carcio, 2014). However, more than half reported that they lacked confidence in their ability to accurately identify OAB and more than half

reported lacking sufficient knowledge to effectively treat OAB (Carcio, 2014). Barriers to changing practice may include a lack of provider confidence in discussing UI, lack of training in clinical examination, and diagnosis and treatment of OAB. APRNs who reported a higher level of education regarding UI had more accurate perceptions, more positive attitudes, and more knowledge regarding older adult women with UI than those who reported lesser levels of education (Keilman & Dunn, 2010). APRNs can make a difference in the management of UI in women if they are taught the essentials and UI and OAB practice guidelines, and have the assessment tools at hand to quickly assess patients for UI and OAB (Keilman & Dunn, 2010). With proper screening for OAB, communication between provider and patient about OAB, most, if not all, of the patients with this condition can be identified and treated (Albers-Heitner et al., 2010; Carcio, 2014; Duralde et al., 2016; Filipetto et al., 2014; Keilman & Dunn, 2010; Nguyen et al., 2013; Teunissen et al., 2015).

2.10 DISCUSSION OF BEST PRACTICE

A review of current literature supports OAB screening by primary care providers to aid in recognizing OAB early and initiating appropriate treatments, thus decreasing the time women wait to seek treatment (Barkin, 2016; Basra et al., 2012; Cardozo et al., 2014; Coyne et al.,2008; De Ridder et al., 2013; Eapen & Radomski, 2016; Fujimura et al., 2011; Hung et al., 2011; Jongen et al., 2015; Juliato et al., 2016; Kinsey et al., 2016; Levkowicz et al., 2011; Palma et al., 2013; Quian-Sheng & Hann-Chorng, 2010; Sumardi et al., 2012; Tikkinen et al., 2009). The potential impact of this quality improvement project was to increase the provider's knowledge about OAB symptoms; and assess the

provider perception of the ABSST effectiveness in assessing OAB symptoms in their patients'.

Successful OAB treatment requires a willing participant who is informed and engaged in the treatment process, understands that OAB has a variable and chronic course likely requiring multiple management strategies over time with no single ideal treatment and understands that treatment vary in invasiveness, risk of adverse effects and reversibility (Gormley et al., 2012). Most OAB treatments improve patient symptoms but are unlikely to eliminate all symptoms (Gormley et al., 2012). Explaining what is normal can help the patient understand their condition and give a comparator for establishing mutually-identified and realistic goals for treatment (Gormley et al., 2012). Education empowers the patient to participate in their treatment, an essential factor when interventions rely on behavior change.

It is believed that the use of a simple urinary symptom screener in primary care settings, may facilitate discussions between the patient and healthcare provider regarding OAB, and thereby help to identify women who could benefit from treatment (Cardozo et al., 2014). A validated OAB screening tool would be useful to healthcare providers in monitoring disease progression, as well as response to treatment.

CHAPTER 3

METHODS

The purpose of this chapter is to present the methodology used to conduct the DNP project. The methodology included description of the design, units of analysis, sample, setting, outcomes to measure, the theoretical framework utilized, strategies to reduce barriers and increase support, the procedure, and the data analysis. The purposes of this project were to (1) determine an effective standard OAB screening tool to be used in a retail clinic environment (see Appendix A), (2) determine the knowledge level of providers regarding OAB, and (3) measure provider's perception of the ABSST effectiveness in assessing for OAB in patients.

3.1 DESIGN

This descriptive exploratory pre- and post-test design assessed the knowledge level of providers regarding OAB. The investigator conducted a pre- and post-test design to ascertain the providers' perception of the ABSST effectiveness in assessing for OAB following an educational model to teach how to use the ABSST.

3.2 UNIT OF ANALYSIS

The researcher utilized descriptive statistical analysis to describe the sample of providers. Most providers in the Walgreens clinic are advance practice nurse practitioners (APRNs). T-testing was used to assess the means, and descriptive statistics was used to analyze data pre- and post-test design for measuring the provider's knowledge level and perception of the effectiveness in assessing for OAB using the ABSST. The descriptive

statistics demographic data included years in practice, gender, age, and role (NP, PA).

The provider's knowledge and perception of the screening tool effectiveness survey (see appendix B), assessed the provider's pre-and post-knowledge of OAB. The survey also captured data regarding the perceptions of the providers in the ABSST effectiveness in assessing for OAB. The combined survey consisted of seven questions on OAB and as based on a five-point Likert Scale ranging from Strongly Agree (5) to Strongly Disagree (1). For example, a question asked the providers if OAB condition affects many women globally and in the U.S.A. Another question asked the provider if women with urinary incontinence problems often seek treatment immediately. The providers were asked to utilize the ABSST tool and rate its' effectiveness in highlighting the presence of OAB symptoms and whether it facilitated communication between them and the patient. Barriers to providers initiating the conversation with patients was also assessed using a five-point Likert scale. This tool was not a validated research tool and had no psychometric findings in the literature.

3.3 SAMPLE

The sample size included 153 providers, who were asked to utilize the Actionable Bladder Symptom Screener Tool (ABSST) (see Appendix C) with at least 50% of their patients whom they saw for UTI symptoms, who meet the inclusion criteria. Inclusion criteria included providers with prescriptive authority directly involved in providing episodic and primary care to adults in Walgreens clinics. Another inclusion criteria, was providers who would be able to utilize the language line for patients whom English is a second language, to assist in answering the questions on the tool. Fulltime, part-time

providers and providers who worked as needed, and had access to a computer for the online training module, either in the clinic or from home were also be included.

The investigator reached out to the Walgreens education team, the Atlanta market educator, and asked their assistance in gaining access to all Walgreen providers' emails.

3.4 INSTITUTIONAL BOARD APPROVAL

Upon receiving approval from USC IRB, written information about the study was sent by the researcher to potential participants via Walgreens email. The email invited the potential subjects to participate in the evidence based project. In the email, the researcher explained the purpose of the quality improvement project, the educational module, the pre- and post-test data collection procedures. The subjects were also given time frames to complete surveys and estimated time to complete the pretest survey, educational modules, and post-test survey. A link for the online Class Climate survey for providers to access to complete their pre-test knowledge and post-test of OAB was provided. The survey also captured data pre-test regarding the perceptions of the provider in the ABSST effectiveness in assessing for OAB, if any. Participation in the survey was voluntary and all responses were anonymous. Participation implied consent to participate. The researcher used the subject providers' mother's birthdate, using month and year, as in 10-1940, for example, to be able to link the pre-and post-survey. The pre-and post-surveys was merged by their mother's birthdate.

3.5 SETTING

The setting for the DNP project and implementation of the OAB assessment tool was online via Walgreens email server. There were over 400 clinic sites throughout the country. Walgreens retail clinics provide a range of services from immunizations,

physicals, treatment of acute illnesses to chronic disease management. The clinics provide care to male and female patients from ages 18 months and older.

3.6 DATA COLLECTION PROCEDURE

There were two phases for the data collection procedure. The first phase included a pre-test survey which the provider completed online via Class Climate survey. The provider's knowledge and perception of the screening tool effectiveness survey (see appendix B), was distributed online via Class Climate to assess the provider's pre-test knowledge of OAB. The survey also captured data pre-test regarding the perceptions of the provider in the ABSST effectiveness in assessing for OAB, if any.

Once the provider subject completed the pre-test, they were provided a link to access and complete the educational component of the program. This was conducted via Grand Rounds on the online educational department website, to teach providers strategies for managing OAB in women presenting to the clinics. The ABSST was also presented to the providers as a validated tool that could be utilized to screen for OAB symptoms. The ABSST is a validated tool with psychometric properties and findings in the literature (Cardozo et al., 2014; Jongen et al., 2015). The subject providers were asked to provide their mother's birthdate, using the month and year only, to link the pre-and post-survey to the same provider.

The researcher with the assistance of the educational team at the Walgreens clinics presented a Grand Rounds educational session on OAB via the online meeting center called Genesys (See Appendix H). All providers were invited to view and listen to the power point presentation recorded on October 27^{th,} 2016. The presentation was approximately 40 minutes in length. The providers who participated in the OAB grand

round session were eligible for one credit hour of continuing education (CE) credit offered by Rush University. Rush University is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation (ANCC). Providers subjects who participated in the grand rounds were asked to email the date of completion to the researcher.

Once the educational module was completed, the providers were asked to complete an online post-test survey, the provider's knowledge and perception of the screening tool effectiveness survey (see appendix D), via Class Climate survey. They were able to access the post-test survey by a link that was emailed to all subjects who were initially invited to participate in the project. Once the participant linked with Class Climate survey, each participant would receive a written introduction again about the survey that explained the purpose of the project, protection of subjects, and consent. All responses were anonymous. The providers were asked to provide their mother's birthdate, asking only for the month and year, to link the pre- and post- survey. Participation was voluntary in the survey and implied consent.

Once the subject completed the module, a second online post-test survey was sent to the same group of potential subjects. The provider's knowledge and perception of the screening tool effectiveness post-test survey (see Appendix C) was distributed online via Class Climate to assess the provider's post-test knowledge of OAB. The survey also captured data post-test regarding the perceptions of the provider in the ABSST effectiveness in assessing for OAB, if any. All responses were anonymous for pre- and post-test. However, the researcher asked the providers for the mother's birthdate, asking only for the month and year, to link the pre- and post-test to each provider. Participation

was voluntary in the survey and implied consent. Providers did not receive any financial incentive to participate.

3.7 OUTCOMES MEASURED

The outcomes measured were increased knowledge regarding the use of screening of OAB as measured by (1) the provider's knowledge of OAB pre-and post-educational intervention, (2) the provider's perception of the ABSST effectiveness in assessing for OAB pre- and post-educational intervention.

3.8 THEORETICAL FRAMEWORK

This project was based on the theoretical framework of the Model for Evidence-based Practice Change (Rosswurm & Larrabee, 1999). There are six steps that help the DNP student progress through evidence-based project, on improving outcomes for patients with OAB.

Step 1. Assess the need for change in practice

The identified problem was that providers in the Walgreens Healthcare Clinics may not routinely screen women who may potentially present with OAB symptoms. A standard OAB assessment tool was utilized by the providers to assess women over 40 years of age who may potentially need further treatment or referral. The Healthcare Clinics at Walgreens are now able to manage primary care problems and having a validated, standard OAB assessment tool, would further assist providers in screening their patients. There was no data provided by Walgreens as to how many women present with OAB symptoms. Having a standard OAB assessment tool that is simple may potentially increase awareness by providers of the problem and help patients improve their quality of life.

Step 2. Locate the best evidence

The evidence that was used was a validated, standard OAB assessment tool. Sources of evidence included electronic bibliographic databases, websites, journals and textbooks. The databases utilized were CINAHL, Joanna Briggs, NIH, Google Scholar, National Guidelines Clearinghouse, PubMed, The Cochrane Collaboration, Web of Science and Turning Research into Practice (TRIP) database. The John Hopkins Evidence Level and Quality Guide was used evaluate the evidence of the sources. The John Hopkins Nursing Evidence-Based Practice process occurs in three phases and can be simply described as Practice question, Evidence, and Translation (PET), which uses a five-level scale to determine the type, level, and quality of evidence (Dearholt & Dang, 2012).

Step 3: Critically Analyze the Evidence

Most articles were appraised and judged for their evidence and found to be of good quality but the levels of articles ranged from level I through level V. Issues that promote the feasibility of this EBP project are that the study can be conducted in about 3 months and the researcher can potentially get good sample size of providers to participate, and approval has been obtained from the Walgreens education team and the chief nursing officer (CNO). Of concern to the researcher a good sample size of provider participation. Another concern will be provider acceptance of the ABSST.

Step 4: Design Practice Change

An OAB assessment tool was provided to the providers in the retail setting.

The researcher involved the CNO and market educators to champion the project with the providers. Providers were notified via email (see Appendix C) of the study and request participation in the study. Providers who accepted to be in the study were asked

to participate in an educational session known as Grand Rounds, and an anonymous Class Climate pre-and post-survey that was sent to each provider to assess improved knowledge after utilizing the standard OAB screening tool.

Step 5: Implement and Evaluate Change in Practice

The researcher assessed provider knowledge and got feedback on the effectiveness of the OAB tool, using Class Climate survey. The providers' feedback was used to make minor adjustments in the implementation plan, if necessary ((Melnyk & Fineout-Overholt, 2015, p. 289). Based on the feedback of the providers, Walgreens would be asked to adapt, adopt, or reject the new OAB assessment tool.

Step 6: Integrate and Maintain Change in Practice

3.9 STRATEGIES TO REDUCE BARRIERS AND INCREASE SUPPORT

A major advantage of survey research was that there was the potential for a large sample size due to the fact that Walgreens clinics were in multiple market. According to Melynk & Fineout-Overholt (2015), before embarking on a study, important questions to ask regarding feasibility are:

1. Can the study be conducted in a reasonable amount of time?
2. Are there an adequate number of potential subjects to recruit into the study?
3. Have the settings for recruitment been identified and is accessibility a concern?
4. Does the lead person (PI) have sufficient time and expertise to spearhead the effort?
5. Are there major ethical or legal constraints to undertaking this study?
6. Are there adequate resources available at the institution or clinical site to conduct the study? If the answer is no, what is the potential for obtaining funding?

Five issues that promoted the feasibility of this evidence based project were: (1) could the study be conducted in about 3 months or less, (2) would the providers in the clinics can complete the online educational modules, (3) would the providers complete the Class Climate survey online, (4) how would the investigator obtain emails for providers who are employed in the Walgreens Clinics for provider recruitment, and (5) would the same providers complete the online survey pre- and post.

The answers to all five issues was yes. The researcher anticipated it may take more time to carry out the project than originally projected and had incorporated a buffer period (i.e., extra time) in case of IRB approval delay, access to subject recruitment took longer than anticipated. Walgreens education team provided the emails for all providers working in the clinics. The market educators, Walgreens IRB team, and Chief Nursing Officer approval of the project also facilitated the researcher's consideration in whether it would be feasible. The researcher anticipated provider "buy-in" to the project.

3.10 DATA ANALYSIS

Once the survey data was returned, the researcher, in collaboration with a statistician, reviewed the data and, created data in the form that would be useable in SAS 9.4 for analysis. The researcher utilized descriptive statistical analysis to describe the sample. Descriptive statistics include frequency tables for categorical variables and means, standard deviation, and range for continuous variables. Matched-paired t-test was used to examine the increase of knowledge after the introduction of the education tool. Also, inferential statistics including parametric test (t-test) and non-parametric test (sign ranked test) were used to examine the difference in means for knowledge and perception of the providers over a 3-month period for this quality improvement study.

3.11 SUMMARY

Once all the data for the study was collected and analyzed, the researcher planned to share the recommendations about the adaptability of the OAB tool in the clinics with the market educators, chief nursing officer and the providers. The researcher also shared the findings with University of South Carolina College of Nursing and planned to publish. The researcher used the data gained from the survey to design an in-service education workshop to enhance the providers' knowledge and skills in this area. This in-service was conducted via Genesys (an online center utilized by providers for educational needs at the Walgreens retail clinic setting). The researcher would continue to communicate with the champions and participants and keep them abreast of the progress being made and actions that have resulted from the research. The researcher would ensure the relationship was maintained after research was concluded by giving feedback to the participants.

CHAPTER 4

RESULTS

The purpose of this project was to (1) determine an effective standard screening tool to be used in a retail clinic environment, (2) determine the knowledge level of providers regarding OAB, and (3) measure provider's perception of the ABSST effectiveness in assessing for OAB in patients. Descriptive statistics were used to describe the sample. Inferential statistics included parametric test (T-test) and non-parametric test (sign ranked test) to examine the difference in means for providers' knowledge of OAB and perception of their effectiveness in assessing OAB pre-and post-intervention. This quality improvement project was conducted over a 3-month period.

The researcher obtained IRB approval from both Healthcare Clinics in Walgreens and University of South Carolina prior to initiating the study in the clinic setting. The researcher then obtained support from the clinic stakeholders – the market educators, providers and assistant area directors – to encourage participation. After obtaining providers' email from the Healthcare Clinic Directors, the initial recruitment invite with the consent and Class Climate survey was sent on December 2nd, 2016 (See Appendix E). The recruitment phase was completed on December 23rd, 2016. Those providers who emailed the researcher upon completing the pre-survey, were then asked to complete the educational module on OAB online (See Appendix H) and email the researcher. Thereafter, the providers were sent the ABSST (See Appendix C), and asked to use with their patients that met the criteria for 4 weeks. The researcher then sent out weekly

remainder emails (See Appendix F) to participants to continue using the tool with patients' who met the criteria. After the utilizing the ABSST in the clinic for 4 weeks, the participants were sent the post survey (See Appendix G). The providers were sent reminders every 3 days to complete the post survey with the final day on February 16th, 2016. The purpose of this chapter was to present the findings of the project.

4.1 DESCRIPTION OF SAMPLE

Over 1000 potential providers were targeted to participate and of those, 153 providers agreed to participate but only 52 providers completed the study including the pre- and post-surveys, the educational module, and utilized the ABSST tool with their patients that met the criteria. The mean age of the sample was 50 years old. See Table 4.1 for characteristics of the respondents who completed the pre-survey and post-survey.

Table 4.1 Frequency and percentage of respondents to the online pre-survey and post-survey

Characteristic	**Pre-survey (N=153)**		**Post survey (N=52)**	
	N	%	N	%
Gender				
Male	8	5.52	1	2
Female	136	93.79	49	98
Age Range				

25-35	17	11.26	2	3.9
36-45	41	27.16	19	37.92
46-55	47	31.13	16	31.37
>55	46	30.46	14	27.45
Years of NP Practice				
1-3 years	39	26	10	19.23
4-7 years	39	26	14	26.92
>8 years	72	48	28	53.85
Title				
NP	145	96.03	49	98
PA	6	3.97	1	2

Findings indicated that 16 participants correctly linked their pre- and post-survey using their mother's date of birth. See Table 4.2 for characteristics of the 16 matched respondents pre-survey and post-survey.

Table 4.2 Frequency and percentage of the 16 matched respondents pre-survey and post-survey

Characteristic	**Pre-survey (N=16)**		**Post-survey (N=16)**	
	N	%	N	%

Gender				
Male	1	6.67	1	6.25
Female	14	93.33	15	93.75
Age Range				
25-35 years	3	18.75	1	6.25
36-45 years	6	37.50	7	43.75
46-55 years	4	25	5	31.25
>56 years	3	18.75	3	18.75
Years of NP Practice				
1-3 years	5	31.25	4	25
4-7 years	6	37.50	4	25
>8 years	5	31.25	8	50
Title				
NP	15	93.75	14	93.33
PA	1	6.25	1	6.67

4.2 KNOWLEDGE OF OAB

The knowledge of the participants was assessed utilizing Class Climate pre-and post-survey (See Appendix D). Findings indicated between age groups, there were no statistically significant mean differences in pre-and post-survey (N= 151 pre-survey, and N=51 post-survey). Moreover, there were no statistically significant mean differences in

mean age between pre-and post-survey (N= 151 pre-survey, and N=51 post-survey). See Table 4.3 for survey items pre-and post-survey.

Table 4.3. Sample (N), Mean, Standard Deviation (STD) for pre-and post-survey between age groups

Survey Item	**Pre**			**Post**			**T-test**
	N	**Mean**	**STD**	**N**	**Mean**	**STD**	**(p-value)**
OAB is a common condition affecting many women globally and in the US	153	4.16	.86	52	4.35	.71	0.154
Women with urinary incontinence problems often seek treatment immediately	150	2.07	.81	49	1.90	.65	0.171

P value <0.05

4.3 PROVIDER'S PERCEPTION OF THE SCREENING TOOL EFFECTIVENESS

The results of the T-test indicated significant mean differences for pre-and post-intervention for ABSST effectiveness (P<0.0001) (N=148 pre-survey and N= 51 post-survey), effectiveness in facilitating critical communication (P <0.0001) (N=145 pre-survey and N=52 post-survey), and patient uncomfortable bringing up the topic

(P=0.0244) (N= 152 pre-survey and N= 52 post-survey). The results did not reveal any statistically significant difference for survey items (1) OAB is a common condition affecting many women globally and in the US (N= 153 pre-survey and N= 52 post-survey); (2) women with urinary incontinence problems often seek treatment immediately (N= 150 pre-survey and N= 49 post-survey). See Table 4.4 for survey items pre-and post-survey.

Table 4.4 Sample (N), Mean, Standard Deviation (STD) for pre-and post-survey between age groups

Survey Item	**Pre**			**Post**			**T-test**
	25 years ≥ 56 years			**25 years ≥ 56 years**			**(p-value)**
	N	**Mean**	**STD**	**N**	**Mean**	**STD**	
The validated overactive bladder screening tool (ABSST) is effective in highlighting the presence of bladder symptoms consistent with OAB	148	3.56	.69	51	4.14	.89	<0.0001*
The ABSST is effective in facilitating	145	3.57	.74	52	4.21	.78	<0.0001*

critical communication between patient and provider							
Lack of provider information about OAB symptoms	151	3.73	.79	51	3.82	.77	0.4556
Not enough time	152	3.89	.86	52	4.02	.90	0.3482
Patients are uncomfortable bringing up the topic	152	4.03	.75	52	4.29	.61	0.0244*

*P value <0.05

Non-parametric results were similar to the T-test results. Findings indicated that the mean differences between pre-and post-survey and provider age groups were not significantly different (p=0.943). Results indicated significant differences for ABSST effectiveness (P<0.0001), effectiveness in facilitating critical communication (P <0.0001), and patient uncomfortable bringing up the topic (P=0.0109) among provider-age groups pre-and post-intervention. The results did not reveal any statistically significant differences between other survey items in Table 4.5 by age group. See Table 4.5 for non-parametric sample (N), mean, standard deviation (STD), and Wilcoxon Test for survey items pre-and post by age groups.

Table 4.5 Non-parametric sample (N), mean, standard deviation (STD) for pre-and post-survey between age groups

Survey Item	Pre			Post			Wilcoxon Two-sample test (p-value)
	25 years ≥ 56 years			25 years ≥ 56 years			
	N	Mean	STD	N	Mean	STD	
OAB is a common condition affecting many women globally and in the US	153	100.06	332.29	52	111.66	332.29	0.0878
Women with urinary incontinence problems often seek treatment immediately	150	102.31	301.51	49	92.93	301.51	0.1256
The validated overactive bladder screening tool (ABSST) is effective in highlighting the presence of bladder symptoms	148	88.59	325.94	51	133.11	325.94	<0.0001*

consistent with OAB							
The ABSST is effective in facilitating critical communication between patient and provider	145	86.98	321.57	52	132.50	321.57	<0.0001*
Lack of provider information about OAB symptoms	151	99.73	306.70	51	106.75	306.70	0.1916
Not enough time	152	99.91	336.98	52	110.07	336.99	0.1218
Patients are uncomfortable bringing up the topic	152	97.76	313.99	52	116.36	313.99	0.0109*

*P<0.05

The matched paired for 16 participants showed an increased mean score for the providers' knowledge between pre-and post-survey (N=16). The result of matched-paired T-test (p = .0306) and sign rank test (p = .0451) were similar (N=16). The results revealed on average a 2.38-unit increase in the provider's knowledge from pre-survey to post-survey (N=16). See Table 4.6 for mean knowledge scores.

Table 4.6 Mean, STD, and 95% CI for the difference knowledge scores (post – pre)

Variable	N	Mean	STD	95% CI Mean	P value
Total OAB	16	2.38	3.98	0.25 – 4.4	0.0306*

*P<0.05

For providers' age group, mean scores were different pre-and post-testing but they were not statistically significant for age groups 25-35, 36-45 and 46-55 (N=3, N=6, N=4 respectively). For providers' greater than 56 years of age, there was a statistically significant increase in the mean score of 5 and p=0.0340 (N= 3), indicating an increase in the provider's knowledge and use of the OAB post intervention. See Table 4.7 below for the total OAB scale for age groups.

Table 4.7. The total OAB scale for age

Variable	25-35 years			36-45 years			46-55 years			>56 years			P
	N	Mean	STD	N	Mean	STD	N	Mean	STD	N	Mean	STD	value
Total OAB	3	-2	1	6	4.50	4.04	4	0.50	2.38	3	5	3	0.0340*

*P<0.05

Providers' years of experience was not statistically significant for mean score differences in pre-and post-testing. However, providers' years or experience in the primary care setting for the matched paired design showed an increased mean score for all experience groups 1-3 years, 4-7 years and greater than 8 years between pre-and post-testing. Providers with more than 8 years of experience had the largest increase in mean

score (3.60), even though it was not statistically significant p=0.6737 (N=5). See Table 4.8 below for the total OAB scale for number of years in primary care setting.

Table 4.8 The total OAB scale for number of years in primary care setting

Years in Primary Care Setting	**1-3 years**			**4-7 years**			**8 years or more**			**P value**
	N	**Mean**	**STD**	**N**	**Mean**	**STD**	**N**	**Mean**	**STD**	
Total OAB	5	2.4	5.22	6	1.33	4.03	5	3.60	2.88	0.6737

P<0.05

4.4 ANALYSIS OF PICO

Among healthcare providers providing primary care in Walgreens clinics, does an educational model to teach providers the use of a standard OAB screening tool (ABSST), as compared to the use of no symptom screening tool, improve knowledge regarding the use of screening of OAB? The project PICOT sought to measure by (1) the provider's knowledge of OAB pre-and post-educational intervention, (2) the provider perception of the ABSST effectiveness in assessing for OAB pre-and post-educational intervention, over a 3-month period.

The post survey was emailed to79 participants upon utilizing the OAB tool for one month in the clinic with 52 participants completing the survey. Upon analyzing the pre-and post-survey data, only 16 participants correctly linked from the pre- and post-survey using their mother's date of birth. Both the researcher and the statistician reviewed the data for accuracy and gaps. Table 4.9 and Table 4.10 show the results by

percentages of responses for the pre-and post-survey by the respondents (N= 153 for pre, N = 52 post).

Table 4.9. Percentage of responses to the OAB and perceptions of ABSST effectiveness pre-survey(N=153)

Survey Item	**SD**	**D**	**N**	**A**	**SA**
OAB is a common condition affecting many women globally and in the U.S	2.61	1.96	8.50	50.98	35.95
Women with urinary incontinence problems often seek treatment immediately	19.33	62.67	10.67	6.00	1.33
The validated OAB screening tool (ABSST) is effective in highlighting the presence of bladder symptoms consistent with OAB	1.35	0.68	45.27	45.95	6.76
The ABSST is effective in facilitating critical communication between patient and provider	2.76	0.69	39.31	51.03	6.21
Lack of provider information about OAB symptoms	0.66	9.27	16.56	63.58	9.93
Not enough time	0.66	7.24	17.11	52.63	22.37
Patients are uncomfortable bringng up the topic of OAB	1.32	3.29	9.21	63.82	22.37

Table 4.10. Percentage of responses to the OAB and perceptions of ABSST effectiveness post-survey (N=52)

Survey Item	**SD**	**D**	**N**	**A**	**SA**
OAB is a common condition affecting many women globally and in the U.S	1.92	1.92	0	53.86	42.31

Women with urinary incontinence problems often seek treatment immediately	24.49	63.27	10.20	2.04	0
The validated OAB screening tool (ABSST) is effective in highlighting the presence of bladder symptoms consistent with OAB	3.92	0	9.80	50.98	35.29
The ABSST is effective in facilitating critical communication between patient and provider	1.92	0	0	51.92	36.54
Lack of provider information about OAB symptoms	0	9.80	9.80	68.63	11.76
Not enough time	0	9.62	9.62	50	30.77
Patients are uncomfortable bringng up the topic of OAB	0	1.92	1.92	61.54	34.62

Table 4.11 and Table 4.12 show results by percentage of matched responses pre- and post-survey by respondents (N=16).

Table 4.11. Percentage of responses to the OAB and perceptions of ABSST effectiveness pre-survey (N=16)

Survey Item	**SD**	**D**	**N**	**A**	**SA**
OAB is a common condition affecting many women globally and in the U.S	0	0	6.25	31.25	62.50
Women with urinary incontinence problems often seek treatment immediately	37.50	50	0	12.50	0
The validated OAB screening tool (ABSST) is effective in highlighting the presence of bladder symptoms consistent with OAB	0	0	42.86	35.71	21.43
The ABSST is effective in facilitating critical communication between patient and provider	0	0	50	42.86	7.14

Lack of provider information about OAB symptoms	0	6.67	20	66.67	6.67
Not enough time	0	0	25	50	25
Patients are uncomfortable bringng up the topic of OAB	0	0	12.50	56.25	31.25

Table 4.12. Percentage of responses to the OAB and perceptions of ABSST effectiveness post-survey (N=16)

Survey Item	**SD**	**D**	**N**	**A**	**SA**
OAB is a common condition affecting many women globally and in the U.S	0	0	0	56.25	43.75
Women with urinary incontinence problems often seek treatment immediately	31.25	50	18.75	0	0
The validated OAB screening tool (ABSST) is effective in highlighting the presence of bladder symptoms consistent with OAB	0	0	12.50	50	37.50
The ABSST is effective in facilitating critical communication between patient and provider	0	0	12.50	31.25	56.25
Lack of provider information about OAB symptoms	0	0	18.75	62.50	18.75
Not enough time	0	25	12.50	37.50	25
Patients are uncomfortable bringng up the topic of OAB[c]	0	0	6.25	56.25	37.50

The results from the T test pre-to post survey revealed a statistically significant increase in the ABSST effectiveness in highlighting OAB symptoms ($p<0.0001$) (N=148 pre-survey and N=51 post survey); and a statistically significant increase in the ABSST facilitating communication ($p<0.0001$) (N=145 pre-survey and N=52 post survey). The

results demonstrated that patients are uncomfortable approaching and discussing OAB (p=0.0109) (N= 152 pre-survey and N=52 post survey). Other survey items were not statistically significant. See Table 4.13 for N, mean, STD pre-and post for each survey item.

Table 4.13. The N, mean, STD pre- and post for each survey item

Survey Item	Pre			Post		
	N	Mean	STD	N	Mean	STD
OAB is a common condition affecting many women globally and in the U.S	153	4.16	0.86	52	4.45	0.71
Women with urinary incontinence problems often seek treatment immediately	150	2.07	0.81	49	1.90	0.65
The validated OAB screening tool (ABSST) is effective in highlighting the presence of bladder symptoms consistent with OAB[a]	148	3.56	0.69	51	4.14	0.89
The ABSST is effective in facilitating critical communication between patient and provider [b]	145	3.57	0.74	52	4.21	0.78
Lack of provider information about OAB symptoms	151	3.73	0.79	51	3.82	0.77
Not enough time	152	3.89	0.86	52	4.02	0.90

Patients are uncomfortable bringng up the topic of OAB [c]	152	4.03	0.75	52	4.29	0.61

a. P value = <0.0001 **b**. P value = <0.0001 **c**. P value = 0.0109

The results revealed a significant change at a 95% confidence interval that the total mean difference between pre and post survey for matched T-test is between 0.2536 and 4.4964, with p=0.0306 (N=16). This findings indicates that providers' knowledge and awareness of OAB symptoms and screening in adult women were increased following an educational online module. See Table 4.14 for N, mean, STD pre-and post-total OAB survey pre-and post.

Table 4.14. The N, mean, STD pre-and post-total OAB survey difference pre-and post.

Survey	**N**	**Mean**	**STD**	**P value**
Total OAB	16	2.375	3.981	0.0306*

*P<0.05

The two questions that sought to measure provider knowledge pre to post educational module were not statistically significant. See Table 4.14 for the N, mean, STD for survey items measuring provider knowledge pre- and post survey.

Table 4.15. The N, mean, STD for survey items measuring provider knowledge pre- and post survey

	Pre			**Post**			
Survey Item	**N**	**Mean**	**STD**	**N**	**Mean**	**STD**	**P value**
OAB is a common condition affecting many women globally and in the U.S	153	4.16	0.86	52	4.35	0.71	0.1542

Women with urinary incontinence problems often seek treatment immediately	150	2.07	0.81	49	1.90	0.65	0.1713

P<0.05

The two questions that sought to measure the provider perception of the ABSST effectiveness in assessing for OAB in patients were statistically significant (N=148; N=145 pre survey and N=51; N=52 post survey). The validated overactive bladder screening tool (ABSST) was found to be statistically significant in hightlighting the presence of bladder symptoms consistent with OAB at a 95% confidence interval (-0.8163 - -0.3366) with p< 0.0001 (N=148 pre-survey and N=51 post survey). The ABSST is effective in facilitating critical communication between patient and provider was signigicant at 95% confidence interval (-0.8787 - -0.3995, p<0.0001) (N=145 pre-survey and N=52 post survey). See Table 4.16 for the N, mean, STD for survey items measuring provider perception pre- and post survey.

Table 4.16. The N, mean, STD for survey items measuring provider perception pre- and post survey

	Pre			**Post**			
Survey Item	**N**	**Mean**	**STD**	**N**	**Mean**	**STD**	**P value**
The validated OAB screening tool (ABSST) is effective in highlighting the presence of bladder symptoms	148	3.56	0.69	51	4.14	0.89	<0.0001*

consistent with OAB							
The ABSST is effective in facilitating critical communication between patient and provider	145	3.57	0.74	52	4.21	0.78	<0.0001*

*P<0.05

The researcher noted some limitations to the study. The small sample size could not provide a robust analysis of the study. The recruitment phase was conducted during vacation time and during company restructuring which may have affected the reponse rate. The study required the providers to complete a pre survey and educational teaching module, utilize the ABSST tool in clinic, and then complete the post survey. Complicated and time consuming steps may have also impacted the response rate leading to a more than 50% attrition rate. While surveys are are direct measures that are versatile, they are prone to bias when respondents provide the socially acceptable answer rather than their true opinion (Moran et al., 2014).

4.5 SUMMARY

Most women with OAB symptoms do not discuss with their healthcare providers bladder dysfunction and providers may not systematically inquire (Hartmann, McPheeters, & Biller, 2009). The rising prevalence of OAB creates a burden for individuals and society and increases the potential for impaired functional status and lower health-related quality of life (Barile et al., 2015). The use of a validated bladder symptom screener tool in women over 40 years of age presenting in the Healthcare

Clinics in Walgreens was found to facilitate discussion between the provider and patient, and thereby identify women who could benefit from treatment or referral. Assessment of OAB symptoms in women is an important component of chronic disease management. This study created an awareness in the providers who did not routinely screen their patients for OAB symptoms. It was found that at a 95% confidence interval there was a statistically significant increase ($p < 0.0001$) in the ABSST effectiveness in highlighting the presence of bladder symptoms consistent with OAB (N=145 pre-survey and N=52 post survey). In regards to provider knowledge level assessing for OAB in patient; there was significant increase following the educational module ($p=0.0004$) (N=153 pre-survey and N=52 post-survey).

CHAPTER 5

DISCUSSION

The prevalence of OAB in the United States is 16.9 percent in women, according to the NOBLE study (Eapen & Radomski, 2016). The rising prevalence of OAB creates a burden for individuals and society and increases the potential for impaired functional status and lower health-related quality of life (Barile et al., 2015). The evaluation of OAB symptoms by providers should be addressed as part of the routine primary care visit, however, it is often not assessed or documented. This quality improvement project goal was to create an awareness of the importance of routinely screening patients for OAB symptoms in primary care settings. The use of the ABSST could facilitate further discussion between provider and patient. The study created an awareness in the providers who did not routinely screen their patients for OAB symptoms. The ABSST was effective in highlighting OAB symptoms. The ABSST questionnaire is an option available for providers to use in clinic to evaluate symptoms of OAB. The OAB grand rounds educational module (See Appendix H), which the participants viewed, discussed how to use the questionnaire and the criteria for treatment or referral.

The researcher cited some limitations to the study project. The small sample size could not provide a robust analysis of the study. There were more female respondents than males, and there were more NPs respondents than PAs.There were no physician

participants in the study. A large and fairly equal sample size based on the characteristics would have helped the study findings. Another limitation was the recruitment phase was conducted during vacation time for providers and during company restructuring, which may have affected the reponse rate. The study required the providers to complete a pre survey, educational teaching module, utilize the ABSST tool in clinic, and complete a post survey. Complicated and time consuming steps may have also impacted the response rate leading to more than 50% attrition rate. Some of the providers did not complete the survey correctly, lending the study to an even smaller matched sample size from pre to post survey. The researcher did not record how often the providers used the tool with their patients. However, the researcher did ask the providers to use it with at least 50% of their female patients who met the criteria. The researcher was not able to match the provider with the survey they completed, as it was anonymous. The study was for a 3-month period; and a longer time in clinic may also have lent itself to a more robust study. While surveys are direct measures that are versatile, they are prone to bias when respondents provide the socially acceptable answer rather than their true opinion (Moran et al., 2014).

The focus of the DNP degree is expertise in clinical practice (Chism, 2013). This quality improvement project is inclusive of the Essentials of Doctoral Education for Advance Nursing Practice as outlined by the American Association of Colleges of Nursing (2006). Each Essential is addressed as it relates to this quality improvement scholarly project. The purpose of this chapter is show how the the Essentials of Doctoral Education in Advance Nursing Practice guided the DNP graduate. According to Donabedian (1990), seven attributes of health care define its quality: (a) efficacy: the

ability of care to improve health; (b) effectiveness: how well health improvements are realized; (c) efficiency: the facility to obtain the best health improvements at the lowest cost; (d) optimally: balancing costs and benefits; (e) acceptability: taking into account patient preferences; (f) legitimacy: accord with social preferences concerning all the above; and (g) equity: fair distribution of care (Holly, 2014).

5.1 THE SCIENTIFIC UNDERPINNING FOR PRACTICE

This was addressed as evidenced by the research of a reliable and validated questionnaire; and peer reviewed journals, articles and textbooks that identify science based theories and concepts related to the prevalence of OAB symptoms in women over 40 years. The project addressed Essential I through developing an educational module on OAB that the providers were able to access via the Healthcare clinic webbased educational forum and then utilizing the ABSST in clinic setting. The pre and post survey data showed statitical significance in the ABSST effectiveness and ABSST facilitating communication between patient and provider. There was no statistical significance found in increasing the knowledge of providers from pre to post testing. This quality improvement project was implemented through researching science based evidence and concepts to identify health care delivery actions and strategies to facilitate better assessment of OAB symptoms.

5.2 ORGANIZATIONAL AND SYSTEMS LEADERSHIP FOR QUALITY IMPROVEMENT AND SYSTEMS THINKING

This was integrated in this project through the researcher identifying a need for a quick and simple questionnaire in clinic to assess for OAB symptoms for women who may not necessarily have urinary tract infections, and present for primary care in the

Healthcare clinics. Encouraging providers to be proactive in inquiring about OAB symptoms in their patients, may lead to a improvement in health related quality of life of the women whose symptoms are addressed promptly.

5.3 CLINICAL SCHOLARSHIP AND ANALYTICAL METHODS FOR EVIDENCE-BASED PRACTICE

For this quality improvement project, the researcher critically evaluated existing literature and determined the best evidence for practice and the implementation and in clinic setting. The researcher presented an educational module on the Walgreens Healthcare University site entitled "Overactive Bladder: Strategies for Assessment and Managing Symptoms" See Appendix H for powerpoint presentation done on October 27th 2016. The pre and post survey data were compared to determine the impact of the educational module presented. The questions that sought to measure provider knowledge pre to post educational module were not statistically significant. However the two questions that sought to measure the provider perception of the ABSST effectiveness in assessing for OAB in patients were statitically significant. Based on the significance of the ABSST effectiveness, continued reinforcement to utilize the questionnaire needs to be encouraged in assessing symptoms and educating patients.

5.4 INFORMATION SYSTEM/TECHNOLOGY AND PATIENT CARE TECHNOLOGY FOR THE IMPROVEMENT AND TRANSFORMATION OF HEALTH

The DNP graduate is required to be knowledgeable and proficient in information technology regarding how to use powerpoint presentation in a virtual classroom. This

quality improvement utilized web-based communication such as email and the online educational module which was done using powerpoint presentation. The information technology was a cost effective and critical component to send out the pre survey, post survey via the work emails.

5.5 HEALTHCARE POLICY FOR ADVOCACY IN HEALTH CARE

DNP graduates are in a position to be powerful advocates for healthcare policy through their practice experiences at all levels.This quality improvement project discussed health polices related to OAB symptoms, promotion of health for patients, and reinforced to providers the importance to screen and educate their patients. Furthermore, doctoral prepared advance nurse practitioners are in a position to advance the health of populations by influencing politicians through organizing communities, advocating for healthy public policy, promoting effective regulation, and pursuing fair taxation and public service (Davidson, 2014).

5.6 INTERPROFESSIONAL COLLABORATION FOR IMPROVING PATIENT AND POPULATION HEALTH

The researcher participated in effective communication with the leadership team, education team and IRB team at Walgreens Healthcare clinics for the need to implement the quality improvement project in the Walgreens clinics. Approval was then given to proceed with study in the clinics.The results of the pre and post survey showed that the ABSST was an effective tool in facilitating critical communication. The researcher communicated with the Walgreens education team the quality improvement study findings; and encouraged them to make the ABSST tool easily accessible online for

providers who may chose to use it to screen their patients for OAB symptoms. The director for education and development at the Healthcare Clinics thought it was a great project and stated she would share the tool with the EPIC and clinical practice teams to see if it could possibly be added to the EPIC electronic medical record, in the future.

5.7 CLINICAL PREVENTION AND POPULATION HEALTH FOR IMPROVING THE NATION'S HEALTH

There are a number of major underlying causes of health disparities, determinants of population health, which lead to health inequalities (Davidson, 2014). Improving patient experience of care, reducing per capita cost and improving population health are described as the Triple Aim by the Institute for Healthcare Improvement and are a roadmap to assess overall population health. (Stiefel & Nolan, 2012). Urinary incontinence (UI) and OAB are common conditions affecting women in the United States (Newman & Wein, 2009). Most health care providers often times fail to screen for UI and OAB (Newman & Wein, 2009). The retail clinics in Walgreens are anexcellent entry point of intervention for women who may present with OAB. Individual health is influenced by whether an individual can afford the care and cope with the stigma that for some causes embrassment and shame. This often times leads to a delay in seeking treatment from their providers. Provider support is essential in education patients about their health conditions.

5.8 ADVANCED NURSING PRACTICE

This was demonstrated with this quality improvement project through comprehensively assessing the health and illness parameters related to OAB in women

and interventions and treatments that can be incorporated in assisting this population. The educational module assisted providers in the use of the ABSST, which in turn they could utilize with their patients to screen for OAB symptoms.

5.9 FURTHER STUDIES

More studies need to be conducted in both male and female patients utilizing the ABSST and comparing it to other reliable and validated questionnaires. Further studies assessing perceptions of physicians, physician assistants and nurse practitioners in acute care, urgent care, primary care and retail settings, in regard to OAB symptoms in their patients would also be beneficial. Moreover, further research aimed at identifying patients who may have OAB symptoms is needed, to help reduce the delay in seeking treatment from their providers.

5.10 RECOMMENDATIONS

Further recommendations for this study would include replicating this study with a larger sample, as well as expanding the content to assess all adults, both male and female. Many studies have found the prevalence of OAB and it symptoms increases with age in both genders (Eapen & Radomski, 2016). The utilization of the ABSST helped facilitate an increased awareness by the providers at the Healthcare Clinics in Walgreens, to rountinely screen their patients for OAB symptoms. The educational module on OAB showed no significance for providers increasing their level of knowledge. However, provider support is essential in educating and screening patients about their OAB condition. Patient awareness of symptoms can reduce stress and improve quality of life.

Providers need to be encouraged to routinely screen their patients for OAB symptoms and incoporate it into their daily practice.

5.11 PRACTICE IMPLICATIONS

This study represents an initial starting entry point in raising awareness about the prevalence of OAB and importance of providers initiating the discussion with their patients. This can empower patients to know when to seek help from their providers. This results suggest that the ABSST is likely to improve patient outcomes for patients who are screened and if criteria met, treatment is started early. The rising prevalence of OAB creates a burden for individuals and society and increases the potential for impaired functional status and lower health-related quality of life (Barile et al., 2015). The indirect costs include impaired work productivity and activity, clinically and statistically poorer general and disease-specific health related quality of lif, and statistically higher rates of OAB-related surgery, hospitalizations, physician visits and pad use (Cardozo et al., 2014). The study results suggest that the use of ABSST in adult patients can lead to enhancing patient care and an increased patient awareness of OAB symptoms.

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APPENDIX A: EVIDENCE LEVEL AND QUALITY GUIDE

Evidence Levels	**Quality Guides**
Level I Experimental study, randomized controlled trial (RCT) Systematic review of RCTs, with or without meta-analysis	**A <u>High quality:</u>** Consistent, generalizable results; sufficient sample size for the study design; adequate control; definitive conclusions; consistent recommendations based on comprehensive literature review that includes thorough reference to scientific evidence **B <u>Good quality:</u>** Reasonably consistent results; sufficient sample size for the study design; some control, fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence **C <u>Low quality or major flaws:</u>** Little evidence with inconsistent results; insufficient sample size for the study design; conclusions cannot be drawn
Level II Quasi-experimental study Systematic review of combination of RCTs and quasi-experimental, or quasi-experimental studies only, with or without meta-analysis	
Level III Non-experimental study Systematic review of a combination of RCTs, quasi-experimental and non-experimental studies, or non-experimental studies only, with or without meta-analysis Qualitative study or systematic review with or without a meta-synthesis	

Level IV Opinion of respected authorities and/or nationally recognized expert committees/consensus panels based on scientific evidence Includes: • Clinical practice guidelines • Consensus panels	**A. <u>High quality:</u>** Material officially sponsored by a professional, public, private organization, or government agency; documentation of a systematic literature search strategy; consistent results with sufficient numbers of well-designed studies; criteria-based evaluation of overall scientific strength and quality or included studies and definitive conclusions; national expertise is clearly evident; developed or revised within the last 5 years **B. <u>Good quality:</u>** Material officially sponsored by a professional, public, private organization, or government agency; reasonably thorough and appropriate systematic literature search strategy; reasonably consistent results, sufficient numbers of well-designed studies; evaluation of strength and limitations of included studies with fairly definitive conclusions; national expertise is clearly evident; developed or revised within the last 5 years **C. <u>Low quality or major flaws</u>**: *Material not sponsored by an official organization or agency; undefined, poorly defined, or limited literature search strategy; no evaluation of strengths and limitations of included studies, insufficient evidence with inconsistent results, conclusions cannot be drawn; not revised within the last 5 years*
Level V Based on experiential and non-research evidence Includes: • Literature reviews • Quality improvement, program or financial evaluation • Case reports	**Organizational Experience:** **A <u>High quality:</u>** Clear aims and objectives; consistent results across multiple settings; formal quality improvement, financial or program evaluation methods used; definitive conclusions; consistent recommendations with thorough reference to scientific evidence

• Opinion of nationally recognized expert(s) based on experiential evidence	**B <u>Good quality:</u>** Clear aims and objectives; consistent results in a single setting; formal quality improvement or financial or program evaluation methods used; reasonably consistent recommendations with some reference to scientific evaluation **C <u>Low quality or major flaws:</u>** Unclear or missing aims and objectives; inconsistent results; poorly defined quality improvement, financial or program evaluation methods; recommendations cannot be made **Literature Review, Expert Opinion, Case Report, Community Standard, Clinician Experience, Consumer Preference:** **A <u>High quality:</u>** Expertise is clearly evident; draws definitive conclusions; provides scientific rationale; thought leader(s) in the field **B <u>Good quality:</u>** Expertise appears to be credible; draws fairly definitive conclusions; provides logical argument for opinions **C <u>Low quality or major flaws:</u>** Expertise is not discernable or is dubious; conclusions cannot be drawn

Adapted from Dearholt, S.L., & Dang, D. (2012). *John Hopkins Nursing Evidence-Base Practice: Model and Guidelines* (2nd ed.). Indianapolis, IN: Sigma Theta Tau International.

APPENDIX B: EVIDENCE TABLE

Arti-cle #	**Brief Reference, Type of Study, Quality rating**	**Methods**	**Threats to validity/ reliability**	**Sample, Sample Size & Setting**	**Study findings that help answer The EBP question**	**Limitations**	**Conclusi-ons**
1.	Sumardi, R., Mochtar, C.A., Junizaf, Santoso, B.I., Tjahjodjati, Purwara, B. H., Hardjowijoto, S., Paraton, H., Yunaidi, D.A.(2012). Test-retest reliability of the Indonesian	Observational Study to evaluate test-retest reliability of OAB symptom Score (OABSS) translated from the original Japanese OABSS. Developed by the Japanese Neurogenic	Threats to the validity could be generalizati-on of the findings from one hospital to another. Initially study done with Japanese patients, and as such, there	84 subjects screened. 50 patients enrolled in the study and the return rated of questionnaire was 100%. Exclusion criteria used was for any patients with (1) significant	Descriptive statistics. All statistical tests were two-tailed and conducted with a significant level of 0.05. All analyses used the Statistical Package of Social Sciences (SPSS).	The 3-day micturition diaries can be troublesome for some patients and data are not immediately amenable for statistical analysis in the research setting.	The test-retest reliability was excellent for OABSS total score. The simplicity of this tool might make it

	version of the overactive bladder symptom score (OABSS) and its correlation with standard assessment tools. *The Indonesian Journal of Internal Medicine,* 44(3):214-221 Retrieved from http://www-ncbi-nlm-nih-gov.pallas2tcl.sc.edu/pubmed/22983076 Observational	Bladder Society, the OABSS was validated in Japanese population and translated to local languages of interest. Patients ≥ 18 years with established overactive bladder, (OAB) completed 3-day micturition diaries and questionnaires for the OABSS, International Prostate Symptom Score (IPSS), and Patient Perception of Bladder Condition	was concern about translation to local language of interest	stress incontinence or mixed stress/urge incontinence as the predominant factor, (2) indwelling catheter, (3) symptomatic urinary tract infection (4) previous pelvic radiation therapy or current malignant disease of the pelvic organs, (5) treatment for OAB that started, stopped or changed within 4 weeks of the screening	Internal correlation coefficient (ICC) was 0.83. The test-retest reliability of the Indonesian OABSS was found to be excellent and for each of the four individual items of the Indonesian OABSS, the weighted Kappa coefficients were 0.55-0.66, representing moderate to good agreement. The correlations with a 3-day micturition diary of total pads used based on 3-day micturition diary of total pads used,	Validated tools have demonstrated clinical use with a certain range, but one common shortcoming is that they do not evaluate actual symptoms.	useful and feasible for clinical practice that has limited time and resources.

	Study Evidence Level: IIb Quality: Good	(PPBC) on 2 separate visits. Test-retest reliability was examined using the internal correlation coefficient (ICC) and weighted Kappa coefficients between the first and second applications of the OABSS. Pearson or Spearman correlation coefficients were calculated to test the correlation of OABSS with IPSSS, IPSS Quality of Life (QOL) item, PPBC and		period, (6) diabetic neuropathy, and (7) patient's receiving certain drugs such as anticholinergic or antispasmodic drugs. Recruited from 3 hospitals in Indonesia from 12/11/09 to 9/20/10	total voided volume and frequency of nocturia were weak (Pearson correlation coefficient were 0.22—0.44 at Visit 1, and 0.10-0.27 at Visit 2). The OABSS total score showed a moderate degree of correlation with the IPSS total score (Spearman correlation coefficient = 0.41 at Visit 1 and 0.45 at Visit 2).		

		clinical variables of the 3-day voiding dairy.					
2	Basra, R.K., Cortes, E., Khullar, V., & Kelleher, C. (2012). A comparison study of two lower urinary tract symptoms screening tools in clinical practice: The B-SAQ and OAB-V8 questionnaires. *Journal of Obstetrics and Gynaecology,* 32(7), 666-671).	The aim of the study was to compare the value of two validated questionnaires: Bladder Control Self- Assessment Questionnaire (B-SAQ) and the Overactive Bladder Awareness Tool (OAB-V8). Patient were not recruited on the basis of presenting symptoms. All female patients attending the clinics were	Threats to the validity was the selection bias as all patients were from general gynecology and urology clinics and not primary care setting.	223 women participated and were recruited from general gynecology and urogynecology clinics in two London teaching hospitals. The mean age of women was 49 years (range 19-84).	Study results were analyzed using SPSS version 15. Only fully completed questionnaires were used for statistical analysis and 219 responses were used for data analysis. (Four patients left incomplete responses). The receiver operating curve (ROC) curve identifying stress incontinence was 0.85 and 0.68 for the B-SAQ and OAB-V8,	Patients unable to read or understand English were excluded. OAB-V8 is a poor test for stress incontinence and a fair test for mixed incontinence. A condition specific questionnaire such as OAB-V8 may be too specific and lead to exclusion of a	The study confirms that both the B-SAQ and OAB-V8 perform well in identifying OAB symptoms, and as such, are suitable to screen for OAB in both the clinical and research setting.

	Retrieved from http://dx.doi.org/10.3109/01443615.2012.696158 Comparison Study Evidence Level: IIIb Quality: Good	handed the study pack consisting of a patient information leaflet and consent form, standardized questionnaire detailing patient's demographic data and the B-SAQ and OAB-V8 questionnaire. B-SAQ is an 8-item questionnaire that evaluates the symptoms of urinary frequency, urgency, nocturia and urinary incontinence and associated bother.			respectively, which shows that the B-SAQ is a good test and the OAB-V8 is poor test for stress incontinence. Cohen's Kappa calculations in patients with a clinical diagnosis of OAB showed values of 0.2 for both B-SAQ and OAB-V8 questionnaires ($p<0.01$); indicating fair agreement between both questionnaires and the clinical diagnosis. The B-SAQ lower urinary tracts screening questionnaire was	large affected population. .	

		The OAB-V8 is an 8-item questionnaire that assesses symptom bother and quality of life (QoL) impact of OAB. Data was collected from patients who agreed to take part in the study. All patients fully completed the B-SAQ questionnaire			found to be a better test for stress and mixed urinary incontinence identification than the OAB-V8.		
3	Juliato, C.R., Baccaro, L.F., Pedro, A.O., Costa-Paiva, L., Lui-Filho, J., Pinto-Neto, A.M.(2016).	A descriptive, exploratory, cross-sectional study. The dependent variable was	Threat to the reliability was some variables such as genital prolapse, the	820 women invited to participate. 749 women participated.	Mean age was 52.5. With regard to menopausal, 16% were premenopausal, 16% perimenopausal and	Some women may minimize urinary symptoms with in-person interviews.	Health professionals should adopt proactive behavior in

	Subjective urinary urgency in middle age women: A population-based study. *Maturitas,* 85(82-87). Retrieved from http://www-ncbi-nlm-nih-gov.pallas2.tcl.sc.edu/pubmed/26857885 Descriptive, exploratory, cross-sectional study Evidence Level: IIb	OAB and the independent variables were sociodemographic data, health related habits and problems, self-perception of health, and gynecological background. All analyses were performed using IBM SPSS version 20 and Stata version 7. Bivariate analysis using the chi-square test, and Poisson regression using back selection criteria.	presence of bacteriuria and complains associated to lower urinary tract symptom.	Inclusion criteria were native Brazilian women, aged 45-60 years and residing in the metropolitan region of Campinas.	68% postmenopausal. The prevalence of OAB was 7.8%. The vast majority of women had only urinary urgency. Only two women who responded to the interview reported urge incontinence. In the final statistical model, vaginal dryness (Poisson Regression 2.21; 95% Clinical Interval 1.11-4.40; p=0.025) were associated with greater prevalence of OAB.	The results were based on self-reporting and uncertainties may have occurred.	surgically menopausal women and those with a history of genital atrophy to identify and treat OAB, thus contributing to an improved quality of lift and healthier aging.

	Quality: Good	Simple random sampling					
4.	Coyne, K.S., Sexton, C.C., Irwin, D.E., Kopp, Z.S., Kelleher, C.J., Milsom, I. (2008). The impact of overactive bladder, incontinence and other lower urinary tract symptoms on quality of life, work productivity, sexuality and emotional well-being in men and women: results from	A nested case-control analysis was performed on men and women with (cases) and without (controls) OAB, from the EPIC study. Based on their responses to questions about lower urinary tract symptoms (LUTS) cases were classified into five groups: continent OAB, OAB with incontinence, OAB + postmicturition, OAB + voiding, and OAB	The CES-D scale has confirmed reliability and validity and has been used in both continent and incontinent OAB populations. The PPBC has a good construct validity, responsiveness to change, and test-retest reliability among patients with OAB.	Of the EPIC participants, 1434 identified OAB cases were matched by age, gender and country, with 1434 designated as controls. A population-based, cross sectional telephone survey of adults aged over 18, was conducted in in five countries (Canada, Germany, Italy, Sweden, and the UK).	Comorbid conditions differed significantly by case/control status, with cases reporting significantly greater rates of chronic constipation, asthma, diabetes, high blood pressure, bladder or prostate cancer, neurological conditions and depression. There were significant differences between cases and controls in all reported LUTS. The OAB + postmicturition +	Many questionnaires used to evaluate the impact of LUTS were OAB-specific, as an objective of this study was to explore the prevalence and impact of OAB. It is possible that the use of a less OAB-specific measures would yield a different pattern of results.	The diagnosis and treatment of OAB should be considered in conjunction with LUTS, to maximize treatment options and optimize patient outcomes.

	the EPIC study. *BJU International* 101(1388-1395). Retrieved from http://scholar.google.com doi:10.1111/j.1464-410X.2008.07760x Symptom prevalence study (prospective cohort). Evidence Level: Ib	+postmicturition + voiding. Both control and cases were asked questions about symptom bother (OAB-q), generic quality of life QoL (EQ-5D), work productivity (Work Productivity and Activity Impairment, WPAI), depressive symptoms (Center for Epidemiologic Studies Depression Scale, CES-D), sexual satisfaction, and erectile dysfunction (men only) using the	No threats to validity/reliability were noted		voiding group reported significantly greater symptom bother, worse HRQoL, higher rates of depression and decreased enjoyment of sexual activity, than the other subgroups.	Controls were not asked any questions, which limits the case-control comparisons. The OAB and LUTS classifications used are based entirely on patient-reported symptoms; there was no urodynamic testing to confirm the type of LUTS, nor was there confirmation by a medical professional.	

	Quality: Good	Massachusetts Male Aging Study. Case answered additional condition-specific questions HRQol (OAB-q short form), Patient Perception of Bladder Condition, PPBC, and work productivity related to a specific health problem (WPAI-SHP). General linear models were used to evaluate group differences.					
5.	de Ridder, D., Roumeguere, T., Kaufman,	Data on OAB and SUI were prospectively	Possible threat was the external	Data was collected on 7193 women,	About 33.9% had mild BCS. Most women reported	The study population consisted of	A significant proportion

	L. (2013). Overactive bladder symptoms, stress urinary incontinence and associated bother in women aged 40 and above; a Belgian epidemiological survey. *International Journal of Clinical Practice,*67(3),198-208. Retrieved from https://eds.b.ebscohost.com.pallas2tcl.sc.edu/ehost doi:http://dx.doi.org.pallas2t	collected among women ≥ 40 years by general practitioners (GP) during a regular visit for any reason. The validated Bladder Control Self-Assessment Questionnaire (B-SAQ) was used and complemented with a question on SUI and bladder bother. The presence of mild bladder control symptoms (BCS) was defined as an overall B-SAQ symptom score (OSS) ≥ 4 and an	validity of the conclusions, involve generalizations of research findings to other settings.	with a mean (SD) age of 61.0 (12.6) years	overall mild OAB symptoms (46.9) and 34.9% had moderate-to-(very) severe symptoms. The prevalence of moderate-severe urgency, frequency or nocturia was higher than that of moderate-severe incontinence. Urgency and nocturia were considered the most bothersome symptoms. Moderate-severe stress urinary incontinence (SUI) affected 17.7% of women. About 16.4% of women reported to be moderately-severely bothered by their bladder in	women aged ≥40 years who visited a GP for any reason. This sample may not be representative of the general population of women ≥40 year and may over-represent women with co-morbidities. Women may have also felt hindered or embarrassed to indicate their problems in the presence of the GP, causing underreporting. The B-SAQ is not a	of women aged 40 years and older do not only have OAB symptoms, but also consider these botherso-me in daily life. Physicians should be proactive and engage in conversations about bladder control symptoms and available

	cl.sc.edu/10.1111/ijcp.12015 Epidemiological study Evidence Level: IIIb Quality: Good	overall bother score OBS ≥1. Descriptive statistics were performed.			everyday life. The risk of severe symptoms and bother increased with age. About 10% of women had clinically significant BCS (OSS ≥ 7 and OBS ≥ 4).	diagnostic questionnaire and does not assess whether the symptoms experienced are actually caused by OAB or whether other pelvic disorders are present.	treatment options.
6.	Qian-Sheng, K., Hann-Chorng, K. (2010). Strong correlation between the overactive bladder symptom score and urgency severity score in assessment	Patients with clinical symptoms of frequency and urgency were prospectively enrolled in this study. The Chinese version of the OABSS questionnaire, which has been linguistically	The OABSS questionnaire was linguistically validated	A total of 170 patients were enrolled - 98 men and 72 women with a mean age of 64.1 years.	A high OABSS total score was significantly associated with a high grade of USS. There was a significant correlation between the two scores (R^2=0.5520, $p<0.0001$). The main contributions of the OABSS in	The OABSS and the Urogenital Distress Inventory short form (UDI-6), measure the frequency and urgency episodes during a given period, but the severity of	A strong correlation between the OABSS and USS based on a voiding diary was noted in patients with OAB and the

	of patients with overactive bladder syndrome. *Tzu Chi Medical Journal*,22(2), 82-86. Retrieved from Retrieved from http://scholar.google.com http://www.tzuchimedjnl.com/ doi:10.1016/s1016-3190(10)60045-6 Prospective study	validated, and the urgency severity score (USS) based on a 3-day voiding diary were recorded at baseline. Patients with clinically diagnosed OAB were treated with solifenacin 5mg daily for 1 month, and the OABSS and USS were repeated at 1 week and 1 month. The OABSS and USS were compared at baseline, 1 week and 1 month after treatment.			patients with a low USS were daytime frequency and nighttime frequency. The contribution of urgency and urgency urinary incontinence became significant in patients with high urgency grades. The changes in the USS and OABSS were significant at 1 month. The change in frequency was significant in the daytime as well as at nighttime.	urgency is not assessed as a quantitative measure reflecting real life conditions.	changes in these two measures were similar after solifenac-in treatment.

	Evidence Level: IIb Quality: Good						
7.	Tikkinen, K.A., Auvinen, A., Johnson, T.M., Wiess, J.P., Keranen, T., Tiitinen, A., Polo, O., Partinen,M., Tammela, T.L. (2009). A systematic evaluation of factors associated with nocturia – The population based FINNO study. *American Journal of*	In a case-control with prevalence sampling, the authors explored the correlates for nocturia and their population-level impact. Questionnaires contained items on medical conditions, medications, lifestyle, sociodemographic and reproductive factors, urinary symptoms, and snoring. Nocturia was defined as ≥2 voids/night. In	Threats to the validity include of self-report has not been established for all characteristics considered. The Finnish population may not be directly generalizable to other ethnicities because impact measures generally are	6000 subjects (aged 18-79) were randomly identified from the Finnish Population Register (62.4% participated, 53.7% were female)	The factors with the greatest impact at the population level were (urinary) urgency (attributable number/1000 subjects (AN=24), benign prostatic hyperplasia (AN=19), and snoring (AN=16) for men and overweight and obesity (AN=40), urgency (AN=24), and snoring (AN=17) for women. Correlates included prostate cancer and antidepressant use	Alcohol consumption reporting was incomplete, yet nocturia prevalence did not vary by alcohol consumption among those reporting this information. There was no information on physical activity, although physical activity has not previously	Although several correlates were identified, none accounted for a substantial proportion of the population burden, highlighting the multifactorial etiology of nocturia.

	Epidemiology, 170(3), 361-368. Retrieved from https://eds.b.ebscohost.com.pallas2tcl.sc.edu/ehost/detail Doi: http://dx.doi.org.pallas2.tcl.sc.edu/aje/kwp133 Case-control study Evidence Level: 1a Quality: High	age-adjusted analyses, factors associated with nocturia were entered into a multivariate model. Backward elimination was used to select variables for the final model, with adjustments for confounding.	context specific.		for men, coronary artery disease and diabetes for women, and restless legs syndrome and obesity for both sexes.	been related to nocturia.	
8.	Barkin, J. (2016). Nocturia: diagnosis and	The article explores the different causes and types of	None noted	The article discussed a study based on a survey of	When taking a patient history, it is important to determine the onset	None noted	Nocturia is pervasive in men

	management for the primary care physicians. *The Canadian Journal of Urology*, 23(1),16-19. Retrieved from www.ncbi-nlm-nih.gov.pallas2.tcl.sc.edu/pubmed/26924591 Evidence level IVa Clinical practice guidelines	nocturia, then describes how to diagnose different types of nocturia (including use of frequency-volume charts), and last, discusses different approaches to managing nocturia (including the use of desmopressin), depending on the type and cause.		more than 1400 people diagnosed with OAB.	and severity of the nocturia, and also find out if nocturia is consistent or intermittent. Physicians need to look for any medical conditions or drugs that may cause nocturia. Physicians should then order all appropriate tests-urinalysis, urine culture and sensitivity test, urine cytology test (if indicated), serum creatinine test to rule out renal failure (indicated), order abdominal/or pelvic ultrasound (if indicated), and		and women who present with LUTS. Providers need to rule out the other medical and non-medical causes of LUTS.

					frequency-volume charts.		
9.	Hung, M.J., Chou, C.L., Yen, T.W., Chuang, Y.C., Meng, E., Huang, S.S., Kuo, H.C. (2011). Development and validation of the Chinese overactive bladder symptom score for assessing overactive bladder syndrome in a RESORT study. *Journal of the Formosan Medical*	The Chinese OABSS was developed by linguistic validation of the original version. It reliability and validity and correlations with a 3-day bladder diary were tested on patients with OAB in a multicenter study conducted in Taiwan (the RESORT study).	A threat to the Chinese OABSS it may not be generalizable to other Mandarin-speaking areas due to the difference in simplified and traditional Chinese characters.	60 patients with OAB who visited different hospitals in Taiwan were enrolled in the study. Patients were randomized either incontinent (OAB wet, n=31) or continent (OAB dry, n=29)	The test-retest reliability of the Chinese OABSS was moderate to good, with weighted kappa coefficients of 0.515-0.721 for each symptom score and 0.610 for the total symptom score. Each symptom score correlated positively with the total OABSS (Spearman's rho 0.365-0.793) and was internally consistent (Cronbach's alpha 0.674). The distribution of the OABSS showed a	One concern is that the Chinese OABSS was developed and validated in Taiwan using Taiwanese patients and traditional Chinese characters. There are, however many differences between simplified Chinese and traditional Chinese characters. It cannot be applied directly to	The Chinese OABSS has been developed and validated as a reliable instrument for assessing OAB symptoms . OABSS can be an alternative to, but not a replacement for, a 3-day bladder diary for

	Association, 112, 276-282. Retrieved from http://scholar.google.com Doi:10.1016/j.jfma.2011.09.020 Randomized clinical trial Evidence level: IIa Quality: High				clear separation between OAB wet (average 11.4, range 7-15) and OAB dry (average 7.97, range 4-10) subgroups (Wilcoxon exact test, $p<0.05$). In addition, the OABSS items correlated positively with the corresponding bladder diary variables (Spearman's rho 0.504-0.879) and the degrees of agreement improved with study visits except for nighttime frequency. The Chinese OABSS tended to underestimate the	other Mandarin-speaking areas.	assessing patients.

					frequency of nighttime voiding.		
10.	Lekskulchal, O., Dietz, H.P. (2008). Detrusor wall thickness as a test for detrusor overactivity in women. *Uitrasound Obstetrics & Gynecology*, 32(4):535-539. Retrieved from http:eds.b.ebscohost.com.pallas2tcl.sc.edu/ehost/detail/detail	Records of women were retrospectively reviewed. The patients had undergone an interview, clinical examination, multichannel urodynamic studies and translabial ultrasound examination. Detrusor wall thickness measurements were taken at the bladder dome, after bladder emptying. Receiver-operator	It was largely a Caucasian population and there may be generalizability issues to other races.	686 women's who attended a tertiary urodynamic service from November 2002 to January 2006	Average detrusor wall thickness in the detrusor overactivity group was 4.7+/- 1.9mm (mean +/- SD), compared to 4.1 +/- 1.6mm in the non-detrusor overactivity group ($p<0.001$). Using a cut-off of detrusor wall thickness of 5.0mm gave a sensitivity of 37% and a specificity of 79% for diagnosing detrusor overactivity. The ROC analysis revealed an area under the curve (AUC) of 0.606	Urodynamic testing is invasive, expensive, time consuming and may be technically difficult. The diagnostic method did not yield high specificity or sensitivity. The researchers did not use a transvaginal ultrasound and only measured the dome.	Measurement of detrusor wall thickness should not be used as a diagnostic parameter for detrusor overactivity in women.

	Retrospectively Review study Evidence Level: IIIb Quality: Good	characteristics (ROC) analysis was used to identify the optimal cut-off of detrusor wall thickness in predicting detrusor overactivity.			(95% CI, 0.56-0.65).		
11.	Levokowicz, R., Whitmore, K. E., Muller, N. (2011). Overactive bladder and nocturia in middle-age American women: Symptoms and impact are significant. Urologic Nursing.	American women internet users were surveyed online from March 18th to March 31st 2009. In addition, a sample of 611 women were surveyed in regards to their experiences and attitudes about treatment.	Threats to the validity were generalizability may be questioned because the sample was drawn from female users of the internet and may not be representative of the general US	1111 women ages, 40 to 65 years of age, online users	Women with nocturia in this study tended to prolong seeking treatment. Women with OAB, including nocturia, were more likely than women with OAB, excluding nocturia , to alter their behavior in social situations, refrain from physical activity and intimacy, and	Participants need to be able to have access and knowledge of a computer to answer survey questions	More public health education is needed to improve consumer knowledge about OAB including nocturia and understanding of all

	31(2):106-111. Retrieved from http://eds.b.ebscohost.com.pallas2.tcl.sc.edu/ehost/detail Descriptive, cross-sectional survey Evidence Level: Vb Quality: Good		population in the target age group and across all desired demographics		cancel social plans because of their condition.		treatment options for its symptoms.
12.	Wells, M. J., Jamieson, K., Markham, T. C.W., Green, S.M, Fader, M. J. (2014). The effects of caffeinated versus	Newly diagnosed women with OAB and a history of caffeine consumption were randomly allocated two groups. Each	Threats to the validity/ reliability the small sample size and generalizability of the findings	14 recruited, but 11 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 ($p<.01$), and a non-	Small sample size of 11 participants. No power calculations were undertaken in order to	The pilot study demonstrated that reducing caffeine intake may alleviate

	decaffeinated drinks on overactive bladder. *Journal of Wound, Ostomy & Continence Nursing.* 41(4)371-378. Retrieved from http://ovidssp.tx.ovid.com.pallas2.tcl.sc.edu/sp-3.18.Ob Double-blind, randomized, crossover study Evidence Level: Ib Quality: Good	group taking decaffeinated and caffeinated drinks for 14 days. The periods were preceded by a 14-day run-in period and interspersed with a 14-day washout period. Primary outcomes were episodes of urgency, frequency, volume per void, and incontinence obtained each period on 3-day bladder diaries. Secondary outcomes measures were OAB symptoms severity and health-related			significant directional change for the total ICIQ-OABqol score (P=.065) was found using sign tests for the period of decaffeinated compared to caffeinated drink intake. No significant differences were found for any caffeine withdrawal measures.	determine sample size. The trial did not consider the value of episodic analysis of compliance over the entire treatment period.	the severity of some symptoms and health-related QOL factors associated with OAB.

		quality of life (QOL) recorded each period using International Consultation on Incontinence-Overactive Bladder Module (ICIQ-OAB-Quality of Life (ICIQ-OABqol) tools. Effects of caffeine reduction were measured each day using visual analogue scales.					
13.	Gormley, E.A., Lightner, D.J., Faraday, M., Vasavada, S.P. (2015). Diagnosis and treatment of overactive	Data extraction conducted as part of the Agency for Healthcare Research and Quality Evidence Report/Technology Assessment Number 187	None noted	The reviewed yielded 151 treatment articles after application of inclusion/ exclusion criteria. A systematic	The amendment focused on four topic areas: mirabegron, peripheral tibial nerve stimulation, sacral neuromodulation and BTX-A. The	None noted	New evidence-based statements and expert opinion supplement the original

	bladder (non-neurogenic) in adults: AUA/SUFU guidelines amendment. *The Journal of Urology*. 193, 1572-1580. Retrieved from OVID http://dx.doi.org/10.1016/j.juro.2015.01.087 Systematic review Evidence Level Ib Quality: Good	titled Treatment of Overactive Bladder in Women (2009). That report searched PubMed, MEDLINE, EMBASE and CINAHL for English language studies published from January 1966 to October 2008. The AUA conducted additional literature searches to capture populations and treatments not covered in detail by the AHRQ report and relevant articles published		review conducted in February 2014 identified 72 additional articles relevant to treatment and made up the basis of the 2014 amendment.	additional literature provided the basis for an updated of current guidelines statements as well as the incorporation of new guideline statements related to the overall management of adults with OAB symptoms.		guidelines published in 2012, which provided guidance for the diagnosis and overall management of OAB in adults.

		through December 2011.					
14.	Fujimura, T., Kume, H., Tsurumaki, Y., Yoshimura, Y, Hosoda, C., Suzuki, M., Fukuhara, H., Enomoto, Y., Nishimatsu, H., Homma, Y. (2011). Core lower urinary tract symptom score (CLSS) for the assessment of female lower urinary tract symptoms: A comparative study. *International*	Three questionnaires: Core lower urinary tract symptoms (CLSS); International Prostate Symptom Score (IPSS); and Overactive Bladder Symptom Score (OABSS), were completed. Quality of life (QOL) was determined as per IPSS quality of life Index. The clinical diagnoses were overactive bladder, mixed incontinence,	Japanese women were studied and the generalizability of this study is called to question.	318 female patients, ages ranging from 15 -91.	All symptom scores were significantly increased in symptomatic women. The CLSS described the symptom profile of patients with distinct conditions. The scores of corresponding symptoms on the three questionnaires were significantly correlated (r=0.51-0.85; all P<0.0001). Multivariate logistic regression modeling proved five CLSS symptoms (daytime frequency, nocturia, urgency incontinence,	The IPSS was designed for men with BPH and may have a limited ability to illustrate female LUTS, such as incontinence symptoms. The Bristol Female Lower Urinary Tract Symptoms (BFLUTS) is a questionnaire for women, but may not be readily accepted for daily use by clinicians	The IPSS alone does not fully evaluate female LUTS, with a possible negative impact on QOL. Using the CLSS questionnaire would enable a simple and comprehensive assessment of female LUTS.

	Journal of Urology, 18(11)778-784. Retrieved from Web of Science http://apps.webofknowledge.com.pallas2.tcl.sc.edu/full_record.do?product=WOS&search-mode Comparative Study Evidence Level: IIIb Quality: Good	stress incontinence, pelvic organ prolapse, interstitial cystitis, bacterial cystitis, underactive bladder and other. Simple statistics and the relationship between symptom scores and poor QOL (QOL Index≥4) were examined.			straining, and urethral pain) as independent predictors of poor QOL, with hazard ratios ranging from 2.0 to 4.2. The IPSS included only two (urgency and straining) significant symptoms.	owing to a large burden.	

15.	Kinsey, D., Pretorius, S., Glover, L., Alexander, T. (2016). The psychological impact of overactive bladder: A systematic review. *Journal of Health Psychology,* 21(1)69-81. Retrieve from PsycINFO http://sagepub.co.uk/journalsPermissions.nav Systematic review	Electronic databases (Web of Knowledge, PsycINFO, MEDLINE and CINAHL) were searched for published articles evaluating the impact of OAB on psychological well-being. All studies were cross-sectional.	Most studies in this review were assessed using self-report questionnaires. This may have led to participants being included/ excluded from OAB group on the basis of different individual views of "urgency", skewing the results.	Electronic searches generated 3699 results. 32 articles on psychological impact of OAB were included in the review.	Majority of studies investigated nine areas: depression, anxiety, embarrassment/ shame, self-esteem, sleep, relationships and impact on others, sexual relationships, social life and QoL.	Research has suggested that there is disagreement among physicians I the way OAB is and should be defined. The lack of clarity about the definition of OAB may also create difficulties in researching the condition, particularly as OAB's key symptom, urgency, cannot be assessed objectively.	This review provides an overview of the current research on the psychological impact of OAB. Psychological health should be considered an important aspect of managing OAB, and further research is required to determine

	Evidence Level: Ib Quality: Good						how to best provide psychological care and support in this area.
16.	Cardozo, L., Staskin, D., Currie, B., Wiklund, I., Globe, D., Signori, M., Dmochowski, R., MacDiarmid, S., Nitti, V.W., Noblett, K. (2014). Validation of a bladder symptom screening tool in women	Prospective, observational study. 100 women completed the Actionable Bladder Symptoms Screener Tool (ABSST), OAB Questionnaire Short Form (OAB-q SF), and a patient global impression of severity (PGI-S) scale. Half of the	A subset of 10 patients with OAB and UUI also participated in a one-to-one cognitive interview during the study visit. This is too small a sample size to draw definitive conclusions and as a such the	100 women from six gynecological clinics located in the USA. Clinic staff identified potential study participants through database and chart reviews and then, using a standard recruitment and screening script, contacted	53 women with UUI/OAB and 47 controls took part (71& Caucasian). Patients with UUI/OAB were older (54.6 vs 40.4 years), had a higher body mass index (31.1 vs 26.4kg/m²), and more comorbid conditions. The Cronbach's alpha reliability of ABSST was 0.90. High correlations with OAB-q SF	Qualitative results should be interpreted with some caution, as it is difficult to draw definitive conclusions around content validity with a sample of 10 patients. The women enrolled in the study represented a group of	The previous MS ABSST scoring algorithm was validated in a non-neurogenic female population. ABSST is a reliable, valid, and sensitive tool for

	with incontinence due to overactive bladder. *International Urogynecologic Journal*, 25:1655-1663. Retrieved from Web of Science. Doi:10.1007/s001192-014-2417-7 Evidence Level: IIb Quality: Good	sample had urinary urgency incontinence (UUI), while the other half did not. Descriptive statistics, reliability, and validity were examined, as was sensitivity and specificity of the previous cut-off score established in patients with multiple sclerosis. IRB was approved for 6 clinics.	generalizability to lower educated women is limited. Most women who participated were relatively highly educated. However, the results showed that the ABSST was a reliable instrument, as demonstrated by its high internal consistency coefficient.	prospective participants to gauge interest in participation and ascertain eligibility for the study.	Symptom Bother and Health Related Quality of Life (r=0.83 and -0.81 respectively) supported concurrent validity. Using the PGI-S severity scores as a reference, the ABSST was able to distinguish patients with differing severity levels (known-group validity). Physician assessment of the need for further evaluation/treatment showed sensitivity (79%) and specificity (98%), supporting a cut-off score of greater than or equal to 3.	patients who were relatively well educated and also willing to discuss their lower urinary tract symptoms in a research setting. Study participants' responses may not be reflective of patients who have not presented for treatment and/or who would be less willing to discuss their symptoms with	women with UUI/OAB.

						a healthcare provider. The diagnosis of OAB was based on the clinician's report without a consistent definition across clinicians. There was no inter-rater reliability of diagnosis or referral for treatment was evaluated.	
17.	Jongen, P.J., Blok, B.F., Heesakkers, J.P., Heerings, M., Lemmens,	Observational non-interventional web-based study	Generalizability of results as this were patients with multiple	141 MS patients from Netherlands. 106 females and 35 males.	For cut-off point 3 the outcomes (Test 1 and 2) were: Test Positive (TP) 43.26%, 40.88%;	Data was acquired via patient self-report.	The study findings suggest that in MS patients

	W.A., Donders, R. (2015). Simplified scoring of the Actionable 8-item screening questionnaire for neurogenic bladder overactivity in multiple sclerosis: a comparative analysis of test performance at different cut-off points. *BMC Urology,* 15 (106). Retrieved from	Assessed the test-retest reliability and concurrent validity of a Dutch version of the English Actionable questionnaire. Compared the test performance of the simplified scoring with cut-off point 3 with that of cut-off point 2, using the original scoring with cut-off point 6 as a gold standard. Associations between positive test result and urological treatment, and bladder-specific	sclerosis (MS) in Netherlands.	Ages ranged from 24 years to 73 years. Recruited from January 2015 to May 2015. Patients gave informed consent prior to participating in web-based study. Inclusion criteria used: (1) have an MS diagnosis (2) no relapse in last 30 days (3) willing and able to comply with requirement of the protocol, i.e. online completion of questionnaires	Test negative (TN) 29.79%, 32.85%; False Positive (FP) 0.00%, 0.00%; False Negative (FN)26.95%, 26.28%; Sensitivity 0.62, 0.61; Specificity 1.00, 1.00; Positive Predictive Value (PPV) 1.00, 1.00; Negative Predictive Value (NPV) 0.53, 0.55; Accuracy 0.73, 0.74; and for cut-off point 2: TP 59.97%, 59.85%; TN 26.95%, 31.39%; FP 2.84%, 1.46%; FN 10.63%, 7.30%; Sensitivity 0.85, 0.89; Specificity 0.90, 0.96; PPV 0.95, 0.98; NPV 0.72,	Given prevalence of cognitive impairments in MS patients, this may interfere with the quality of the data and conclusions.	the simplified Actionable scoring is more accurate with cut-off point 2, by reducing false negative outcomes; while in OAB patients a cut-off point of 3 strongly distinguishes between patients who should be treated vs. those who

	bmcurol.biomedcentral.com/articles/10.1186/s12894-015-0100-z Observational study Evidence Level: IIIa Quality: High	drug treatment were calculated.		and having the Expanded Disability Status Scale score assessed by phone.	0.81; Accuracy 0.87, 0.91. Cut-off 3 completely prevented FP outcomes, but wrongly classified 26% of the patients as negative (FN). Cut-off 2 reduced the FN to 7-10%, with low FP values (2.84-1.46%). With cut-off 2, the percentage of patients screened positive was higher in the Progressive group (75%) than in the Relapsing Remitting group (56.25%) (P=0.0331), which		do not require treatment.

					was not the case with cut-off 3. Only a positive test according to the original scoring was associated with both urological treatment (P=0.0119) and bladder-specific medication (P=0.0328).		
18.	Eapen, R.S., Radomski, S. B. (2016). Gender differences in overactive bladder. *The Canadian Journal of Urology*, 23(1):2-9.	The article discusses various LUTS and OAB studies and describes ways to evaluate and treat patients who present with symptoms suggestive of OAB.	None noted	The article discussed fours studies OAB symptoms, their findings and prevalence and impact on quality of life.	Prevalence of OAB and its symptoms increases with increasing age in both genders. Urinary urge incontinence more common in women. Treatment should take on a multidisplinary approach with	None noted	OAB is common in both men and women.

	Retrieved from google scholar. Clinical practice guidelines Evidence level IVa Quality: High				implementation of lifestyle modification s and behavioral therapies alongside pharmacotherapy for most optimal outcome.		
19.	Jafarabadi, M., Jafarabadi, L., Shariat, M., Rabie Salehi,G., Haghollahi, F., Rashidi, B.H.(2015). Considering the prominent complaint as a guide in medical therapy for	Randomized, double-blind, parallel group trial The study was designed to determine the effectiveness of oxybutynin (5mg immediate release{IR} tablet, three times a day) versus tolterodine (2mg	Generalizability of study findings to other countries with diverse populations. This study was performed on patients in a women's clinic in Tehran, Iran.	410 patients screened 301 randomized. 151 and 150 patients in the oxybutynin and tolterodine groups, respectively. Exclusion criteria: lactation,	Mean improvements in the terms of urgency (P=0.64) and urge incontinence (P=0.75) showed an insignificantly larger score in patients who were treated by oxybutynin. Improvement in night-time urinary	Small sample size, short follow-up duration and the subjective nature of the follow up	Oxybutynin and tolterodine showed similar efficacy on daytime symptoms of overactive bladder and similar side

	overactive bladder syndrome in women over 45 years. Journal of Obstetrics & Gynaecology Research, 41(1):120-126 DOI:http://dx.doi.org.pallas2.tcl.sc.edu/10.1111/jog.12483 Randomized clinic trial study Evidence Level: Ib Quality: Good	IR tablet every 12 hours) in a 12-week treatment of OAB in women over 45 years.		suspicion of pregnancy, glaucoma, acute or repetitive urinary infection, significant stress urinary incontinence, myasthenia gravis, neuropathy, mental disorder, gross renal, hepatitis or cardiovascular disorders, obstruction in urinary bladder outlet, history of genitourinary operations, interstitial cystitis,	urgency and nocturia (41.2% and 54.3% vs 39.7% and 40.1% in oxybutynin vs tolterodine groups, respectively) were shown to be more improved by tolterodine in comparision to oxybutynin (P=0.72 and 0.04 for night-time urinary urgency and nocturia, respectively) Discontinuation of treatment due to adverse events was not significantly different in the two groups.		effects in perimenopausal patients. For patient with the chief complaint of nocturnal frequency, prescription of tolterodine is preferably suggested.

				unexplained hematuria, urinary catheterization, concomitant antimuscarinic medication, electrostimulation therapy or bladder training, allergy to oxybutynin or tolterodine, or treatment with this drugs in the 3 months before randomization and exposure to any other investigational drug in the preceding 2 months			

20.	Palma, T., Raimondi, M., Souto, S., Fozzatti, C., Palma, P., Riccetto, C. (2013). Prospective study of prevalence of overactive bladder symptoms and child-bearing in women in reproductive age. *Journal of Obstetrics & Gynaecology Research*, 39(8):1324-1329. DOI: http://dx.doi.org.pallas2tcl.s	Premenopausal women were interviewed to ascertain the prevalence of OAB symptoms. Patients were approached to complete the International Consultation on Incontinence Questionnare-Overactive Bladder (ICIQ-OAB) questionnaire. A validated ICIQ-OAB Portuguese version, with specific questionnaire for the demographics.	External validity due to generalization of results as questionnaire performed in public places.	1052 women of child-bearing age (20-45 years) in Campinas, Brazil, 1400 questionnaires were filled. 348 were excluded as they did not meet the inclusion criteria. Exclusion criteria: diabetes mellitus, chronic lung disease, history of recurrent urinary tract infections, current urinary	Multiparous and primiparous women showed significantly higher scores in the ICIQ-OAB questionnaire than nulliparous women, Multiparous women presented more frequency than nulliparous women ($P<0.0001$). No significant difference was found in urgency ($P=0.0682$), and multiparous women presented more urgency incontinence than nulliparous ones ($P=0.0313$).	The non-parametric analysis. Study performed in mostly public places, which made it impossible to perform physical assessments in participants. Data relied on the information given by the women in the questionnaires.	Nulliparous women presented fewer OAB symptoms than primiparous women. Multiparous women presented more symptoms than the other two groups. No significant differences between cesarean and vaginal delivery,

	c.edu/10.1111/jog.12063 Epidemiological study Evidence Level:IIIb Quality: Good			tract infection, neurological diseases and other conditions that can predispose to neurogenic detrusor overactivity, and patients who underwent surgery for urinary incontinence and other major pelvic surgery.			but the scores of women who had vaginal delivery were higher than those who had cesareans. Both types of delivery were related to higher ICIQ-OAB questionnaire scores than those of nulliparous women.

21.	Al-Ghazo, M.A., Ghalayani, I. F., Al-Azab, R., Hani, O. B., Matani, Y.S., Haddad, Y. (2011). Urodynamic detrusor overactivity in patients with overactive bladder symptoms. *International Neurourology Journal,* 15:48-54.	A study to evaluate the relationship between urodynamic detrusor overactivity (DO) and OAB symptoms in men and women. Records were reviewed of patients who attended a tertiary referral center for urodynamic evaluation of OAB syndrome symptoms with	Generalizability of the results to the entire population	Results reviewed of 209 adult non-neurogenic patients (117 men and 92 women) in a urodynamic specialist referral testing center. Performed between February 2002 and February 2007. Exclusion criteria: neurological,	Incidence of DO was 76.1% and 58.7% in male and female OAB patients, respectively. Of men 63% and 61% of women with urgency (OAB dry) had DO, while 93% of men and 69.8% of women with urgency and urgency urinary incontinence (OAB wet) had DO. Of women, 58% who were OAB wet had stress urinary	The study was retrospective. A validated urgency scale that measures urgency rather than bladder sensation was needed. The study compares subjective symptoms with objective parameters. Follow-up data was lacking in some patients.	There was better correlation in results between OAB symptoms and the urodynamic diagnosis of DO in men than in women, more so in OAB wet than in OAB dry.

	DOI:10.5213/inj.2011.15.1.48 Retrospective Study Evidence Level: IIIb Quality: Good	the presence or absence of DO. DO was calculated for symptoms alone or in combinations.		vesical, bladder outlet and pelvic floor diseases or surgery.	incontinence symptom with 26.4% having urodynamic stress incontinence. 6% of men and 6.5% of women with OAB symptoms had urodynamic diagnosis of voiding difficulties with post-void residual greater than 100ml. Combination of symptoms is more accurate in predicting DO in OAB patients. The multivariate disease model for males included urge urinary incontinence (UUI)	There was not adequate information regarding whether or not urodynamic findings altered management for these patients.	Combination of symptoms of OAB syndrome seems to have a better correlation with objective parameters from the bladder diary, filling cystometry, and with the occurrence of DO.

					and urgency while for females it included UUI and nocturia. The results were statistically evaluated using Mann-Whitney and Fisher's exact probability tests for comparison of the findings between DO and no DO patients, and for comparison between symptoms and urodynamic findings.		
22.	Reynolds, W.S., McPheeters, M., Blume, J., Surawicz, T., Worley, K.,Wang, L.,	Multiple reviewers screened original research published in English on community	Bias, as 98% of the studies reported funding by industry.	5 Data sources: MEDLINE, EMBASE, Cumulative Index to Nursing and Allied Health	Effects of medication and placebo was assessed and no individual agent demonstrated	None noted	Evidence from more than 27000 women participating in

	Hartmann, K. (2015). Comparative effectiveness of anticholinergic therapy for overactive bladder in women: A systematic review and meta-analysis. (Review). *Obstetrics and Gynecology,* 125(6):1423-1432 Evidence Level IIIb Quality: Good	dwelling women with non-neurogenic OAB undergoing pharmacotherapy with medications available in the USA. Study design included randomized controlled trial for meta-analysis and cohorts, case-control, and case series for harms data.		Literature, and ClinicalTrials.gov Exclusion criteria: studies in which women comprised less than 75% of population; small sample size less than 50.	superiority over another.		randomized controlled clinical trials suggests improvement in symptoms with anticholinergic management of overactive bladder is modest and rarely fully resolves symptoms.
23.	Yamaguchi, O., Marui, E., Kakizaki, H.,	Randomized, double-blind, placebo-	Bias as some of the researchers	1139 patients in multiple	Mirabegron was found to be significantly	None noted in article.	Mirabegron 50mg daily is an

	Homma, Y., Igawa, Y.,Takeda, M., Nishizawa, O., Gotoh, M., Yoshida, M.,Yokoyama, O., Seki, Na., Ikeda, Y., Ohkawa, S. (2014). Phase III, randomized, double-blind, placebo-controlled study of the β3-adrenoceptor agonist mirabegron, 50mg once daily, in Japanese patients with overactive	controlled phase III study enrolled Japanese patients experiencing OAB symptoms for ≥ 24 weeks. Patients with ≥ 8 micturitions/24 hours and ≥ 1 urgency episode/24 hours or ≥1 urgency incontinence episode/ 24 hours were randomized to once daily placebo, mirabegron 50mg or tolterodine 4mg (as an active comparator, without testing for non-inferiority of efficacy and	were consultants for industry. Generalizability of results to other countries with diverse populations	centers in Japan. Receiving placebo, n=381. Receiving mirabegron 50mg, n=380. Receiving tolterodine 4mg, N=378. Demographic and baseline characteristics were similar among the treatment groups.	superior to placebo in terms of mean (SD) change from baseline in number of micturitions/24 hours (-1.67 [2.212] vs -0.86 [2.354]; P<0.001) and mean [SD] change from baseline in number of urgency episodes/24 hours (-1.85) [2.555] vs -1.37 [3.191]; P=0.025), incontinence episodes/24 hours (-1.12[1.475] vs -0.66 [1.861]; P=0.003), urgency incontinence episodes/ 24 hours (-1.01 [1.338] vs -0.60 [1.745]; P=0.008), and volume voided/micturition		effective treatment for OAB symptoms, with a low occurrence of side effects in a Japanese population.

	bladder. *BJU International*, 113:951-960 Randomized clinic trial study Evidence Level: Ib Quality: Good	safety) for 12 weeks. Primary endpoint was change in mean number of micturations/ 24 hours from baseline to final assessment. Secondary endpoints included micturition variables related to urgency and/or incontinence and QOL domain scores on the King's Health Questionnaire. Safety assessment included adverse events (AEs), post-void residual urine volume,			(24.300 [35.4767] vs 9.715 [29.0864] ml; P< 0.001). Adverse events (AE) incidence were similar in both mirabegron and placebo groups. Most AEs were mild and none were severe.		

		laboratory variables, vital signs and 12 lead electrocardiogram .					
24.	Cardozo, L., Hebdorfer, E., Milani, R., Arano, P., Dewilde, L., Slack, M., Drogendijk, T., Wright, M., Bolodeoku, J. (2008). Solifenacin in the treatment of urgency and other symptoms of overactive bladder: results from a randomized, double-blind,	The study (SUNRISE, solifenacin in the treatment of urgency symptoms of OAB in a rising dose, randomized, placebo-controlled, double-blind, efficacy trial) was randomized, double-blind, 16-week, placebo-controlled, multicenter study of solifenacin 5/10 mg in patients with symptoms of	Potential bias, as the study was supported by industry	863 patients in 105 centers in 14 European countries	Solifenacin 5/10 mg was significantly more effective than placebo in reducing the mean number of episodes of severe urgency with or without incontinence per 24 hours from baseline to endpoint (-2.6 vs -1.8, $P<0.001$). There were also statistically significant differences in favor of solifenacin 5/10 mg over placebo for all secondary variables measured	None noted.	Solifenacin significantly reduced the number of urgency episodes and the extent of urgency bother, and was well tolerated; it was effective as early as day 3 of treatment.

	placebo-controlled, rising-dose trial. *BJU International*, 102 (1120-1127). DOI:10.1111/j.1464-410X.2008.07939.x Randomized clinical trial study Evidence Level: Ib Quality: Good	OAB for ≥ 3months. The primary efficacy variable was the change from baseline to endpoint in the number of episodes of severe urgency with or without urgency incontinence per 24 hours, as measured using the Patient Perception of Intensity of Urgency Scale, grade 3+4. Secondary efficacy variables included patient-reported outcomes for bladder condition,			at endpoint, including patient-reported outcomes. There was a significant improvement in urgency as early as day 3 of treatment. Treatment-emergent adverse events with solifenacin 5/10 mg were mainly mild or moderate in severity, and only led to discontinuation in 3.6% of patients.		

		urgency bother and treatment satisfaction. A 3-day voiding diary was used to record micturition frequency and episodes of urgency and incontinence. A 7-day diary was used to assess speed of onset of effect.					
25.	Nguyen, K., Hunter, K.F., Wagg, A. (2013). Knowledge and understanding of urinary incontinence: Survey of family	A cross-sectional survey, using randomly selected sample of family physicians in Alberta, Canada. Family physicians were selected from the publicly available directory	The findings may not be generalizable due to a low response rate of practitioners. An honorarium of $50 was offered to	Of 158 of 1488 family practitioners contacted participated. All practitioners completed the questionnaire	Survey response rate was 10.6% (158 of 1488); 84.2% (133 of 158) of respondents practiced in urban settings, 44.9% (71 of 158) had been in practice for fewer than 15 years, 24.1% (38 of 158)	Low response rate. Declining response rates to surveys owing to survey fatigue.	There continues to be considerable variation in knowledge about urinary incontine-

	practitioners in northern Alberta. *Canadian Family Physician* 59(7):e330-e337 Retrieved from www.cfp.ca.pallas2.tcl.sc.edu/content/59/7/e330 Descriptive survey Evidence Level: IIIb Quality: Good	published by the College of Physicians and Surgeons of Alberta using computer-generated random number list. Standardized validated survey used.	complete the survey and may potentially create a bias	via telephone, and fax	reported having no training in urinary incontinence (UI) management since graduation, and 53.8% (85 of 158) reported that they proactively discussed UI with their patients. Overall, 70.0% of respondents felt fairly confident in managing UI. Most family physicians referred patients for specialist care, with few referrals to community services. Respondents thought that continence services were scarce, with long waiting times,		nce management and a relative overreliance on specialist care, despite well recognized difficulties in gaining access to services. Respondents believed that increased awareness among patients and health care providers

					and that such services were generally overstretched; they believed that although high quality continence care was a personal priority, it was not a priority for their practice partnerships or networks. In terms of the highest ranked areas for improvement in UI management, increased awareness and understanding among physicians (ranked first by 28.5% of respondents), followed by		coupled with greater access to continence services were key factors in improving care delivery.

					dedicated incontinence clinics or nurses for referral (17.7%) and improving patient awareness and understanding (12.0%).		
26.	Teunissen, D. T. A. M., Stegeman, M.M., Bor, H. H., Lagro-Janssen, A.L.M. (2015). Treatment by a nurse practitioner in primary care improves the severity and impact of urinary incontinence in women. An	An observational study examining how nurse practitioners (NPs)treated female patients with UI. All patients were examined and referred by the General Practitioner (GP) the NP working in the same practice. At baseline the severity of the UI	The generalizability of the study cannot be but is assumed to have improved the women's life after three months of therapy.	16 nurse practitioners working with a GP's office in the Netherlands, undertook a training program in which they learned how to manage female patients with UI.	103 women were included, mean age 55 years (SD 12.6). The Sandvik severity categories improved significantly (P<0.001), as did the impact on daily life (2.54 points, P=0.012). Among the IIQ score the impact on daily activities increased 0.73 points (P=0.032), on social functioning 0.60 points	The dropout rate in this study was 32% which is considered high. No control group was involved as a RCT which received care by the GP. The training program for patients with UI is time consuming,	Treatment by a trained NP seems to have a small positive affect the severity of the UI and the impact on the quality of life. NPs involved in the care of patients generally

	observational study. BioMed Central,15:51. DOI:10.1186/s12894-015-0047-0 Observational study Evidence Level: IIIb Quality: Good	(Sandvik-score), the impact of the quality of life (IIQ) and the impressed severity (PGIS) was measured and repeated after three months. Differences were tested by the paired t and the NcNemar test. Reasons for not completing treatment were documented by the nurse practitioner and differences between the group that completed treatment and the			(P=0.030) and on emotional well-being 0.63 points (P=0.031). The PGIS -score improved in 41.3% of the patients. The most important reasons for not completing the treatment were lack of improvement of the UI and difficulties in performing the exercises. Women who withdraw from guidance by the nurse practitioner perceived more impact on daily life (P=0.036), in particular on the scores for social functioning (P=0.015) and	and not always easy to sustain and difficult to implement in daily life.	leads to an improvement of health outcomes and patient satisfaction. Women who did not complete treatment suffer from more impact on quality of life, experience not enough improvement and mention difficulties

		drop-out group were tested.			emotional well-being (P=0.015).		in performing exercises.
27.	Albers-Heitner, C.P., Lagro-Janssen, A.L.M., Venema, P.L., Berghmans, L.C.M., de Jonge, A., Joore, M.A. (2010). Experiences and attitudes of nurse specialists in primary care regarding their role in care for patients with urinary incontinence.	A focus group conducted with nurse specialists who were trained in caring for patients with UI in a randomized clinical trial. The aim was to explore experiences and attitudes of nurse specialists in primary care. The focus group interview was audio-taped and transcribed verbatim.	There may have been some bias, as all were interested participants. Due to the small sample size the generalizabil-ity of the study was limited.	16 nurse specialists in four Dutch regions who provided care to patients with UI. The study was carried out from May 2005 until Mache 2008. All consecutive patients consulting their GP for UI within 1 year and patients already diagnosed with	Descriptive statistics was used. To increase dependability and confirmability, the interview was transcribed verbatim. To improve consistency and reliability analysis, the external moderator and the researcher analyzed the transcript independently of each other. To promote trustworthiness, the researchers	A small size was used. Only one focus group was conducted. The participants may have made socially desirable comments because they knew interviewers may have an interest in the subject.	The focus group trained nurse specialist appeared to feel competent and satisfied to support GPs in caring for patients with UI. They also felt highly appreciated by both patients and GPs.

	Scandinavian Journal of Caring Science. 25:303-310. DOI:10.1111/j.1471-6712.2010.00827.x Focus group study Evidence Level:IVb Quality: Good	A questionnaire was filled out prior to the focus group. The data was analyzed using qualitative content analysis to identify themes. To understand obstacles and incentives for change, the researchers relied on an existing 'implementation model.'		UI were eligible. Approval was sought from the Medical Ethical Committees of all the involved medical centers and hospitals.	discussed data fragments in the light of 'potential barriers and facilitators for quality of care and change' related to the individual's cognitive, educational and motivational attributes as well as to social, organizational and economic factors. Nurse specialists value continuous education and feedback in daily care of patients with UI.		Nurse specialist sometimes noticed the GPs lack of interest in UI. Having personal contact with GPs, availability of enough time, adequate equipment and financial resources are important preconditions for effective

							nurse specialist care.
28.	Keilman, L.J., Dunn, S. K. (2010). Knowledge, attitudes, and perceptions of advanced practice nurses regarding urinary incontinence in older adult women. *Research and Theory for Nursing Pratice: An International Journal,* 24 (4):260-279.	Across-sectional, descriptive, correlational design was used to study purposive sample of APNs who were identified from personal and professional contacts and an APN organization membership list. Eligible participants had completed a master's degree in nursing from an accredited university, had achieved national certification as a	A small sample size may limit the generalizability of the findings. Self-reported data may create a bias	72 APNS initially agreed to participate; however, only 56 questionnaires were returned. 2 questionnaires were not excluded for failing to complete the questionnaire. The study sample of 54 participants or a 75% response rate, Majority of participants	Data was analyzed using SPSS17.0 computer software. Approximately 57% (n=31) of the APNs reported diagnosing UI in their clinical practice. Of the APNS who diagnosed UI, 60% also treat, manage, educate, and counsel patients regarding their condition. Only 48.1% felt their education on the topic was adequate. This group of APNs	Sample was not a true representation of the entire population of APNs. There were 148 questions, which took approximately 1-2 hours to complete.	Continuous education is a crucial component in the management of UI. APNs can make a difference in the management of UI in women if they are taught the essentials and UI practice guidelines within

	DOI:10.1891/1541-6277.24.4.260 Cross-sectional, descriptive, and correlational design study Evidence Level IIIb Quality: Good	nurse practitioner, clinical nurse specialist, or midwife, and worked with older adult women. IRB approval was sought prior to recruitment. Participants where initially consulted by telephone, email or in-person. The study purpose, process, estimated timeframe for the questionnaire completion, and consent were then explained to participants.		were female (n=51, 94.4%), Caucasian (n=46, 85.2%), married (n=40, 84.1%). Age of the participants ranged from 31.7 to 72.8 years with a mean of 53.0 (SD=10.25) Upon data entry, 2 participants failed to complete the questionnaire appropriately.	reported learning more about UI through attending conferences where UI was offered as a topic (n=30, 72.2%); consulting a UI specialist n=21, 38.9%); or acquiring specific information through reading professional journals (n=48, 88.9%). UI guidelines were used regularly in practice by only 24.1% (n=13)) of the APNs. Participants also reported the prevalent gender of older adult patients treated for UI was		their graduate education. Researchers have found that enhancing UI content with graduate curriculum may be warranted. Perhaps the single most important action that APNs can take is to ask every older adult about UI and then follow

					female (n=39, 72.2%) and more than 50% of those individuals were 66 years of age and older. All participants did not necessarily feel confident in their assessment/diagno-stic skills related to UI (M=3.50, SD=0.95) and in managing and/or treating UI independently. APNS who reported a higher level of education regarding UI had more accurate perceptions, more positive attitudes, and more knowledge		with the basic approache s to evaluation and managem-ent.

					regarding older adult women with UI than those who reported lesser levels of education. Reliability of the KAPUIOW scale was estimated by Cronbach's alpha. Total scale estimate was α=0.86, with α=0.81 for the Attitudes/Perceptio n subscale, and α=0.77 for the Knowledge subscale.		
29.	Duralde, E.R., Walter, L.C., Van Den Eeden, S.K., Nakagawa, S., Subak, L.L., Brown, J.S., Thom, D.H.,	An observational cohort study from 2003-2012. Women aged 40 years and older enrolled in a Northern California	The generalizabili ty of the study may be limited as the women in this study had few	969 women in a Northern California integrated health care delivery system.	Mean age of the participants was 59.9 years and 55% were racial/ethnic minorities (171 black, 233 Latina, 133 Asian or Native American). Fifty-	Researchers relied on participants report on incontinence status, comorbid conditions and	Lower income women and diabetic women were less likely to

	Huang, A.J. (2016). Bridging the gap: determinants of undiagnosed or untreated urinary incontinence in women. *American Journal of Obstetrics & Gynecology*,214:266.e1-9 Retrieved from http://dx.doi.org/10.1016/j.ajog.2015.08.072 Evidence Level IIIb	integrated health care delivery system who reported at least weekly incontinence. Structured questionnaires were used to assess clinical severity, type, treatment, and discussion of incontinence.	barriers to care, were insurance, with relatively easy access to affordable primary care specialists.		five percent reported discussing their incontinence with a health care provider, 36% within 1 year of symptom onset, and with only 3% indicating that their provider initiated the discussion. More than half (52%) reported being at least moderately bothered by their incontinence. Of these women, 324 (65%) discussed their incontinence with a clinician, with 200 (40%) doing so within 1 year of symptom onset. In a multivariate	provider interactions around incontinence. Researchers utilized interviews in data collection, which have been associated with poorer reporting of sensitive topics such as incontinence. Only women with a least weekly incontinence participated, and did not include women who had previously	discuss incontinence issues with their providers. The findings provide support for systematic screening of women by providers to overcome barriers to evaluation and treatment.

	Quality: Good				analysis, women were less likely to have discussed their incontinence if they had a household income <$30,000 vs ≥ 120,000/year (adjusted odds ratio [AOR], 0.49, 95% confidence interval (CI), 0.28-0.86) or were diabetic (AOR, 0.71, 95% CI, 0.51-0.99). They were more likely to have discussed incontinence if they had clinically severe incontinence (AOR, 3.09, 95% CI, 1.89-5.07), depression (AOR, 1.71, 95% CI, 1.20-2.44), pelvic organ prolapse (AOR,	suffered from incontinence, underwent evaluation, and were successfully treated, or those with less frequent incontinence.	

					1.98, 95% CI,1.13-3.46), or arthritis (AOR, 1.44, 95% CI, 1.06-1.95). Among the subset of women reporting at least moderate subjective bother from incontinence, black race (AOR, 0.45 95%CI, 0.25-0.82, vs white race) and income < $30000/ year (AOR, 0.37, 95% CI 0.17-0.81, vs ≥ $120000/year) were associated with a reduced likelihood of discussing incontinence. Those with clinically severe incontinence (AOR, 2.93, 95% CI, 1.53-5.61, vs low to moderate		

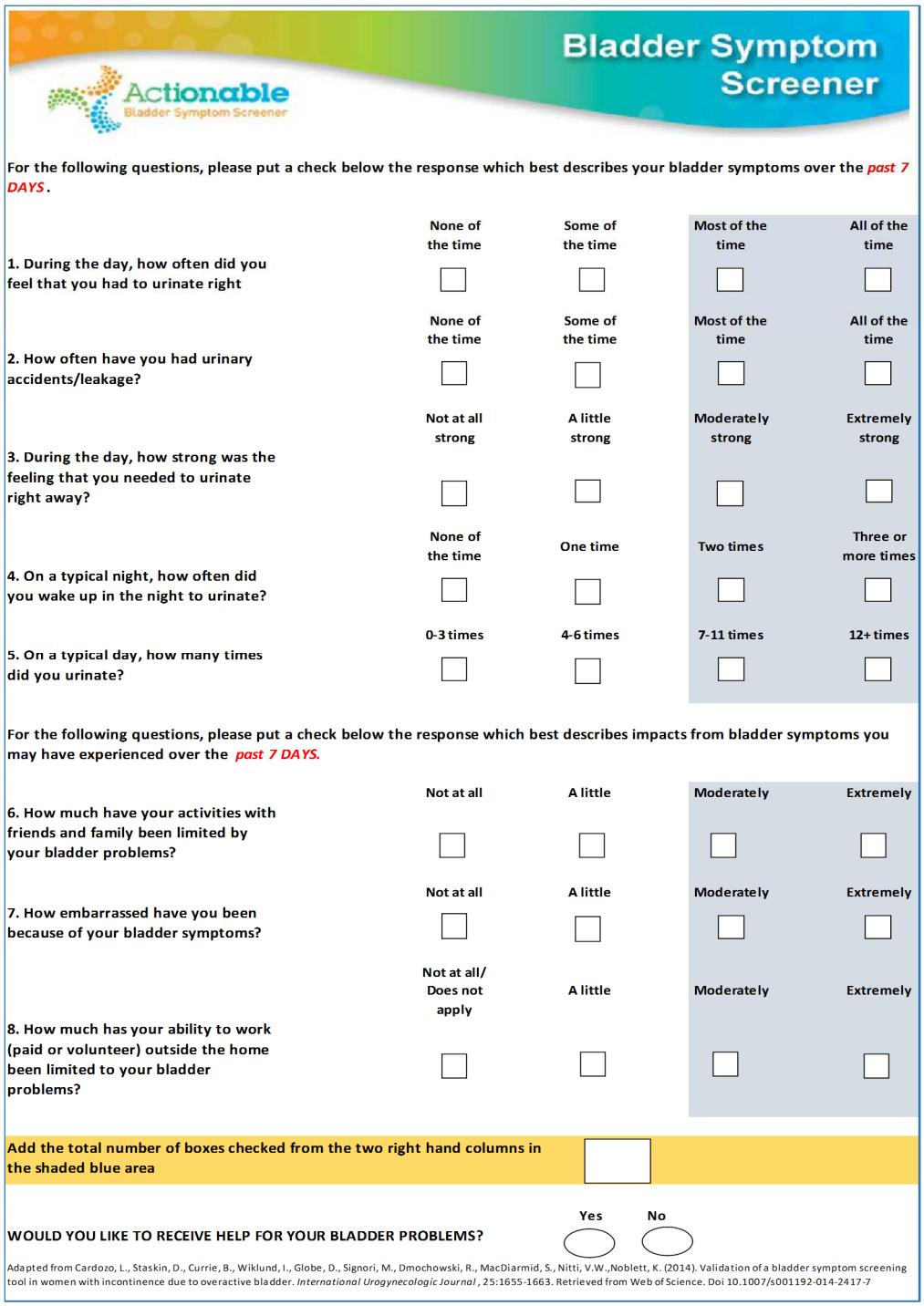
					incontinence by the Sandvik scale) were more likely to discuss it with a clinician.		
30.	Carcio, H.A. (2014). Calming the overactive bladder: a nurse practitioner perspective. *Women's Healthcare: A clinical journal for NPs*, 2(3):26-27 & 49. Retrieved from www.NPWomenshealthcare.com	The article explores the assessment and management of OAB by NPs	None noted	The article discussed a survey done by the National Association of Nurse Practitioners in Women's Health on 300 NPs to ascertain their own level of recognition and treatment of OAB in their practice	OAB is lifestyle threatening and patients need not suffer with it, if OAB symptoms are identified quickly, by a NP or patient. The assessment includes a health history, focused physical examination that includes a gynecological exam to assess the bladder and pelvic floor muscles.	None noted	NPs have an opportunity to emerge as front-line practitioners in educating patients about OAB. Continued emphasis on OAB in academic programs and national

	Evidence Level: IVb Quality: Good						conferences will increase NP knowledge and confidence in assisting patients with OAB.
31.	Filipetto, F. A., Holthusen, A. E., McKeithen, T. M., McFadden, P. (2014). The patient perspective on overactive bladder: a mixed-method needs assessment.	Mixed methods qualitative/quantitative needs assessment of patients with OAB and/or urinary symptoms. Researchers conducted in-depth qualitative interviews via telephone with 40 patients.	Internal validity of the study may be affected due to selection bias of participants	194 participants, 98 were men and 96 were female. 200 surveys filled out, 6 were invalid. Most participants had a primary care provider	Statistical and qualitative analysis of results were conducted. Among survey respondents, an average of 3.5 years elapsed between symptom onset and seeking diagnosis by a physician. In the long term, most patients do not	The survey was developed using responses from the qualitative interviews. The survey was not pilot tested and was not validated. Participants were recruited using a	The significant time gap between symptom onset and diagnosis indicates ongoing need for screening and diagnosis of

	BMC Family Practice, 15:96 Doi:10.1186/1471-2296-15-96 Mixed methods qualitative/quantitative needs assessment Evidence Level:IIb Quality:Good	Interview respondents who had previously identified themselves as having OAB or bladder problems.		managing their symptoms. Several men were treated by urologist, and two women were cared for by urogynecologi-sts.	experience improvement in symptoms. Medication non-adherence is common and is related to therapy effectiveness and adverse effects. Patients clearly indicated that communication and patient/provider relationships are important to them and they would prefer the clinician initiate the conversation on overactive bladder. Patient experiences, perspectives, and attitudes toward their bladder symptoms differ in many ways from	company that compiles panels of participants.	overactive bladder. Contrary to guideline recommendations, urinalysis and physical examination are not widely used in clinical practice. Many patients experience no improvement in symptoms over time. Patients indicate that

					provider assumptions.		clinician/patient relationship and communication regarding the condition are important.

APPENDIX C: ACTIONABLE BLADDER SYMPTOM SCREENER (ABSST)



Actionable
Bladder Symptom Screener

Bladder Symptom Screener

For the following questions, please put a check below the response which best describes your bladder symptoms over the *past 7 DAYS*.

	None of the time	Some of the time	Most of the time	All of the time
1. During the day, how often did you feel that you had to urinate right	☐	☐	☐	☐
	None of the time	Some of the time	Most of the time	All of the time
2. How often have you had urinary accidents/leakage?	☐	☐	☐	☐
	Not at all strong	A little strong	Moderately strong	Extremely strong
3. During the day, how strong was the feeling that you needed to urinate right away?	☐	☐	☐	☐
	None of the time	One time	Two times	Three or more times
4. On a typical night, how often did you wake up in the night to urinate?	☐	☐	☐	☐
	0-3 times	4-6 times	7-11 times	12+ times
5. On a typical day, how many times did you urinate?	☐	☐	☐	☐

For the following questions, please put a check below the response which best describes impacts from bladder symptoms you may have experienced over the *past 7 DAYS.*

	Not at all	A little	Moderately	Extremely
6. How much have your activities with friends and family been limited by your bladder problems?	☐	☐	☐	☐
	Not at all	A little	Moderately	Extremely
7. How embarrassed have you been because of your bladder symptoms?	☐	☐	☐	☐
	Not at all/ Does not apply	A little	Moderately	Extremely
8. How much has your ability to work (paid or volunteer) outside the home been limited to your bladder problems?	☐	☐	☐	☐

Add the total number of boxes checked from the two right hand columns in the shaded blue area ☐

WOULD YOU LIKE TO RECEIVE HELP FOR YOUR BLADDER PROBLEMS? Yes ◯ No ◯

Adapted from Cardozo, L., Staskin, D., Currie, B., Wiklund, I., Globe, D., Signori, M., Dmochowski, R., MacDiarmid, S., Nitti, V.W.,Noblett, K. (2014). Validation of a bladder symptom screening tool in women with incontinence due to overactive bladder. *International Urogynecologic Journal*, 25:1655-1663. Retrieved from Web of Science. Doi 10.1007/s001192-014-2417-7

APPENDIX D: OAB CLASS CLIMATE SURVEY

ORGANIZATION: University of South Carolina
AUTHOR: Helen, Ngigi
College of Nursing
SURVEY: OAB Survey

☐ Activate contrast mode ☐ Activate contrast mode

1Knowledge of Overactive Bladder and Perception of the Screening Tool Effectiveness Demographic

DO NOT ADD YOUR NAME anywhere on the Survey.

1.1 Please provide your mother's birthdate starting with month, and then followed by year below so that we can link the pre-and post-survey to same provider.

1.2 What is your age range?

☐ 25-35 years ☐ 36-45 years ☐ 46-55 years ☐ Greater than 56 years

1.3 Number of years of practice in a primary care setting

☐ 1-3 years ☐ 4-7 years ☐ Greater than 8 years

1.4What is your gender?

☐ Male Question ☐ Female ☐ Not applicable

1.5 What is your title?

☐ NP ☐ PA ☐ MD

Please mark the box for the response that best reflects your opinion of the following statement.

Strongly Disagree Disagree Neither Disagree or Agree Agree Strongly Agree

1.6 OAB is a common condition affecting many women globally and in the US

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree or Agree ☐ Agree ☐ Strongly Agree

---

1.7 Women with urinary incontinence problems often seek treatment immediately

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree or Agree ☐ Agree ☐ Strongly Agree

---

1.8 The validated overactive bladder screening tool (ABSST) is effective in highlighting the presence of bladder symptoms consistent with OAB

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree or Agree ☐ Agree ☐ Strongly Agree

---

1.9 The ABSST is effective in facilitating critical communication between patient and provider

☐ Strongly Disagree ☐ Disagree ☐ Neither Disagree or Agree ☐ Agree ☐ Strongly Agree

---

1.10 How strongly would you agree or disagree that the following are barriers to assessing your patients for OAB symptoms?

Strongly Disagree Disagree Neither Disagree or Agree Agree Strongly Agree

1.11 Lack of provider information about OAB symptoms

Strongly Disagree Disagree Neither Disagree or Agree Agree Strongly Agree

---

1.11 Not enough time

Strongly Disagree Disagree Neither Disagree or Agree Agree Strongly Agree

---

1.12 Patients are uncomfortable bringing up the topic of OAB

Strongly Disagree Disagree Neither Disagree or Agree Agree Strongly Agree

---

Submit

APPENDIX E: COVER LETTER AND INFORMATION SHEET PRE-SURVEY

Overactive Bladder Assessment Tool Project
Cover Letter and Information Sheet
Principle Investigator: Helen Ngigi

December 2nd, 2016

Dear HCC Providers,

As part of my Doctor of Nursing scholarly project, I will be conducting a quality improvement project on overactive bladder symptoms in women who present at the HCC. Your participation in this project will play an important role in its success. The benefit will be to identify women who may have overactive bladder in order to improve outcomes. I will be conducting a quality improvement project on the effectiveness of the Actionable Bladder Symptom Screener tool when used by providers in the HCC. This project will be strictly voluntary. Participation is anonymous, and no provider personal identifiers will be collected. You will not receive any financial benefit for participating. As part of the project, your mother's birthdate, using month and year, as in 101940, for example, will used to link the pre- and post-survey. The pre- and post-survey will be merged by using your mother's birthdate. Your implied consent to participate in this project begins with the completion of the pre-survey that will be sent to you via email from Class Climate.
Please click on this link to complete the pre-survey:

https://classclimate.uts.sc.edu/classclimate/online.php?p=OABSURVEYPRE

If the link above does not work, please copy and paste it to your browser.

Instructions

The Actionable Bladder Screening Tool will be sent to you once you complete the OAB Grand Rounds recording. This tool is a validated tool that has been used in many primary care settings.

- The participant provider will screen any eligible female patients that comes into the clinic on any given day with or without complaints of urinary symptoms.
- Inclusion criteria are females age 40 years or greater with urinary tract infection complaints.
- If a patient is found to meet the criteria for assessment, the provider will further evaluate the patient using the ABSST.
- This form should be completed by the provider, not the patient. Also, under no circumstances should the ABSST tool form be scanned into the patient chart. It is only for this quality improvement project only.

- The forms will be used in the clinics for a four- week duration. All participating providers will receive reminder emails weekly of when to start and stop using the ABSST tool.
- There is a OAB grand rounds educational teaching module that the researcher conducted on October 27th 2016, and I encourage all participants to access the recording via Healthstreams Grand Rounds. This grand round on overactive bladder discussed strategies of assessing and managing symptoms.
- Upon completion of the study, participants will receive a post survey via Class Climate, to assess the effectiveness of the tool.

Thank you for your participation on this project.

Sincerely,

Helen Ngigi, MSN, FNP-C

APPENDIX F: OAB INSTRUCTION LETTER TO USE ABSST

Dear Providers,

Thank you for completing the pre-survey and OAB grand rounds. The next step in the study is to utilize The Actionable Bladder Screening Tool starting today.

Attached are two documents:

1. **OAB instructions** – this has the instruction of all screening questions and the criteria for further follow-up
2. **OAB tool (ABSST)** – this is the tool you will need to print and start using with your patients who meet the criteria.

See instructions below:

1. Any female patients age 40 years or greater that comes into the clinic on any given day with or without complaints of urinary symptoms is eligible for screening.
2. The OAB tool (ABSST)will be used in the clinics for a four- week duration.
3. This OAB tool (ABSST) should be completed by the provider only, not the patient.
4. Under no circumstances should the OAB tool (ABSST) be scanned into the patient chart.
5. Upon completion of the study, you will receive a post survey via Class Climate, to assess the effectiveness of the tool.

Please feel free to reach out to me if you have any questions.

Helen Ngigi

Helen Ngigi, MSN, FNP-C
Clinic Manager for Healthcare Clinics in Austell and Smyrna

APPENDIX G: COVER LETTER AND INFORMATION SHEET POST-SURVEY

Overactive Bladder Assessment Tool Project
Cover Letter and Information Sheet
Principle Investigator: Helen Ngigi

Dear HCC Providers,

As part of my Doctor of Nursing scholarly project, I have conducted a quality improvement project on overactive bladder symptoms in women who present at the HCC. Your participation in this project has played an important role in its success. The benefit was to identify women who may have overactive bladder in order to improve outcomes. I have conducted a quality improvement project on the effectiveness of the Actionable Bladder Symptom Screener tool when used by providers in the HCC. This project was strictly voluntary. Participation was anonymous, and no provider personal identifiers were collected. You did not receive any financial benefit for participating. As part of the project, your mother's birthdate, using month and year, as in 101940, for example, will used to link the pre- and post-survey. The pre- and post-survey will be merged by using your mother's birthdate. Your implied consent to participate in this project began with the completion of the pre-survey that was sent to you via email from Class Climate. The conclusion of your part in the study is completing the post-survey.
Please click on this link to complete the post-survey:

https://classclimate.uts.sc.edu/classclimate/online.php?p=OABSURVEYPO

If the link above does not work, please copy and paste it to your browser.

Instructions

The Actionable Bladder Screening Tool has already been sent to you and you completed the OAB Grand Rounds recording. This tool is a validated tool that has been used in many primary care settings.

- As the participant provider you have screened any eligible female patients that came into the clinic on any given day with or without complaints of urinary symptoms.
- Inclusion criteria was females age 40 years or greater with urinary tract infection complaints.
- If a patient was found to meet the criteria for assessment, you as the participant provider further evaluated the patient using the ABSST.

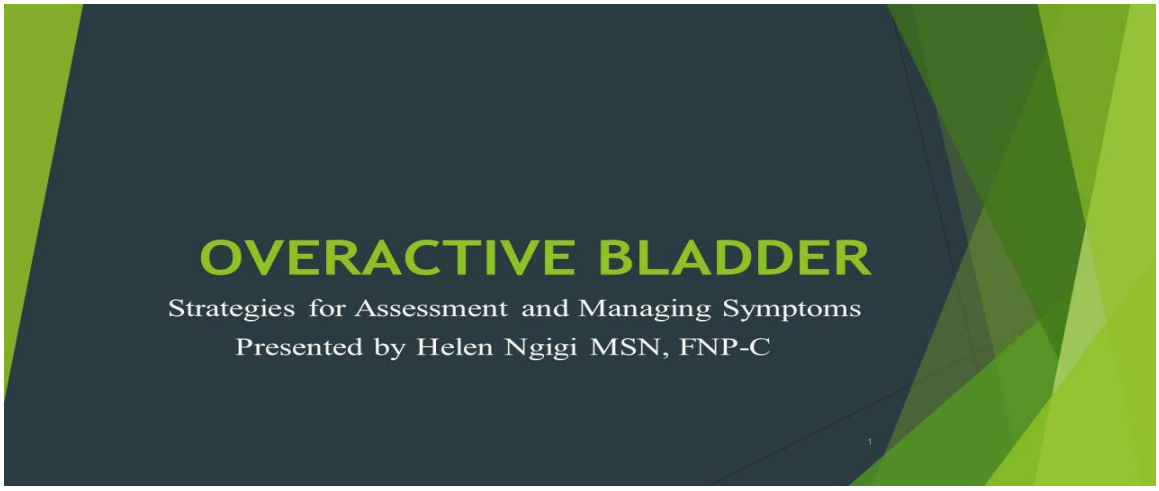
- This form should only have been completed by the provider, not the patient. Also, under no circumstances was the ABSST tool form to be scanned into the patient chart. It was only for this quality improvement project only.
- The forms were to be used in the clinics for a four- week duration. All participating providers received reminder emails of when to start and stop using the ABSST tool.
- There is a OAB grand rounds educational teaching module that the researcher conducted on October 27th, 2016, and encouraged all participants to access the recording via Healthstreams GrandRounds. This grand round on overactive bladder discussed strategies of assessing and managing symptoms.
- Upon completion of the study, you are now receiving a post survey via Class Climate, to assess the effectiveness of the tool.

Thank you for your participation on this project.

Sincerely,

Helen Ngigi, MSN, FNP-C

APPENDIX H: POWER POINT OAB EDUCATIONAL MODULE PRESENTATION



Overactive bladder (OAB) is defined by the International Continence Society (2005) as "urgency with or without urgency incontinence, usually with frequency and nocturia.

Levkowicz et al., 2011

3

Symptoms

- Urinary frequency- urinating more than eight times per day
- Urinary urgency - strong, sudden desire to urinate

Van Kerrebroek et al., 2002; Levkowicz et al., 2011;

4

Symptoms – Cont.

- Nocturia - more than one episode per night for adults under 65 years of age and three or more episodes for adults aged 65 years or older
- Daytime urinary frequency - hallmark symptom of OAB increasing with age

Coyne et al., 2008

5

Effects

- Decreased sexual activity
- Decreased sexual satisfaction
- Disruption of ones emotional and social circumstances

Coyne et al., 2008; Levkowicz et al., 2011; Barile et al., 2015

6

Effects

- Creates a burden for individuals and society
- Increases the potential for impaired functional status
- Lower health-related quality of life

Coyne et al., 2008

7

Prevalence

- 25% of young women
- 44% to 57% of middle-aged and postmenopausal women
- 75% of older women
- Before age of 60 it is more common in women than in men

Agency for Healthcare Research and Quality, 2013; Gray & Moore, 2009

8

Prevalence

- NOBLE study in USA showed:-
- 16.9% in women
- More common in women than in men, younger than 60 years of age

Coyne et al., 2008

9

Prevalence - Cont

- EpiLUTS survey done in the USA, UK and Sweden showed:-
- 43.1% of women of 40 yrs and older reported urgency or urge incontinence 'at least sometimes'
- Of these women, 67.6% and 38.9 % reported 'somewhat' or 'quite a bit' bother respectively.

Espen & Radomski, 2016; De Ridderr et al., 2013

10

Prevalence- Cont.

- Substantial proportion of patients never consulted a provider
- Many waited a number of years before consulting
- Women may benefit from screening for symptoms of OAB, including urinary urge incontinence

Cardozo et al., 2014; Cruz et al., 2012

11

Prevalence- Cont.

- The majority do not talk with their healthcare providers concerning their bladder dysfunction.
- Providers may not systematically inquire
- Few obtain adequate treatment for their symptoms.
- Urinary incontinence has been associated poorer health care quality of life.

Hartmann et al., 2009

12

Disease Burden

- Economic burden and lower health-related quality of life
- The total cost in the USA was estimated to be $65.9B in 2007, 22.1% of which accounted for by indirect costs
- Indirect costs include:
  - impaired work productivity and activity
  - Statistically higher rates of OAB-related surgery, hospitalizations and
  - Higher rates of pad use

Cardozo et al., 2014

13

Risk Factors For OAB

- Functional deficits:-
  - impaired mobility or dexterity
  - cognitive difficulties

Gray & Moore, 2009

14

Risk Factors For OAB - Cont.

- Race – Caucasian
- Female gender
- Insulin-dependent diabetes mellitus
- Increased BMI

Coyne et al., 2008

15

Risk Factors For OAB - Cont.

- Arthritis
- Depression
- Age greater than 75

Coyne et al., 2008

16

Associated Conditions

- Neurological disorders:- stroke, hydrocephalus, brain tumors, dementia or parkinsonism
- Stress urinary incontinence
- Inflammatory disorders:- urinary tract infection, bladder stones or tumors

Gray & Moore, 2009

17

Associated Conditions Cont.

- Idiopathic factors
- Obstruction as a cause of detrusor overactivity.

Coyne et al., 2008

18

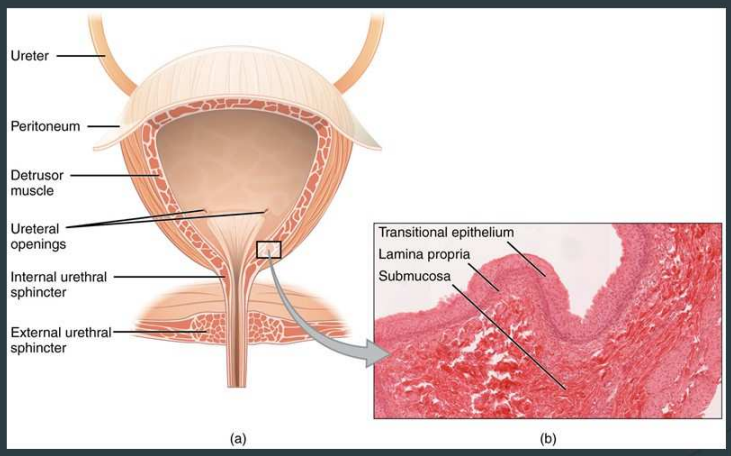


Illustration from Anatomy & Physiology, Connexions Web site. http://cnx.org/content/col11496/1.6/, Jun 19, 2013.

19

Associated Conditions - Cont

- Overactivity of detrusor muscle may also be due to transient causes such as:
  - delirium,
  - infection,
  - atrophic urethritis/vaginitis,
  - pharmaceutical, psychological,
  - excessive urine output,
  - restricted mobility, and
  - stool impaction (Gomella, 2010).

Gomella, 2010

20

Assessing OAB Symptoms

- OAB is defined by subjective symptoms, rather than objective measures,
- Patient's perspective is important in managing OAB
- Providers need to capture the patient's perspective of their OAB symptoms and their impact on the quality of life

Barkin, 2016; Hung et al., 2013; Juliato et al., 2016

21

Assessing OAB Symptoms Cont.

- A patient work up helps clinicians determine the cause of the symptoms as well as the degree of bother to the patient
- The diagnosis of OAB is essentially clinical and can be performed through structured questionnaires
- When taking a patient history, it is important to determine the onset and severity of the nocturia, and also find out if the nocturia is consistent or intermittent

Coyne et al., 2008

22

Assessing OAB Symptoms -Cont

- Providers should look for any medical conditions or drugs that may cause nocturia.
- Medications such as diuretics, sedatives, narcotics, antidepressants, antihistamines, calcium channel-blocker and alpha blockers can cause or worsen OAB.
- Provider should perform a physical examination, to ensure that the patient is not in retention (palpate suprapubically).

Barkin, 2016 23

Diagnostic Tests

- Providers should order a urinalysis, a urine culture and sensitivity test
- Urine cytology test (if indicated, because of hematuria)
- Serum creatinine (if indicated to rule out renal failure)
- Abdominal and or pelvic ultrasound test (if indicated)

Gomella, 2010 24

Diagnostic Tests Cont.

- Other diagnostic procedures for OAB include:
  - Urodynamics
  - Uroflowmetry
  - Urethral pressure profilometry
  - Endoscopy/cystoscopy
  - Voiding and intake diaries
  - Pad test, and
  - Post void residuals

Coyne et al., 2008

25

Medications

- First line treatment is antimuscarines :- oxybutynin, tolterodine, trospium, solifenacin, hyoscyamine, and fesoterodine
- Limited in some individuals because of the suboptimum efficacy or bothersome adverse events, including dry mouth, blurred vision and constipation
- Alternative approaches :- beta-adrenoceptors, such as mirabegron, which have a recognized role in mediating the relaxation of bladder smooth muscle

Gomella, 2010; Yamaguchi et al., 2014

26

Additional Treatments

- Behavioral therapy such as:
  - bladder retraining
  - pelvic floor exercises (Kegel exercises)
  - pelvic floor biofeedback
  - Transvaginal/transrectal electrical stimulation

Gomella, 2010

27

Additional Treatments - Cont.

- High fiber diet and limiting consumption of caffeine and alcohol
- Other options:-intravesical therapies (capsaicin, resinofentoxin), and estrogen (topical or oral)

Coyne et al., 2008

28

Prognosis

- Varies according to the severity of disorder and compliance of the patient
- 50% - 80% respond to combination of behavioral modification, pelvic floor therapy, and pharmacotherapy

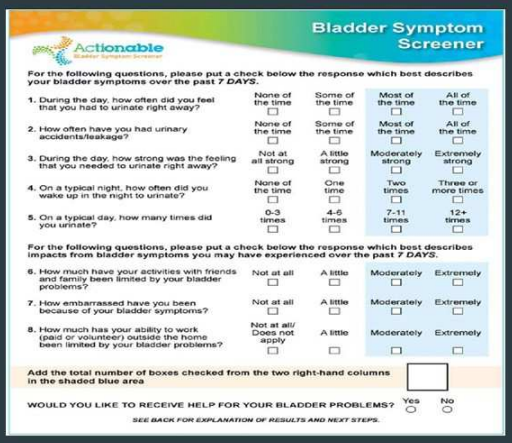
Gomella, 2010

29

- Provider need to:-
- Screen for symptoms and help patients explore behavioral as well as medication
- Create a public health education plan to improve patient knowledge

30

Actionable Bladder Symptom Screening Tool



Actionable Bladder Symptom Screener

For the following questions, please put a check below the response which best describes your bladder symptoms over the past *7 DAYS*.

1. During the day, how often did you feel that you had to urinate right away?	None of the time ☐	Some of the time ☐	Most of the time ☐	All of the time ☐
2. How often have you had urinary accidents/leakage?	None of the time ☐	Some of the time ☐	Most of the time ☐	All of the time ☐
3. During the day, how strong was the feeling that you needed to urinate right away?	Not at all strong ☐	A little strong ☐	Moderately strong ☐	Extremely strong ☐
4. On a typical night, how often did you wake up in the night to urinate?	None of the time ☐	One time ☐	Two times ☐	Three or more times ☐
5. On a typical day, how many times did you urinate?	0-3 times ☐	4-6 times ☐	7-11 times ☐	12+ times ☐

For the following questions, please put a check below the response which best describes impacts from bladder symptoms you may have experienced over the past *7 DAYS*.

6. How much have your activities with friends and family been limited by your bladder problems?	Not at all ☐	A little ☐	Moderately ☐	Extremely ☐
7. How embarrassed have you been because of your bladder symptoms?	Not at all ☐	A little ☐	Moderately ☐	Extremely ☐
8. How much has your ability to work (paid or volunteer) outside the home been limited by your bladder problems?	Not at all/ Does not apply ☐	A little ☐	Moderately ☐	Extremely ☐

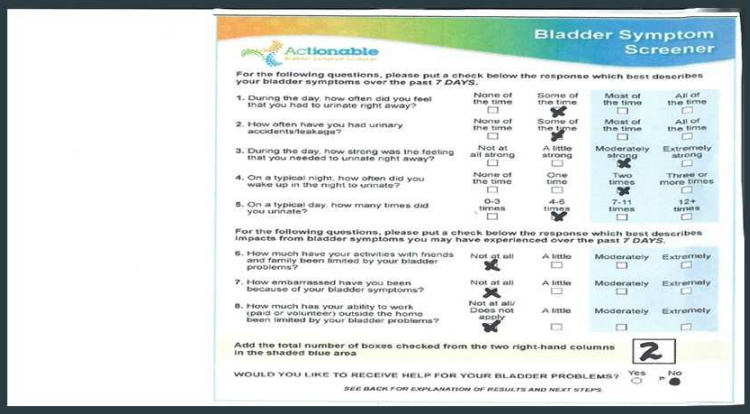
Add the total number of boxes checked from the two right-hand columns in the shaded blue area ☐

WOULD YOU LIKE TO RECEIVE HELP FOR YOUR BLADDER PROBLEMS? Yes ○ No ○

SEE BACK FOR EXPLANATION OF RESULTS AND NEXT STEPS.

Adapted from Cardozo, L., Staskin, D., Currie, B., Wiklund, I., Globe, D., Signori, M., Dmochowski, R., MacDiarmid, S., Nitti, V.W., Noblett, K. (2014). Validation of a bladder symptom screening tool in women with incontinence due to overactive bladder. *International Urogynecologic Journal*, 25:1655-1663. Retrieved from Web of Science. DOI: 10.1007/s001192-014-2417-7

Actionable Bladder Symptom Screening Tool- Below 3



Actionable Bladder Symptom Screener

For the following questions, please put a check below the response which best describes your bladder symptoms over the past *7 DAYS*.

1. During the day, how often did you feel that you had to urinate right away?	None of the time ☐	Some of the time ☒	Most of the time ☐	All of the time ☐
2. How often have you had urinary accidents/leakage?	None of the time ☐	Some of the time ☒	Most of the time ☐	All of the time ☐
3. During the day, how strong was the feeling that you needed to urinate right away?	Not at all strong ☐	A little strong ☐	Moderately strong ☒	Extremely strong ☐
4. On a typical night, how often did you wake up in the night to urinate?	None of the time ☐	One time ☐	Two times ☒	Three or more times ☐
5. On a typical day, how many times did you urinate?	0-3 times ☐	4-6 times ☒	7-11 times ☐	12+ times ☐

For the following questions, please put a check below the response which best describes impacts from bladder symptoms you may have experienced over the past *7 DAYS*.

6. How much have your activities with friends and family been limited by your bladder problems?	Not at all ☒	A little ☐	Moderately ☐	Extremely ☐
7. How embarrassed have you been because of your bladder symptoms?	Not at all ☒	A little ☐	Moderately ☐	Extremely ☐
8. How much has your ability to work (paid or volunteer) outside the home been limited by your bladder problems?	Not at all/ Does not apply ☒	A little ☐	Moderately ☐	Extremely ☐

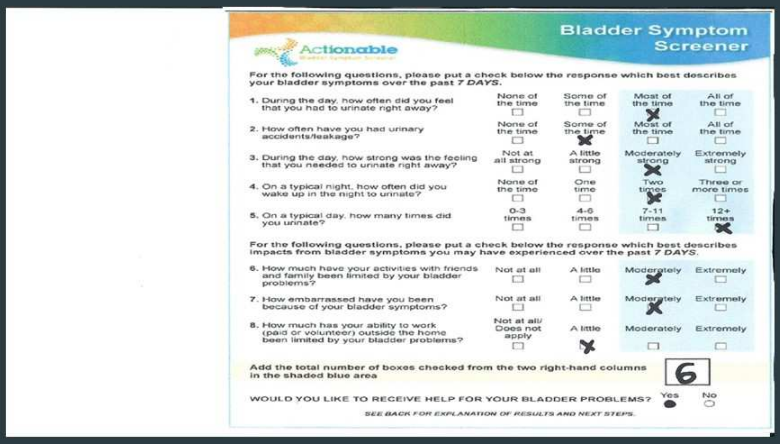
Add the total number of boxes checked from the two right-hand columns in the shaded blue area 2

WOULD YOU LIKE TO RECEIVE HELP FOR YOUR BLADDER PROBLEMS? Yes ○ No ●

SEE BACK FOR EXPLANATION OF RESULTS AND NEXT STEPS.

Adapted from Cardozo, L., Staskin, D., Currie, B., Wiklund, I., Globe, D., Signori, M., Dmochowski, R., MacDiarmid, S., Nitti, V.W., Noblett, K. (2014). Validation of a bladder symptom screening tool in women with incontinence due to overactive bladder. *International Urogynecologic Journal*, 25:1655-1663. Retrieved from Web of Science. DOI: 10.1007/s001192-014-2417-7

Actionable Bladder Symptom Screening Tool – 3 and Above



Actionable

Bladder Symptom Screener

For the following questions, please put a check below the response which best describes your bladder symptoms over the past *7 DAYS*.

1. During the day, how often did you feel that you had to urinate right away?	None of the time ☐	Some of the time ☐	Most of the time ☒	All of the time ☐
2. How often have you had urinary accidents/leakage?	None of the time ☐	Some of the time ☒	Most of the time ☐	All of the time ☐
3. During the day, how strong was the feeling that you needed to urinate right away?	Not at all strong ☐	A little strong ☐	Moderately strong ☒	Extremely strong ☐
4. On a typical night, how often did you wake up in the night to urinate?	None of the time ☐	One time ☐	Two times ☒	Three or more times ☐
5. On a typical day, how many times did you urinate?	0-3 times ☐	4-6 times ☐	7-11 times ☐	12+ times ☒

For the following questions, please put a check below the response which best describes impacts from bladder symptoms you may have experienced over the past *7 DAYS*.

6. How much have your activities with friends and family been limited by your bladder problems?	Not at all ☐	A little ☐	Moderately ☒	Extremely ☐
7. How embarrassed have you been because of your bladder symptoms?	Not at all ☐	A little ☐	Moderately ☒	Extremely ☐
8. How much has your ability to work (paid or volunteer) outside the home been limited by your bladder problems?	Not at all/ Does not apply ☐	A little ☒	Moderately ☐	Extremely ☐

Add the total number of boxes checked from the two right-hand columns in the shaded blue area **6**

WOULD YOU LIKE TO RECEIVE HELP FOR YOUR BLADDER PROBLEMS? Yes ● No ○

SEE BACK FOR EXPLANATION OF RESULTS AND NEXT STEPS.

Adapted from Cardozo, L., Staskin, D., Currie, B., Wiklund, I., Globe, D., Signori, M., Dmochowski, R., MacDiarmid, S., Nitti, V.W., Noblett, K. (2014). Validation of a bladder symptom screening tool in women with incontinence due to overactive bladder. *International Urogynecologic Journal*, 25:1655-1663. Retrieved from Web of Science. DOI: 10.1007/s001192-014-2417-7

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Actionable Bladder Symptom Screening Tool

- It is validated in non-neurogenic females, and found to be a reliable, valid and sensitive tool for screening women with urinary urge incontinence and OAB
- The Actionable Bladder questionnaire with cut-off score 3 strongly distinguishes between patients who should be treated versus those who do not require treatment
  - A score of less than 3- no further action required.
  - A score of 3 and greater- requires further assessment or referral.

Cardozo et al., 2014; Jorgen et al., 2015

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Conclusion

This screening tool is short, and patients can fill out while in the waiting area.

The providers in the retail clinic setting can use this screening tool to quickly assess whether patients meet the criteria for treatment, or referral to PCP or Urologist.

Thank you all for your attention.

Any questions?

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